



**15th Annual
Charles H. Tator – Barbara Turnbull
Spinal Cord Injury Symposium**

Friday, November 18, 2016

**UHN BMO Education and Conference Centre at the Krembil Discovery Tower
60 Leonard Avenue
12.15pm to 5.45pm**

We hope you will join us for this very special lectureship event

This is a free event and anyone with an interest in spinal cord injury – personal or professional – is welcome to attend.

Organized By:



Keynote Speaker: Prof Claes Hultling, MD, PhD

**Prof Hultling broke his neck on the 31st of May 1984
Since then he has been fighting for a better every day life for
the SCI through the Spinalis Foundation
His talk will be entitled:
NEW FRONT FOR INJURED BACKS**



Prof. Michael Fehlings
Gerald and Tootsie Halbert Chair
in Neural Repair and Regeneration

In conjunction with UHN, the Krembil Neuroscience Centre, U of T Spine Program, the Spinal Cord Injury Research Unit, the DeZwrek Family and the Barbara Turnbull Foundation



For further information, contact Anoushka Singh - asingh@uhnresearch.ca

Introduction to the Tator -Turnbull Spinal Cord Injury Symposium



We are delighted to welcome you to the 15th Annual Tator-Turnbull Spinal Cord Injury Symposium. This event aims to bring information about cutting edge spinal cord injury research to the wide community of those interested in the area, with special attention to including those living with spinal cord injury and their friends and families.

After being shot at the age of 18 during a convenience store robbery which left her paralyzed from the neck down, Barbara Turnbull went on to become a journalist and a tireless advocate and research activist for those living with spinal cord injury.

Dr. Charles Tator, who treated Barbara after when she came into the ER after the shooting has a legacy which includes establishing the first dedicated spinal cord injury unit in Ontario, providing excellence in the care of individuals with spinal cord injury, directing an internationally acclaimed basic and clinical research program in this field, leading efforts at preventing brain and spinal injuries and also as a teacher and mentor to countless neurosurgeons and researchers.

Dr. Michael Fehlings hosts and organises The Charles H. Tator-Barbara Turnbull Spinal Cord Injury Symposium each year to honour Charles Tator and Barbara Turnbull, who shared a special doctor-patient friendship, for their enormous contribution, energy and drive in the area of spinal cord injury research.

15TH ANNUAL

CHARLES H. TATOR – BARBARA TURNBULL SPINAL CORD INJURY SYMPOSIUM

FRIDAY, NOVEMBER 18, 2016

12.15 – 5.45 PM

BMO EDUCATION & CONFERENCE CENTRE *

KREMBIL DISCOVERY TOWER, TORONTO WESTERN HOSPITAL

60 LEONARD AVENUE

12.15 **REGISTRATION / COFFEE**

12.45 **WELCOMING REMARKS**

*Michael Fehlings, Head, Spinal Program, UHN & Vice Chair Research, Dept Surgery, U
of T*

Albert Yee, Co-Director, Spine Program, University of Toronto

12.55 **ONF and SCI Ontario**

*Kent Basset Spiers (Ontario Neurotrauma Foundation) and Dr. Stuart Howe (Spinal
Cord Injury, Ontario)*

1.05 Combination strategies for spinal cord injury repair

Molly Shoichet, PhD, University of Toronto

1.20 How neural cells are made

Derek van der Kooy, PhD, University of Toronto

1.35 Repair from within: Activating resident stem cells for neural regeneration

Cindi Morshead, PhD, University of Toronto

1.50 Can neural stem cells regenerate the injured spinal cord? Hope or hype?

*Michael Fehlings, MD, PhD, FRCSC, FACS, FRSC, FCAHS, University Health Network & U
of T*

2.05 Strategies to promote repair of the injured spinal cord

Andrea Mothe, PhD, Toronto Western Research Institute

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2.20 **Discussion session 1**

2.35 **REFRESHMENT BREAK**

2.50 Making SCI cell therapy safe
Andras Nagy, PhD, University of Toronto

3.05 The conundrum: health maintenance following spinal cord injury
Anthony Burns, MD, PhD, University Health Network & U of T

3.20 Traumatic spinal cord injuries in the elderly: Facts and Fallacies
Julio Furlan, PhD, University Health Network and University of Toronto

3.35 Endocrine Metabolic Disease Risk: What's next?
Cathy Craven, PhD, University Health Network and University of Toronto

3.50 Restoration of Upper Limb Function in an Individual with Cervical Spondylotic
Myelopathy using Functional Electrical Stimulation Therapy: A Case Study
Milos Popovic, PhD, University Health Network and University of Toronto

4:05 **Discussion session 2**

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4:20 **BREAK**

4.35 Spontaneous Recovery and Opportunities for Neural Restoration of the Upper Limb
after Traumatic Spinal Cord Injury

Sukhvinder Kalsi-Ryan PT, PhD, University Health Network and University of Toronto

4.50 **New front for injured backs**

TATOR-TURNBULL SYMPOSIUM KEYNOTE ADDRESS / CPIN DISTINGUISHED

LECTURE:

Clas Hultling, MD, PhD, Spinalis SCI Unit, Karolinska Institute, Stockholm

5.35 **TRIBUTE TO BARBARA TURNBULL**

*Charles Tator, CM, MD, PhD, FRCSC, FACS, University Health Network &
University of Toronto*

*Michael Fehlings, Head, Spinal Program, UHN & Vice Chair Research, Dept Surgery, U
of T*

Barbara Turnbull Family members

5.45 **CLOSING REMARKS**

*Michael Fehlings, Head, Spinal Program, UHN & Vice Chair Research, Dept Surgery, U
of T*

Guest PSeaker



Claes Hultling got his medical degree at the Karolinska Institute in Solna and worked as a consultant in anesthesiology and intensive care when he on the last day of May 1984 sustained a cervical spinal cord injury in a diving accident. He was then 31 years of age and on the verge of starting his “real” life. His wedding was scheduled to take place two weeks after the broken neck and against all odds Barbro and Claes were married on the 15th of June that year. Claes then realized that he could not continue to work in the OR and decided to pursue spinal cord injury as his specialty. Together with his friend and colleague Richard Levi he spent one year in Perth in Western Australia and worked for ??? during 1986 and 1987. After coming back to Stockholm, he tried to persuade the local municipal authorities to start a comprehensive spinal cord injury unit to meet the needs of this defined group of patients. However, the responsible

politicians and directors at the Karolinska Hospital thought that it was “good as it is”.

Claes then started the Spinalis Foundation, which is a non-profit organization that has as a goal to create a better everyday life for the spinal cord injured. With significant support from the industry and private donors, Spinalis started its operations in 1991. Until 1995 Spinalis served the spinal cord injured constituency in Stockholm through this foundation, but after growing and employing more than 20 people it became a part of the Karolinska Hospital in 1996.

After that, Spinalis has grown and also joined forces with Rehab Station Stockholm, to cater for in- and out-patients – only spinal cords – in the greater Stockholm area. We have today 1,261 SCI patients listed and more than 15,000 visits to the out-patient unit per year. We have through the years in spite of our small size produced a large number of scientific papers in peer review journals and up until now 12 persons have defended their Ph.D. theses within spinal cord – all supported by the Spinalis Foundation. Claes has remained the CEO of the Foundation over the years.

Apart from the operations carried out in Stockholm, Spinalis has started one small spinal cord injury unit in Gabarone in Botswana and one in Windhoek in Namibia and is now preparing to start one in Lusaka in Zambia.

During 2009-2010 Claes served as a Professor at the Stanford University in Palo Alto in California and did the clinical work at the VA in Palo Alto.

In 2010 Claes Hultling received the “Certificate of Appreciation” from the Royal College of Physicians and Surgeons of Canada for his participation as the Royal College 2010 McLaughlin-Gallie Visiting Professor.

He is married to Barbro, who is a pediatrician, and they have one son, Emil, who was the result of four years of intensive research conducted in the early 90s. Emil is probably the first child in the world born with a complete spinal cord injured father where the conception occurred through IVF. When Claes does not treat spinal cord injured patients, he dedicates a lot of time to one of his favorite interests in life – sailing. He was a keen sailor before the injury and has done an enormous

ground work in order to introduce sailing as part of the Paralympics. He participated in the Paralympics in Sydney in 2000 in the 2,4 mR class. Before the injury he competed in 8 mR and has also sailed 8 meters on lake Ontario.



Kent Bassett-Spiers

Kent serves as the Chief Executive Officer of the Ontario Neurotrauma Foundation, a position he has held since 1999. Kent has extensive experience in developing strategic linkages and partnerships, organizational restructuring and working with the Ministry of Health on policy and system reforms. He has served health care organizations in a senior management capacity as General Manager - Central Canada, Canadian Red Cross/Canadian Blood Services, Senior Vice President, Chief Operating Officer Doctors Hospital and Vice President (Hospital Services) Toronto Western and Assistant Vice President Toronto Hospital. Kent was

the volunteer Chair of the Anne Johnston Health Centre, Vice Chair of the provincial Community Health Center Accreditation Board and is currently a member of the Sheila Basrur Center Advisory Council.

Through his work with the Ontario Neurotrauma Foundation Kent has been involved in a number of partnership activities with the Rick Hansen Foundation and the Rick Hansen Institute including the SCI Solutions Network, Canadian Neurotrauma Research Partnership and more recently with the Best Practices Implementation Project where ONF is taking the lead. Kent is also Chair of the Ontario Working Group of Neurological Health Charities Canada and is a member of Spinal Cord Injury Ontario's Board of Directors.



Stuart Howe is the Chief Executive Officer of Spinal Cord Injury Ontario – a charitable organization that is an ongoing, life-long resource for people with spinal cord injuries, their families, friends and the professionals in their service. Stuart applies his proven track record in fostering innovation, building partnerships, growing revenues and running operations, to ensure the organization's success.

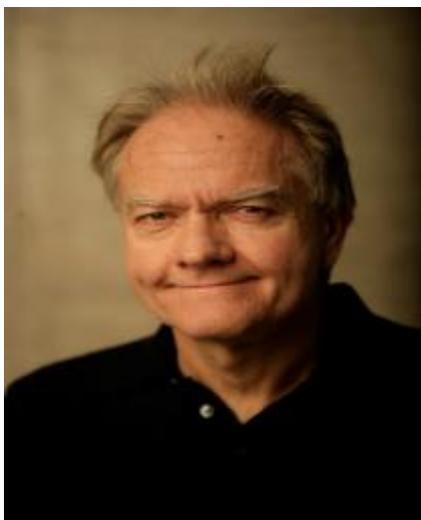
Throughout his career, Stuart has continuously challenged the established norms of not-for-profit business practices, and has successfully translated innovations into commercial products. Through his work, he has built robust business partnerships. He has launched new technology companies and service businesses. In doing so, he has become skilled at securing research and development funding, implementing LEAN process improvements, and growing new, sustainable, revenue streams.

Stuart has a Ph.D. in Chemistry from the University of Essex and is a registered patent agent. He has worked for one of Canada's largest national law firms and spent 16 years in various business roles at Canada's premier children's hospital. He has consulted on innovation and business development for a number of hospitals and community service providers, and has served as a director and officer of several for-profit and not-for-profit organizations.



Professor Molly Shoichet holds the Tier 1 Canada Research Chair in Tissue Engineering at the University of Toronto. She has published over 530 papers, patents and abstracts and has given over 325 lectures worldwide. She currently leads a laboratory of 25 and has graduated 148 researchers. She founded two spin-off companies, is actively engaged in translational research and science outreach. Dr. Shoichet is the recipient of many prestigious distinctions and the only person to be a Fellow of Canada's 3 National Academies: Canadian Academy of Sciences of the Royal Society of Canada, Canadian Academy of Engineering, and Canadian Academy of Health Sciences. Dr. Shoichet was the L'Oreal-UNESCO For Women in

Science Laureate for North America in 2015 and elected Foreign Member of the US National Academy of Engineering in 2016. She holds the Order of Ontario, Ontario's highest honour and is a Fellow of the American Association for the Advancement of Science. In 2013, her contributions to Canada's innovation agenda and the advancement of knowledge were recognized with the QEII Diamond Jubilee Award. In 2016, Dr. Shoichet became a Foreign Member of the United States National Academy of Engineering (NAE). In 2014, Dr. Shoichet was given the University of Toronto's highest distinction, University Professor, a distinction held by less than 2% of the faculty. Dr. Shoichet received her SB from the Massachusetts Institute of Technology (1987) and her PhD from the University of Massachusetts, Amherst in Polymer Science and Engineering (1992).



Derek van der Kooy served as Professor in the Department of Anatomy and Cell Biology at the University of Toronto from 1991 until 2002, and then became a Professor in the Department of Molecular Genetics. Derek received a M.Sc. in Psychology at the University of British Columbia, and a Ph.D in Anatomy, first at Erasmus University in the Netherlands, and finishing in the Department of Anatomy at the University of Toronto. Derek gained postdoctoral research experience at Cambridge University in England and at the Salk Institute in California. Derek received a Distinguished Scientist of the Canadian Institutes of Health Research award.

For additional information, please visit the [van der Kooy Laboratory website](#)



Dr. Morshead did her PhD at the University of Toronto and joined the Department of Surgery in 2003. She is currently a tenured Professor and Chair of the Division of Anatomy, Department of Surgery. Dr. Morshead's expertise is in stem cell biology and specifically, in the field of adult neural stem cells. Her lab is interested in exploring fundamental questions regarding the behaviour and characterization of neural stem cells and applying this knowledge to regenerative medicine strategies. Her team is actively pursuing the role of endogenous stem cells in models of neurodegenerative disease such as stroke, cerebral palsy, acquired brain injury and spinal cord injury.



After receiving his MD degree from the University of Toronto in 1983, Dr. Fehlings completed his general surgical and neurosurgical training, PhD degree and FRCSC specialist qualifications at Queen's University and the University of Toronto. He then undertook a combined clinical and basic science postdoctoral fellowship at New York University before returning to Toronto to assume clinical and academic positions. He is currently Professor and Vice Chair in the Department of Surgery at the University of Toronto, a McLaughlin Scholar in Molecular Medicine, Senior Scientist at the McEwen Centre for Regenerative Medicine, Co-Director of the University of Toronto Spine Program and Gerald and Tootsie Halbert Chair in Neural Repair and Regeneration. He is a Deputy-Editor of the journal Spine, Past President of the Cervical Spine Research Society, immediate

Past Chair of AOSpine North America, a past AO Foundation Trustee, founding Director of the University of Toronto Neuroscience Program and Past Chairman of the Section on Neurotrauma and Critical Care of the AANS/CNS.



Andrea Mothe is a neuroscientist in the laboratory of Dr. Charles Tator. She is investigating strategies to reduce inhibitory signals after spinal cord injury to promote repair. Her research interests also include neural stem cell therapy and approaches to promote transplant survival for spinal cord regeneration.



Dr. Nagy is currently a Shawn Kimel Senior Scientist at the Lunenfeld-Tanenbaum Research Institute, Sinai Health System, Professor in the Department of Obstetrics & Gynaecology and Institute of Medical Science at the University of Toronto, Investigator at the McEwen Centre for Regenerative Medicine and Professor at the Monash University, Melbourne. He holds a Tier I Canada Research Chair in Stem Cells and Regeneration. He also has a Fellowship of the Royal Society of Canada in the Life Sciences Division of the Academy of Science. Dr. Nagy has made significant breakthroughs in the development of mouse and human pluripotent stem cells (both embryonic and induced) that could accelerate research in regenerative medicine and lead to future therapies for currently incurable diseases, such as blindness, diabetes, arthritis, spinal cord injury and many others. His team created the first two

Canadian human embryonic stem cell lines and developed a novel method for generating non-viral induced pluripotent stem cells. His current research focuses on understanding the process of reprogramming to stem cells at the molecular level and using sophisticated genome editing methodology to pave the way leading to safe and effective cell based therapies of diseases.



Dr. Anthony S. Burns, MD, MSc

Anthony S. Burns graduated from the Yale University School of Medicine in 1994, and afterwards completed combined residency training in Internal Medicine and Physical Medicine & Rehabilitation at the Johns Hopkins University, followed by a SCI fellowship at the University of Alabama at Birmingham. He is a past participant in the Rehabilitation Medicine Scientist Training Program, funded by the U.S. National Institutes of Health. From 2000 through 2007, he was Assistant Professor, Department of Rehabilitation Medicine, Thomas Jefferson University, Philadelphia PA; Assistant Director of the Regional SCI Center of the Delaware Valley; and adjunct Assistant Professor, Department of Neurobiology and Anatomy, Drexel University

College of Medicine, Philadelphia PA. Since 2007, Dr. Burns has held a clinical appointment in the University Health Network - Toronto Rehabilitation Institute Spinal Cord Rehabilitation Program, the largest program of its kind in Canada. He is also an Associate Professor in the Division of Physiatry, Department of Medicine, University of Toronto. His clinical and research interests focus on the clinical management of spinal cord injury and related secondary complications.



Julio C. Furlan, MD, LLB, MBA, PhD, MSc (Clinical Epidemiology), FRCPC

Dr Furlan is a neurologist, clinician investigator at the Lyndhurst Centre, Toronto Rehabilitation Institute, University Health Network, and Assistant Professor in the Department of Medicine, Division of Physical Medicine and Rehabilitation, University of Toronto. He completed the residency training in Adult Neurology at University of Toronto in June 2014. Dr. Furlan also completed a 2-year clinical fellowship in Neurorehabilitation and Neural Repair at University of Toronto and Toronto Rehabilitation Institute in June 2016.

Dr. Furlan is a previously-trained head and neck surgeon who holds a MBA degree in Health Administration, an MSc degree in Clinical Epidemiology and a PhD degree in Neuroanatomy. After moving to Canada, he was offered a Clinical Research Fellowship at Toronto Western Hospital, University Health Network in 2001, which solidified his research interest in spinal cord injury. Dr. Furlan was hired as an Associate Research Scientist at Toronto Western Research Institute, University Health Network in 2007. He also became Adjunct Scientist at Lyndhurst Centre, Toronto Rehabilitation Institute in 2007.

Since 2001, his research has been mostly focused on outcome measures and predictors of outcome (including age and sex) after spinal cord injury. Dr Furlan has also been studying imaging and neurophysiological modalities of assessment of individuals with spinal cord injury.



B. Catharine Craven, BA, MD, FRCP(C), MSc,

Dr. Craven is a Clinician Scientist appointed as an Associate Professor in the Department of Medicine, Division of Physical Medicine and Rehabilitation at the University of Toronto. Dr Craven is a Senior Scientist within the Neural Engineering and Therapeutics Team at Toronto Rehabilitation Institute and holds a Craig H Nielsen Foundation Senior Scientist award. Dr Craven is the Medical Lead of the Spinal Cord Rehabilitation Program at Toronto Rehab's Lyndhurst Centre within University Health Network. Dr Craven's clinical and research expertise is in the prevention and treatment of secondary health conditions among individuals living with spinal cord injury and their related health service needs. Her recent work has focused on the associations between changes in body composition and multimorbidity among individuals with chronic spinal cord injury. Dr Craven led

publication of the Rick Hansen Institute sponsored E-scan Atlas "Capturing Capacity in Canadian SCI Rehabilitation" www.idapt.com/research/scimanifesto. Dr Craven, currently co-leads SCI-HIGH project aimed at developing structure, process and outcome indicators to advance SCI rehabilitation in Canada by 2020. Dr Craven has been the scientific co-chair of the 1st-7th National SCI Conference www.sci2017.com. Dr Craven currently Dr Craven has published over 135 articles on related topics <http://www.ncbi.nlm.nih.gov/pubmed?cmd=PureSearch&term=Craven%20BC%20%5Bauthor%5D>)



Milos R. Popovic, PhD, PEn

Milos R. Popovic received his Ph.D. degree in mechanical engineering from the University of Toronto, Canada in 1996, and the Dipl. Electrical Engineer degree from the University of Belgrade, Serbia in 1990.

Dr. Popovic is the Associate Scientific Director at the Toronto Rehabilitation Institute - University Health Network and the Toronto Rehab Chair in Spinal Cord Injury Research. He is also a Professor in the Institute of Biomaterials and Biomedical Engineering at the University of Toronto, as well as Senior Scientist and the Neural Engineering and Therapeutics Team Leader at the Toronto Rehabilitation Institute.

Dr. Popovic's fields of expertise are functional electrical stimulation, neuroprostheses, neuro-rehabilitation, brain machine interfaces, modeling and control of linear and non-linear dynamic systems, robotics, and signal processing. His interests are in the areas of neuro-rehabilitation, physiological control systems, assistive technology, and brain machine interfaces.

In 1997, together with Dr. Thierry Keller, he received the Swiss National Science Foundation Technology Transfer Award - 1st place. In 2008, Dr. Popovic was awarded the Engineering Medal for Research and Development from the Professional Engineers of Ontario and Ontario Society of Professional Engineers. In 2011, he was elected to the College of Fellows of the American Institute of Medical and Biological Engineering. In 2012, company MyndTec Inc., which Dr. Popovic co-founded in 2008, won the 1st Prize and the Best Intellectual Property Award at the annual TiEQuest Business Venture Competition. In 2013, he received the Morris (Mickey) Milner Award for outstanding contributions in the area of Assistive Technologies from the Health Technology Exchange. Also, in 2013, together with Drs. Prodic, Lehn, and Huerta-Olivares, and Mr. Tarulli, Dr. Popovic received the

University of Toronto Inventor of the Year Award. In 2015, Dr. Popovic received the 2014 University Health Network's Inventor of the Year Award.

Dr. Popovic is the co-founder and co-chair of the Canadian National Spinal Cord Injury Conference established in 2004.

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Dr. Sukhvinder Kalsi-Ryan, BScPT MSc PhD

Affiliations: Clinician Scientist, Krembil Neuroscience Spine Program, Toronto Western Hospital UHN Assistant Professor, University of Toronto, Dept of Physical Therapy

Biography: Dr. Kalsi-Ryan, currently a clinician scientist in the field of spine pathology has been an active clinician in

the Spine Program at the Toronto Western Hospital. She is a Licensed

Physical Therapist who has been involved in the rehabilitation care of both ambulatory and non-ambulatory patients. In addition to her clinical work she conducts clinical research; focused on outcomes of spine and SCI interventions. Her research is oriented to establishing methods to quantify neurological change after injury and understand neuro-restorative methods to enhance and optimize function for those with neurological impairment. She provides academic teaching within the Neurosurgical Resident training and Physical Therapy programs at the University of Toronto.

