# Parkinson Disease: Predicting the Future

https://neurodegenerationresearch.eu/survey/parkinson-disease-predicting-the-future/

**Principal Investigators**

SCHERZER, CLEMENS R

**Institution**

BRIGHAM AND WOMEN'S HOSPITAL

**Contact information of lead PI**
**Country**

USA

**Title of project or programme**

Parkinson Disease: Predicting the Future

**Source of funding information**

NIH (NINDS)

**Total sum awarded (Euro)**

€ 1,949,386.24

**Start date of award**

30/09/2016

**Total duration of award in years**

3

**The project/programme is most relevant to:**

Parkinson's disease & PD-related disorders

**Keywords**
**Research Abstract**

Parkinson’s Disease: Predicting the Future It is poorly understood why some patients with Parkinson’s have an aggressive disease course. The pace of progression varies considerably, ranging from a manageable functional decline to an accelerated course that leaves patients rapidly wheelchair bound or with dementia. This is a source of anguish for patients and caregivers. In clinical trials, this variation obfuscates drug effects. Many genetic variants have been linked to susceptibility, but the genes modulating disease progression have not been well established. Our initial studies indicate multiple coding and noncoding variants predictive of a

hyper-accelerated motor or memory decline. We hypothesize that genetic variants will powerfully predict the progression of Parkinson’s. We will directly address this question through high coverage, massively parallel, targeted sequencing of ten cohorts from North America and Europe that were longitudinal characterized with exceptional granularity over the course of up to twelve years. 3,939 patients with Parkinson’s disease and over thirty thousand clinical assessments will be analyzed using Cox and mixed random and fixed effect models. In Aim 1, we will identify genetic variants in susceptibility loci and familial genes that predict cognitive or motor progression. Furthermore, novel putative progression loci emerging from our exome-scale search will be evaluated. In Aim 2, we will replicate and verify forwarded genetic variants in independent populations. This study will establish the first progression genes for Parkinson’s disease, clarify prognosis, and shift the way we design clinical trials. Rare variants that disrupt protein function will inform on the underlying mechanism and reveal clues for therapies. More generally, these data will contribute towards a precision medicine poised to transform healthcare.

**Lay Summary**
The progression of Parkinson’s disease varies considerably between individuals, ranging from a manageable functional decline to an aggressive course that leaves patients rapidly wheelchair bound or with dementia. This variation is a major source of noise and inefficiency in therapeutic trials. Predictors of progression are needed to overcome this roadblock. This study will establish the first progression genes for Parkinson’s disease and shift the way we design clinical trials.

**Further information available at:**

**Types:**
Investments > €500k

**Member States:**
United States of America

**Diseases:**
Parkinson's disease & PD-related disorders

**Years:**
2016

**Database Categories:**
N/A

**Database Tags:**
N/A