

Preclinical and clinical studies on Parkinson's disease: Etiology, pathology, and restoration

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Sweden

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Preclinical and clinical studies on Parkinson's disease: Etiology, pathology, and restoration

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Research Abstract

Parkinson's disease is characterized by dopamine cell death in the substantia nigra. A less known fact is the extensive loss of noradrenaline neurons in the locus coeruleus. The first aim focuses on noradrenergic degeneration in Parkinson's disease, and is divided into one preclinical and one clinical part. In the preclinical part, maintenance of the dopamine neurons is studied in a rat model lacking noradrenaline, and the vulnerability of nigral dopamine neurons to inflammation in the absence of noradrenaline will be studied. Clinically, data from parkinsonian patients are analyzed to identify characteristics addressed to the noradrenergic system. One hallmark for dopamine neuron degeneration is the accumulation of a-synuclein. Today, neither

the upcoming nor the consequence of a-synuclein aggregation is known. A second aim is to unravel the mechanisms for the toxic effects of a-synuclein, and a molecule that templates a-synuclein aggregation in cytosol will be used, which enables the possibility to investigate the toxic effects. There are to date no cures for Parkinson's disease. However, one future possibility is to restore the dopamine system through grafting. A key issue with grafting is the limited graft outgrowth. The third aim is focused on how to trigger nerve fiber reinnervation to restore motor function in Parkinson's disease. Taken together, this project aims at both understanding the pathology behind the disease as well as to find a future cure.

Further information available at:

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