CANDIAN SPINAL CORD CONFERENCE 2013

THE SPINAL CORD: FUNCTIONAL RESTORATION & REPAIR

April 21 - 23, 2013
Halifax Marriott Harbourfront Hotel
Halifax, Nova Scotia
# CONFERENCE PROGRAM

## Sunday, April 21, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>1500-1730</td>
<td>Conference Registration - alcove outside Halifax Ballroom, 2nd Floor</td>
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<tr>
<td>1730-1930</td>
<td>Welcome &amp; Introduction: Dr. Robert M. Brownstone</td>
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## Monday, April 22, 2013

### Theme I: Sensory and Motor Systems of the Spinal Cord

#### SESSION I CHAIR: WOLFRAM TETZLAFF

<table>
<thead>
<tr>
<th>Time</th>
<th>Authors, Title, Affiliation</th>
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<tbody>
<tr>
<td>0900-0925</td>
<td>Nora Szabo, Ronan Vinicius Da Silva, Susana G. Sotocinal, Jeffrey Mogil and Artur Kania</td>
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<tr>
<td></td>
<td>Role of the transcription factor Lmx1b in the development of spinal dorsal horn neurons and the relay of pain sensation</td>
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<td></td>
<td>Institut de recherches cliniques de Montréal (IRCM), Montréal, Quebec</td>
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<tr>
<td>0925-0950</td>
<td>Katinka Stecina and Hans Hultborn</td>
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<td>Gating of sensory input from one side of the body to the other during fictive locomotion</td>
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<td>University of Copenhagen, Department of Neuroscience and Pharmacology</td>
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<tr>
<td>0950-1015</td>
<td>Sravan Mandadi, P. Hong, PJ Whelan</td>
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<td>Kinin receptors sensitize TRPV1 channels to disrupt fictive locomotion in mice</td>
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<td>1 Hotchkiss Brain Institute, University of Calgary; 2 Department of Physiology and Pharmacology, University of Calgary; 3 Department of Comparative Biology and Experimental Medicine, University of Calgary, Calgary, Alberta</td>
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<tr>
<td>1015-1030</td>
<td>COFFEE BREAK, Nova Scotia Room, 2nd Floor</td>
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<tr>
<td>1030-1055</td>
<td>Jake Blacklaws, Dylan Deska-Gauthier, Ying Zhang</td>
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<td>Sim1 is required for proper migration and axon projection of V3 interneurons within the developing mouse spinal cord</td>
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<td>Medical Neuroscience, Dalhousie University, Halifax, Nova Scotia</td>
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<tr>
<td>1055-1120</td>
<td>Joanna Borowska, Chris Jones, Han Zhang, Jake Blacklaws and Ying Zhang</td>
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<td>Functional subpopulations of V3 interneurons in the adult mouse spinal cord</td>
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<tr>
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<td>Department of Medical Neuroscience, Dalhousie University, Halifax, Nova Scotia</td>
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<tr>
<td>1120-1145</td>
<td>Tuan V Bui, T. Akay, TM Jessel, RM Brownstone</td>
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<td>Spinal dI3 interneurons provide a source of sensory drive during locomotion</td>
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<td>Departments of 1Surgery (Neurosurgery) and 2Medical Neuroscience, Dalhousie University, Halifax, Nova Scotia; 3Howard Hughes Medical Institute, Kavli Institute for Brain Science, Departments of Neuroscience, and Biochemistry and Molecular Biophysics, Columbia University; 4Department of Neurological Surgery, Center for Motor Neuron Biology and Disease, Columbia University, NYC</td>
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<tr>
<td>1145-1200</td>
<td>DISCUSSION</td>
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### Theme II: Imaging Methods for SCI

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<th>Time</th>
<th>Authors, Title, Affiliation</th>
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<tr>
<td>1200-1330</td>
<td>Ciaran Lane, Crystal Milligan, James Fawcett</td>
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<td>NCK Proteins are Critical for Axon Guidance During Development</td>
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<td>Department of Pharmacology, Dalhousie University, Halifax, Nova Scotia</td>
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<tr>
<td>1330-1355</td>
<td>Fraser Olsen, Anna Gniener, and Simon Gogsnach</td>
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<td>Regional distribution of reticulospinal projections to the thoraco-lumbar spinal cord of the neonatal mouse</td>
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<td>University of Alberta, Dept. of Physiology, Centre for Neuroscience, Calgary, Alberta</td>
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<td>1420-1445</td>
<td>Marc Soubeynard, Reaz Vawd, Anna Badner, Michael Fehlings</td>
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<tr>
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<td>Ultra high resolution ultrasonography for real-time in vivo imaging of parenchymal hemorrhage after traumatic spinal cord injury</td>
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<tr>
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<td>1Division of Genetics and Development, Department of Surgery, Toronto Western Research Institute, University Health Network; 2Institute of Medical Science, Faculty of Medicine, University of Toronto, Toronto, Ontario</td>
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Keith K. Fenrich, Pascal Weber, Geneviève Rougon and Franck Debarbieux

Long and short term intravital imaging reveals differential spatiotemporal recruitment and function of myeloid cells after spinal cord injury

1 Aix Marseille University, Developmental Biology Institute of Marseille-Luminy CNRS 7288 Case 907 - Parc Scientifique de Luminy 13009 Marseille France; 2 University of Alberta, Faculty of Rehabilitation Medicine, Center for Neuroscience; 3 European Center for Medical Imaging (CERIMED) Campus de la Timone 13005 Marseille, France

Shahabeddin Vahdat, Ovidiu Lungu, Julien Doyon

Spine-brain interaction during motor sequence learning: fMRI evidence from a simultaneous scanning paradigm

Unité de Neuroimagerie Fonctionnelle (UNF), Centre de recherche de l’Institut universitaire de gériatrie de Montréal; Université de Montréal; SensoriMotor Rehabilitation Research Team [* indicates equal contribution], Montréal, Quebec

S唐fessor Samuel Pfaff, PhD

“Spinal circuits associated with motor primitives”

Salk Institute, C. A. Howard Hughes Medical Institute Investigator, Benjamin H. Lewis Chair

Transport to Pier 21 - Meet in hotel lobby, shuttle service provided by Ambassatours Gray Line

BANQUET - Pier 21, 1055 Marginal Rd

0800-0900 Continental breakfast – Nova Scotia Room, 2nd Floor

0900-1800 Halifax Ballroom, 2nd Floor

Theme III: Novel Approaches to SCI Therapies

Section III Chair: Serge Rossignol

0900-0925 Philippe P. Monnier, Alirezha Sabanzahdeh, Nardos G. Tassew

SKI-1 inhibition induces axonal regeneration following optic nerve injury

Toronto Western Research Institute, Division of Genetics and Development, University Health Network, Toronto, Ontario

0925-0950 Kajana Satkunendrarajah, F. Nissiri, S.K. Karadimas, M.G. Fehlings

Riluzole Associated Plasticity of Spared Axonal Connections Following High Cervical Hemisection

1 Department of Genetics and Development, Toronto Western Research Institute, and Spinal Program, Krembil Neuroscience Center, University Health Network, Toronto, Ontario

0950-1015 Tobias Fuehrmann, Peter Poon, Shawn C. Owen, Charles Tator and Molly Shoichet

Development of a hyaluronan-based hydrogel for localised drug delivery to the injured spinal cord

1 The Donnelly Centre for Cellular and Biomolecular Research, University of Toronto; 2 Division of Genetics & Development, Toronto Western Research Institute, Toronto, Ontario

1015-1030 COFFEE BREAK, Nova Scotia Room

1030-1055 Ryan PF Salewski, Robert A Mitchell, Michael G. Fehlings

Definitive neural stem cells clonally generated from pluripotent stem cells promote recovery following spinal cord injury

1 Division of Genetics and Development, Toronto Western Research Institute, 2 Institute of Medical Science, University of Toronto, 3 Spinal Program, University Health Network, Toronto Western Hospital, 4 Division of Neurosurgery, University of Toronto, Toronto, Ontario

1055-1120 Larry M. Jordan, James I. Nagy, Krzysztof Miazga, Anna M. Caba, Anna Leszczyńska, Henryk Majczyński, Urszula Sławińska

Actions of descending serotonergic reticulospinal neurons on locomotion studied in isolation through the use of intraspinal grafting of B1, B2 and B3 neuronal groups in adult spinal rats

1 Department of Physiology, Spinal Cord Research Centre, University of Manitoba, Winnipeg, Manitoba; 2 Department of Neurophysiology, Nencki Institute of Experimental Biology PAS, Warsaw, Poland; 3 Department of Bionics, Institute of Biocybernetics and Biomedical Engineering PAS, Warsaw, Poland
Francoise Baylis
hESC Research for Spinal Cord Injury: Good ethics = Good science
Dalhousie University, Novel Tech Ethics, Halifax, Nova Scotia

1145-1200 DISCUSSION

1200-1300 LUNCH & POSTER VIEWING - NOVA SCOTIA ROOM
SESSION IV CHAIR: LARRY JORDAN

Magown Philippe, Y Zhang, V Rafuse.
Light-activated contraction of denervated skeletal muscle
Department of Medical Neurosciences, Dalhousie University, Halifax, Nova Scotia

1305-1330 Alain Frigon, Marie-France Hurteau, Yann Thibaudier, Giuseppe D'Angelo, Alessandro Telonio, Yann Develle
Cutaneous stimulation of the lumbar back modulates locomotor activity and weight support in the chronic spinalized adult cat
Department of physiology and biophysics, Faculty of medicine and health sciences, Centre de recherche clinique Étienne-Le Bel, Université de Sherbrooke, Sherbrooke, Quebec

Brad Holinski, DG Everaert, RB Stein, VK Mushahwar
Restoring Stepping using Intraspinal Microstimulation
Department of Biomedical Engineering, University of Alberta, (BJH); Department of Physiology, University of Alberta, (DGE & RBS); Division of Physical Medicine & Rehabilitation, University of Alberta, (VMK) Calgary, Alberta

1415-1430 Marina Martinez, Serge Rossignol
Role of treadmill training on locomotor recovery and plasticity after incomplete spinal cord injury in cats
Université de Montréal/ Physiology, Montréal, Quebec

1455-1500 Shane McCullum, Colleen O'Connell, Melony Jones, Andrew Sexton, Chris McGibbon PhD
Pilot testing of functional electrical stimulation (FES) cycling on spasticity in persons with spinal cord injury – Early results from the FES Bike Study
Stan Cassidy Centre for Rehabilitation/Institute for Biomedical Engineering, Fredericton, New Brunswick

K. Fouad
Rehab training in rats with spinal cord injury, so many questions and it all sounds so simple
Faculty of Rehabilitation Medicine, Centre for Neuroscience, University of Alberta, Edmonton, Alberta

1545-1600 Serge Rossignol 1a, S. Nadeau 1b, C. Richards, J. Fung 3 and J. Doyon 1c
The SensoriMotor Rehabilitation Research Team (CIHR)
1a Université de Montréal; 1b Institut de Recherche Gingras-Lindsay de Montréal; 1c Functional Neuroimaging Unit at the Centre de Recherche de l'Institut de Gériatrie de l'Université de Montréal; 2 Université Laval, Institut de Réadaptation en Déficiences Physiques de Québec; 3 McGill University, Jewish Rehabilitation Hospital, Montréal, Quebec

1610-1625 DISCUSSION

1625-1700 CLOSING REMARKS

Poster presentations, Nova Scotia Room, 2nd Floor

Viewing April 22 and 23 from 1200 to 1300

Authors, Title, Affiliation

Peggy Assinck, J. S. Sparling, G. J. Duncan, D.L. Wu, J. Liu, W. Tetzlaff
What Constitutes “Chronic” after Rat Contusion Spinal Cord Injury
ICORD, University of British Columbia, Vancouver, British Columbia

Peggy Assinck, Gregory J. Duncan, Douglas R. Brown, Jason R. Plemel, Jie Liu and Wolfram Tetzlaff
PDGFRα-positive cells form myelinating oligodendrocytes and schwann cells following contusion spinal cord injury
ICORD, University of British Columbia, Vancouver, British Columbia
Jeremy W. Chopek, C.W. MacDonell, K. Gardiner, P.F. Gardiner

Daily passive cycling partially restores the loss of excitatory response to quipazine on the hindlimb extensor, but not flexor, monosynaptic reflex in spinalized rats

Spinal Cord Research Centre, Department of Physiology, Faculty of Medicine, and Faculty of Kinesiology and Recreation Management, University of Manitoba, Winnipeg, Manitoba

Gregory. J. Duncan, A. Chojnacki, J. R. Plemel, P. Assinck, A. Samiei, J. Kim, Y. Jiang, J. Liu, and W. Tetzlaff

Human platelet derived growth factor responsive neural precursors (PRPs) are capable of producing myelin and differentiating into mature oligodendrocytes when transplanted into the injured spinal cord

ICORD, University of British Columbia, Vancouver, BC; Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta

Caitlin. Hurd., N. Weishaupt, K. Fouad,

Anatomical correlates of recovery in single pellet reaching in spinal cord injured rats

Centre for Neuroscience, University of Alberta (all); Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, Alberta (KF only)

Brett J. Hilton¹, Ranjan Kumar², Peggy Assinck¹, Daniel Lu¹, Jeffrey Biernaskie², Wolfram Tetzlaff¹

Combination of skin precursor derived schwann cell transplantations and PTEN deletion in corticospinal neurons to promote regeneration following spinal cord injury

¹International Collaboration on Repair Discoveries, The University of British Columbia, Vancouver, British Columbia, ²Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Alberta

K. Karadimas Spyridon, Michael G. Fehlings

Compromise of spinal cord microvasculature in non traumatic spinal cord injury

Institute of Medical Sciences, University of Toronto, Toronto, Ontario

Ana M. Lucas-Osma, VK Mushahwar

Quantification of active lumbar spinal neurons due to muscle contraction in rat

Division of Physical Medicine & Rehabilitation and Centre for Neuroscience, University of Alberta, Alberta

¹,²,³Gray Moonen, ¹,²,³Andrea Mothe, ¹,²,³Charles Tator.

Development of a novel lumbar spinal cord injury model to examine the therapeutic potential of transplanting neuronally induced neural stem/progenitor cells

¹University of Toronto, ²University Health Network, ³Toronto Western Research Institute, Toronto, Ontario

Andrea J. Mothe, Roger Y. Tam, Tasneem Zahir, Molly S. Shoichet, Charles H. Tator

Transplantation of neural stem cells in a hyaluronan-based hydrogel promotes repair following spinal cord injury

Toronto Western Research Institute, Division of Genetics and Development, Krembil Neuroscience Centre, Toronto Ontario; Institute of Biomaterials and Biomedical Engineering; Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, Ontario

Heather Nichol, Hao Shi, Katie Lin, Ethan Zhao, Benjamin Lam, Monica Neuber-Hess, Ken Rose (funded by CIHR)

Density of KCC2 on dendrites of motoneuron in the intact spinal cord: is there enough to offset the increase in intracellular [Cl−] due to inhibitory synaptic activity?

Queen’s University/Centre for Neuroscience Studies, Kingston, Ontario

RS Wong, SL Chong, A Kabore, Y Kinyogo, R Zhou, VK Mushahwar

Retained effect of FES-assisted arm and leg cycling after incomplete spinal cord injury

Centre for Neuroscience, University of Alberta, Calgary, Alberta

Anna Grienier, Rachel Jeong, Jason Dyck, Simon Gosgnach

Regional distribution of functionally defined components of the mammalian locomotor CPG

University of Alberta/ Ctr for Neuroscience, Dept. of Physiology, Calgary, Alberta

*denotes changes