

Knight Alzheimer's Disease Research Center (ADRC)

International collaborations

Dominantly Inherited Alzheimer Network (DIAN) Imaging Core Lab

- NIH/NIA 2UF1AG032438
- This is an international study of families with autosomal dominant Alzheimer's Diseases (AD). Imaging includes MRI, amyloid PIB and AV45 PET, and tau T807 PET.

With this renewal application, the DIAN Imaging Core will continue to analyze longitudinal imaging data that's fully integrated with clinical, psychometric and cerebrospinal fluid (CSF) biomarkers, and will allow for mutation-specific genotype-phenotype analysis. The G Imaging Core will be responsible for the acquisition, quality control, and analysis of the MRI and PET neuroimaging for DIAN. Carriers of AD-causing mutations and their non-carrier siblings are enrolled and followed in the Clinical Core through the international DIAN performance sites. Participants will undergo structural and functional MRI, amyloid PET, and metabolic PET imaging every 2 years in conjunction with their clinical visits. Source imaging data and post-processed data will be available to collaborating and outside investigators and will be distributed by the Informatics and Biostatistics cores.

Specific aims are to: (1) Collect structural and functional MRI, amyloid PET and metabolic PET imaging (2) Process image data, including segmentation and matched regions of interest across all modalities. (3) Follow up novel findings identified in DIAN participants, including (a) an imaging biomarker timeline in asymptomatic ADAD, (b) an early hypermetabolic phase of the disease, (c) similarities between decreased cerebral blood flow and hypometabolism near the onset of symptoms, and (d) a late stage with accelerated accumulation of microhemorrhages. (4) Conduct comparisons to late onset AD (LOAD), evaluate new imaging approaches, and perform exploratory genotypic-phenotypic analysis to include imaging and pathology.