

CASE STUDY

Evaluation of the enteric neuro-inflammatory signature as a source of biomarkers for Parkinson's disease

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François Cossais, PhD, is currently post-doc at the Institute of Anatomy of the University of Kiel. His work focuses on studying the mechanisms regulating the plasticity of the enteric nervous system in health and disease and proposes with his colleagues to characterize the potential alterations of enteric neuropathological pathways in patients with Parkinson's disease. He received his PhD in development neuroscience at the University of Erlangen, Germany.

nCounter® Assay selection:

nCounter Human Neuropathology Panel

Project Summary:

PD is increasing worldwide and yet there is still no curative treatment for PD nor are there valid biomarkers. Diagnosis of PD still relies on neurologic examination at a late time-point of the pathology, when up to 70% of central dopaminergic neurons are already lost. Central neuro-inflammation is a key process in PD pathogenesis. However, characterization of these neuro-inflammatory pathways and their use as biomarkers are limited by the inability to assess central neuronal tissues from living patients. Interestingly, accumulating data show that the enteric nervous system (ENS), the nervous system of the gut, is also affected in PD. The ENS is an essential regulator of gut homeostasis, including intestinal immune reactivity, and peristalsis. Loss of enteric dopaminergic neurons has been observed in patients with PD, and the ENS was further postulated to serve as entry route for the disease. Intestinal biopsies containing cells of the ENS can be routinely obtained from living patients. Previous work from our group and others demonstrated the rationale to use such biopsies to characterize ENS alterations in PD patients. Therefore, a detailed characterization of these pathways represents a unique opportunity to define a PD-specific enteric neuro-inflammatory signature, which may ultimately help identify novel biomarkers for PD. We propose to provide the first detailed description of the enteric neuro-inflammatory signature occurring in PD patients. This study will bring essential new knowledge on enteric neuro-inflammation in PD patients and represents a fundamental step towards the development of novel biomarkers for PD based on this neuro-inflammatory signature.

“Our goal is to identify some expression patterns associated with the disease. This will just be the beginning of something more if this works. We need biomarkers for the early detection of Parkinson's but also later on to follow the evolution of disease. If it works it could be really a great adventure.”

François Cossais, PhD



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