Investigation of mechanisms by which PINK1 protects against Parkinson’s disease: to develop better biomarkers and treatment targets for the disease.

https://www.neurodegenerationresearch.eu/survey/investigation-of-mechanisms-by-which-pink1-protects-against-parkinson%c2%92s-disease-to-develop-better-biomarkers-and-treatment-targets-for-the-disease/

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Country

Ireland

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Investigation of mechanisms by which PINK1 protects against Parkinson’s disease: to develop better biomarkers and treatment targets for the disease.

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4

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Research Abstract
Parkinson’s disease (PD) is a slowly progressive brain degenerative disorder that primarily impairs movement and also causes cognitive defects, sleep disturbance, gastrointestinal problems and a reduced ability to smell. PD is the second most common age-related

neurodegenerative disorder next to Alzheimer’s disease, and affects 10 million people worldwide. This number is doubling every 20 years due to the expanding ageing population, and lack of preventative treatments. PD results primarily from degeneration of dopamine-producing neurons in the substantia nigra which regulate neuronal circuits controlling movement. The protein alpha-synuclein, builds up in aggregates called Lewy bodies, for reasons yet unknown, and this build-up is believed to initiate neurodegeneration in PD. In ~90% of cases, there is no explanation for why people develop PD. However, ~10% of cases are inherited, caused by mutations in known genes. These include PINK1 mutations, resulting in loss of PINK1 function, one of the major causes of inherited PD.

Research in Dr. O’Neill’s and other labs shows PINK1 is a major neuroprotective, anti-stress protein which enhances cell survival, protein health and mitochondrial function, all major systems defective in PD. However there is limited information on the PINK1 system in neuronal systems in vivo with direct application to PD. Further understanding of the biology of PINK1, specifically manipulating PINK1 in the AAV-alpha-synuclein model of PD, is the primary aim of this research, and offers major potential to better understand what molecular /cell systems cause and protect against PD. In this study application of the new findings and knowledge of PINK1 function in cell models will additionally begin to assess whether diagnostic changes in levels of key components of the PINK1 system can be detected in skin cells in patients with PD. Together this research will increase understanding of the mechanisms that both cause and protect against PD.

Further information available at:

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