Role of CRMP2 and Pin1 in the pathogenesis of Alzheimer’s disease

https://neurodegenerationresearch.eu/survey/role-of-crmp2-and-pin1-in-the-pathogenesis-of-alzheimer%c2%92s-disease/

Name of Fellow
Institution
Funder

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Contact information of fellow
Country

EC

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Role of CRMP2 and Pin1 in the pathogenesis of Alzheimer’s disease

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The project/programme is most relevant to:

Alzheimer's disease & other dementias

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Neuroscience | Alzheimer's disease | CRMP2 | Pin1 | axon growth and guidance | growth cone collapse | axon regeneration

Research Abstract
Collapsin response mediator protein 2 (CRMP2) is essential for neural development and function. It promotes axon growth but upon its phosphorylation it mediates axon retraction. Deregulation of CRMP2 has been implicated in Alzheimer’s disease (AD) where CRMP2 was

detected to form hyperphosphorylated aggregates within neurofibrillary tangles. The mechanisms that regulate formation of CRMP2 aggregates are so far largely unknown. We have recently found that one CDK5-phosphorylated CRMP2 isoform is specifically stabilized by Pin1 – a unique phospho-specific isomerase linked to AD, suggesting that deregulation of Pin1 could contribute to AD related CRMP2 pathology. In the present proposal we will study how various CRMP2 isoforms are involved in CRMP2 aggregate formation and how high levels of Amyloid-b peptide, CDK5, and Pin1 affect phosphorylation, stability or localization of CRMP2 isoforms in AD using mouse models. Funding of the proposal will bring a new insight into the role of Pin1 in AD-related CRMP2 pathology.

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