Connectomics of Brain Aging and Dementia

https://neurodegenerationresearch.eu/survey/connectomics-of-brain-aging-and-dementia/

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Country

USA

Title of project or programme

Connectomics of Brain Aging and Dementia

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

€ 5,474,695.41

Start date of award

01/06/2016

Total duration of award in years

1

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)... Basic Behavioral and Social Science... Behavioral and Social Science... Brain Disorders... Clinical Research... Clinical Research - Extramural... Dementia... Diagnostic Radiology... Minority Health for IC Use... Neurodegenerative... Neurosciences... Women's Health for IC Use

Research Abstract

? DESCRIPTION (provided by applicant): This is a resubmission of our application in response

to PAR-14-281, Connectomes Related to Human Disease: research cohorts should be comprised of individuals with neurodegenerative diseases associated with aging such as Alzheimer's disease (preclinical, early- and late-onset), other dementias of aging, and/or age-related cognitive disorders such as Mild Cognitive Impairment (early, mild and late MCI). The organizing principle of our research plan is the idea that the expression of cognitive dysfunction in the elderly is the result of two independent processes – the first is the neuropathology associated with AD, and the second the neuropathological changes as a consequence of vascular disease. While synaptic loss, senile plaques, and neurofibrillary tangles are the functional and diagnostic hallmarks of AD, it is the structural changes as a consequence of vascular disease that reduce brain reserve and compensation, resulting in an earlier expression of the clinical DAT syndrome. This work is being completed under the auspices of the Human Connectome Project (HCP). We will implement the HCP LifeSpan imaging protocol, and will use the HCP behavioral and cognitive assessments as specified in FOA. We will enroll 200 individuals from the University of Pittsburgh Alzheimer's Disease Research Center: 125 with DAT and 75 with prodromal AD. All subjects will meet research-level diagnostic criteria for their syndromes, and all will be in active follow-up in the ADRC. We will also enroll 200 cognitively normal individuals, 50-89 years old, from ongoing studies of community-dwelling elders. All of the cognitively normal individuals will have had at least five years of antecedent data available to this study for the purpose of cognitive classification and extraction of health-related data. Th participants enrolled into this HCP disease-related study will be stratified by age (50/decade/group) with equal representation of African- Americans and women. 200 individuals (100 patients/100 controls) will be selected for additional neuroimaging using the HCP Magnetoencephalography (MEG) protocol. Each of the participants will contribute the HCP-specified demographic, behavioral and laboratory data. We will acquire data relative to vascular risk. 200 individuals will also have in vivo amyloid imaging, and 100 of these participants will have 2-year longitudinal follow-up. All of the data will be made publicly available under the HCP guidelines using the Connectome Coordination Facility. Locally, we will use these data to address specific questions related to structure, function, AD, aging and vascular disease in multi-modality studies leveraging the differential advantages of MRI, fMRI, MEG, and in vivo A? imaging.

Lay Summary

PUBLIC HEALTH RELEVANCE: As we learn more about how the brain controls thinking and behavior, we are learning that the connections between different parts of the brain may be at least as important as what happens in the individual brain regions. In this project, we will study people over the age of 50 years, half of whom will have a cognitive disorder related to Alzheimer's disease. Our goal is to understand how changes in the physical connections between brain regions affect how these brain regions are able to communicate with each other and how this affects overall brain function, thinking, and behavior.

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