U of Toronto

- Hotbed of Neuroscience—genetics to brain networks
- High ranking research university especially in Neuroscience (500 scientists)
- Toronto is the financial capital of Canada; GTA > 5Million
- Ontario Brain Research Institute
- Toronto members of Canadian Consortium for Clinical Cognitive Research (C5R)
University of Toronto Fully Affiliated Hospitals

- Baycrest (Rotman Research Institute) *
- St. Michael’s *
- Sunnybrook *
- University Health Network (TWH, TGH, Princess Margaret) (Center for Research in Neurodegenerative Diseases); Mount Sinai *
- Center for Addiction and Mental Health §
- Women’s College §
- Hospital for Sick Children; Bloorview Kids Rehab
- Toronto Rehabilitation Institute §

* Active Division of Adult Neurology (Full time faculty members = 59); § Cross appointments
<table>
<thead>
<tr>
<th>Bridgepoint Health</th>
<th>The Royal Victoria Hospital</th>
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<tr>
<td>Credit Valley Hospital</td>
<td>The Scarborough Hospital</td>
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<td>George Hull Centre for Children and Families</td>
<td>Southlake Regional Health Centre</td>
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<tr>
<td>Hincks-Dellcrest Centre</td>
<td>St. John's Rehabilitation Hospital</td>
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<td>Humber River Regional Hospital</td>
<td>St. Joseph's Health Centre</td>
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<td>Lakeridge Health Network</td>
<td>Surrey Place Centre</td>
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<td>Markham-Stouffville Hospital</td>
<td>Toronto East General Hospital</td>
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<td>North York General Hospital</td>
<td>Trillium Health Centre</td>
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<td>Ontario Shores Centre for Mental Health Sciences</td>
<td>West Park Healthcare Centre</td>
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<td>Providence Healthcare</td>
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University of Toronto Fully Affiliated Hospitals – Subspecialty Concentration

- Baycrest – Behavioral Neurology, Geriatric Neurology, Movement Disorders
- St. Michael’s – MS, Stroke, Neuromuscular, Epilepsy
- Sunnybrook – Behavioral Neurology, Stroke, Neuromuscular, Neuro-oncology, MS
- University Health Network (TWH, TGH, Princess Margaret); Mount Sinai – Movement Disorders, Behavioral Neurology, Epilepsy, Neuromuscular, Neuro-oncology, Stroke, Neuro-ophthalmology, HA & Pain
Education

Adult Neurology Program:
- Residents: 31
- Clinical Fellows: 23
- Research: 6

Pediatric Neurology Program:
- Residents: 9
- Residents (not RCPSC program): 3
- Fellows: 9
TORONTO NEUROLOGY
Subspecialty Training & Research
Programs in Adult Neurology

- Stroke *
- Movement Disorders *
- Behavioral Neurology *
- Epilepsy
- Multiple Sclerosis
- Neuromuscular
- Neuro-oncology
- Neuro-ophthalmology
- Pain & Headache
Provincial Government Academic Health Sciences AFP and Hospital support from 3 adult teaching hospitals → the formal development of a City-Wide Stroke Program mid-2009

Establishment → enabled Collaboration, Hiring, New funding
Arm 1-Research Activities

- Design of data capture across 3 sites to identify patients for trials city-wide.
- “CLOQS” trial - Sunnybrook funded; seeking funds for city-wide implementation.
- Phase 4 observational Dabigatran Registry proposed.
- Collaborating on an evaluation of EMS pre-hospital stroke bypass protocols

Arm 2- Harmonized Care Protocols (Aim 6 per year)

- Renal safety of CTA/CTP; collaborations with Nephrology
- Octoplex protocol standardized; collaborations with Hematology
- Hemicraniectomy for MCA

Arm 3- Knowledge Transfer (Aim 6 per year)

- ‘Beyond the Guidelines’ template developed
- Warfarin and ASA
- Carotid Occlusions
- PFO management
- Driving Restrictions for Stroke/TIA patients
**UTSP- The First 6 Months.**

**Additional Funding**

- **Approved:**
  - Sunnybrook Innovations Funding for CLOQS trial ‘Countdown lights to Optimize Quality in Stroke Care’ - November 2009.

- **Applied:**
  - Roche Funding- to expand CLOQS trial City-wide
  - Galileo Fund (Sanofi-Aventis) for infrastructure support, fellowship funds
  - Planned CIHR March 2010 submission: Intracranial Wall Imaging, (if successful, partially fund UTSP infrastructure)
**UTSP- The First 6 Months**

Other Activities:

- Vision Statement developed.
- Program Manager hired.
- 0.5 FTE data coordinators hired at all 3 sites. Data capture began January 2010.
- Web portal launched
- Recruitment of co-op students
- Advertising for city-wide clinical/research fellows
UTSP Future Directions (next 6 months)

- **Research**
  - City-wide REB applications
  - Launch city-wide trials and studies (CLOQS, Carotid Artery Occlusions, Intracranial Wall imaging)

- **Education (continued from 1st 6 months)**
  - Monthly journal reviews of key articles; quarterly evening lecture series by field leaders; monthly case presentations

- **Best Practices**
  - Implementation of existing protocols, 2-3 new protocols
  - Dissemination strategies (internal and external) - Communication and Outreach Strategy for best use of documents developed by UTSP

- **Outreach & Fundraising**
  - Website and Advertising for Fellowships/Trainees
  - Partnerships & Collaborations (Neuroscience, Divisions)
  - Stable long-term funding source(s)
Clinical care – largest Parkinson’s disease clinic in Canada (one of the largest in NA)

Clinical research
- Symptomatology, drug complications, others
- Clinical Genetics
- Clinical Epidemiology

Clinical trials (neuroprotection, symptomatic, drug complications)
- Phase II
- Phase III

Education
- Movement Disorders Fellowships
- Nursing
Movement Disorders: Neurology Faculty and Subspecialty Interests

TWH

- Anthony Lang – Director, Clinical research
- Janis Miyasaki – Assoc. Director, Clinical Trials, Palliative Care
- Robert Chen – Clinical Electrophysiology
- Elena Moro – Movement Disorders Surgery
- Susan Fox – Clinical Neuropharmacology
- Connie Marras – Clinical Epidemiology
- Antonio Strafella – Functional Imaging

Other Sites

- Mario Masellis (SB) – Behavior, Pharmacogenomics
- Galit Kleiner-Fisman (Baycrest) – Clinical studies
- Tom Steeves (SMH) – Clinical studies
Movement Disorders: Other Faculty

- Neurosurgery: Andres Lozano, Mojgan Hodaie, Clement Hamani
- Neurophysiology: William Hutchison, Jonathan Dostrovsky
- Neuropharmacology, animal models: Jonathan Brotchie
- Neuropathology: Lili-Naz Hazrati
- Neuroimaging: David Mikulis
- Neuropsychology: Sarah Duff Canning
- Neuropsychiatry: Mateusz Zurowski
- Behavioral Neurology: David Tang-Wai
TWH Laboratories

- **Human Neurophysiology (Chen, Hutchison, Dostrovsky)**
  - Transcranial Magnetic Stimulation /Other
  - Intra-operative electrophysiology

- **Basic (Brotchie, Lozano, Hutchison)**
  - Cell biology, neurodegeneration, neuroregeneration
  - Neuropharmacology, systems biology and animal models
  - Mechanisms of action of deep brain stimulation
University of Toronto
MD/ PD Research Program

- Toronto Western Hospital Campus
  - Movement Disorders Clinic
  - Human Laboratories Including PET @ CAMH
  - Basic Laboratories

- University Avenue Campus
  - Center for Research in Neurodegenerative Diseases

- Other Hospital Campuses
  - Other e.g., Medical Sciences Bldg, Speech Pathology
  - Baycrest, Sunnybrook, St Michael's

2012
Center for Research in Neurodegenerative Diseases

- Parkinson’s Disease Laboratory
  - Protein trafficking, protein-protein interactions
  - Mechanisms of neurodegeneration
- Molecular genetics
- Genomics
- Protein chemistry
- Transgenic animal models
- Proteomics
- Immune mechanisms
- Cell biology
CRND Investigators

- Peter St George Hyslop
- Paul Fraser*
- Lili-Naz Hazrati*
- (Anthony Lang*)
- Joanne McLaurin
- Howard Mount*
- Janice Robertson
- Ekaterina Rogaeva*
- Gerold Schmitt-Ulms
- Hiroshi Suzuki*
- Anurag Tandon*

* Directly involved in Parkinson’s Disease research
U of Toronto-Dementia Research
Important Strengths:

- Genetics and animal models including drug discovery and delivery
- Clinical care: largest group of Behavioural Neurologists in Canada (7 and growing) and Geriatric Psychiatrists (>12)
- Cognitive Neuroscience and leading in brain network analyses, frontal lobes, memory
- Neuroimaging and image analysis
- Clinical research: Active participant in North American and international consortia and clinical trials