SYSTEMS BIOLOGY OF PATHWAYS INVOLVING BRAIN AGEING

https://neurodegenerationresearch.eu/survey/systems-biology-of-pathways-involving-brain-ageing/

Principal Investigators
Institution
Contact information of lead PI
Country

European Commission

Title of project or programme

SYSTEMS BIOLOGY OF PATHWAYS INVOLVING BRAIN AGEING

Source of funding information

European Commission FP7-Seventh Framework Programme

Total sum awarded (Euro)

€ 6,000,000

Start date of award

01/01/2013

Total duration of award in years

4.5

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

Research Abstract

In spite of valuable approaches applied to get a broad understanding of genetic, epidemiologic and molecular and system-level biological principles of human aging, cognitive decline remains as one of the greatest health challenges of the old age, with nearly 50% of adults over 85 afflicted of Alzheimer’s disease. Furthermore, drug development has not performed as expected in clinical trials, at least in part because of an insufficient mechanistic understanding at the systemic level in human. AgedBrainSYSBIO is a timely and straightforward project based on the integration of available transcriptomics, proteomics and metabolomics data, addition of relevant novel sets of data, their modeling and experimental testing in both human, mouse and drosophila. The concept is to identify subsets of pathways with two unique druggable hallmarks: (i) the validation of interactions occurring locally in subregions of neurons and (ii) a human and/or primate accelerated evolutionary signature, using six interacting approaches: (1) the

identification of interacting protein networks from recent Late-Onset Alzheimer Disease-Genome Wide Association Studies (LOAD-GWAS) data, (2) the experimental validation of interconnected networks working in subregion of a neuron (such as dendrites and dendritic spines), (3) the inclusion of these experimentally validated networks in larger networks obtained from available databases to extend possible protein interactions, (4) the identification of human and/or primate positive selection either in coding or in regulatory gene sequences,(5) the manipulation of these human and/or primate accelerated evolutionary interacting proteins in human neurons derived from induced Pluripotent Stem Cells (iPSCs) and modeling prediction challenged in drosophila and novel mouse transgenic models. This work will finally allow (6) the validation of new druggable targets and markers as a proof-of-concept towards the prevention and cure of aging cognitive defects.

Lay Summary
Further information available at:

Types:
Investments > €500k

Member States:
European Commission

Diseases:
Alzheimer's disease & other dementias

Years:
2016

Database Categories:
N/A

Database Tags:
N/A