A gene expression signature for the early detection of Parkinson disease

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Title of project or programme

A gene expression signature for the early detection of Parkinson disease

Principal Investigators of project/programme grant

Title	Forname	Surname	Institution	Country
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Source of funding information

The Research Council of Norway

Total sum awarded (Euro)

755000

Start date of award

01-03-2009

Total duration of award in months

55

The project/programme is most relevant to

- Parkinson’s disease

Keywords

Parkinson, diagnostics, genetics, bioinformatics, translational research, industry

Research abstract in English

The diagnosis of PD today relies on a physicians exam. Autopsy studies, however, have demonstrated that even experienced neurologists misdiagnose PD in about a quarter out of a hundred cases. Diagnostic accuracy at disease onset, when neuroprotective trea tment is anticipated to be most effective, is even lower. Thus, there is a crucial need for biomarkers that are disease-specific and which precisely identify early disease stages. Traditional studies of blood from PD patients have analyzed expression leve ls of one gene or gene product at a time. We have taken advantage of whole genome array technology allowing expression analysis of up to 32,000 genes simultaneously and so have our collaborative partner Dr. Scherzer at Harvard Medical School, Cambridge, U SA. We have with different approaches identified two sets of signature genes with characteristic expression in patients with PD. We will now in a collaborative approach join these two sets of genes and transform these ‘molecular fingerprints’ into one sim ple and inexpensive diagnostic test. Most importantly, we will attempt to improve diagnostic accuracy at an early stage of the disease. An early test will help optimizing treatment already in an early phase and the test will at the same time avoid erroneo us treatment for those that do not have PD but something else.The goal of this project is to develop and clinically validate a blood based gene expression pattern characteristic for PD in an early phase and with an accuracy, specificity and sensitivity t hat makes it useful as a diagnostic product and as a biomarker in the development of drugs for the disease. We will at the same time evaluate a novel bioinformatics approach that has the potential for a more robust diagnostic algorithm.

Lay summary