

Altered monocyte function in relation to the CD33 Alzheimers disease locus

<https://neurodegenerationresearch.eu/survey/altered-monocyte-function-in-relation-to-the-cd33-alzheimers-disease-locus/>

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Country

USA

Title of project or programme

Altered monocyte function in relation to the CD33 Alzheimers disease locus

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

€ 1,603,787.16

Start date of award

30/09/2012

Total duration of award in years

5

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... Human Genome... Immune System... Neurodegenerative... Neurosciences

Research Abstract

DESCRIPTION (provided by applicant): Alzheimer's disease (AD) is an age-related neurodegenerative disease characterized by progressive cognitive decline and dementia. An important component of AD pathology relates to the accumulation of amyloid plaques in the brain. Recent genome scans have identified ten novel AD susceptibility loci, and several of these loci implicate the immune system in late-onset AD. CD33 is one of these genes; the protein is a transmembrane glycoprotein expressed on the surface of myeloid progenitor cells and mature monocytes and appears to have a constitutive repressor function, subduing monocyte pro- inflammatory cytokine production. Interestingly, our preliminary data shows a strong correlation of increased CD33 expression on monocytes and the CD33 risk allele. Determining the role that altered CD33 expression plays in the basic functions of monocytes, will give important insights into the potential role of this molecule in AD pathology. Using three different collections of human subjects, we will characterize the functional consequences of the CD33 locus in monocytes in (1) younger healthy subjects (2) presymptomatic older subjects, and (3) subjects with AD. We propose a multifaceted approach integrating human genetic and human immunology experiments throughout the life course to understand how the CD33 locus alters the state of activation in monocytes and enhances susceptibility to AD.

Lay Summary

This project is of direct relevance to Alzheimer's disease, as we are studying monocytes and microglia from patients with Alzheimer's disease, pre- symptomatic older subjects and young subjects, many of whom will develop Alzheimer's disease in later life. Our data will potentially provide a mechanism of how a region of the human genome containing the CD33 gene alters the function of the immune system and in doing so, increases an individual's risk of developing Alzheimer's disease.

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