

Alzheimer's Disease Research Current Grantees

Alzheimer's disease (AD) causes irreversible damage to the brain, disrupting memory, cognition, personality, and other functions. At the very final stages, AD leads to complete brain failure, which is fatal. AD is the sixth leading cause of death in the United States.

With the support from our donors, Alzheimer's Disease Research (ADR), which began in 1985, has awarded more than \$110 million to fund research projects on the causes and potential prevention and treatment of this disease. Because Alzheimer's is such a complex disease, ADR is supporting research projects looking into every aspect of prevention, treatment, and cure. This "yearbook" provides a snapshot of currently active ADR grant projects, grouped into the following categories:

Over **5** million people live with Alzheimer's disease in the United States today, by 2050 there will be close to **15** million.



- Stopping Alzheimer's By Understanding Pathogenesis
- Amyloid Beta and Tau: The Fight Continues
- Role of Immune Factors and Clearance Mechanisms
- Brain Circulation and Alzheimer's Disease
- Finding Drugs to Halt Alzheimer's
- Intervening with Genetic Risk
- Preserving the Brain Network in Alzheimer's
- Other Innovative Approaches to Drug Discovery & Treatment
- Controlling Alzheimer's Risk Factors
- Pioneering New Ways to Image and Assess the Brain

Stopping Alzheimer's By Understanding Pathogenesis

It's hard to believe that today, more than 100 years after Alzheimer's disease (AD) was first discovered, scientists are still looking for explanations on how it starts. There appears to be a disruption in the brain's system for clearing waste, causing an excess of amyloid proteins (both amyloid-beta [A β] and tau) to collect in plaques and tangles. Besides that, there's evidence of breakdown in the immune system, leading to inflammation, and in brain circulation and metabolism, disrupting its blood supply and energy. And there may be other molecular changes, including protein misfolding that interrupts the brain's normal function and contributes to the degeneration and death of neurons. As damage grows, parts of the brain stop communicating with one another, causing memory loss and dementia. Growing evidence suggests that AD might spread inside the brain through diseased nerve fibers and connections. Each day researchers fit together more pieces of the puzzle, and that will lead to effective treatments and cures.



Inma Cobos, MD, PhD (7/1/17 - 6/30/20)
University of California, Los Angeles

AD in the Human Brain: Focusing on One Neuron at a Time

"Our studies aim to define the precise identity of neurons that are affected in AD, and uncover the relevant genes and molecular pathways that confer cell-type specific vulnerability or resilience to disease."

www.brightfocus.org/grant/A2017346S

This grant is made possible in part by support from Alzheimer's Greater Los Angeles.



Chadwick Hales, MD, PhD (7/1/17 - 6/30/20)
Emory University, Atlanta, GA

How Proteins Contribute to AD Pathology and Spread

"Our project studies how ribonucleic acid (RNA) processing factors promote or seed the abnormal accumulation of proteins in AD, thereby identifying novel approaches for targeting cellular mechanisms that lead to AD."

www.brightfocus.org/grant/A2017281S



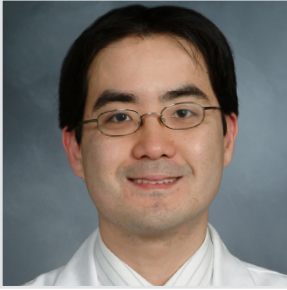
David Irwin, MD (7/1/16 - 6/30/18)
University of Pennsylvania School of Medicine, Philadelphia

Non-Amnesic Alzheimer's Disease Biology

"The goal of our project is to study the pattern of disease spread and genetic risk for non-amnesic clinical variants of AD."

www.brightfocus.org/grant/A2016244S

This grant is made possible in part by a bequest from the Timothy Miles Charitable Trust.



Makoto Ishii, MD, PhD (7/1/15 - 6/30/18)
Weill Cornell Medicine, New York, NY

Identifying How Fat Hormones That Regulate Body Weight Are Affected in AD

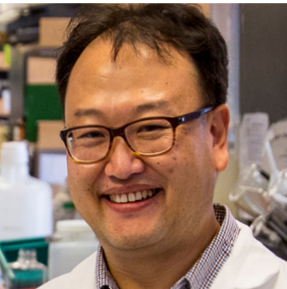
"The goal of this project is to understand why AD leads to loss in body weight, particularly early in the disease, and by doing so explore new avenues for developing novel therapeutic targets and diagnostic tools."
www.brightfocus.org/grant/A2015485S



Chaeyoung Kim, PhD (7/1/16 - 6/30/19)
*The J. David Gladstone Institutes,
University of California, San Francisco*

ApoE4 and Mitochondrial Function in AD

"We aim to determine how apolipoprotein E4 (ApoE4), the major genetic risk factor for Alzheimer's, and its neurotoxic fragments disrupt mitochondrial activity to drive neurodegeneration."
www.brightfocus.org/grant/A2017214F



Doo Yeon Kim, PhD (7/1/16 - 6/30/19)
Massachusetts General Hospital, Harvard Medical School, Boston

A Human Cellular AD Model Based on 3D Culture Technology

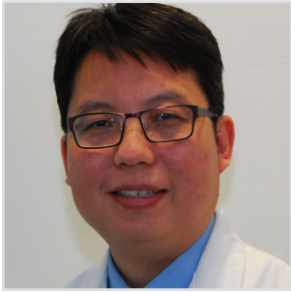
"In this project, we will further develop and characterize a human 'Alzheimer's in a dish' model based on a unique three-dimensional (3D) human neural progenitor cell culture technique."
www.brightfocus.org/grant/A2016362S



Tae Ho Lee, PhD (7/1/17 - 6/30/20)
*Beth Israel Deaconess Medical Center, Harvard Medical School,
Boston, MA*

A New Mechanism Regulating Neuron Death in AD

"Our goal is to study the role of death-associated protein kinase 1 (DAPK1) in AD using mouse models, and to determine the relationship between DAPK1 and neuronal cell death in human AD."
www.brightfocus.org/grant/A2017180S



Tao Ma, MD, PhD (7/1/17 - 6/30/20)

Wake Forest University School of Medicine, Winston-Salem, NC

A Potential New Therapeutic Target for AD

"The goal of our project is to understand the detailed mechanisms underlying AD, and particularly the role of a messenger RNA (mRNA) known as translational factor elongation factor 2 (eEF2) in AD-associated dementia syndrome."

www.brightfocus.org/grant/A2017457S



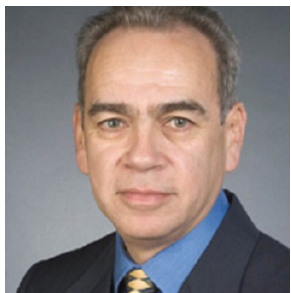
Stephen Salton, MD, PhD (7/1/16 - 6/30/18)

Icahn School of Medicine at Mt. Sinai, New York, NY

Role of VGF in AD Pathogenesis and Progression

"This project can be expected to result in a strong foundation for future exploration of approaches that deliver VGF and/or VGF-derived peptides to patients with AD."

www.brightfocus.org/grant/A2016508S



Juan Troncoso, MD (7/1/15 - 6/30/18)

Johns Hopkins University, Baltimore, MD

AD, Before Plaques and Tangles

"We propose to study the postmortem brain of individuals between 30 and 50 years of age and to identify those brains with the very early pathologic changes or lesions of AD."

www.brightfocus.org/grant/A2015332S

This grant is made possible by a bequest from the Howlett Revocable Trust.



Guilian Xu, PhD (7/1/14 - 6/30/18)

University of Florida, Gainesville

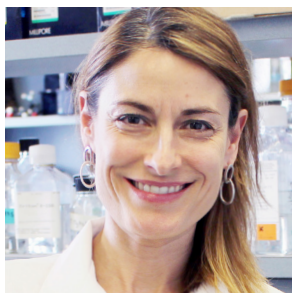
Are There Global Changes in Protein Metabolism with AD and Do These Changes Affect Cognition?

"We hypothesize that tau protein is one of the 'secondary misfolded' proteins that happens as human AD progresses."

www.brightfocus.org/grant/A2014108S

Amyloid Beta and Tau: The Fight Continues

Amyloid-beta (A β) and tau are two of the nearly two million proteins the human body is capable of producing, and both serve a useful role in healthy brains. Yet in AD, they undergo molecular changes that cause them to collect into tangles, plaques, and vascular deposits. Whether or not these changes are the culprit in Alzheimer's is a matter of debate; not all people with A β plaques show symptoms of Alzheimer's, and even in advanced AD, some neurons will develop tau tangles, while others next to them remain healthy. Since A β changes tend to happen first, a decade or longer before AD symptoms, some believe those changes may set the stage, after which tau, inflammation, neurodegeneration, and other disease processes take over. Today, almost every molecule in the brain's changing landscape is under surveillance as scientists sort out what causes amyloid fibers to go from "normal" to becoming misshapen and toxic. Early treatment, and perhaps prevention opportunities, could lie in the answer.

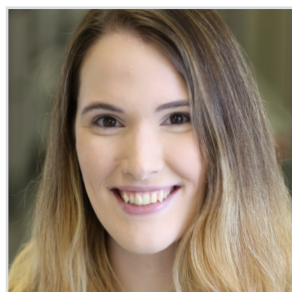


Francesca Bartolini, PhD (7/1/15 - 6/30/18)
Columbia University, New York, NY

Microtubule Stabilization Pathways in AD

"Our studies will potentially identify new diagnostic markers and introduce a new class of cytoskeleton regulators that may be targeted in drug therapies aimed at rescuing cells from both amyloid beta and phospho-tau toxicity in AD."

www.brightfocus.org/grant/A2015508S



Kathryn Bowles, PhD (7/1/17 - 6/30/19)
Icahn School of Medicine at Mount Sinai, New York, NY

Discovering Factors That Cause Tau to Change

"There are six different versions of tau protein in the human brain. This project aims to discover which genes are responsible for regulating the different versions of tau so that we may better understand how and why an imbalance occurs, and what we could do to fix it."

www.brightfocus.org/grant/A2017144F



David Brody, MD, PhD (7/1/14 - 6/30/18)
Washington University School of Medicine, St. Louis, MO

Purifying the Most Toxic Forms of Beta Amyloid from the Brains of Patients with AD

"The goal of this project is to purify and characterize small, toxic proteins that may be the root cause of dementia in AD."

www.brightfocus.org/grant/A2014270S

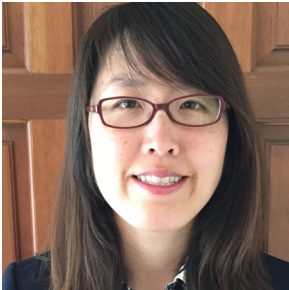


Resham Chhabra, PhD (7/1/17 - 6/30/19)
Johns Hopkins University, Baltimore, MD

TDP-43 Depletion as a Risk Factor for Tau Pathology in Alzheimer's

"My research aims to determine whether depletion of TAR DNA-binding protein 43 (TDP-43) in neurons contributes to pathological conversion of tau or accelerates tauopathy, a critical driver of neuron loss and cognitive decline in sporadic AD."

www.brightfocus.org/grant/A2017102F



Karen Chiang, PhD (7/1/17 - 6/30/19)
University of California, San Diego

The Impact Of A β on the Spread of Tau Toxicity in the Brain

"My research aim is to explain how the relative synaptic localization of amyloid beta expression contributes to the development of tau pathology."

www.brightfocus.org/grant/A2015595F



Sarah DeVos, PhD (7/1/17 - 6/30/20)
Massachusetts General Hospital, Harvard Medical School, Boston

A New Tool to Monitor Tau Aggregates in the Brain

"This research aims to observe directly, in real time, what happens once a neuron develops a tau aggregate, as well as to study which genes increase or decrease in a neuron once it develops one of these tau accumulations."

www.brightfocus.org/grant/A2017436F



Umesh Jinwal, PhD (7/1/15 - 6/30/18)
University of South Florida, Tampa

Defining the Role of Tau and Kinase Regulator Chaperone Protein Cdc37 in Alzheimer's Disease

"The main focus of this research is to investigate the role of Cdc37, a chaperone protein, in tau abnormalities using cellular and animal models of AD."

www.brightfocus.org/grant/A2015666S



Harry LeVine, III, PhD (7/1/14 - 6/30/18)
University of Kentucky, Lexington

Identifying the Type of Neuron Accumulating Amyloid in Early AD

"The goal of our project is to identify the type of neuron in humans that is first affected by human-specific pathology in AD and to determine how further changes in humans as AD progresses differ from those in a mouse model of AD pathology"

www.brightfocus.org/grant/A2014044S



Jiri Safar, MD (7/1/16- 6/30/19)
Case Western Reserve University, Cleveland, OH

Profiling Prion-Like Strains of A β that Control Alzheimer's Progression

"We believe our project addresses a confounding puzzle: Why clinical symptomatology, severity, and progression rates of late-onset AD frequently do not coincide with the total amyloid-beta (A β) load?"

www.brightfocus.org/grant/A2016085S



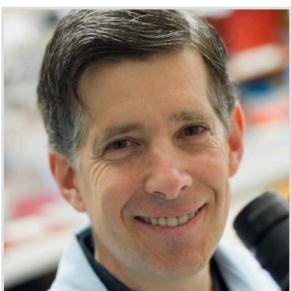
Paul Seidler, PhD (7/1/16- 6/30/18)
University of California, Los Angeles

Blocking Assembly of Tau Protein into Toxic Structures Associated with AD

"This project will expand our understanding of Alzheimer's by delineating the structural assemblies that are available to tau, another amyloid protein that, along with A β , is associated with AD."

www.brightfocus.org/grant/A2016588F

This grant is made possible in part by support from Alzheimer's Greater Los Angeles.



Benjamin Wolozin, MD, PhD (7/1/15 - 6/30/18)
Boston University, Massachusetts

Harnessing Reversible Protein Aggregation to Treat AD

"We hypothesize that the process of aggregation associated with stress granules might actually stimulate pathology in AD."

www.brightfocus.org/grant/A2015256S



Ryohei Yasuda, PhD (7/1/15 – 6/30/18)

Max Planck Florida Institute for Neuroscience, Jupiter

Identifying the Role of a Brain-Specific Protein Centaurin-a1, in AD

"We recently identified that a signaling protein called centaurin-a1 (CentA1) causes A β -induced dysfunction of neurons and thus potentially contributes to brain dysfunction in AD."

www.brightfocus.org/grant/A2015251S

Role of Immune Factors and Clearance Mechanisms

One unifying theory about AD is that it may be triggered, in part, by a breakdown in the brain's immune system. Normally our brain has ways of clearing damaged cells and other unwanted particles in its midst and disposing them into the bloodstream—which can be thought of as “taking out the garbage.” However, a chronic rise in unwanted debris, including toxic A β and tau proteins, can short-circuit the immune system. Grantees are looking at what causes the immune response to become unbalanced and whether there are ways to help the brain's microglia and immune system do a better job of fighting Alzheimer's.



Karen Duff, PhD (7/1/17 - 6/30/20)

Columbia University, New York, NY

Slowing AD by Enhancing Cellular Clearance

"We propose to test whether the spread of tangles through the brain is a result of abnormal tau overwhelming the cell's ability to clear it, and whether we can boost cell defenses against tangles using clinically approved drugs that have not been used for this purpose previously."

www.brightfocus.org/grant/A2017393S

This Alzheimer's Disease Research Grant is made possible in part by support from Lois and Duane Luallin in Memory of Denver E. Perkins and Edwin H. Luallin.



Swetha Gowrishankar, PhD (7/1/16 - 6/30/18)

Yale University School of Medicine, New Haven, CT

Role of Axonal Lysosome Transport in AD Pathology

"Collectively, our efforts are expected to provide understanding of the mechanisms whereby amyloid plaques trigger the accumulation of lysosomes in surrounding axons, as well as the contribution of such lysosomes to the disease process."

www.brightfocus.org/grant/A2016411F



Jean-Vianney Haure-Mirande, PhD (7/1/16 - 6/30/18)
Icahn School of Medicine at Mount Sinai, New York, NY

Role of Microglia in AD: Deleterious or Helpful?

"The aim of our project is to: understand the role of the immune system in the pathogenesis of Alzheimer's, and provide new insight for a therapeutic target to control AD."

www.brightfocus.org/grant/A2016482F

This grant is made possible by support from the J.T. Tai Foundation

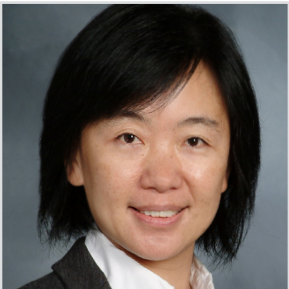


Bruce Lamb, PhD (7/1/15 - 6/30/18)
Cleveland Clinic Lerner Research Institute, Ohio

The Role of TREM2, a Key Immune Regulating Protein, in AD

"We are working to find new drug targets in the brain and to understand the biology of the newly identified immune molecule, triggering receptor expressed on myeloid cells 2 (TREM2), and its role in the Alzheimer's tau pathology."

www.brightfocus.org/grant/A2015296S



Wenjie Luo, PhD (7/1/16 - 6/30/19)
Weill Cornell Medicine, New York, NY

Cellular Mechanisms Underlying Microglia-Mediated Amyloid Degradation

"Accumulation of abnormal amyloid and tau proteins in the brain is believed to be detrimental for brain functions; thus, searching for ways to reduce these bad proteins from the brain may help us find a promising drug for AD."

www.brightfocus.org/grant/A2016399S



Zixu Mao, PhD (7/1/16 - 6/30/19)
Emory University, Atlanta, GA

Understanding Brain Inflammation in AD

"The goal of my project is to understand the critical signaling pathways that underlie microglial inflammatory response in the context of Alzheimer's pathogenesis."

www.brightfocus.org/grant/A2016501S



Edoardo Marcora, PhD (7/1/17 - 6/30/20)
Icahn School of Medicine at Mount Sinai, New York, NY

Understanding the Role of Apolipoprotein E in Microglia

"The goal of this project is to elucidate the functional role of apolipoprotein E (ApoE) in microglia, the resident immune cells of the brain."

www.brightfocus.org/grant/A2017458S

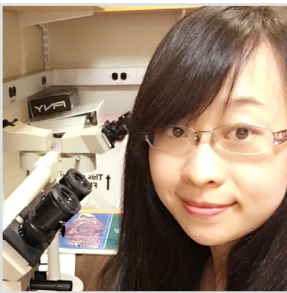


Charles Sanders, PhD (7/1/15 - 6/30/18)
Vanderbilt University Medical Center, Nashville, TN

How Does TREM2 Help the Brain Clean out Molecular 'Garbage' that Contributes to Alzheimer's?

"We seek to unravel the role that the triggering receptor expressed on myeloid cells 2 (TREM2) protein plays in helping to prevent AD and to provide a better understanding of what exactly goes wrong, contributing to AD, when this protein no longer can do its job."

www.brightfocus.org/grant/A2015565S



Qiaoqiao Shi, PhD (7/1/16 - 6/30/18)
Brigham and Women's Hospital, Harvard Medical School, Boston, MA

New Mouse Models to Study the Role of Complement in Brain Aging and Neurodegeneration

"Complement component 3 (C3), an immune molecule, is up-regulated in AD and may contribute to the synapse loss that underlies cognitive decline. To further understand when and where C3 plays a role in Alzheimer's, we have generated two novel mouse models."

www.brightfocus.org/grant/A2016425F

This grant is made possible in part by a bequest from the Estate of Frederick J. Pelda.



Brain Circulation and Alzheimer's Disease

Most AD is “mixed,” meaning that in addition to amyloid plaques and tangles, there are changes in the brain’s blood vessels that interfere with normal circulation. Amyloid can deposit in vessels, and Alzheimer’s-related inflammation causes vessels to grow “sticky,” both of which may stall the blood flow. The reduced flow compromises the supply of oxygen and nutrition to the brain. In addition, the extremely tight junctions of the blood-brain barrier (BBB), which close the brain’s circulation from the rest of the body, may also be affected in AD. It may be possible to manipulate tight junctions to allow better clearance of toxins and facilitate entry of drugs to treat AD, which is notoriously difficult.



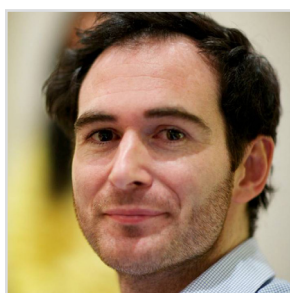
Rachel Bennett, PhD (7/1/16 - 6/30/18)

Massachusetts General Hospital, Harvard Medical School, Boston

Blood Vessel Changes in Tauopathy

“This research aims to determine if blood vessel alterations are an early or late event in the disease process and to use ‘off the shelf’ drugs to prevent blood vessel growth.”

www.brightfocus.org/grant/A2016404F



Matthew Campbell, PhD (7/1/15 - 6/30/18)

Trinity College, Dublin, Ireland

A Novel Way of Removing Toxic Material from the Brain in Early AD

“The primary goal of this research project is to develop a greater understanding of the integrity of blood vessels in the brain in the context of Alzheimer’s.”

www.brightfocus.org/grant/A2015548S



Jorge Ghiso, PhD (7/1/15 - 6/30/18)

NYU Langone Health, New York, NY

Effect of Aging and Dysfunction of Cerebral Microvasculature in AD

“The central focus of this project is how brain amyloid-beta (A β) removal is additionally influenced by aging and by the dysfunction of the cerebral microvasculature.”

www.brightfocus.org/grant/A2015275S

Recipient of the Virginia Faber Memorial Award



Ethan Lippmann, PhD (7/1/17 - 6/30/20)
Vanderbilt University, Nashville, TN

Why Do Brain Blood Vessels Become Leaky in Alzheimer's and Dementia?

"The goal of our project is to better understand how the blood vessels in the brain form the blood-brain barrier (BBB), which normally protects the brain from toxic substances but becomes leaky in diseases like Alzheimer's and dementia."

www.brightfocus.org/grant/A2017094S



Jerome Robert, PhD (1/1/16 - 12/31/2017)
University of British Columbia, Vancouver, Canada

Development of a New Model of Brain Vasculature in the Test Tube

"We are developing novel methods to analyze in the test tube the importance of the brain vessels in the development of AD."

www.brightfocus.org/grant/A2015324F



Pietro Michelucci, PhD (7/1/17 - 6/30/19)
Human Computation Institute, Ithaca, NY

EyesOnALZ: Crowdsourced Research to Accelerate Future Alzheimer's Treatments

"We will apply the validated crowd engine to new experimental data to see if we can reduce the time to a treatment target from decades to just a few years. This is the first citizen science project supporting Alzheimer's research"

www.brightfocus.org/grant/CA2017606

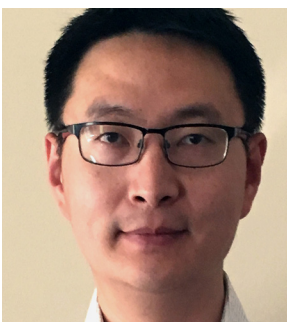


Chris Schaffer, PhD (7/1/17 - 6/30/20)
Cornell University, Ithaca, NY

Improving Brain Blood Flow in AD to Improve Cognitive Function

"The work proposed here would set the stage for a clinical trial that assesses whether manipulating leukocyte adhesion can improve brain blood flow and impact cognition in AD patients."

www.brightfocus.org/grant/A2017488S



Yi Su, PhD (7/1/17 - 6/30/20)
Washington University School of Medicine, St. Louis, MO

Neurovascular Changes in Aging and AD

"The goal of this project is to use novel imaging techniques to examine change in brain metabolism and the loss of BBB integrity as a consequence of aging and AD."

www.brightfocus.org/grant/A2017272S

Finding Drugs to Halt Alzheimer's

The painstaking work to uncover Alzheimer's pathology has paid off with a bounty of pathways to potentially treat the disease. With a disease as complex as this one, it's very good news that there are multiple points where it may be possible to slow or halt Alzheimer's path of destruction in the brain. ADR grantees are discovering and contributing to early development of molecules and compounds aimed at improving the brain's clearance of debris and toxins; promote brain synapse health, circulation and metabolism; and modifying increased risk from the apolipoprotein E4 (ApoE4) allele and other genetic variants. This work will help to put new drugs and therapies on the market.



Mark Henkemeyer, PhD (7/1/16 - 6/30/19)

University of Texas Southwestern Medical Center, Dallas

Identification of Novel Compounds to Promote Synapse Health and Prevent AD

"I aim to discover a new class of medicines that will halt the destruction of synapses and avert memory loss with direct implication for the prevention of AD."

www.brightfocus.org/grant/A2016345S



Tsuneya Ikezu, MD, PhD (7/1/16 - 6/30/19)

Boston University, Massachusetts

Validation of Drug Candidates for Enhancing the Phagocytic Clearance in the Alzheimer's Brain

"We propose to identify a drug, which can enhance clearance of unwanted protein buildup, consisting of degraded nerve fibers (called fibrils) and dead cells, in the Alzheimer's brain."

www.brightfocus.org/grant/A2016551S



Patrick Kehoe, PhD (7/1/16 - 6/30/19)

University of Bristol, United Kingdom

Helping the Brain to Fight Back Against Alzheimer's—Using Old Drugs for New Purposes

"Our project will examine the therapeutic potential of a drug that enhances the function of a biochemical pathway that reduces high blood pressure. The same drug has additional properties that may alleviate some other destructive processes that occur in brain cells in AD."

www.brightfocus.org/grant/A2016582S

This grant is made possible in part by a bequest from the Trust of Edward & Irene Schlosser.



Daniel Lee, PhD (7/1/15 - 6/30/18)
University of South Florida, Tampa

Gene Therapy with Arginine Decarboxylase and the Regulation of Tau

"The goal is to identify a viable target that could be drugged or induced to provide maximum benefit with respect to tauopathies and Alzheimer's-like pathology, but minimal changes in a host of other body systems."

www.brightfocus.org/grant/A2015504S

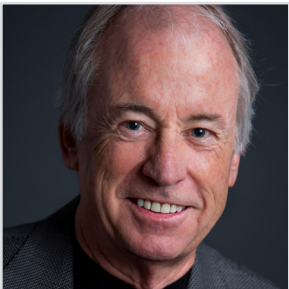


M. Paul Murphy, MA, PhD (7/1/14 - 12/30/17)
University of Kentucky, Lexington

A Novel Therapy for Alzheimer's-Associated Dementia with Cerebrovascular Comorbidity

"This proposal holds potential for making progress towards a new therapeutic option for AD with significant cerebrovascular comorbidity, a neurologic disorder that is both poorly understood and has only limited treatment options."

www.brightfocus.org/grant/A2014280S



Stephen Martin, PhD (7/1/16 - 6/30/18)
University of Texas at Austin

A New Approach to Treating AD

"Because there is an urgent, unmet need for drugs to treat both the symptoms and the disease, the proposed program will explore a novel strategy to treat AD by targeting a biological pathway different from those of all existing drugs and all but one known clinical candidate."

www.brightfocus.org/grant/A2016443S

This grant is made possible in part by a bequest from the Trust of Francis C. Dykeman and in honor of Marie E. Dykeman.



Ana Pereira, MD (7/1/16 - 6/30/19)
The Rockefeller University, New York, NY

Enhancing Glutamate Levels as a Way to Treat AD

"Our project studies how dysfunction of the major glutamate transporter in the brain, GLT-1, is an important mechanism in several toxicities in AD, thus potentially validating GLT-1 as a novel and specific target for drug development."

www.brightfocus.org/grant/A2016478S

This grant is made possible by support from the Ping Y. Tai Foundation

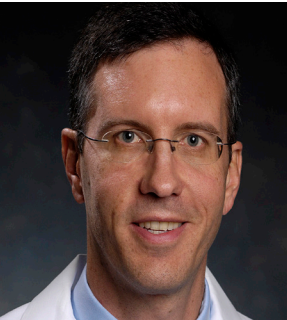


Dianne Perez, PhD (7/1/16 - 6/30/19)
The Cleveland Clinic Foundation, Ohio

Novel Drugs against a New Receptor Target to Treat AD

"This project is important in order to validate the target, then to actually make new drugs that are the most selective for this target, and then to test these drugs in an animal model of the disease, all of which paves the way for human drug development."

www.brightfocus.org/grant/A2016272S



Erik Roberson, MD, PhD (7/1/15 - 6/30/18)
University of Alabama at Birmingham

A New Approach to Targeting Tau in AD by Inhibiting Its Interaction With Fyn

"We are investigating compounds that would stop the interaction between two proteins, tau and Fyn. Considerable data indicates that blocking this interaction could ameliorate Alzheimer's."

www.brightfocus.org/grant/A2015693S

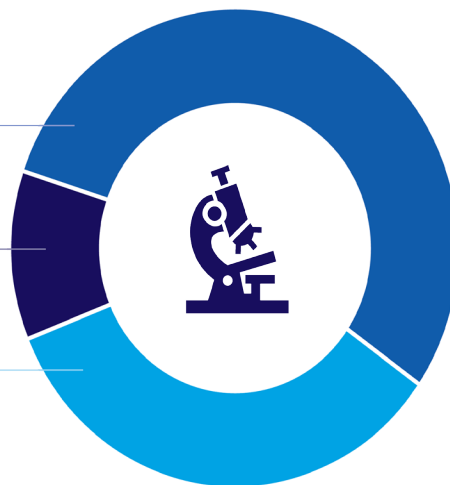
This grant is made possible in part by a grant from the Jerome Jacobson Foundation.

➤ BrightFocus Grants at a Glance

47%
 BASIC RESEARCH GRANTS

15%
 CLINICAL RESEARCH GRANTS

38%
 TRANSLATIONAL RESEARCH GRANTS



Basic - Research that aims to better understand how a disease happens, and to obtain new ideas of how to stop the disease.

Clinical - Research involving volunteer participants to test the safety and effectiveness of drugs, devices, or other treatment candidates.

Translational - Research to move findings from the lab bench to the "bedside" by testing potential treatments.

Intervening with Genetic and Gene Expression

Genes represent another possible treatment pathway early in AD. Mutations associated with Alzheimer's risk may affect protein metabolism and lead to deposits of amyloid and other abnormal proteins. Another genetic variant affects amyloid precursor protein, one of the raw ingredients of amyloid-beta ($A\beta$), and appears to double the risk for late onset AD. And inherited forms of Alzheimer's are being studied for genetic mutations and variations that may help explain the far more common, late-onset form of the disease. Genetic contributors, once discovered, are potentially modifiable.



Pierre De Rossi, PhD (7/1/17 - 6/30/19)
University of Chicago, Illinois

BIN1 as a Genetic Risk Factor in AD Pathology

"I will investigate how BIN1 functions as a risk factor in Alzheimer's pathogenesis. This project will highlight BIN1 as a prospective candidate for drug development."

www.brightfocus.org/grant/A2017366F



Veer Bala Gupta, PhD (7/1/15 - 6/30/17)
Edith Cowan University, Perth, Australia

Studying Proteins in Blood to Detect AD at an Early Stage

"We propose that investigating familial form of Alzheimer's disease will be an innovative approach to identify and develop reliable blood-based biomarkers for this disease."

www.brightfocus.org/grant/A2015641F



Joachim Herz, MD (7/1/16 - 6/30/19)
University of Texas Southwestern Medical Center, Dallas

Targeting the Molecular Cause of the ApoE4 Risk in AD

"Successful completion of the project would establish a novel therapeutic approach to Alzheimer's that has the potential to abolish the ApoE4 risk for developing the most frequent late-onset form of the disease."

www.brightfocus.org/grant/A2016396S



Catherine Kaczorowski, PhD (7/1/16 - 6/30/19)
The Jackson Laboratory, Bar Harbor, ME

A New Method to Identify Genes Critically Involved in AD

"The main goal of our project is to identify new genes that may modify the age at which a person will develop symptoms of AD, termed 'age-at-onset.'"

www.brightfocus.org/grant/A2016397S

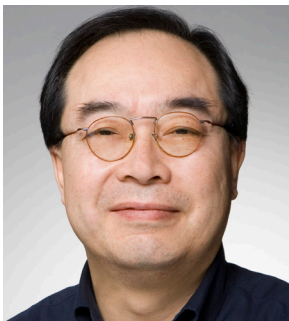


Celeste Karch, PhD (7/1/15 - 6/30/18)
Washington University School of Medicine, St. Louis, MO

Defining the Role of Phospholipase D3 in AD

"We have identified genetic variants in phospholipase D3 (PLD3) that double the risk for late-onset AD. The goal of this study is to use cell and mouse models to begin to define the molecular mechanisms by which PLD3 variants influence APP metabolism and contribute to Alzheimer's pathology."

www.brightfocus.org/grant/A2015411S



Joseph H. Lee, PhD (7/1/15 - 6/30/18)
Columbia University, New York, NY

Genome Search for Genetic Modifiers of AD Age at Onset

"The main goal of this project is to identify new genes that may lead to either earlier or later age at onset of Alzheimer's by examining Puerto Rican families that have at least one person who carries a unique mutation in the PSEN1 gene."

www.brightfocus.org/grant/A2015633S

This grant is made possible in part by a bequest from the Estate of Frederick J. Pelda.



Jada Lewis, PhD (7/1/15 - 6/30/18)
University of Florida, Gainesville

Decreasing Expression of a Toxic Protein in AD

"We propose to cut DNA at specific regions of tau protein, thus downregulating expression of tau protein, for the purpose of curing familial frontotemporal dementia."

www.brightfocus.org/grant/A2015688S



Chia-Chen Liu, PhD (7/1/16 – 6/30/18)
Mayo Clinic, Jacksonville, FL

The Effects of ApoE Isoforms on Brain Functions and AD

"Using a unique inducible mouse model, our studies will for the first time test how peripheral ApoE affects brain functions and AD progression."

www.brightfocus.org/grant/A2016346F



Carlos Saura, PhD (7/1/14 – 6/30/18)
Universitat Autònoma de Barcelona, Spain

Genetic Mechanisms Underlying Memory Loss in AD

"The goal of this project is to investigate novel molecular mechanisms that regulate gene expression programs causing memory impairments at early AD stages"

www.brightfocus.org/grant/A2014417S

Preserving the Brain Network in Alzheimer's

The human brain has an estimated 100 billion neurons, including quite a few to spare, and from each of them extends a long fiber called an "axon". Axons form connections, known as "synapses" with other nerve cells, creating an incredible communications network. Despite the loss of individual neurons, it isn't until the brain's entire communications network malfunctions that we experience Alzheimer's most typical symptoms—things like forgetting common words, or becoming lost in familiar places. Even then, the brain is amazingly adaptable and "plastic," meaning it actively remodels itself to meet new demands. If part of the network becomes too damaged to connect with other neurons by the most direct route, it will find detours and form new connections known as indirect neural pathways. ADR grantees are devising new ways to study this network and preserve its function for as long as possible, even after the onset of Alzheimer's disease (AD).



Iman Aganj, PhD (7/1/16 - 6/30/19)
Massachusetts General Hospital, Harvard Medical School, Boston

Imaging Biomarkers for Alzheimer's: New Methods to Account for Indirect Brain Connections

"In this project, I'll develop necessary computer tools and imaging techniques to model neuronal connections in the human brain, and use the results to better understand how the brain architecture and function are influenced by Alzheimer's."

www.brightfocus.org/grant/A2016172S



Ulrich Hengst, PhD (7/1/15 - 6/30/18)
Columbia University, New York, NY

Spread of AD along Neuronal Connections

"We plan to study the question of what precisely is happening within an axon that connects to a diseased area of the brain, and how is the neurodegenerative signal transmitted back to the neuron."

www.brightfocus.org/grant/A2015093S

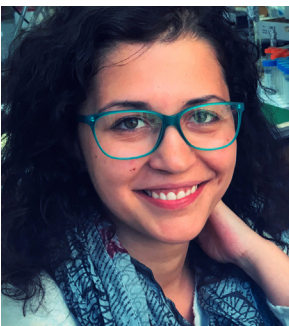


Terrance Kummer, MD, PhD (7/1/17 - 6/30/20)
Washington University School of Medicine, St. Louis, MO

An MRI Fingerprint of Brain Circuit Breakdown in AD

"The aim of our project is to shed light on the breakdown of circuits in the brain during AD by developing new tools to measure these events and connect them to outcomes in animal models and in humans."

www.brightfocus.org/grant/A2017084S



Selene Lomoio, PhD (7/1/16 - 6/30/18)
Tufts University School of Medicine, Boston, MA

Reorganizing the Neuronal Highway in the Alzheimer's Brain

"Our goal is to try to understand what is disrupting the neuronal traffic in AD brains, find a way to prevent it, and possibly find a treatment for Alzheimer's."

www.brightfocus.org/grant/A2016379F



Richard Morrison, PhD (7/22/14 - 12/31/17)
University of Washington School of Medicine, Seattle, WA

Restoring a Novel Multifunctional Protein in Neurons to Enhance Cognitive Function in Alzheimer's Disease

"The goal of our project is to enhance cognitive function and reduce cell damage in Alzheimer's disease by restoring expression of a novel multifunctional protein in neurons that is lost during the progression of Alzheimer's."

www.brightfocus.org/grant/A2014237S



Tara Tracy, PhD (7/1/16 - 6/30/18)
*The David J. Gladstone Institutes,
University of California, San Francisco*

Investigating the Impact of KIBRA Protein Loss on Synapse Function and Memory

"My research will advance our understanding of how the loss of a kidney and brain-expressed (KIBRA) protein at synapses contributes to cognitive decline in AD."

www.brightfocus.org/grant/A2016360F

Other Innovative Approaches to Drug Discovery & Treatment

Brain changes associated with Alzheimer's disease (AD) can happen slowly, over a decade or longer, and scientists think the best results will come when AD is treated early in this window. Researchers are looking at the earliest indications of Alzheimer's (biomarkers) in order to diagnose the disease as early as possible, and are discovering potential new drug targets in these earliest stages. Also, since different individuals might share the same set of risk factors, such as a genetic mutation $A\beta$ plaques, yet be resistant to AD, the body's innate defense mechanisms are being studied with the hopes of replicating them. And since no two people's Alzheimer's is alike, other researchers are developing personalized approaches to monitor and assess each individual's disease and optimize treatment strategies (eg, "personalized medicine").



Jason Gestwicki, PhD (7/1/15 - 6/30/18)
University of California, San Francisco

Control of Normal Tau Levels by Molecular Chaperones

"In the current project, we are trying to understand how the body's own proteins (termed molecular chaperones) protect us against AD."

www.brightfocus.org/grant/A2015297S



Shahrnaz Kemal, PhD (7/1/17 - 6/30/19)
Northwestern University, Evanston, IL

Unexplored Toxic Pathways in AD: Potential New Drug Targets

"The experiments in this proposal are designed to find new pathways by which toxic forms of $A\beta$, a peptide associated with AD, damages microtubules, tube-like structures used to move components around in cells, including neurons in the brain."

www.brightfocus.org/grant/A2017033F



Brian Kraemer, PhD (7/1/14 - 6/30/18)
VA Puget Sound Health Care System, Seattle, WA

Deconstructing the Dopamine/Abnormal Tau Relationship in AD

"The mission of my research program is to understand the molecular mechanisms at work in age-related cognitive decline caused by neurodegeneration."

www.brightfocus.org/grant/A2014438S

This grant is made possible in part by a bequest from the John A. Beaty Trust.



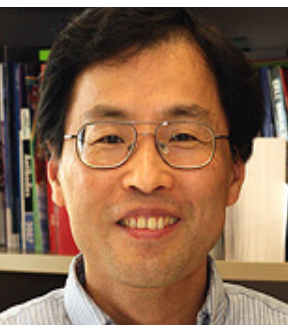
Yona Levites, PhD (7/1/14 - 6/30/18)
University of Florida, Gainesville

Targeting Tau with Immunotherapy in a Mouse Model of AD:
A Comparison of Approaches

"We propose to compare the ability of genetically engineered antibodies targeted to the intracellular or extracellular levels to fight tau pathology in two mouse models."

www.brightfocus.org/grant/A2014105S

This grant is made possible by a bequest from the estate of Virginia Eberwein.



Chien-liang Lin, PhD (7/1/14 - 6/30/18)
The Ohio State University Research Foundation, Columbus

Regulating Glutamate Levels as a Therapeutic Strategy for AD

"The goal of this research is to develop restoration of EAAT2, a glial glutamate transporter, function as a therapeutic strategy for AD."

www.brightfocus.org/grant/A2014315S



Randy McIntosh, PhD (7/1/17 - 6/30/20)
Baycrest Centre for Geriatric Care, Toronto, Canada

Building a Personalized Virtual Brain with AD

"This research project is leading us towards a personalized medicine approach to understanding, preventing and treating brain disorders, specifically Alzheimer's and Parkinson's disease, using a network dynamics approach via TheVirtualBrain."

www.brightfocus.org/grant/A2017286S



Daniel Pak, PhD (7/1/17 - 6/30/20)
Georgetown University, Washington, DC

Testing a Novel Amyloid-Promoting Factor as an AD Therapy

"Our project studies a novel protein, PLK2, that stimulates the production of pathogenic amyloid fragments and may be a potential new target for Alzheimer's therapeutics."

www.brightfocus.org/grant/A2017508S



Angèle Parent, PhD (7/1/17 - 6/30/20)
University of Chicago, Illinois

Targeting APP Intracellular Fragment to Improve Memory and Reduce A β Burden in AD

"Our research will test the hypothesis that production of an intracellular fragment originating from APP could rescue memory decline in AD."

www.brightfocus.org/grant/A2017443S

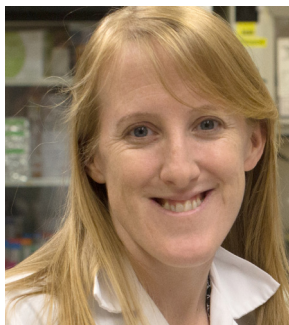


Philip Verghese, PhD (5/1/16 - 4/30/18)
C2N Diagnostics, St. Louis, MO

Silk A β Spot Test

"The primary objective is to develop novel and simple blood tests using the SILK™ and SISAQ platforms that can be used for 1) aiding in selection of patients for inclusion in AD trials, 2) demonstrating drug target engagement, and 3) tracking disease progression."

www.brightfocus.org/grant/CA2016636



Tracy Young-Pearse, PhD (7/1/15 - 6/30/18)
Brigham and Women's Hospital, Harvard Medical School, Boston, MA

A Personalized Medicine Approach to Develop New AD Treatments

"The project combines a series of modern technologies and a deep understanding of Alzheimer's disease that will, for the first time, enable us to answer some very practical questions about how we can make future Alzheimer's treatments more effective."

www.brightfocus.org/grant/A2015607S



Huda Zoghbi, MD (7/1/16 - 6/30/19)
Baylor College of Medicine, Houston, TX

A Genetic Screen to Identify New Drug Targets for AD

"The major goal of this project is to discover new therapeutic targets for AD. We propose a research program centered on genes and genetic networks that control amyloid precursor protein levels using innovative screens of the 'druggable' genome."

www.brightfocus.org/grant/A2016151S

Controlling Alzheimer's Risk Factors

The conditions for Alzheimer's may develop over a lifetime, and the risks are not necessarily confined to one's later years. The factors contributing to sporadic (ie, not genetically inherited) late-onset forms of Alzheimer's disease (AD) begin to develop throughout middle age, when conditions such as diabetes, cardiovascular disease, sedentary lifestyle, and declining mental activity (reading, playing music, or learning new things) may begin to take their toll. Heart disease, lipid disorders, sleep problems, depression, and prior brain trauma are being investigated as risk factors. To offset increased risk, beneficial lifestyle modifications, including exercise and diet aimed at lowering lipids and cholesterol, improved cardiovascular health, and even support for gut bacteria are being explored for possible help in delaying disease onset and severity.



Jason Brandt, PhD (7/1/16 - 6/30/19)
Johns Hopkins University, Baltimore, MD

A High Fat, Low Carbohydrate Diet for MCI and Early AD

"This study will test whether a special diet that has been used to treat other brain disorders may be useful to treat AD."

www.brightfocus.org/grant/A2016073S

This grant is made possible in part by support from the Jerome Jacobson Foundation.

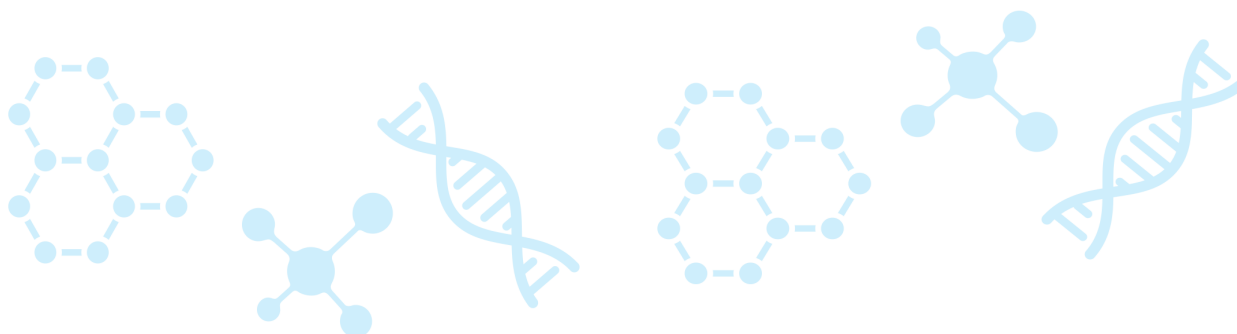


Sarah Fritschi, PhD (7/1/17 - 6/30/19)
Washington University School of Medicine, St. Louis, MO

Understanding the Interplay between Sleep and AD

"We will assess if and to what extent sleep disturbances affect both amyloid-beta (A β) and tau pathology, which are AD lesions that likely occur at different stages of the disease."

www.brightfocus.org/grant/A2017114F





Jennifer Gatchel, MD, PhD (7/1/16 - 6/30/18)
*McLean Hospital, Massachusetts General Hospital,
Harvard Medical School, Boston*

Depressive Symptoms, Proteins AB and Tau, and Neuronal Network Activity in Prodromal and Early AD

"The goal of my project is to investigate whether specific brain changes, including both the accumulation of two of the main AD associated proteins, – A β and tau – and associated changes in connections between neurons, might underlie these symptoms in early Alzheimer's."

www.brightfocus.org/grant/A2016434F

This grant is made possible by a bequest from the Howlett Revocable Trust.



Mar Hernandez-Guillamon, PhD (7/1/17 - 6/30/20)
Vall de Hebron Research Institute, Barcelona, Spain

Modulating Brain Cholesterol to Treat AD

"My laboratory is studying the impact of recombinant ApoA-I-Milano protein on a cell culture model that mimics the environment of blood vessels in the human brain."

www.brightfocus.org/grant/A2017243S



Majken Jensen, PhD (7/1/17 - 6/30/20)
Harvard T.H. Chan School of Public Health, Boston, MA

Using Blood Samples to Assess the Role of Nutritional Factors in AD Risk

"In this project we will identify key healthy dietary patterns that can form the foundation of dietary recommendations to lower Alzheimer's risk."

www.brightfocus.org/grant/A2017290S



Frank LaFerla, PhD (7/1/15 - 6/30/18)
University of California, Irvine

Investigating Mechanisms that Link Diabetes Mellitus and AD

"This proposal seeks to elucidate how diabetes affects Alzheimer's."

www.brightfocus.org/grant/A2015535S



Brendan Lucey, MD (7/1/16 - 6/30/19)

Washington University School of Medicine, St. Louis, MO

Sleep Quality and Decreasing A β Levels in the Human Brain

"This study proposes to answer several of these questions: 1) does poor sleep quality increase A β and 2) does improving sleep quality in poor sleepers decrease A β ?"

www.brightfocus.org/grant/A2016180S



Robert Newton, PhD (7/1/17 - 6/30/20)

Pennington Biomedical Research Center, Baton Rouge, LA

Exercise to Reduce Alzheimer's Risk in African Americans

"The goal of our project is to increase our knowledge on the effects of a physical activity program on dementia prevention in African American adults."

www.brightfocus.org/grant/A2017547S



Donald Redelmeier, MD (7/1/15 - 6/30/18)

Sunnybrook Research Institute, Toronto, Canada

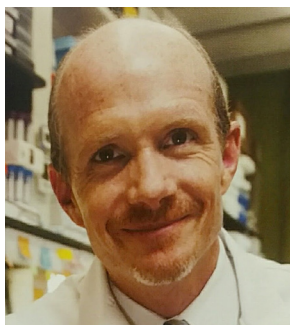
A New Way to Recover from a Concussion and Avoid AD

"We propose a computerized study linking multiple healthcare databases (anticipated sample size = 30,000, median follow-up duration = 10 years) to test whether statin treatment might decrease the risk of subsequent dementia in seniors following a concussion."

www.brightfocus.org/grant/A2015284S

Pioneering New Ways to Image and Assess the Brain

Solving Alzheimer's requires knowing as much as possible about how the brain works throughout our lifespan, including normal aging, and how its different regions and circuitry are ravaged by the disease over time. Thanks to new imaging techniques, the Alzheimer's brain no longer has to be visualized "in theory," or through postmortem examination, but can be observed in real time through live imaging. ADR grantees are working to develop and validate high-definition imaging that will differentiate between early disease and normal aging, and support earlier diagnoses, potentially before symptoms occur. Imaging will help doctors assess the impact of A β , tau, and other aspects of AD on brain circuitry. Ultimately these techniques will help us monitor brain health and the impact of treatment.



Randall Bateman, MD (7/1/17 - 6/30/20)

Washington University School of Medicine, St. Louis, MO

A New Way to Image Amyloid Plaque Growth in Human AD

"Our goal is to measure, for the first time in human AD brain, the rate of plaque pathology using the most advanced imaging technology."

www.brightfocus.org/grant/A2017081S



Ryan Darby, MD (7/1/17 - 6/30/19)

Vanderbilt University, Nashville, TN

Neuroimaging to Understand Delusions and Hallucinations in Alzheimer's

"The goal of this research is to find an explanation for delusions and hallucinations, symptoms which commonly occur in Alzheimer's and Lewy body dementia."

www.brightfocus.org/grant/A2017226F



Lea Grinberg, MD, PhD (7/1/17 - 6/30/20)

University of California, San Francisco

A Neuroimaging Biomarker for Asymptomatic AD

"We will develop a histologically-validated clinical MRI [magnetic resonance imaging] template for detecting locus ceruleus shrinkage. This should allow us to track AD progression on a case-by-case in individuals and permit intervention before a substantial amount of neurons have died."

www.brightfocus.org/grant/A2017560S



Xiong Jiang, PhD (7/1/16 - 6/30/19)
Georgetown University, Washington, DC

A Novel Non-Invasive MRI-Based Biomarker of Early Stages of AD

"Here we propose to develop and validate multimodality magnetic resonance imaging (MRI) techniques that can help to detect and quantify asymptomatic Alzheimer's progression."

www.brightfocus.org/grant/A2016251S



Emilie Reas, PhD (7/1/16 - 6/30/18)
University of California, San Diego

Novel Biomarkers of Brain Microstructure in Aging and Mild Cognitive Impairment

"Our research aims to characterize the small-scale structural changes that occur during the earliest stages of AD, and describe how they relate to cognitive decline during aging and neurodegenerative disease"

www.brightfocus.org/grant/A2016241F

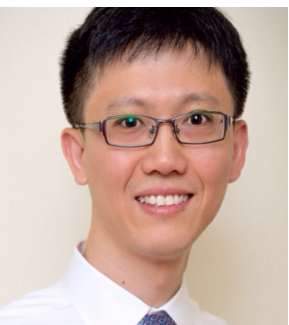


Peter Tessier, PhD (7/1/17 - 6/30/20)
University of Michigan, Ann Arbor

New Tau Imaging for Early Diagnosis of AD

"We aim to use an innovative design and evolution method for generating imaging probes specific for particles of one of the most harmful Alzheimer's proteins (tau)."

www.brightfocus.org/grant/A2017395S



Yong Wang, PhD (7/1/17 - 6/30/20)
Washington University School of Medicine, St. Louis, MO

A New Way to Image Early Damage in the AD Brain

"Our goal is to use a new imaging system to monitor damage caused by AD to the brain region that contains the insulated axons (analogous to cables) connecting the neuron cell bodies (analogous to the central processing unit of a computer)."

www.brightfocus.org/grant/A2017330S



Laura Wisse, PhD (7/1/16 - 6/30/18)
University of Pennsylvania, Pittsburgh

Separating Early AD and Aging Effects in Search of Markers to Track Alzheimer's Treatment Effects

"My ultimate goal is to find a good biomarker in the brain that can help track disease progression and treatment effects in an early stage of the disease, before the damage has become too severe."

www.brightfocus.org/grant/A2016432F

This grant is made possible in part by a bequest from the Trust of Elenore Lundeen.

We supported the early work of two researchers who went on to receive Nobel prizes later in their careers.



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**Note: These are the active Alzheimer's Disease Research grants as of 7/20/2017.*



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