COMBINED
Canadian Spinal Cord & Ontario Spinal Cord Injury Research Network MEETING

Regeneration, Rehabilitation & Reintegration

May 12-14, 2017

Co-host: Dr. Michael Fehlings

Co-host: Dr. Karim Fouda
COMBINED

Canadian Spinal Cord & Ontario Spinal Cord Injury Research Network

MEETING

We are pleased to welcome you to the Combined Canadian Spinal Cord (CSC) & Ontario Spinal Cord Injury Research Network (OSCIRN) Meeting. This meeting is a unique opportunity to strengthen ties between those with clinical, basic science and consumer interests in spinal cord injury. This meeting will facilitate, broaden and re-enforce the partnership between ONF/OSCIRN and the wider, national and international teams and alliances in the field of spinal cord injury.

The meeting aims to drive knowledge translation: sharing the latest clinical and scientific research with all of you here today. It is imperative to have dialogue between those working in the lab and those in the clinic, in order to facilitate “forward and reverse translation”. This allows findings that are already in clinical practice to be improved and informed by the latest lab findings and vice versa. It is, furthermore, a platform to disseminate information about current research and clinical trials and increase awareness and participation. The ultimate aim of the research is to enhance and optimize outcomes for those with spinal cord injuries and to expedite and maximize their opportunities to re-integrate into the community post-injury.

In addition to our line-up of expert speakers in the field of spinal cord injury research, who will speak on topics ranging from clinical trials to guidelines for care and rehabilitation, we have included a health economics and clinical trials workshop as well as updates on the recently held primary care and pain summits. We are optimistic that this program will move forward our aims and be of interest to all of you here today.

Best wishes,

Planning Committee

Mr. Kent Bassett-Spiers, Drs. Michael Fehlings, Keith Hayes, Karim Faoud, Tara Jeji, and Anoushka Singh

The event is wheelchair accessible
14:00  Registration and Poster Set Up

15:30  Introduction & House Keeping (Salons 1-2-3 )
Anoushka Singh, PhD

15:32  Welcome Remarks
Michael Fehlings, MD, PhD, FRCSC, FACS, FRSC, FCAHS
Albert Yee, MD, MSc, FRCSC
Mr. Kent Bassett-Spiers - CEO, Ontario Neurotrauma Foundation (ONF)

15:45  SCI Research Today - Video Series Designed to Educate, Empower & Inform
Barry Munro, Chief Development Officer CSRO & ONF

16:00  Inaugural Guest Speaker
Robert Bell, MD, Deputy Minister of Health for Ontario

16:30  Designing Neuromodulation Trials for SCI
David Darrow, MD, MPH, University of Minnesota (Guest Speaker)

16:45  Current Trends in Neuromodulation to Restore Motor Function in SCI
Nick Terrafranca, DPM, FACFAS, CEO - NeuroRecovery Technologies, Inc. (Guest Speaker)

17:00  Discussion

17:20  Poster Viewing (Trinity Ballroom Foyer)
(6pm -8pm- Reception, Peller Estate, Wine tasting/cash bar and Hors d'oeuvres)
7:00  Breakfast & Registration (Grand Ballroom Foyer)

8:30  Introduction & House Keeping (Salons A,B and Crush)
     Anoushka Singh, PhD

8:32  Overview
     Michael Fehlings, MD, PhD, FRCSC, FACS, FRSC, FCAHS
     Albert Yee, MD, MSc, FRCSC
     Keith Hayes, PhD

8:40  Current Advances & Developments in SCI
     Michael Fehlings, MD, PhD, FRCSC, FACS, FRSC, FCAHS
     Jefferson Wilson, MD, PhD
     Kristin Musselman, PhD

9:10  Team Grants - Project Update
     James Milligan, MD
     Dalton Wolfe, MD, PhD
     Marques Cesar, PhD
     Kristin Musselman, PhD

9:40  Trends in Health Care Costs for the First Two Years after SCI
     Brian Chan, PhD, University of Toronto

9:50  Access to Care and Timing for Traumatic SCI in Canada
     Christiana Cheng, PhD, Rick Hansen Institute, Vancouver

10:00 Effects of Injury Severity on Mi-RNA Expression Profile in CSF & Serum Samples from Human Patients with SCI
     Seth Tigchelaar, PhD, University of British Columbia

10:10 Respiratory Plasticity via Cervical Glutamatergic Interneurons Preserves Breathing after Cervical SCI
     K. Satkunendrarajah, PhD, University of Toronto
10:20 Recovery of Forelimb Function after Unilateral Cervical Contusion by Rehabilitation Training in a Single Pellet Grasping Task in Rats  
Ana M. Lucas-Osma, PhD, University of Alberta

10:30 Refreshment Break (Salons C&D)

10:50 Combining Local Delivery of Chondroitinase Abc with Human Induced Pluripotent Stem Cells Derived Neuronal Grafts for Treatment of SCI  
T. Fuhrmann, PhD, University of Toronto

11:00 Electrical Stimulation to Increase Hindlimb Load during Passive Stand-Training Reduces Musculoskeletal Decline in An Animal Model of Severe SCI  
Kristine Cowley, PhD, University of Manitoba

11:10 Selective Expression of Designer Receptors Exclusively Activated by Designer Drugs (Dreadds) in Thoracic-Lumbar Cholinergic Interneurons in Genetically Modified Mice with Cre-Recombinase in Cholinergic Neurons  
Xiaoyu Chen, PhD student, University of Manitoba

11:20 Discussion

11:35 Summit Updates - Primary Care & Pain  
Joseph Lee, MD, Chair & Lead Physician, Centre for Family Medicine Kitchener-Waterloo  
Eldon Loh, MD, Lawson Health Research Institute

11:55 For Better and Worse: Activity, Exercise and Physical Therapy after Experimental SCI  
David Magnuson MD, University of Louisville, (Guest Speaker)

12:25 Discussion

12:40 Buffet Lunch (Grand Ballroom Foyer)

13:30 Workshops: 1. Health Economics Model - Brian Chan, PhD  
2. Clinical Trial- CRO Perspective – Michele Towle, BSc; DP Clinical Inc.

By Invitation only Meetings:  1. Primary Care  
2. North American SCI Consortium
14:30  Translational SCI Research towards Clinical Studies  
Lisa McKerracher, PhD, Founder & CEO Bioaxone

14:40  Interim Clinical Results from Ongoing INSPIRE Pivotal Study to Assess Safety and Probable Benefit of Investigational Neuro-Spinal Scaffold for Treatment of Acute Thoracic AIS A SCI  
Kristin Neff, MS, Invivo Therapeutics

14:50  Pten Gene Silencing by Self-Delivering SIRNA Therapeutics to Promote Axon Regeneration after Central Nervous System Injury  
Joerg Ruschel, PhD, Post-Doctoral Fellow, Bioaxone

15:00  Refreshment Break (Salons C&D)

15:20  Spleen is an Important Site for Mesenchymal Stromal Cell-Mediated Immunomodulation Following Traumatic SCI  
Anna Badner, PhD Student, University of Toronto

15:30  Smart Human Neural Stem Cells to Degrade Cspgs and Optimize Regeneration of the Chronically Injured Cervical Spinal Cord  
Christopher Ahuja, MD/PhD Student, University of Toronto

15:40  Human Ipsc Derived Neural Progenitor Cells Engineered to Secrete GDNF Show Enhanced Survival, Neuronal Differentiation and Improves Functional Recovery after SCI  
Mohammed Khazaei, PhD, Post-Doctoral Fellow, Krembil Research Institute, UHN

15:50  Patients with Complete Cervical Spinal Cord Injuries Treated with AST-OPC1  
Edward D. Wirth, III MD, PhD, CMO, Asterias Biotherapeutics

16:00  Discussion

16:15  Poster Award Announcements & Presentation  
Tara Jeji, MD, MBA and Anoushka Singh, PhD

16:20  Closing Remarks – Drs Michael Fehlings and Albert Yee

18:30  Gala Dinner - Key Note Speaker (Salon A,B and Crush)  
Brian Kwon, MD, PhD, FRCSC, University of British Columbia
A G E N D A – Sunday May 14th

7.45  Breakfast & Registration (Grand Ballroom Foyer)

9:00  Introduction & House Keeping (Salon A, B and Crush)
      Anoushka Singh, PhD

9:02  Future of Translational Research
      Michael Fehlings, MD, PhD, FRCSC, FACS, FRSC, FCAHS
      Karim Fouad, PhD

09:10  Spinal Cord Perfusion Pressure as Measured by Lumbar Intrathecal Catherization Predicts Neurological Recovery in Acute SCI: A Prospective Observational Study
      Jordan W. Squair, MSc, MD/PhD student, University of British Columbia

9:20  Rethinking the Definition of Myelopathy: Quantitative Multiparametric MRI Detects Subclinical Tissue Injury in Asymptomatic Cervical Spinal Cord Compression
      Allan R. Martin, P.Eng., MD/PhD Student, University of Toronto

9:30  Therapeutic Use of Robotics for Upper Extremity SCI Rehabilitation: Systematic Review
      Hardeep Singh, MScOT, PhD Student, University of Toronto

9:40  A Speed Adaptable Controller to Restore Walking in a Spinal Cord Hemisection Model Using Intraspinal Microstimulation
      Ashley N. Dalrymple, BSc, University of Alberta

9:50  Stimulation of the Lumbar Excitatory Cells Prevents the Degeneration of the Locomotor CPG and Preserves Function after Cervical SCI
      Spyridon K. Karadimas, MD, PhD Student, University of Toronto

10:00  Molecularly Distinct Lumbosacral Interneurons Anatomically Implicated as Locomotor Activators
      Dylan Deska-Gauthier, PhD Student, Dalhousie University

10:10  Dual Time-Course RNA-Sequencing Reveals Differential Level-Specific Vascular Disruption and Reactive Astrogliosis Following Cervical and Thoracic SCI
      James Hong, PhD Student, University of Toronto

10:20  New Oligodendrocyte Myelin Does Not Contribute to Functional Recovery after Moderate Thoracic Spinal Contusion in Mice
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<th>Time</th>
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<tr>
<td>10:30</td>
<td><strong>Effect of Affinity Release Chondroitinase ABC Hydrogel for Chronic Cervical SCI</strong></td>
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<td><em>Andrea Mothe, PhD, Krembil Research Institute, University of Toronto (Invited Speaker)</em></td>
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<td>10:45</td>
<td><strong>New Therapeutic Targets to Foster Endogenous Repair Mechanisms in SCI</strong></td>
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<td><em>Soheila Karimi, PhD, University of Manitoba (Invited Speaker)</em></td>
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<td>11:00</td>
<td>Discussion</td>
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<td>Refreshments (Salons C&amp;D)</td>
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<td><strong>Cell Transplantation for Spinal Cord Repair: Filling in the Gaps</strong></td>
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<td><em>Martin Oudega, PhD, University of Miami, (Guest Speaker)</em></td>
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<td>12:00</td>
<td>Discussion</td>
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<td>12:15</td>
<td>Breakout Sessions – Team Building Exercise</td>
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<td>13:00</td>
<td>Feed Back From The Team Building Session</td>
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<td>13:15</td>
<td><strong>Future Direction &amp; Closing Remarks</strong></td>
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<td><em>Kent Bassett-Spiers, CEO, Ontario Neurotrauma Foundation</em></td>
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<td>Lunch (Grand Ballroom Foyer)</td>
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Dr. Robert S. Bell

Dr Bell was appointed Deputy Minister of Health and Long-Term Care, effective June 2, 2014. Prior to this role, he served as President and Chief Executive Officer of University Health Network for nine years. He was previously the Chief Operating Officer at Princess Margaret Hospital and Chair of both Cancer Care Ontario’s Clinical Council and the Cancer Quality Council of Ontario. Dr. Bell received his Doctor of Medicine from McGill University and a Master of Science from the University of Toronto. He also completed a Fellowship in Orthopaedic Oncology at Massachusetts General Hospital and Harvard University. Dr. Bell is a Fellow of the Royal College of Physicians and Surgeons of Canada, the American College of Surgeons and an Honorary Fellow of the Royal College of Surgeons of Edinburgh. An internationally recognized orthopedic surgeon, health care executive, clinician-scientist, and educator, Dr. Bell brings more than 40 years of health care experience to his current role.

Dr. David Darrow

Dr Barrow is a neurosurgery resident at the University of Minnesota. He is interested in functional neurosurgery and is specifically focused on neuromodulation for epilepsy, pain, movement disorders, spinal cord injury, and neuropsychiatric diseases. He seeks a novel approach towards these foci with neuroinformatics and validated, model-based methods. He is interested in both invasive and noninvasive neuromodulation and is completing a neuromodulation fellowship in transcranial focused ultrasound. He specializes in clinical trials and the application of novel devices and algorithms to the intensive care unit and neurosurgical patients.

Dr. Nick Terrafranca

Dr Terrafranca DPM is CEO of NeuroRecovery Technologies, Inc. a cutting edge medical Technology Company focused on the design and development of devices to help restore function & movement in patients with paralysis. Dr. Terrafranca is a serial entrepreneur, with 30 years experienced in the various disciplines of the Life Science Industry. His professional experience has touched upon every facet in the healthcare delivery system from clinical practice, and product development to healthcare provider programs. Dr. Terrafranca is a co-founded of NeuroRecovery Technologies along with Professor Reggie Edgerton of UCLA and Joel Burdick of Cal Tech. Joining the team of world-class scientists from UCLA, and The California Institute of Technology he has led the company from inception and is now preparing them to embark on commercial development of their break-through technology;
positioning the company to begin clinical trials on their first product, a unique novel non-invasive spinal cord neuromodulation system.

Dr. David S. K. Magnuson

After earning a BSc at the University of Victoria and PhD at the University of British Columbia Dr Magnuson undertook postdoctoral training at University College London and at the University of Ottawa. Dr. Magnuson then landed his first faculty appointment at the University of Manitoba where he studied spinal cord locomotor circuitry. In 1995, Dr. Magnuson joined the University of Louisville and was a founding member of the Kentucky Spinal Cord Injury Research Center. In 2010 he was awarded the Friends for Michael Endowed Chair in Spinal Cord Injury Research. His current research focuses on the central pattern generator for locomotion, plasticity and rehabilitation following spinal cord injury, and how activity influences the recovery of both locomotion and cardiovascular function. The primary goals of the Magnuson Lab are to determine how best to harness the incredible computing power present in the spinal cord to maximize functional recovery after incomplete spinal cord injuries and to provide a rich, nurturing yet challenging environment for the next generation of neurotrauma researchers.

Dr. Martin Oudega

Dr Oudega received his PhD in Medical Biology from the University of Leiden in the Netherlands. After postdoctoral fellowships at the University of California at San Diego and the University of Miami, Dr. Oudega held faculty positions at the University of Miami, Johns Hopkins University, and the University of Pittsburgh. Currently, Dr. Oudega is faculty at the University of Miami where he has his laboratory at The Miami Project to Cure Paralysis. Dr. Oudega studies the efficacy of cellular transplants, alone or in combination with growth-supporting interventions, to elicit anatomical repair and functional recover after spinal cord injury. He has a special interest in employing biomaterials to enhance the efficacy of cell transplants to repair the damaged spinal cord and in approaches to enhance neuroplasticity in support of training-induced recovery. The overall goal of Dr. Oudega’s laboratory is to develop spinal cord repair strategies for translation into the clinic.
Dr. Soheila Karimi

Dr. Soheila Karimi has had a long-term interest in spinal cord regeneration. Soheila received her PhD degree in developmental neurobiology from the University of Saskatchewan in 2001. She then undertook a postdoctoral fellowship in spinal cord injury (SCI) at the Toronto Western Research Institute. During her training, Soheila received numerous academic and research awards including a Synthes Award from the American Association of Neurological Surgeons, and postdoctoral fellowships from the CIHR, Ontario Neurotrauma Foundation and the Heart and Stroke Foundation. Her postdoctoral work broke a new ground in SCI therapeutics by showing that transplantation of neural stem cells can be used therapeutically to restore myelin with improved recovery of function. Soheila joined the University of Manitoba in 2010 to establish her Neural Regeneration and Stem Cell program within the Regenerative Medicine Program. Current research in Karimi’s laboratory focuses on uncovering disease mechanisms and developing regenerative therapies for SCI and multiple sclerosis (MS). Using drug delivery, stem cell therapy, genetic manipulations and bioengineering approaches, Karimi’s team have discovered novel targets that play major roles in regulating endogenous repair processes and myelin repair in SCI and MS. Karimi’s program has been supported by concurrent grants from the CIHR, NSERC, the Multiple Sclerosis Society of Canada, the Canadian Foundation for Innovation, the Craig H. Neilsen Foundation, the Canadian Paraplegic Association and the Research Manitoba.

Dr. Andrea Mothe

Dr. 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.
ACKNOWLEDGEMENT

*Thank you to our Partners and Sponsors*