



UNIVERSITY OF TORONTO  
FACULTY OF MEDICINE

# TORONTO NEUROLOGY



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Toronto Dementia Research Alliance

# 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

# University of Toronto

## Community and Affiliated Hospitals

- [Bridgepoint Health](#)
- [Credit Valley Hospital](#)
- [George Hull Centre for Children and Families](#)
- [Hincks-Dellcrest Centre](#)
- [Humber River Regional Hospital](#)
- [Lakeridge Health Network](#)
- [Markham-Stouffville Hospital](#)
- [North York General Hospital](#)
- [Ontario Shores Centre for Mental Health Sciences](#)
- [Providence Healthcare](#)
- [The Royal Victoria Hospital](#)
- [The Scarborough Hospital](#)
- [Southlake Regional Health Centre](#)
- [St. John's Rehabilitation Hospital](#)
- [St. Joseph's Health Centre](#)
- [Surrey Place Centre](#)
- [Toronto East General Hospital](#)
- [Trillium Health Centre](#)
- [West Park Healthcare Centre](#)

# TORONTO NEUROLOGY



## □ University of Toronto Fully Affiliated Hospitals – Subspecialty Concentration)

■ Baycrest – Behavioral Neurology, Geriatric Neurology, Movement Disorders



Enriching Care  
Enhancing Knowledge  
Enlightening Minds

■ 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

# TORONTO NEUROLOGY

## Stroke Program



- 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





# UTSP- The First 6 Months

## **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 1<sup>st</sup> 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)

# University of Toronto MD/ PD Research Program



Toronto Western  
Hospital Campus

University Avenue  
Campus

Other Hospital  
Campuses

Movement  
Disorders  
Clinic

Human Laboratories  
Including PET  
@ CAMH

Basic  
Laboratories

Center for  
Research in  
Neurodegenerative  
Diseases

Other  
e.g., Medical  
Sciences Bldg,  
Speech Pathology

Baycrest,  
Sunnybrook,  
St Michael's

# Movement Disorders / Parkinson's Disease Program

## *TWH Movement Disorders Clinic*

- 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

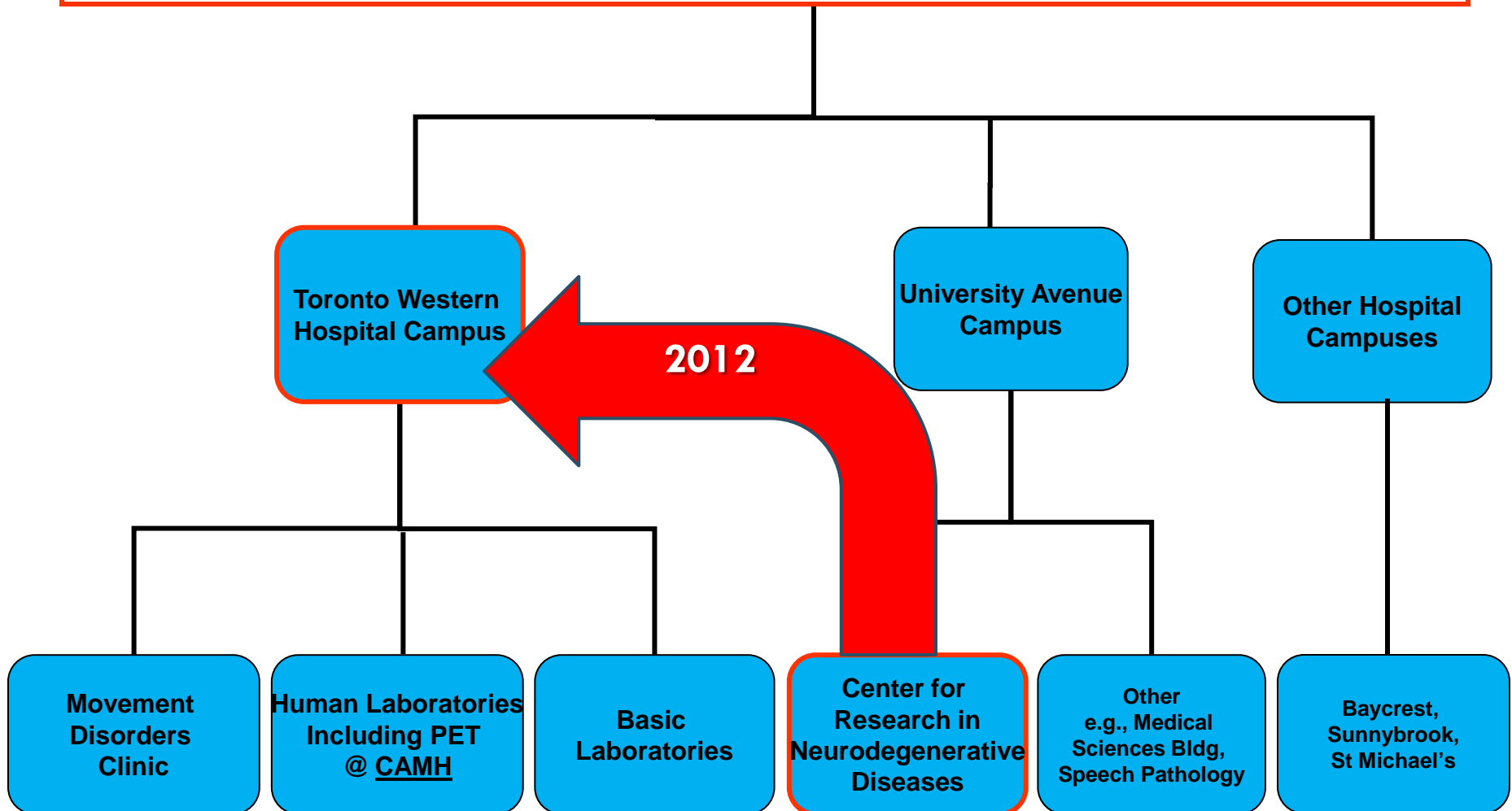
- Neurosurgery: Andres Lozano, Mojgan Hodaie, Clement Hamani
- Neurophysiology: William Hutchison, Jonathan Dostrovsky
- Neuropharmacology, animal models: Jonathan Brotchie
- Neuropathology: Lili-Naz Hazrati
- Neuroimaging: David Mikulis
- Neuropsychology: Sarah Duff Canning
- Neuropsychiatry: Mateusz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



# 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

