



Krembil Neuroscience Program

Neurodegenerative Disorders: Movement Disorders

Overview

The Krembil Neuroscience Program's, Morton and Gloria Shulman Movement Disorders Centre is the largest of its kind in Canada. The Centre focuses on the management and care of patients with movement disorders as well as translational research to improve patient outcomes. Recognized as a National Parkinson Foundation Centre of Excellence, its international reputation for patient care, research and innovation bring patients from around the world to its clinic.

There are several types of movement disorders including Parkinson's disease, essential tremor and dystonia. Parkinson's, the most common movement disorder, is a chronic, progressive neurodegenerative disorder characterized by tremors, stiffness, slowness of movement, and difficulty with balance. Parkinson's results from the loss of cells in the brain that produce dopamine. Dopamine is responsible for transmitting signals within the brain and its loss causes nerve cells to fire out of control leaving patient unable to control their movement in a normal manner. The exact cause and cure for Parkinson's is unknown.

UHN Milestones/Innovations

- Discovery of a gene (DJ-1) that protects dopamine-producing neurons in the brain from damage caused by unstable molecules. (2005)
- Discovery that high levels of the protein BAG5 inhibit the actions of the parkin gene and are a cause of neurodegeneration in Parkinson's disease. (2004)
- In conjunction with nine centres around the world, conducted the first ever clinical trials using positron emission tomography (PET) to assess progression of Parkinson's disease over two years. (2003)
- Identification of a protein called sonic hedgehog as a new therapeutic target for Parkinson's. (2003)
- Deep brain stimulation (DBS) of the subthalamic nucleus (co-ordinates automatic movements) to improve motor skills and ability to perform tasks of daily living in Parkinson's disease patients. (2001)
- Leading involvement in several trials designed to alter the progression of Parkinson's disease.

Scope of Work

- Diagnosis and treatment, pharmacological treatments, transcranial magnetic stimulation and deep brain stimulation.
- Monitoring condition and ongoing care
- Information and support to understand and cope with changes in motor abilities
- Opportunities to participate in research, including clinical drug trials

Integration of Care

Physicians, clinicians and other staff members in the Movement Disorders Clinic believe the best patient care involves the integration of modalities. Patients may receive care or consultation from:

- Movement disorder neurologists
- Neurophysiologists
- Nurses
- Neuropsychiatrists
- Other healthcare team workers

<p>Basic science research includes investigations into:</p> <ul style="list-style-type: none">• Mechanisms of neurodegeneration• Neuropathological hallmarks of corticobasal degeneration• Genetic and molecular biological studies of patients with Parkinson's• Mechanism of action of deep brain stimulation	<p>Clinical science research includes investigations into:</p> <ul style="list-style-type: none">• Functional neurosurgical treatments including deep brain stimulation and pallidotomy• Neuropsychological disturbances accompanying Parkinson's• Therapeutic agents helping symptomatology and slowing progression)• Pallidotomy• Evaluation of complications of drug treatments
---	---