2012 Alzheimer’s Association Grants Portfolio
—Organized by categories in research

### Biology of Disease-Related Molecules

#### Production and clearance of beta-amyloid

**Susanne Frykman, Ph.D.**
Karolinska Institutet
Stockholm, Sweden

**Synaptic Production of Beta-Amyloid Peptide and Targeted Inhibition Thereof**
New Investigator Research Grant—$99,000 over two years
Can certain toxins inhibit beta-amyloid production in synaptic vesicles, and what other mechanisms are responsible for synaptic damage in Alzheimer’s disease?

**Andreas M. Grabrucker, Ph.D.**
University Hospital Ulm
Ulm, Germany

**Investigating the Physiological Role of Zinc Binding to Beta-Amyloid**
New Investigator Research Grant—$100,000 over two years
How does zinc/APP binding affect APP function in laboratory cells and in mice genetically engineered to develop Alzheimer’s-like symptoms?

**Claudio A. Hetz, Ph.D.**
Institute of Biomedical Sciences, University of Chile
Santiago, Chile

**Protective Role of the Transcription Factor XBP1 in Alzheimer’s Disease**
New Investigator Research Grant—$100,000 over two years
What mechanisms underlie XBP1’s ability to regulate beta-amyloid production and alleviate memory loss?

**Yueming Li, Ph.D.**
Sloan-Kettering Institute for Cancer Research
New York, New York

**The Mechanisms of Action of Gamma-Secretase Modulators**
Investigator-Initiated Research Grant—$240,000 over three years
How can combinations of gamma-secretase modulators alter the production of different forms of beta-amyloid?

**Giovanni Meli, Ph.D.**
European Brain Research Institute
Rome, Italy

**Targeting Subcellular Beta-Amyloid Oligomers in Human Alzheimer’s Primary Cells**
New Investigator Research Grant—$100,000 over two years
How does antibody treatment prevent oligomer formation in subcellular regions?

**Kulandaivelu S. Vetrivel, Ph.D**
The University of Chicago
Chicago, Illinois

**Proteomic Analysis of Gamma-Secretase Residing in Raft Domains**
New Investigator Research Grant—$100,000 over two years
How does gamma-secretase function when attached to lipid rafts, and what other proteins work with gamma-secretase when it is in this position?

### Beta-amyloid toxicity

**Dara Dickstein, Ph.D.**
Mount Sinai School of Medicine
New York, New York

**Assessing the Effect of Oligomeric Abeta on Neuronal and Synaptic Integrity**
New Investigator Research Grant—$99,979 over two years
How does beta-amyloid in the different animal models cause synaptic damage and brain cell death?

**Lan Guo, Ph.D.**
University of Kansas Center for Research
Lawrence, Kansas

**CypD and Abeta-Impaired Axonal Mitochondrial Motility and Docking**
New Investigator Research Grant—$100,000 over two years
How do cypD and beta-amyloid hinder mitochondrial movement and synaptic function?

**Muralidhar L. Hegde, Ph.D.**
The University of Texas Medical Branch at Galveston
Galveston, Texas

**Oxidized Amyloid Proteins Induce Genome Damage in Alzheimer’s Disease**
New Investigator Research Grant—$100,000 over two years
Where do beta-amyloid, tau and alpha-synuclein bind to brain cell DNA, and what DNA damage is caused by such binding?

### Tau and neurofibrillary tangles

**Jose F. Abisambra, Ph.D.**
University of South Florida
Tampa, Florida

**Mechanisms of Tau and ER Stress for Novel Alzheimer’s Disease Therapeutics**
New Investigator Research Grant to Promote Diversity—$100,000 over two years
How does tau activate the stress response of the endoplasmic reticulum?
Lars M. Ittner, M.D.
The University of Sydney
Sydney, Australia
**The Role of Tau in Excitotoxicity in Alzheimer's Disease**
New Investigator Research Grant—$99,400 over two years
How does tau-induced pathology occur in the brain, and what are the mechanisms that underlie the process?

Gloria Lee, Ph.D.
University of Iowa
Iowa City, Iowa
**Fyn in Tau-Induced Neurodegeneration**
Investigator-Initiated Research Grant—$239,250 over three years
How does the enzyme Fyn contribute to the formation of neurofibrillary tangles?

Miranda N. Reed, Ph.D.
West Virginia University
Morgantown, West Virginia
**Effects of Risk Factors on Tau-Mediated Memory Deficits**
New Investigator Research Grant—$97,493 over two years
What are the effects of diabetes on tau phosphorylation?

**Other disease-related molecules and pathways**

Jungsu Kim, Ph.D.
Washington University in St. Louis
St. Louis, Missouri
**Regulation of LDLR as Alzheimer's Disease Therapeutics**
New Investigator Research Grant—$100,000 over two years
Does modifying the activity of proteins that reduce levels of low-density lipoprotein receptors affect apolipoprotein and beta-amyloid levels in mice with Alzheimer’s-like brain changes?

Masashi Kitazawa, Ph.D.
University of California, Merced
Merced, California
**Neuroinflammation-Induced Alterations of GLT-1 and Synaptotoxicity in Alzheimer's Disease**
New Investigator Research Grant—$100,000 over two years
What mechanisms underlie the role of beta-amyloid and interleukin-1 in repressing the activity of the protein glutamate transporter-1?

Thomas Kukar, Ph.D.,
Emory University
Atlanta, Georgia
**The Role of Progranulin in Alzheimer's Disease**
New Investigator Research Grant—$100,000 over two years
How might progranulin activity become altered in old age or disease?

Michael McMurray, Ph.D.
University of Colorado
Denver, Colorado
**Mechanisms of Misfolding and Aggregation of Septin Proteins in Alzheimer's**
New Investigator Research Grant to Promote Diversity—$99,998 over two years
How is proper folding of septins maintained, and what mechanisms are responsible for misfolding and aggregation?

Kalipada Pahan, Ph.D.
Rush University Medical Center
Chicago, Illinois
**Induction of BDNF and NT-3 by Cinnamon Metabolite Sodium Benzoate**
Investigator-Initiated Research Grant—$239,910 over three years
How does sodium benzoate increase levels of BDNF and NT-3 in the brain?

Junichi Shioi, Ph.D.
Mount Sinai School of Medicine
New York, New York
**Effect of EphB2/CTF2 Peptide on NMDAR Phosphorylation and Signaling**
Investigator-Initiated Research Grant—$240,000 over three years
How is the cellular signaling pathway involving gamma-secretase affected by genetic mutations of the gamma-secretase gene?

**Disruption of brain cell functions/properties**

Stephen D. Ginsberg, Ph.D.
Nathan S. Kline Institute for Psychiatric Research
Orangeburg, New York
**Effect of Caloric Restriction on Septohippocampal Neurons in Alzheimer's Disease**
Investigator-Initiated Research Grant—$240,000 over three years
How does a restricted-calorie diet affect the activity of genes involved in the biochemical pathways of Alzheimer’s-related degeneration?

Daniel Llano, M.D., Ph.D.
University of Illinois, Urbana-Champaign
Urbana, Illinois
**Diminished Cortical GABAergic Inhibition in a Mouse Model of Alzheimer’s Disease**
New Investigator Research Grant—$100,000 over two years
How do animals’ corticocortical system and thalamocortical system become “desensitized” to the protective effects of GABA?

Cristina Marchetti, Ph.D.
European Brain Research Institute
Rome, Italy
**Learning From Epilepsy to Understand Alzheimer’s Disease**
New Investigator Research Grant—$100,000 over two years
How do changes in neuronal channel activity in the hippocampus lead to excitotoxicity, brain seizures and cognitive loss?
Qitao Ran, Ph.D.
University of Texas Health Science Center at San Antonio
San Antonio, Texas
Glutaredoxin 2, Mitochondrial Protein Glutathionylation and Alzheimer’s Disease
Investigator-Initiated Research Grant—$239,862 over three years
Do high glutaredoxin 2 levels prevent nerve cell damage caused by Alzheimer’s genes, and can drugs to activate glutaredoxin 2 be viable treatments to prevent or slow the progression of Alzheimer’s disease?

Kaori Takehara-Nishiuchi, Ph.D.
University of Toronto
Toronto, Ontario, Canada
Physiological Basis of Memory Impairments in Rat Model of Early-Stage Alzheimer’s Disease
New Investigator Research Grant—$100,000 over two years
How does the progression of degeneration affect the oscillatory activity associated with memory formation?

Dementia Risk Factors and Prevention

Owen T. Carmichael, Ph.D.
University of California, Davis
Davis, California
Imaging Biomarkers of Preclinical Cerebrovascular Disease
New Investigator Research Grant—$100,000 over two years
Are tiny hemorrhages, reduced brain blood flow, stroke-related lesions and narrowing of carotid arteries that lead to the brain potential biomarkers of preclinical CVD?

Gemma Casadesus Smith, Ph.D.
Case Western Reserve University
Cleveland, Ohio
Modulation of Metabolic Processes to Prevent Alzheimer’s Disease
Investigator-Initiated Research Grant—$239,996 over three years
Do combination treatments of leptin plus amylin improve cognitive function more than either hormone acting alone?

Angela Kamer, Ph.D.
New York University
New York, New York
Infection/Inflammation and Cognitive Decline
New Investigator Research Grant—$100,000 over two years
Does periodontal inflammation exacerbate cognitive and neurological changes linked with dementia?

Jennifer Weuve, Sc.D.
Rush University Medical Center
Chicago, Illinois
The Red Cell Distribution Width, a Potential Marker of Dementia Risk
New Investigator Research Grant—$99,831 over two years
Is increased RDW related to cognitive decline, risk of dementia and changes in brain structure?

Zhongcong Xie, M.D., Ph.D.
Massachusetts General Hospital
Charlestown, Massachusetts
Development of Safer Anesthesia for People with Alzheimer’s Disease
Investigator-Initiated Research Grant—$240,000 over three years
How do isoflurane and desflurane affect amyloid plaque formation, brain structure and learning and memory?

Diagnosis and Detection of Alzheimer’s Disease

Rebecca Amariglio, Ph.D.
Brigham & Women’s Hospital
Boston, Massachusetts
Subjective Cognitive Complaints: An Early Indicator of Alzheimer’s Disease
New Investigator Research Grant—$96,565 over two years
What is the role of subjective cognitive complaints (SCCs) in Alzheimer’s risk?

Jed Meltzer, Ph.D.
Rotman Research Institute of Baycrest
Toronto, Canada
Detection of Early Cortical Pathology Using MEG and Speech Analysis
New Investigator Research Grant—$97,090 over two years
What are the speech patterns of people with Alzheimer’s disease and mild cognitive impairment (MCI) and conditions that precede clinical dementia?

Rhonda K. Roby, Ph.D., M.P.H.
University of North Texas Health Science Center
Fort Worth, Texas
A Longitudinal Study of the Changes in mtDNA of People With Alzheimer’s Disease
New Investigator Research Grant—$100,000 over two years
Do people with Alzheimer’s disease have a higher than normal rate of mitochondrial DNA accumulation in their peripheral blood?

Nicholas Seyfried, Ph.D.
Emory University
Atlanta, Georgia
Early Changes in the Brain Proteome and Alzheimer’s Disease Risk
New Investigator Research Grant—$99,840 over two years
What human synaptic proteins may be linked to early Alzheimer’s?

David A. Wolk, M.D.
University of Pennsylvania
Philadelphia, Pennsylvania
Exploration of Memory Change in Preclinical Alzheimer’s Disease
New Investigator Research Grant—$99,840 over two years
Which cognitive tests and biochemical markers are the most simple, reliable and inexpensive for detecting early signs of the Alzheimer’s disease process?
Imaging

Gil Rabinovici, M.D.
University of California, San Francisco
San Francisco, California

*Imaging and CSF Biomarkers in the Diagnosis of Early-Onset Dementia*
Investigator-Initiated Research Grant—$200,000 over three years
Can the use of CSF biomarkers and PET brain imaging distinguish between early-onset Alzheimer’s disease and frontotemporal dementia?

Technology

Serguei Pakhomov, Ph.D.
Regents of the University of Minnesota—Twin Cities
Minneapolis, Minnesota

*Automated Semantic Indices for Early Detection of Cognitive Changes*
Development of New Cognitive Functional Instrumentation in Alzheimer’s Disease—$400,000 over two years
Can automatic speech recognition and computational linguistic technologies be reliable in detecting subtle early cognitive changes associated with risk of progressing to Alzheimer’s disease?

Steve R. Rapp, Ph.D.
Wake Forest University Health Sciences
Winston-Salem, North Carolina

*Validation of a Simulation-Based Assessment of Cognitive Functioning*
Development of New Cognitive Functional Instrumentation in Alzheimer's Disease—$362,821 over three years
Can SIMBAC assess sensitivity to change, affirm its reliability and document its acceptability to older users?

Clinical tests

Maritza Dowling, Ph.D.
University of Wisconsin-Madison
Madison, Wisconsin

*Evaluating the Structural Equivalence of Dementia Screening Tests*
New Investigator Research Grant to Promote Diversity—$100,000 over two years
Can the MoCA test detect people who have reduced brain function and distinguish them from healthy people?

Clinical and Pre-Clinical Drug Development and Clinical Interventions

Drug therapies/treatments

Michael G. Agadjanyan, Ph.D., D.Sc.
Institute for Molecular Medicine
Huntington Beach, California

*Immune Mechanisms Involved in Responses to Multiprotein Alzheimer’s Disease Vaccine*
Investigator-Initiated Research Grant—$239,503 over three years
Can the immune system generate antibodies against beta-amyloid that are more powerful and specific than those generated by conventional vaccines?

Mathew M. Blarton-Jones, Ph.D.
University of California, Irvine
Irvine, California

*Testing the Therapeutic Efficacy of Neprilysin-Expressing Neural Stem Cells*
New Investigator Research Grant—$100,000 over two years
How can neural stem cells be more effective at battling Alzheimer’s pathologies?

Boris Decourt, Ph.D.
Banner Sun Health Research Institute
Sun City, Arizona

*Preclinical Testing of Lenalidomide as Anti-Amyloid Treatment for Alzheimer’s Disease*
New Investigator Research Grant—$100,000 over two years
Does lenalidomide have the ability to reduce TNG-alpha and beta-amyloid levels in Alzheimer’s-like mice?

Francisco J. Gil-Bea, Ph.D.
Foundation for Applied Medical Research
Pamplona, Spain

*Pharmacological Manipulation of BDNF as Therapeutic Challenge for Alzheimer’s Disease*
New Investigator Research Grant—$100,000 over two years
What mechanisms may increase BDNF levels in cells and living animals?

Bing Gong, M.D., Ph. D.
Mount Sinai School of Medicine
New York, New York

*hFx2/APP, a Novel Transgenic Mouse Model in the Study of BACE1 Degradation*
Investigator-Initiated Research Grant—$240,000 over three years
Does the destruction of BACE1 reduce amyloid plaque formation in the brain?

Joshua Grill, Ph.D.
University of California, Los Angeles
Los Angeles, California

*Barriers to Enrollment in Preclinical Alzheimer’s Disease Clinical Trials*
New Investigator Research Grant—$100,000 over two years
What are the barriers to Alzheimer’s clinical trial recruitment?
Henrieta Scholtzova, M.D., Ph.D.
New York University School of Medicine
New York, New York

**Innate Immunity Stimulation as a Novel Therapeutic Approach in Alzheimer’s Disease**
Investigator-Initiated Research Grant—$240,000 over three years
Can stimulation of the immune system reduce these signs of disease and reduce the accumulation of amyloid plaque in brain blood vessels?

David R. Schubert, Ph.D.
The Salk Institute for Biological Studies
La Jolla, California

**The role of the unfolded protein response in preventing amyloid toxicity**
Investigator-Initiated Research Grant—$240,000 over three years
Is CNB-100 a potential drug candidate for Alzheimer’s disease?

Vitaly Vasilevko, Ph.D.
University of California, Irvine
Irvine, California

**Pyroglutamate Modified Abeta Species in Alzheimer’s Disease: Target for Immunotherapy**
New Investigator Research Grant—$100,000 over two years
Can a vaccine direct the immune system to recognize and remove pyroglutamate-modified beta-amyloid from the brain?

---

**Social/Behavioral and Cognitive/Functional**

Marie Boltz, Ph.D.
New York University
New York, New York

**A Family-Nurse Partnership for Care of Hospitalized Persons With Dementia**
New Investigator Research Grant—$99,979 over two years
How can the hospital environment be safer for people with dementia and more conducive to physical and mental activity?

Gongping Liu, Ph.D.
Huazhong University of Science and Technology
Wuhan, China

**Spatial Learning on Neurogenesis and Behavior in Alzheimer’s-Like Models**
New Investigator Research Grant—$100,000 over two years
What are the benefits of neuronal growth in rats injected with beta-amyloid?

Chris Nugent, Ph.D.
University of Ulster
Newtownabbey, United Kingdom

**TAUT: Technology Adoption and Prediction Tool for Everyday Technologies**
Everyday Technologies for Alzheimer's Care—$199,790 over three years
What are factors and predictors for successful technology uptake in patients suffering from memory impairment?

---

**Pathology and Genetics of Alzheimer’s Disease**

Guojun Bu, Ph.D.
Mayo Clinic Jacksonville
Jacksonville, Florida

**LRP1 and HSPG in Cerebrovascular Clearance of ABeta**
Investigator-Initiated Research Grant—$240,000 over three years
How do changes in LRP1 and HSPG levels affect the clearance of beta-amyloid in animal models?

Abhinav Diwan, M.D.
Washington University in St. Louis
Saint Louis, Missouri

**Enhancing Lysosome Biogenesis to Prevent Amyloid Plaque Pathogenesis**
New Investigator Research Grant—$100,000 over two years
What is the role of the transcription factor TFEB in moderating beta-amyloid production?
Nicholas Fitz, Ph.D.
University of Pittsburgh
Pittsburgh, Pennsylvania

**Effect of RXR Agonist on Alzheimer’s Phenotype in APP Mice Expressing APOE-e3 and e4**
New Investigator Research Grant—$100,000 over two years
How does bexarotene treatment affect brain beta-amyloid levels and cognition?

Yuri Zilberter, Ph.D.
Institut de Neuroscience des Systèmes (UMR1106), INSERM Marseille, France

**Energy Substrates as a Tool for Treatment of Hyperexcitability in Alzheimer’s Disease**
Neuronal Hyperexcitability in Seizures and Alzheimer’s Disease Research Grant—$396,969 over three years
How are nutrients able to reduce hyperexcitability caused by beta-amyloid, and does this effect involve only nerve cells or are other supporting cells in the brain also required?

**Beta-amyloid toxicity**

Silvia Fossati, Ph.D.
New York University School of Medicine
New York, New York

**Death Receptors as Mediators of Amyloid-Induced Cerebrovascular Dysfunction**
New Investigator Research Grant—$100,000 over two years
How does the interaction of beta-amyloid oligomers and death receptors lead to blood vessel cell apoptosis?

Michael Gitcho, Ph.D.
University of Wisconsin-Madison
Madison, Wisconsin

**Age-Dependent Increases of Phosphorylated TDP-43 in APP Mice**
New Investigator Research Grant—$100,000 over two years
What are the effects of amyloid deposition on phosphorylated TDP-43 brain changes in Alzheimer’s disease?

Jeroen J.M. Hoozemans, Ph.D.
VU University Medical Center Amsterdam
Amsterdam, Netherlands

**Age-Dependent Toll-Like Receptor Signalling in the Alzheimer’s Brain**
New Investigator Research Grant—$99,857 over two years
Can the protein called interleukin-1 receptor-associated kinase-4 prevent inflammation without hindering amyloid clearance?

Shaomin Li, M.D., Ph.D
Brigham and Women's Hospital
Boston, Massachusetts

**Abeta Increases Glutamatergic Excitation and Induces Epileptiform Activity**
New Investigator Research Grant—$100,000 over two years
What is the link between excitotoxicity and seizures, and what molecular mechanisms may underlie this association?

Rodrigo Morales, Ph.D.
University of Texas Health Science Center
Houston, Texas

**Transmissibility of Amyloid-Beta Deposition by Blood and Different Routes**
Mentored New Investigator Research Grant to Promote Diversity—$150,000 over two years
How does amyloid plaque formation in one region of the blood or brain trigger more extensive plaque formation in the brain?

Lindsay C. Reese, Ph.D.
Oregon Health & Science University
Portland, Oregon

**The Role of Amyloid Deposition in Blood-Brain Barrier Dysfunction in Alzheimer’s Disease**
U.S.–U.K. Young Investigator Exchange Fellowship—$259,998 over three years
What is the role of impaired blood flow and amyloid deposition in blood-brain-barrier damage?

Jokubas Ziburkus, Ph.D.
University of Houston
Houston, Texas

**Inhibitory Neuron and Circuit Dysfunctions in Alzheimer’s Disease Model**
New Investigator Research Grant—$100,000 over two years
Are beta-amyloid levels related to neuron function in the hippocampus, and what are the ion channels responsible for defective activity of inhibitory neurons?

**Tau and neurofibrillary tangles**

Kim Green, Ph.D.
University of California, Irvine
Irvine, California

**Role of Microglia in Alzheimer’s and in Abeta and Tau Immunotherapy**
New Investigator Research Grant—$100,000 over two years
How are microglia involved in the development of plaques and tangles, and how can they help the immune system combat these protein aggregates?

Daniel C. Lee, Ph.D.
University of South Florida
Tampa, Florida

**Impact of Arginase-1 Deficiency on Tau and Amyloid Pathogenesis**
Mentored New Investigator Research Grant to Promote Diversity—$149,774 over two years
What is the role of the glial cell arginase-1 in the formation of amyloid plaques and neurofibrillary tangles?
Other disease-related molecules and pathways

David W. Colby, Ph.D.
University of Delaware
Newark, Delaware
*Generation of Diverse Neural Culture Models of Alzheimer’s Disease by Cell Reprogramming*
New Investigator Research Grant—$100,000 over two years
Which exact set of transcription factors is required to produce basal forebrain cholinergic neuron, and can engineered cells exhibit the abnormalities characteristic of Alzheimer’s?

Andrew Sharp, Ph.D.
Mount Sinai School of Medicine
New York, New York
*DNA Methylation Profiling of Alzheimer's Disease Brains*
New Investigator Research Grant—$98,670 over two years
What specific genes and genetic regions are abnormally methylated in Alzheimer’s?

Robia Pautler, Ph.D.
Baylor College of Medicine
Houston, Texas
*The Impact of Catalase Overexpression on Alzheimer's Pathology*
Investigator-Initiated Research Grant—$200,000 over three years
Do increased levels of catalase in nerve cells of the brain prevent the development of Alzheimer's-like disease characteristics?

Helen E. Scharfman, Ph.D.
Nathan S. Kline Institute for Psychiatric Research
Orangeburg, New York
*Circuit-Based Strategies in Alzheimer's Disease and Epilepsy*
Neuronal Hyperexcitability in Seizures and Alzheimer’s Disease Research Grant—$339,956 over three years
Can anticonvulsant drugs reduce or prevent hyperexcitability that precedes neurodegeneration in the perforant path and hippocampus?

Neal Sondheimer, M.D., Ph.D.
The Children's Hospital of Philadelphia
Philadelphia, Pennsylvania
*Alzheimer's Disease and the Destabilization of the Mitochondrial Genome*
New Investigator Research Grant—$99,549 over two years
Are changes in mitochondrial DNA responsible for initiating Alzheimer’s disease?

Saeid Taheri, Ph.D.
Medical University of South Carolina
Charleston, South Carolina
*Monitoring Effect of Hypertension on the BBB in APP Mice Model of Alzheimer's Disease*
New Investigator Research Grant—$99,988 over two years
What are the effects of high blood pressure on the blood brain barrier and how does it affect the development of Alzheimer's-like disease in the brain?

Synaptic dysfunction

Mikako Sakurai, Ph.D
Columbia University
New York, New York
*Functional Analysis of Neurons Derived From Alzheimer's Patient iPSCs*
New Investigator Research Grant—$100,000 over two years
What role does excitotoxicity play in dementia-related synaptic decline?