A systems pharmacology approach to the discovery of novel therapeutics in Alzheimer´s disease

https://www.neurodegenerationresearch.eu/survey/a-systems-pharmacology-approach-to-the-discovery-of-novel-therapeutics-in-alzheimers-disease/

Principal Investigators
Institution
Contact information of lead PI
Country

European Commission

Title of project or programme

A systems pharmacology approach to the discovery of novel therapeutics in Alzheimer´s disease

Source of funding information

European Commission FP7-Seventh Framework Programme

Total sum awarded (Euro)

€ 1,296,000

Start date of award

01/04/2014

Total duration of award in years

5.0

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords
Research Abstract
Alzheimer´s disease (AD) is the most common form of dementia, with over 35 million people suffering from it worldwide, and it constitutes a personal and societal tragedy of immense proportions. Fifty years of intense research have revealed many key elements of the biology of this neurodegenerative disorder. However, our understanding of the molecular bases of the disease is still very limited, and the available medical treatments for AD are purely symptomatic and hardly effective. It is now clear that the modulation of a single target is unlikely to yield the desired outcome, and we should move from gene-centric to network-centric therapeutic strategies. In addition, we should focus on early (asymptomatic) phases of AD, before the brain

damage is irreversible, and the identification of molecular biomarkers to monitor the response of patients is paramount.

Accordingly, the main objective of our proposal is the identification of novel biomarkers in AD to monitor the onset and progression of the pathology from very early stages, and to discover combinations of drug targets and chemical compounds able to modify the biology of the disease. We will first run proteomics and transcriptomics experiments, in AD mouse models, to reveal the organization of proteins and genes that are up- or down-regulated at different ages and AD stages, and their potential translocation into/out of mitochondria. We will then construct the AD-associated network, incorporating clinical data, which we will use as a framework for the integration and analyses of the –omics data collected. We will transform the static data snapshots, corresponding to the different AD stages, into a dynamic model able to explain the progression of the disease, providing hints as to the best strategies to monitor and modulate AD evolution. We will finally design and validate a systems pharmacology strategy, based on concerted multi-target perturbations with small molecules, to modify the biology of the disease.

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