Parietal-hippocampal network in the triple transgenic mouse model of Alzheimers

https://neurodegenerationresearch.eu/survey/parietal-hippocampal-network-in-the-triple-transgenic-mouse-model-of-alzheimers/

Principal Investigators

WILBER, AARON A

Institution

UNIVERSITY OF CALIFORNIA-IRVINE

Contact information of lead PI
Country

USA

Title of project or programme

Parietal-hippocampal network in the triple transgenic mouse model of Alzheimers

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

173206.422

Start date of award

15/04/2015

Total duration of award in years

2

Keywords

Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD)... Brain Disorders... Dementia... Neurodegenerative... Neurosciences

Research Abstract
? DESCRIPTION (provided by applicant): Alzheimer’s disease is devastating for both individuals and society. Impaired spatial navigation and memory is one of its major symptoms. Similarly, rodent models of Alzheimer’s disease also exhibit impairments in spatial navigation. Emerging evidence suggests abnormal communication between the posterior parietal cortex (PPC) and

hippocampus in humans with Alzheimer’s. The objective of the proposed research is to explore the functionality of the hippocampal-PPC network in an animal model of amyloidosis, in order to develop a model for assessing potential contributions of altered cortico-hippocampal function to Alzheimer’s disease. To do this, I will utilize a triple transgenic mouse model of Alzheimer’s where three major genes associated with familial Alzheimer’s disease are expressed. This mouse model mimics both plaque and tangle pathological hallmarks of the disease with a distribution pattern similar to human patients, including synaptic changes in the limbic system. Specifically, in three different experiments I will: a) assess hippocampal population activity and behavior to measure the ability of triple transgenic mice to utilize an external (room based) reference frame when their internal position reference frame is disrupted; b) assess both rest related memory replay and functional synaptic connectivity within and across the hippocampus and posterior parietal cortex in the triple transgenic mouse; c) utilize a novel pharmacogenetic approach to test the theory that temporary and specific hippocampal inactivation will produce impairments in memory replay that mimic those seen in animal models. Finally, findings in the triple transgenic model will be confirmed in a newer model of Alzheimer’s that is more similar to sporadic Alzheimer’s in humans. Therefore, this project will provide insight into the normal function of a circuit that is dysfunctional in Alzheimer’s disease and allo me to probe this circuit in a mouse model of Alzheimer’s, so that we can begin to understand changes in this network that may underlie impairments observed in individuals with Alzheimer’s disease.

Further information available at:

Types:
Investments < €500k

Member States:
United States of America

Diseases:
N/A

Years:
2016

Database Categories:
N/A

Database Tags:
N/A