Postgraduate Research Scholarship on genetic forms of Parkinson's disease

Mission To evaluate how different types of brain cells with different genetic mutations that cause Parkinson's disease affect brain function and biology

PROJECT SUMMARY

Mutations and/or deletions in specific genes result in a high probability of developing Parkinson's disease suggesting a critical role for these genes in the health and survival of specific cells. Curiously, it is not yet clear how specific types of brain cells are functionally impacted by genetic mutations to generate neuronal loss that defines Parkinson's disease. The project below will use patient-derived cells from genetic forms of Parkinson's disease to provide a unique paradigm to reveal temporal, spatial and cellular components of Parkinson's disease pathobiology.

Group/Team Join a multi-disciplinary lab with expertise in stem cell biology, animal models of neurodegenerative diseases, tissue engineering, and a wider international collaborative research hub that is focused on understanding the pathobiology of Parkinson's disease. You will have access to world class research facilities in the Charles Perkins Centre (CPC), the Brain and Mind Centre (BMC) and the Kolling Institute. Opportunities to travel to international collaborating laboratories and national and international conferences.

Project details - Analysing human neurons and astrocytes with genetic mutations that cause Parkinson's disease in cell culture to determine the contribution of the different cell types to Parkinson's disease pathology.

The student will perform cytology analysis on neurons and astrocytes differentiated from human induced pluripotent stem cells (iPSCs) genetically engineered to express mutations in different Parkinson's disease risk genes. The student will conduct iPSC cell culture and differentiation, establish co-culture cell models and perform immunocytology and immunohistology using state-of the art microscopy methods. Different combinations of mutation cell lines will be studied to determine how underlying genetic defects in different cell types contribute to Parkinson's disease pathology.

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