

# Dominantly Inherited Alzheimer Network

<https://neurodegenerationresearch.eu/survey/dominantly-inherited-alzheimer-network/>

## Principal Investigators

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### Country

USA

## Title of project or programme

Dominantly Inherited Alzheimer Network

## Source of funding information

NIH (NIA)

## Total sum awarded (Euro)

€ 16,595,251.38

## Start date of award

15/09/2008

## Total duration of award in years

7

## The project/programme is most relevant to:

Alzheimer's disease & other dementias

## Keywords

Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD)... Brain Disorders... Clinical Research... Clinical Research - Extramural... Dementia... Genetics... Neurodegenerative... Neurosciences... Prevention

## Research Abstract

DESCRIPTION (provided by applicant): Dominantly inherited Alzheimer's disease (AD) is an attractive model for study because the responsible mutations have known biochemical

consequences that underlie the pathological basis of the disorder. The opportunity to determine the sequence of imaging and biomarker changes in asymptomatic gene carriers who are destined to develop AD may reveal critical information about the pathobiological cascade that culminates in symptomatic disease. Because the clinical and pathological phenotypes of autosomal dominant AD (ADAD) appear similar to those for the far more common late-onset “sporadic” AD, the nature and sequence of brain changes in ADAD also may be relevant for late-onset AD. However, individuals with ADAD are few and are geographically dispersed worldwide. In its initial funding period, the Dominantly Inherited Alzheimer’s Network (DIAN) has established an international, multicenter registry of individuals (gene carriers and noncarriers; asymptomatic and symptomatic) who are biological adult children of a parent with a known causative mutation for AD in the amyloid precursor protein (APP), presenilin 1 (PSEN1), or presenilin 2 (PSEN2) genes in which the individuals are evaluated at entry and longitudinally thereafter with standard instruments to include the Uniform Data Set of the Alzheimer’s Disease Centers, structural, functional, and amyloid imaging protocols developed by the Alzheimer’s Disease Neuroimaging Initiative (ADNI), biological fluids (blood; CSF) in accordance with the ADNI protocols, and histopathological examination of cerebral tissue in individuals who come to autopsy also using ADNI protocols. In addition to establishing the DIAN registry, support was found for DIAN’s major hypotheses examined. First, AD biomarker changes will identify MCs many years before these individuals develop symptomatic AD, thus supporting the concept of preclinical AD. Second, the initial biomarker changes in the preclinical stage of ADAD will involve A $\beta$ 42, followed by changes related to neurodegeneration, followed by cognitive decline. Third, the clinical and neuropathological phenotypes of ADAD will be similar to, but not identical with, those of “sporadic” LOAD. Although data obtained in the initial budget period provide support for each of these hypotheses, all have yet to be confirmed with longitudinal data analyses. Hence, this application now emphasizes longitudinal data collection and analyses to truly appreciate how biomarkers change over time. This renewal application continues to address the 3 original DIAN hypotheses with increased emphasis on longitudinal data (increasing visit frequency for asymptomatic participants) and maintain current aims (maintenance of the established international DIAN registry of individuals (MCs and NCs, symptomatic and asymptomatic) with attention to preparing and adjusting for participants who participate in current and planned prevention trials. New scientific studies are planned; many funded independently of the DIAN grant and conducted within the DIAN infrastructure at no cost to DIAN.

### **Lay Summary**

**PUBLIC HEALTH RELEVANCE:** Alone among leading causes of death in the United States, Alzheimer disease (AD) lacks any effective treatment or prevention mechanism. The Dominantly Inherited Alzheimer Network (DIAN) provides a unique opportunity to understand the development of brain changes in AD, even many years before symptoms of the disease appear. Identifying this asymptomatic period also allows intervention with anti-AD drugs in an effort to prevent symptoms from ever occurring, a goal that is highly relevant not only to DIAN but also the far more common “sporadic” form of AD.

**Further information available at:**

### **Types:**

Investments > €500k

### **Member States:**

United States of America

**Diseases:**

Alzheimer's disease & other dementias

**Years:**

2016

**Database Categories:**

N/A

**Database Tags:**

N/A