Pathway complexities of protein misfolding in neurodegenerative diseases: a novel approach to risks evaluation and model development

https://neurodegenerationresearch.eu/survey/pathway-complexities-of-protein-misfolding-in-neurodegenerative-diseases-a-novel-approach-to-risks-evaluation-and-model-development/

Principal Investigators

Jia-Yi Li

Institution

Lund University

Contact information of lead PI
Country

Sweden

Title of project or programme

Pathway complexities of protein misfolding in neurodegenerative diseases: a novel approach to risks evaluation and model development

Source of funding information

Swedish Research Council

Total sum awarded (Euro)

€ 369,372

Start date of award

01/12/2015

Total duration of award in years

3

Keywords
Research Abstract

The deposition of misfolded proteins in the central nervous system (CNS) of affected individuals is a common feature of major neurodegenerative disorders including Alzheimer’s disease (AD), Parkinson’s disease (PD), fronto-temporal dementias and prion diseases. Taken together, these diseases affect ~50 million people worldwide. AD, the most common form, is characterized by the cerebral deposition of aggregated amyloid ? (A?) and tau, while PD is characterized by

neuronal inclusions known as Lewy bodies that are comprised of the protein ?-synuclein (?-syn). In prion diseases, the aggregated misfolded prion protein, called prion, is widespread in the CNS. A large body of histopathological, genetic, and experimental studies clearly implicates the conversion of native proteins into abnormal distinct conformations as a key step in the variegate disease pathogenesis. In this proposal we aim at studying the molecular determinants of the so-called strain phenomenon in the different diseases and relate the results to the functional and clinical outcome using several experimental tools. First, we plan to use small molecules to discriminate different structural conformers of A?, tau and ?-syn. These molecules include luminescent conjugated oligothiophenes. In vitro and in vivo testing in cellular and animal models and human autopsy brains from clinically characterized disease cases will parallel biochemical and biophysical characterizations of such disease-related conformers.

Further information available at:

Types:
Investments < €500k

Member States:
Sweden

Diseases:
N/A

Years:
2016

Database Categories:
N/A

Database Tags:
N/A