Genetic Epidemiology of Cognitive Decline in an Aging Population Sample

https://www.neurodegenerationresearch.eu/survey/genetic-epidemiology-of-cognitive-decline-in-an-aging-population-sample/

Principal Investigators

EVANS, DENIS A

Institution

RUSH UNIVERSITY MEDICAL CENTER

Contact information of lead PI
Country

USA

Title of project or programme

Genetic Epidemiology of Cognitive Decline in an Aging Population Sample

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

€ 3,027,960.55

Start date of award

30/09/2007

Total duration of award in years

8

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)... Biotechnology... Brain Disorders... Clinical Research... Clinical Research - Extramural... Dementia... Epidemiology And Longitudinal Studies... Genetics... Human Genome... Minority Health for IC Use... Neurodegenerative... Prevention

Research Abstract

DESCRIPTION (provided by applicant): This revised application proposes to renew R01 AG030146, “”Genetic Epidemiology of Cognitive Decline in an Aging Population Sample””. Cognitive decline in older age and its most severe manifestation, Alzheimer’s disease, are public health problems of enormous magnitude that are projected to become much larger with the continued growth of the oldest population groups. We propose to build on our previous work to further the understanding of the genetic architecture of these important and common phenotypes through an integrated consideration of both epigenomic variation and genomic variation. The proposed work offers substantial potential for increasing our understanding of these phenotypes among African Americans (AAs). An integrated approach to genomic and epigenomic variation may be especially relevant in a study comparing results among AAs and European Americans (EAs) because of the different average exposures to life experiences and environments of these two racial/ethnic groups. The plasticity of the epigenome makes it an excellent place to search for long-lasting traces of past events such as midlife or earlier social and experiential disease risk factors that may be important to understanding racial/ethnic differences in disease risk. We will initially conduct a multi-ethnic meta-analysis of these phenotypes in existing genome wide association scan (GWAS) data from seven cohorts of AAs and EAs representing a large portion of available GWAS data for AAs. We will obtain additional genomic data for a large sample of 5000 AAs and 5000 EAs from these cohorts to characterize the relation of the class of genomic variation in the 0.001-0.05 frequency spectrum to cognitive decline by interrogation of coding and splicing variation throughout the human genome. We will then assemble a comprehensive picture of possible causal genomic variants and of their interconnections using integrated functional dissection of phenomic, transcriptomic (RNA and miRNA), and epigenomic (DNA methylation and H3K9Ac profiles) data available for two of the biracial cohorts. Finally, we will generate DNA methylation profiles and miRNA from 100 AA brains (50 with Alzheimer’s disease and 50 controls) from these same two cohorts) to perform targeted investigations of the role of DNA methylation and miRNA in susceptibility loci of AA subjects and compare these results to those obtained from EA subjects.

Lay Summary

PUBLIC HEALTH RELEVANCE: This application investigates genetic, epigenetic, and other factors affecting cognitive decline among older people of African and European ancestry. Cognitive decline is of high public health importance as its occurrence is continuing to increase rapidly with the growth of the oldest population age groups in the US and all other developed countries.

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