

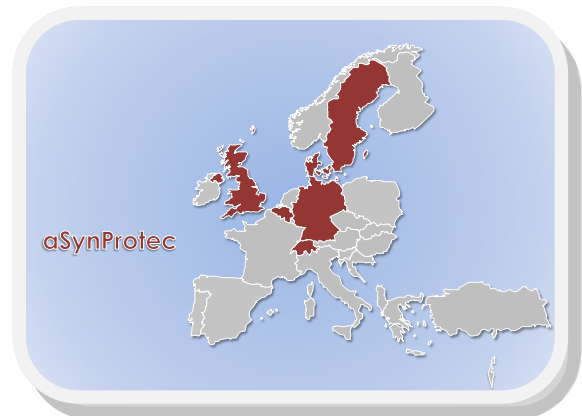
## aSynProtec

Alpha-synuclein pathology propagation in Parkinson's disease and quest for novel protective strategies

Parkinson's disease (PD) is the most common movement disorder and the second most common neurodegenerative disease after Alzheimer's disease. The neuropathological hallmarks of PD are loss of dopaminergic neurons in the substantia nigra of the midbrain and protein aggregation, called Lewy bodies and Lewy neurites, which are primarily contributed by misfolded  $\alpha$ -synuclein. Increasing evidence shows that exogenous human  $\alpha$ -synuclein fibrils originating from the PD patient brain, transgenic mouse brain or recombinantly synthesized from bacteria, can be taken up into neurons and stimulate the aggregation of endogenous  $\alpha$ -synuclein in cell models or in laboratory animal models after injection into the central and peripheral nervous systems.

This consortium aims to address fundamental questions on the origin and the molecular mechanisms causing the development of synucleinopathies and to design innovative protective strategies, with combined cutting-edge technologies and complementary and multidisciplinary approaches, such as protein chemistry, biochemistry and biophysics, cell and molecular biology, PD patient-derived iPSC cells, microbiome analysis and imaging techniques. The fulfillment of this program will contribute significantly to advancing our understanding of the interplay between genetic and environmental risk factors and their role in the initiation of  $\alpha$ -synuclein aggregation and pathology spreading in PD and related synucleinopathies. The findings may also be generally applicable to other neurodegenerative diseases.

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