

**Principal Investigator:**

Roger Ashmus

**Institution:**

Simon Fraser University

**Research Project:**

Development of Improved Substrates for Live Cell Imaging to Aid in Discovering New Glucocerebrosidase Therapeutic Agents

**Award Type:**

Trainee Award

**Amount Awarded:**

\$124,500 over 3 years, co-funded by Parkinson Society British Columbia and Michael Smith Foundation for Health Research. Each organization will contribute \$62,250 over this period of time.

**Project Description:**

Parkinson's disease (PD) is a neurodegenerative disorder that affects millions of people worldwide, with no standard treatment currently available. Therefore, there is a major need for new therapeutic agents to treat or prevent the progression of PD. One promising solution involves targeting the protein glucocerebrosidase (GCase) encoded by the gene GBA1. Studies have shown small molecules that increase GCase activity could help prevent the progression of PD.

Dr. Ashmus will use a combination of organic chemistry, chemical biology, and cell biology to discover new therapeutic agents that increase GCase activity. Fluorescently-quenched substrates will be chemically synthesized and used in enzymatic assays to monitor GCase activity in vitro and in neuroblastoma cells. The assay will then be adapted and optimized for use in a high-throughput screen of compounds from the Canadian Glycomics Network and from a natural products collaborator, Roger Linington, at SFU.

The results of this research could produce new lead compounds that increase GCase activity. In addition, the compound screen could aid in identifying new therapeutic targets for PD, which would drive preclinical translation research in this area.