2010 Alzheimer’s Association Grants Portfolio  
—Organized by trends in research

**Biology of disease-related molecules**

1. **Production of beta-amyloid**

- **Carmela R. Abraham, Ph.D.**
  Boston University Medical Campus
  Boston, Massachusetts

  *Modulators of APP Dimerization as Novel Therapeutics for Alzheimer’s Disease*
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  Does dimerization of APP affect the production of beta-amyloid, and could this be a useful target for drugs to halt or slow the progression of Alzheimer’s disease?

- **Alessia Barbagallo, Ph.D.**
  Albert Einstein College of Medicine at Yeshiva University
  Bronx, New York

  *The Role of APP Phosphorylation Induced by IGF-1 in APP Processing*
  2010 New Investigator Research Grant—$80,000 over 2 years
  How do abnormal phosphorylation and the loss of normal IGF-1 activity affect APP processing in cells and lead to brain cell damage?

- **Giuseppe Di Fede, M.D., Ph.D.**
  Fondazione IRCCS Istituto Neurologico Carlo Besta Milan, Italy

  *Trans-suppression of Abeta Amyloidogenesis in Cellular and Nematode Models*
  2010 New Investigator Research Grant—$50,000 over 2 years
  What biological mechanisms underlie an APP variant’s ability to promote harmful amyloid clumping?

- **Joseph D. Fondell, Ph.D.**
  University of Medicine and Dentistry of New Jersey—Robert Wood Johnson Medical School
  Piscataway, New Jersey

  *T3-Dependent Silencing of Beta-Amyloid Precursor Protein Gene Expression*
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  How does T3 regulate the expression of APP and what other proteins assist in this process?

- **Laura Beth McIntire, Ph.D.**
  Columbia University Medical Center
  New York, New York

  *Dissecting the Role of PI3K Family Members in Aβ Biogenesis*
  2010 New Investigator Research Grant—$80,000 over 2 years
  Is the protein ataxia telangiectasia mutated kinase (ATM) or another kinase most responsible for regulating beta-amyloid production?

- **Amantha Thathiah, Ph.D.**
  VIBvzw
  Leuven, Belgium

  *Regulation of the Gamma-Secretase and Abeta Peptide Generation by GPR3*
  2010 Mentored New Investigator Research Grant to Promote Diversity—$150,000 over 3 years

   - **Yunwu Zhang, Ph.D.**
     Xiamen University
     Xiamen, China

     *The Involvement of CutA in Alzheimer’s Disease*
     2010 New Investigator Research Grant—$80,000 over 2 years
     What are the roles of CutA and copper atoms in the regulation of BACE1 and the production of beta-amyloid?

2. **Tau phosphorylation**

- **Kanae Iijima-Ando, Ph.D.**
  Thomas Jefferson University
  Philadelphia, Pennsylvania

  *Tau Phosphorylation and Toxicity Induced by Mitochondrial Mislocalization*
  2010 New Investigator Research Grant—$80,000 over 2 years
  Does abnormal mitochondrial transport promote tau toxicity in cells by enhancing tau phosphorylation in certain disease-affected brain regions?

- **Umesh Kumar Jinwal, Ph.D.**
  University of South Florida
  Tampa, Florida

  *Behavioral and Biochemical Analysis of Mice Lacking FKBP51*
  2010 New Investigator Research Grant—$50,000 over 2 years
  Does eliminating FKBP51 in healthy mice alter the production of normal tau and lead to behavioral changes?

- **Nicholas M. Kanaan, Ph.D.**
  Northwestern University—Chicago Campus
  Chicago, Illinois

  *Tau-Mediated Axonal Transport Dysfunction*
  2010 New Investigator Research Grant—$80,000 over 2 years
  Does the phosphatase-activating domain (PAD) hinder axonal transport through a process that phosphorylates tau?

- **Fei Liu, Ph.D.**
  Research Foundation for Mental Hygiene, Inc. at New York State Institute for Basic Research
  New York, New York

  *Role of Dyrk1A in Tau Pathology in Alzheimer’s Disease*
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  How does modification of Dyrk1A during the disease process affect the phosphorylation of tau, as well as the expression of different forms of tau?

- **Fengquan Zhou, Ph.D.**
  Johns Hopkins University School of Medicine
  Baltimore, Maryland

  *Regulation of Tau Phosphorylation in Neurons by Par3/6 via GSK-3s*
  2010 New Investigator Research Grant—$80,000 over 2 years
  Is Par3/6 activity part of a signaling pathway activated by known signals, such as growth factors?
3. Normal function of disease-related proteins

- Christopher Conrad, Ph.D.
  Columbia University
  New York, New York
  The Role of SorLA in Tau Aggregation
  2010 New Investigator Research Grant—$80,000 over 2 years
  Does decreased sorLA expression lead to the overproduction of normal tau protein and the development of neurofibrillary tangles?

- Sebastien Gauthier, Ph.D.
  The Nathan S. Kline Institute for Psychiatric Research
  Orangeburg, New York
  CysC Restores the Flow of Autophagy to Counteract Alzheimer Pathogenesis
  2010 New Investigator Research Grant—$80,000 over 2 years
  How and where do Alzheimer-related proteins accumulate in cells?

- Ulrich Hengst, Ph.D.
  Columbia University Medical Center
  New York, New York
  The Role of Intra-Axonal Protein Synthesis in Alzheimer’s Disease
  2010 New Investigator Research Grant—$80,000 over 2 years
  How and where do Alzheimer-related proteins accumulate in cells?

- Nikolaos K. Robakis, Ph.D.
  Mount Sinai School of Medicine
  New York, New York
  Neuroprotective Functions of Progranulin and Receptor
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  How do mutations in progranulin lead to neurodegeneration?

- Jie Shen, Ph.D.
  Brigham and Women’s Hospital
  Boston, Massachusetts
  Role of APP Family in the Synapse
  2010 Zenith Fellows Award—$450,000 over 3 years
  What are the functions of APP in brain cells and synapses?

- Marcel M. Verbeek, Ph.D.
  Radboud University Nijmegen Medical Centre
  Nijmegen, Netherlands
  ApoE and ApoJ in the Cerebrovascular Clearance of Amyloid Beta Protein
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  How does amyloid beta interact with ApoE and ApoJ, and how is this interaction important for removal of beta-amyloid from the brain?

- Huaxi Xu, Ph.D.
  Burnham Institute for Medical Research
  La Jolla, California
  Appoptosin, an APP Binding Proapoptotic Protein, Mediates Neuronal Death
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  How do appoptosin trigger cell death, and how is that process influenced by binding of APP?

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Alzheimer’s disease pathology

1. Properties and toxicity of abnormal protein structures

- Natália Carulla, Ph.D.
  Institute for Research in Biomedicine
  Barcelona
  Barcelona, Spain
  Structure-Toxicity Relationship of Abeta Oligomers
  2010 New Investigator Research Grant—$80,000 over 2 years
  What is the exact structure of the most toxic amyloid oligomers?

- Claudio Hetz, Ph.D.
  Institute of Biomedical Sciences
  Santiago, Chile
  Defining the Role of the Unfolded Protein Response in Alzheimer’s Disease
  2010 New Investigator Research Grant—$80,000 over 2 years
  How does x-box binding protein-1 (XBP-1) make brain cells vulnerable to amyloid-induced damage?

- Keith A. Johnson, M.D.
  Massachusetts General Hospital
  Boston, Massachusetts
  Tracking the Progression of Early Amyloid Deposition
  2010 Zenith Fellows Award—$449,214 over 3 years
  What are the patterns of amyloid plaque formation and the rate of plaque formation, and which features of amyloid plaque are associated with brain degeneration?

- Efrat Levy, Ph.D.
  The Nathan S. Kline Institute for Psychiatric Research
  Orangeburg, New York
  Transgenic Models of the Anti-Amyloidogenic Activity of a Mutant Form of Aβ
  2010 Zenith Fellows Award—$450,000 over 3 years
  How does mutant APP affect the aggregation of beta-amyloid and the development of amyloid plaque?

- Anant Krishna Paravastu, Ph.D.
  Florida State University Research Foundation, Inc.
  Tallahassee, Florida
  NMR Characterization of Prefibrillar Amyloid-Beta Aggregates
  2010 New Investigator Research Grant—$80,000 over 2 years
  What is the exact structure of early oligomer formations?

- Jonathan Pierce-Shimomura, Ph.D.
  University of Texas at Austin
  Austin, Texas
  Mechanisms of APP-Induced Death of Cholinergic Neurons in C. Elegans
  2010 New Investigator Research Grant—$80,000 over 2 years
  How does APP overexpression damage roundworm cholinergic neurons?

2. Mediators of beta-amyloid toxicity

- Nelson Arispe, Ph.D.
  The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.
  Rockville, Maryland
  Contribution of Alzheimer Abeta Channels to the Abeta-Induced Calcium Response
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  Are channels formed by beta-amyloid in the cell membrane responsible for the toxicity of beta-amyloid in nerve cells?
Do deposits of misfolded beta-amyloid or prion protein lead to synaptic damage and astrocitosis?

How does beta-amyloid affect the activity of acid-sensing ion channels?

Does amyloid accumulation in the brain impair chaperone-mediated autophagy (CMA) activity and lead to the build-up of tau and fibrillar beta-amyloid?

Does blocking the Kv1.3 channel prevent microglia from causing further inflammation without hindering the cells’ ability to clear beta-amyloid?

Does metal ions promote beta-amyloid accumulation by reducing the activity of enzymes that clear amyloid from the brain?

Does GSK-3 hinder axonal transport?

Does amyloid-related reductions in insulin hinder spatial memory in another in Alzheimer’s disease?

What is the role of the proteins ATP7a and CTR1 in the regulation of copper levels in the brain and within nerve cells of the brain?

What associations exist between working memory loss, aging and mitochondrial dysfunction?

Does metal ion toxicity positively correlate with increased levels of the non-enzymatic reactive-glycation-endproducts (RAGE) receptor in the brain?

How do brain cells use dopamine and NMDA receptor activity to manage synaptic damage and for memory encoding?

Does alpha-synuclein promote amyloid-induced synaptic damage?

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3. Synaptic dysfunction

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What is the role of the proteins ATP7a and CTR1 in the regulation of copper levels in the brain and within nerve cells of the brain?
- **George Perry, Ph.D.**
  Case Western Reserve University
  Cleveland, OH
  **The Role of PGC-1alpha in Alzheimer’s Disease**
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  What causes decreased expression of PGC-1alpha in Alzheimer’s?

- **Inna Slutsky, Ph.D.**
  Tel-Aviv University
  Tel-Aviv, Israel
  **Initiation of Alzheimer’s Disease: From Amyloid-Beta Release to Synaptic Failure**
  2010 New Investigator Research Grant—$80,000 over 2 years
  Do altered brain cell activity patterns lead to harmful beta-amyloid release and synaptic damage?

- **Xiongwei Zhu, Ph.D.**
  Case Western Reserve University
  Cleveland, Ohio
  **In Vivo Study on Abnormal Mitochondrial Dynamics in Alzheimer Model**
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  What molecular mechanisms cause changes in mitochondria during the development of Alzheimer pathology?

5. Genetics

- **Corinne Engelman, Ph.D.**
  University of Wisconsin-Madison
  Madison, Wisconsin
  **Genetic Architecture of Alzheimer-Related Functional and Structural Brain Aging**
  2010 New Investigator Research Grant—$80,000 over 2 years
  Which SNPs are associated with Alzheimer-related cognitive decline, and which SNPs are linked to structural brain loss?

- **Kinga Szigeti, M.D., Ph.D.**
  Baylor College of Medicine
  Houston, Texas
  **Copy Number Variation GWA with Age at Onset of Alzheimer’s Disease**
  2010 New Investigator Research Grant—$80,000 over 2 years
  Which copy number variants are associated with Alzheimer-related cognitive decline, and which genes are associated with these variants?

6. Other factors in Alzheimer pathology

- **Cheng-Xin Gong, M.D.**
  Research Foundation for Mental Hygiene, Inc. at New York State Institute for Basic Research
  New York, New York
  **Targeting Insulin Signaling for Treating Neurofibrillary Degeneration in Alzheimer’s Disease**
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  How does loss of insulin signaling contribute to the development of neurofibrillary tangles?

- **Henrieta Scholtzova, M.D., Ph.D.**
  New York University School of Medicine
  New York, New York
  **Mechanisms of Action of Innate Immunity Stimulation with CpG ODN on CAA**
  2010 New Investigator Research Grant—$80,000 over 2 years
  How does the activation of macrophages by CpG ODN safely regulate vascular and brain beta-amyloid levels?

- **Nicholas H. Varvel, Ph.D.**
  Hertie-Institute for Clinical Brain Research
  Tuebingen, Germany
  **Alzheimer Pathologies in the Absence of Microglia**
  2010 New Investigator Research Grant—$80,000 over 2 years
  What is the role of microglia in the development and maintenance of Alzheimer pathology?

- **Riqiang Yan, Ph.D.**
  Cleveland Clinic Foundation
  Cleveland, Ohio
  **Blocking RTN3 Aggregation for Improving Cognitive Function**
  2010 Novel Pharmacological Strategies to Prevent Alzheimer’s Disease—$320,000 over 3 years
  What is the role of RTN3 in the progression of Alzheimer pathology?

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**Dementia risk factors**

- **Maria M. Corrada, Sc.D.**
  University of California, Irvine
  Irvine, California
  **Vascular Disease in Relation to Dementing Pathologies in the Oldest Old**
  2010 New Investigator Research Grant—$77,422 over 2 years
  How does the dementia risk presented by vascular disorders change in the oldest old?

- **Edo Richard, M.D.**
  Academic Medical Center
  Amsterdam, the Netherlands
  **A New Perspective on Dementia: From Vascular Risk Factors to Prevention**
  2010 New Investigator Research Grant—$80,000 over 2 years
  Which cardiovascular factors have the greatest impact on dementia risk, and which types of people would benefit most from reducing dementia risk through cardiovascular treatment?

- **Christopher Rowe, M.D., Ph.D.**
  CSIRO Preventative Health
  Heidelberg, Australia
  **AIBL II**
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  How do diet and lifestyle affect an individual’s risk of developing Alzheimer’s disease?

- **Liqin Zhao, Ph.D.**
  University of Southern California
  Los Angeles, California
  **IDE, ER Subtype ApoE Genotype and Alzheimer Prevention Versus Treatment**
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  How does estrogen regulate levels of IDE in the brain, and how does this regulation influence the risk of Alzheimer pathology?

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**Diagnosis and disease monitoring**

1. Biomarkers

- **Miia Kivipelto, M.D., Ph.D.**
  University of Kuopio
  Kuopio, Finland
  **Effect of Preventive Interventions on Biomarkers for Cognitive Decline**
  2010 The Senator Mark Hatfield Award for Clinical Research—$200,000 over 3 years
  Which potential biomarkers accurately reflect cognitive decline?
1. **Brain imaging**

- **Adam M. Brickman, Ph.D.**
  Columbia University Medical Center  
  New York, New York  
  *An Ex-Vivo MRI Study of White Matter Hyperintensities in Aging and Alzheimer's Disease*
  2010 New Investigator Research Grant—$80,000 over 2 years  
  Do people with Alzheimer’s have greater white matter hyperintensity (WMH) concentrations in their parietal regions, and are there any associations between WMH levels and various hallmarks of Alzheimer’s?

- **Mark Edward Wheeler, Ph.D.**
  University of Pittsburgh  
  Pittsburgh, Pennsylvania  
  *Neural Mechanisms of Perceptual Memory Decisions in MCI*
  2010 New Investigator Research Grant—$80,000 over 2 years  
  How can fMRI show how the brain perceives, processes and remembers sensory information, and how these brain abilities are altered in persons with MCI?

- **Guofan Xu, Ph.D.**
  University of Wisconsin-Madison  
  Madison, Wisconsin  
  *Detecting the Cerebral Vascular Function Deficits Associated with Alzheimer’s Disease*
  2010 New Investigator Research Grant—$80,000 over 2 years  
  Can MRI detect early stages of Alzheimer’s disease using measurements of brain blood flow in different parts of the brain?

2. **Other risk factors**

- **Michael Paul Murphy, Ph.D.**
  University of Kentucky Research Foundation  
  Lexington, Kentucky  
  *Leptin Resistance and Alzheimer’s Disease*
  2010 New Investigator Research Grant—$200,000 over 3 years  
  Is there a possible link between an increased risk of Alzheimer’s disease and the presence of obesity or type 2 diabetes?

3. **Drug development and clinical interventions**

1. **Drug therapies**

- **Ved Chauhan, Ph.D.**
  Research Foundation for Mental Hygiene, Inc., at New York State Institute for Basic Research  
  New York, New York  
  *Gelsolin, Trichostatin A and Alzheimer’s Disease*
  2010 New Investigator Research Grant—$199,218 over 2 years  
  Is trichostatin A (TSA) an effective treatment to prevent Alzheimer-like pathology in Alzheimer-like mice?

- **Suzanne Craft, Ph.D.**
  Seattle Institute for Biomedical and Clinical Research  
  Seattle, Washington  
  *Intranasal Insulin Analogue Effects on CSF and Imaging Biomarkers in MCI*
  2010 Zenith Fellows Award—$449,966 over 2 years  
  How does long-acting insulin affect cognitive function, brain blood flow and the levels of chemicals in the CSF known to be associated with MCI?

- **Pankaj Karande, Ph.D.**
  Rensselaer Polytechnic Institute  
  Troy, New York  
  *Study of Tight Junction Binding Peptides for Drug Delivery Across the BBB*
  2010 New Investigator Research Grant—$79,993 over 2 years  
  Can several peptides that bind to claudin 5 penetrate a model blood-brain barrier (BBB) engineered from different human cells?

- **Pavan Kumar Krishnamurthy, Ph.D.**
  University of Chicago-Illinois  
  Chicago, Illinois  
  *Yeast Cell-based HTS Screen for Inhibitors of Abeta42 Oligomerization*
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years  
  Can 10 potential drug candidates be identified and tested for their ability to inhibit beta-amyloid oligomerization?

- **Chien-liang Glenn Lin, Ph.D.**
  Ohio State University  
  Columbus, Ohio  
  *Evaluating Glial Glutamate Transporter EAAT2 Activators in APP Mice*
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years  
  Can drug candidates that increase the expression of EAAT2 restore the ability of glial cells to remove glutamate from the brain?

- **Tiffany Mellott, Ph.D.**
  Boston University Medical Campus  
  Boston, Massachusetts  
  *Effect of Perinatal Choline Supplementation on an Alzheimer’s Disease Model*
  2010 New Investigator Research Grant—$80,000 over 2 years  
  Does choline help slow age-related memory declines?

- **Christian J. Pike, Ph.D.**
  University of Southern California  
  Los Angeles, California  
  *NeuroSARMs in the Prevention of Alzheimer’s Disease*
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years  
  Can selective androgen receptor modulators (SARMs) reduce the risk of Alzheimer’s disease in aging men?

- **Nadezhda Povysheva, Ph.D.**
  University of Pittsburgh  
  Pittsburgh, Pennsylvania  
  *Somatostatin-Positive Interneurons as a Novel Target of Anti-Alzheimer Drugs*
  2010 New Investigator Research Grant—$80,000 over 2 years  
  Do memantine and other drugs promote cellular activity in Alzheimer’s by blocking the functions of inhibitory nerve cells?
2. Nutritional and lifestyle interventions

- **David Morgan, Ph.D.**
  University of South Florida
  Tampa, Florida
  
  **Ketogenesis and Alzheimer Pathology**
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  How does the ketogenic state affect nerve cell death and brain function in mouse models that exhibit amyloid plaques and neurofibrillary tangles?

- **Kumar Sambamurti, Ph.D.**
  Medical University of South Carolina
  Charleston, South Carolina
  
  **Dietary Modification of Alzheimer Biomarkers**
  2010 Investigator-Initiated Research Grant—$200,000 over 3 years
  Do treatments that reduce homocysteine levels also reduce the development of Alzheimer-like pathology?

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**Care, support and social-behavioral factors**

- **Jesus Favela, Ph.D.**
  Center for Scientific Research and Higher Education of Ensenada
  Ensenada, Mexico
  
  **Offering Situational Awareness from Activity Estimation and Social Networks**
  2010 Everyday Technologies for Alzheimer Care Grant—$164,040 over 3 years
  Can a social networking system (SNS) enable people with Alzheimer’s disease and their caregivers to better manage daily activities and communication?

- **Nathalie Sumien, Ph.D.**
  University of North Texas Health Science Center
  Fort Worth, Texas
  
  **Exercise, Antioxidants and APOE Interactions in Cognitively-Impaired Mice**
  2010 New Investigator Research Grant—$80,000 over 2 years
  Can combining exercise and antioxidant intake slow or prevent Alzheimer pathology in mice engineered to express ApoE-e4?
• **Laura N. Gitlin, Ph.D.**
  Thomas Jefferson University
  Philadelphia, Pennsylvania
  *Managing Behavior in Nursing Homes: Innovative Intervention and Methods*
  2010 Non-Pharmacological Strategies to Ameliorate Symptoms of Alzheimer's Disease—$320,000 over 2 years
  Can the Tailored Activity Program for Nursing Homes (TAP-NH) effectively engage people with dementia in activities tailored to their abilities?

• **Maureen Schmitter-Edgecombe, Ph.D.**
  Washington State University
  Pullman, Washington
  *A Multi-Dyad Cognitive Rehabilitation Intervention*
  2010 Non-Pharmacological Strategies to Ameliorate Symptoms of Alzheimer's Disease—$320,000 over 3 years
  Can a multifamily cognitive-rehabilitation intervention improve behavioral management skills in persons with MCI and supportive strategies by their care partners?