Insight into the synergistic interactions between A? amyloid, ?-synuclein and Tau

https://neurodegenerationresearch.eu/survey/insight-into-the-synergistic-interactions-between-a-amyloid-synuclein-and-tau/

Name of Fellow
Institution
Funder

European Commission FP7-Seventh Framework Programme

Contact information of fellow
Country

EC

Title of project/programme

Insight into the synergistic interactions between A? amyloid, ?-synuclein and Tau

Source of funding information

European Commission FP7-Seventh Framework Programme

Total sum awarded (Euro)

€ 100,000

Start date of award

01/03/12

Total duration of award in years

4.0

The project/programme is most relevant to:

AD/PD

Keywords

Computational biology | Structural biology | Biophysics

Research Abstract

Protein aggregation is associated with numerous incurable diseases, including A? and tau proteins in Alzheimer’s disease (AD) and ?-synuclein in Parkinson’s disease (PD). In vivo studies illustrate that these proteins appear in the brains of both AD and PD patients and that there are synergistic interactions between ?-synuclein and tau, A? and tau, and ?-synuclein and

A?. Despite the accumulating in vivo evidence of the synergistic interactions between ?-synuclein and tau, A? and tau, and ?-synuclein and A?, the mechanism through which the protein pairs aggregate remains controversial. How and which interactions between two types of protein could be involved in protein aggregation is not completely understood. Moreover, it is still not clear which domains in these proteins can interact and what effects result from these interactions. To understand the mechanism of the aggregation between two types of protein, it is necessary to probe and characterize the molecular interactions between oligomers of these proteins. The challenge and the focus of this proposal are to identify the specific interactions between these protein pairs and to probe the oligomeric structures of the proteins at the molecular level. This proposal relies basically on computational tools (molecular modeling and molecular dynamics simulations). The modeling procedure will be based on experiemntal data (ssNMR, cryo-EM) and the constructed oligomeric structures will be validated by collaborative experimental work. The output of this project will be a detailed description of the interactions between proteins that are related to neurodegenerative diseases. Moreover, this proposal may provide insight into the link between AD and PD, and will pave the way to the development of potential drugs to alleviate/prevent the symptoms of neurodegenerative diseases by impending/preventing the interaction between the proteins.

Types:
Fellowships

Member States:
N/A

Diseases:
Neurodegenerative disease in general

Years:
2016

Database Categories:
N/A

Database Tags:
N/A