New effort to identify Parkinson's biomarkers

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Last month, the National Institutes of Health announced a new collaborative initiative that aims to accelerate the search for biomarkers—changes in the body that can be used to predict, diagnose or monitor a disease—in Parkinson's disease, in part by improving collaboration among researchers and helping patients get involved in clinical studies.

As part of this program, launched by the National Institute of Neurological Disorders and Stroke (NINDS), part of the NIH, Clemens Scherzer, MD, a neurologist and researcher at Brigham and Women's Hospital (BWH), was awarded $2.6 million over five years to work on the development of biomarkers and facilitate NINDS-wide access to one of the largest data and biospecimens bank in the world for Parkinson's available at BWH. This NINIDS initiative is highlighted in an editorial in the March issue of Lancet Neurology.

"There is a critical gap in the research that leads to lack of treatment for diseases like Parkinson's," said Scherzer. "Biomarkers are desperately needed to make clinical trials more efficient, less expensive and to monitor disease and treatment response. We are hopeful that this initiative will fast track new discoveries in this area."

According to Scherzer, most of our knowledge of the human brain is based on the analysis of just 1.5 percent of the human genome that encodes proteins. The first part of Scherzer's project will examine the function of the remaining 98.5 percent of the genome that, so far, has

been unexplored in the human brain. While this remainder had been previously dismissed as "junk", it is now becoming clearer that parts of it actively regulate cell biology. Scherzer and colleagues believe that "dark matter" RNA transcribed from stretches of so called "junk" DNA is active in brain cells and contributes to the complexity of normal dopamine neurons and, when corrupted, Parkinson's disease.

"This offers a potentially ground breaking opportunity for biomarker development. Initially, the team will search for these RNAs associated in brain tissue of individuals at earliest stages of the disease. Then, this team will look for related biomarkers in the bloodstream and cerebrospinal fluid in both healthy brains and those with Parkinson's," Scherzer said.

Scherzer's lab has been spearheading biomarker research in this field since 2004 and the team already has 2,000 patients enrolled and being followed in a longitudinal study with rich clinical data and one of the largest biobanks in the world for Parkinson's tissue with support from the Harvard NeuroDiscovery Center. The biobank was designed as an incubator for Parkinson's research and until now was chiefly available for research collaborations within the Harvard-affiliated community. As part of this new project, this vast resource will be open to all NIH-funded investigators.

"Our ultimate goal is to personalize treatment for our patients with Parkinson's." said Scherzer. "By opening up this vast collection of specimens, we are exploding the resources that are available to NIH-funded investigators looking at this disease. We hope to harness the power of collaboration to speed up biomarkers discovery."

Provided by Brigham and Women's Hospital