Parkinson's Disease Pathogenesis

The continuous loss of dopaminergic neurons is one of the pathogenic hallmarks of Parkinson's disease (PD) in the substantia nigra (SN).

Wang et al. examined circRNA and mRNA expression profiles in peripheral exosomes from PD patients (n = 23) and healthy controls (n = 15) using next-generation sequencing (NGS) technology, functional annotation, and quantitative polymerase chain reaction. Correlation analysis was performed between the expression levels of the circRNAs and the clinical characteristics of PD patients. The binding MicroRNAs and target genes were predicted using TargetScanHuman, miRDB, and miRTarBase. The predicted target genes were compared with the differentially expressed mRNAs in sequencing results.

Results: According to the NGS, 62 upregulated and 37 downregulated circRNAs in the PD group were screened out. Correlation analysis revealed that hsa-SCMH1_0001 has strong clinical relevance. We identified 17 potential binding MicroRNAs of hsa-SCMH1_0001 with 149 potential target genes. ARID1A and C1orf115 belong to the intersection of the predicted target genes and the differentially expressed mRNAs obtained by sequencing.

This study suggested that hsa-SCMH1_0001 and its target genes ARID1A and C1orf115 are downregulated in PD patients and may be involved in the occurrence of PD [1].

SNCA may serve to integrate presynaptic signaling and membrane trafficking. Defects in SNCA have been implicated in the Parkinson's disease pathogenesis. SNCA peptides are a major component of amyloid plaques in the brains of patients with Alzheimer's disease. Alternatively, spliced transcripts encoding different isoforms have been identified for this gene

A study demonstrated the importance of the SNCA locus for the etiology of Parkinson's disease in Latinos. By leveraging the demographic history of a cohort via admixture mapping, they identified two potential PD risk loci that merit further study [2].

Alterations in thalamic nuclei volumes and the intrinsic thalamic network in patients with PD differed based on their predominant symptoms. These findings might be related to the underlying Parkinson's disease pathogenesis and suggest that PD is a heterogeneous syndrome [3].

1)
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2)
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3)

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