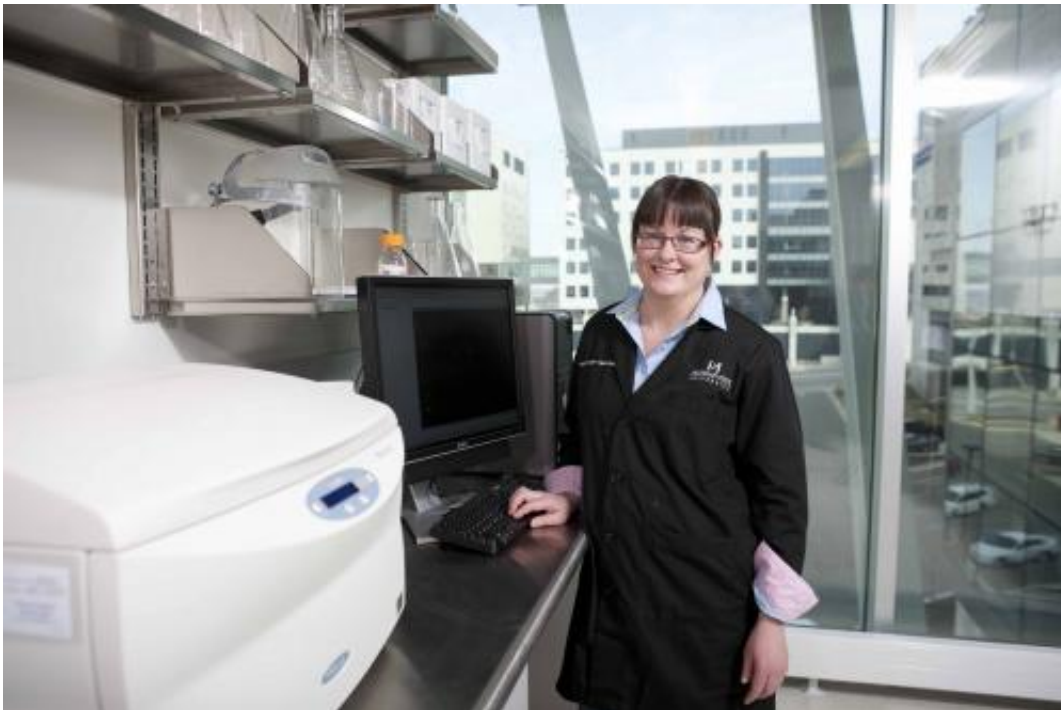


Brain inflammation linked to more severe Parkinson's symptoms

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Lena Brundin is an associate professor in the college and a researcher with the Van Andel Institute.

Reversing inflammation in the fluid surrounding the brain's cortex may provide a solution to the complex riddle of Parkinson's, according to researchers who have found a link between pro-inflammatory biomarkers and the severity of symptoms such as fatigue, depression and anxiety in patients with the chronic disease.

Lena Brundin of Michigan State University's College of Human Medicine was part of a research team that measured inflammatory markers found in cerebrospinal fluid samples of Parkinson's patients and members of a control group.

"The degree of neuroinflammation was significantly associated with more [severe depression](#), fatigue, and cognitive impairment even after controlling for factors such as age, gender and disease duration," said Brundin, an associate professor in the college and a researcher with the Van Andel Institute.

"By investigating associations between inflammatory markers and non-motor symptoms we hope to gain further insight into this area, which in turn could lead to new treatment options."

The results of the study were published in the journal *Brain, Behavior, and Immunity*.

Inflammation in the brain long has been suspected to be involved in the development of Parkinson's disease, specifically in non-motor symptoms such as depression, fatigue and [cognitive impairment](#). Recent research suggests inflammation could drive cell death and that developing [new drugs](#) that target this inflammation might slow disease progression.

Parkinson's disease is the second most common [degenerative disorder](#) of the [central nervous system](#); the causes of the disease and its development are not yet fully understood.

"The few previous studies investigating [inflammatory markers](#) in the cerebrospinal fluid of Parkinson's patients have been conducted on comparatively small numbers of subjects, and often without a healthy control group for comparison," Brundin said.

In the study, 87 Parkinson's patients were enrolled between 2008 and 2012. For the control group, 37 individuals were recruited. Participants underwent a general physical exam and routine blood screening. Researchers looked at the following markers: C-reactive protein, interleukin-6, tumor necrosis factor-alpha, eotaxin, interferon gamma-induced protein-10, monocyte chemotactic protein-1 and macrophage inflammatory protein 1-?.

The study was carried out in collaboration with researchers from Lund University in Sweden, Skåne University Hospital in Sweden and the Mayo Clinic College of Medicine in Florida.

Provided by Michigan State University

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