

Collaborative Program in Neuroscience (CPIN)

University of Toronto

Newsletter – Vol. 32, No. 2 – October 2015

Featured In This Issue

Welcome New CPIN Faculty Members We would like to welcome **Dr. Robert P. Bonin** (Assistant Professor, Leslie Dan Faculty of Pharmacy), **Dr. Graham Collingridge** (Professor and Chair, Physiology) and **Dr. Margaret Hahn** (Assistant Professor, Psychiatry & Institute of Medical Science) to the CPIN community. Please see page 3 for more details.

Welcome New Member of the CPIN Academic Program Committee The Academic Committee is pleased to welcome new member **Dr. Ze'ev Seltzer** (Dentistry & Physiology). We would like to thank **Dr. Barry Sessle** (Dentistry & Physiology) for his role on the CPIN Academic Committee and support for the program over the years.

News – CPIN Students Congratulations to CPIN student member **Vivek Mahadevan** (Dept. of Cell and Systems Biology, Supervisor Dr. Melanie A. Woodin) on recently completing the CPIN requirements and graduating from his PhD program. Please see page 4 for more details.

Neuroscience Opportunities Please see page 5 for details.

2015-16 CPIN Distinguished Lectureship Series

<http://www.neuroscience.utoronto.ca/events/lectureship.htm>



Speaker | **Dr. Robin West**, Professor, Department of Psychology, University of Florida

Title | *Self-Regulation and Memory Change*

Date | **Wednesday, October 21, 2015**

Time | 12:15 pm

Location | 248 Lecture Theatre, Galbraith Building, 35 St. George St., U of T

Host | Dr. Christopher Honey, Assistant Professor, Department of Psychology, U of T

Sponsor | Department of Psychology, U of T



Speaker | **Dr. Roberto Caldara**, Professor, Department of Psychology, University of Fribourg; Chair, Cognitive Neuroscience, Department of Psychology, University of Fribourg

Title | *Mapping face and visual processing through human diversity*

Date | **Thursday, November 5, 2015**

Time | 4:00 pm

Location | 1190 Auditorium, Bahen Centre Information Tech, 40 St. George Street, U of T

Host | Dr. Kang Lee, University Distinguished Professor, Dr. Eric Jackman

Institute of Child Study, Applied Psychology and Human Development, OISE, U of T

Co-sponsor | Applied Psychology and Human Development, OISE, U of T



Speaker | **Dr. Shekar Kurpad**, Professor of Neurological Surgery, Director, Spinal Cord Injury Center Medical College of Wisconsin, Chief of Neurological Surgery, Clement J. Zablocki VA Medical Center

Title | *The case for early surgical intervention in the management of traumatic SCI: Evidence from animal and clinical studies*

Date | **Wednesday, November 11, 2015**

Time | 5:00 pm

Location | Room AB, BMO Education & Conference Centre, Krembil Discovery Tower, Toronto Western Hospital

Host | Dr. Michael Fehlings, Professor & Vice Chair of Research, Department of Surgery, U of T

Co-sponsors | (i) 29th E. Harry Botterell Lectureship in Neurosurgery (ii) Dr. Michael Fehlings, Co-Director, U of T Spine Program; Head, Spine and Spinal Cord Injury Program; Senior Scientist, McEwen Centre for Molecular Medicine, Toronto Western Hospital, University Health Network

<http://www.neuroscience.utoronto.ca/communications/newsletter.htm>

CPIN Newsletter

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CPIN Office

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Lead Faculty

Faculty of Medicine

CPIN Participating Units

Applied Psychology & Human
Development
Biochemistry
Biomaterials & Biomedical
Engineering
Cell & Systems Biology
Computer Science
Dentistry
Laboratory Medicine &
Pathobiology
Medical Biophysics
Medical Science
Music
Pharmaceutical Sciences
Pharmacology & Toxicology
Physiology
Psychology
Rehabilitation Science

Contributors:

St. Michael's Neuroscience
Research Program

Toronto Western Research
Institute

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2015-16 CPIN Distinguished Lectureship Series (contd.)

<http://www.neuroscience.utoronto.ca/events/lectureship.htm>



Speaker | **Dr. Tobias Langenhan**, Principal Investigator, Institute of Physiology, University of Würzburg, Germany; Chairperson, Adhesion-GPCR Consortium (AGC; <http://www.adhesiongpcr.org>)

Title | *Adhesion GPCRs - A novel class of metabotropic mechanoreceptors*

Date | **Thursday, November 12, 2015**

Time | 2:00 pm

Location | Red Seminar Room, Terrence Donnelly Centre for Cellular and Biomolecular Research, 160 College Street, U of T

Host | Dr. Oliver Ernst, Professor, Departments of Biochemistry & Molecular Genetics, U of T

Co-sponsors | Department of Pharmacology & Toxicology, U of T; Faculty of Pharmacy, U of T



Speaker | **Dr. Jan Schwab**, Professor, Department of Neurology and Neuroscience; Head, Spinal Cord Injury Division; William E. Hunt & Charlotte M. Curtis Chair; Ohio State University Wexner Medical Center

Title | *Spinal Cord Injury-induced Immune Deficiency Syndrome (SCI-IDS) – Clinical relevance and experimental evidence*

Date | **Friday, November 13, 2015**

Time | 5:00 pm

Location | BMO Education & Conference Centre, Krembil Discovery Tower, 60 Leonard Ave., Toronto Western Hospital

Host | Dr. Michael Fehlings, Head, Spinal Program, Krembil Neuroscience Centre, Toronto Western Hospital and Co-Chair, University of Toronto Spine Program

Co-Sponsors | (i) University of Toronto Spine Program; (ii) Barbara Turnbull Foundation; (iii) CIHR; (iv) Halbert Chair in Neural Repair and Regeneration

Note: Professor Schwab's lecture is also the Keynote Speech at the Charles Tator-Barbara Turnbull Spinal Cord Injury Symposium -- which will run from 1 pm – 6 pm on Fri. Nov 13th at the BMO Education & Conference Centre. In addition, the 2015 Barbara Turnbull Award Presentation and Lecture will take place at 1:45 – 2:30 pm during the Symposium. Other confirmed speakers at the event include: Cathy Craven, Samuel David, Michael Fehlings, Cindi Morshead, Andrea Mothe, Kristin Musselman, Milos Popovic, Molly Shoichet and Derek van der Kooy. CPIN students are most welcome to attend all or part of the Symposium. For further details, please see the following link:

<http://drfehlings.ca/news-events/2015-tator-turnbull-lectureship-announced/>



Speaker | **Dr. J. David Sweatt**, Professor, Department of Neurobiology, University of Alabama at Birmingham School of Medicine; Director, McKnight Brain Institute; Director, Civitan International Research Center

Title | *Epigenetic Mechanisms in Memory Formation*

Date | **Thursday, November 19, 2015**

Time | 9:30 am

Location | 103 Main Lecture Room, FitzGerald Building, 150 College Street, U of T

Host | Dr. Iva Zovkic, Assistant Professor, U of T Mississauga

Co-sponsor | Department of Psychology, U of T Mississauga

CPIN Young Researcher Seminar



Speaker | **Pojeong Park**, PhD Candidate, University of Bristol, United Kingdom

Title | *Calcium-permeable AMPARs and long-term potentiation in the hippocampus*

Date | **Thursday, October 22, 2015**

Time | 12:00 pm

Location | Rm. 2173, Medical Sciences Building, 1 King's College Circle, U of T

Host | Dr. Graham Collingridge, Chair and Professor, Department of Physiology, U of T

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Welcome New CPIN Faculty Members



We would like to welcome **Dr. Robert P. Bonin** (Assistant Professor, Leslie Dan Faculty of Pharmacy) to the CPIN community.

Dr. Bonin received his Ph.D. in Physiology from the University of Toronto studying the role of tonic neuronal inhibition on neuronal activity and nociception. He later conducted postdoctoral work at Laval University under the supervision of Yves De Koninck, where he characterized a novel mechanism regulating the maintenance of central sensitization in pain.

Dr. Bonin's group in the Faculty of Pharmacy is continuing to explore the plastic processes that contribute to the development and maintenance of persistent pain. He seeks to identify the molecular mechanisms by which neuronal activity modifies or disrupts memory traces of pain in the spinal cord, and to develop new technologies for the optogenetic investigation of sensory processing pathways.



We would like to welcome **Dr. Graham Collingridge** (Professor, Physiology) to the CPIN community. Dr. Collingridge is the Ernest B. and Leonard B. Smith Chair of the Department of Physiology, University of Toronto. He also holds an appointment as a Senior Investigator at the Lunenfeld-Tanenbaum Research Institute of Mt. Sinai Hospital in Toronto.

In his early work, Dr. Collingridge discovered the role of NMDA receptors in synaptic plasticity, a cellular mechanism that the brain uses to control the strength of connections and communication. He later identified the role of other types of glutamate receptors (AMPA, metabotropic and kainate) in synaptic plasticity and other neuronal functions. Dr. Collingridge is currently studying the downstream signalling molecules involved in learning and memory, and how aberrant synaptic plasticity contributes to brain dysfunction. He aims to find treatments to restore behavioural and cognitive function and to prevent the neurodegenerative processes that afflict people with Alzheimer's and other neurodegenerative conditions.

The research focuses on the hippocampus, a brain region that is critical for learning and memory. Electrophysiology and imaging are used to investigate two main forms of synaptic plasticity, known as long-term potentiation (LTP) and long-term depression (LTD). His team employs disease models to study the genetic and molecular signaling pathways that go awry. For example, glutamate receptors, cAMP, JAK/STAT, Akt/GSK-3 and calcium signals are important modulators of neuronal responses and learning and memory. As most brain illnesses involve impairments in neuronal signaling and plasticity, the research has the potential of helping the millions of people who are afflicted worldwide.



We would like to welcome **Dr. Margaret Hahn** (Assistant Professor, Psychiatry and Institute of Medical Science) to the CPIN community.

Dr. Hahn is a clinician-scientist at the Centre for Addiction and Mental Health (CAMH) in the Complex Mental Illness Programme. Dr. Hahn's research interests lie in translational work focused on the complex interplay between mental illness, antipsychotic treatments, and cardiometabolic risk, with a special interest in diabetes. Given the early accrual of metabolic risk leading to a 20% reduction in life expectancy for patients with schizophrenia, she has an interest in early episode individuals and prevention strategies. She currently is the principal investigator on a clinical trial examining a pharmacological intervention for younger patients with psychosis and glucose abnormalities. She co-leads the Mental Health and Metabolic Clinic at the CAMH, which specializes in metabolic monitoring, and interventions for metabolic risk factors in individuals with serious mental illness. From a translational perspective, Dr. Hahn oversees a basic science laboratory that studies underlying mechanisms of antipsychotic-related metabolic disturbances and their attenuation.

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News - CPIN Students

http://www.neuroscience.utoronto.ca/communications/news_cpिन_students.htm



Congratulations to CPIN student member **Vivek Mahadevan** (Dept. of Cell and Systems Biology, Supervisor Dr. Melanie A. Woodin) on recently completing the CPIN requirements and graduating from his PhD program.

Vivek received his Master's degree in Advanced Biochemistry from the University of Madras, India, and got interested in the neurobiology of the synapse while working at the National Brain Research Institute, India. After immigrating to Canada in 2008, he started working in the lab of Dr. Roderick McInnes at the Hospital for Sick Children, and set towards understanding the molecular mechanisms underlying Excitation/Inhibition (E/I) coupling in the central nervous system. Subsequent to the completion of a Master's degree in Molecular Genetics, he bridged his way into the Woodin lab and started his PhD in 2011. His PhD thesis research pushed forward a previously unknown concept in the field of cell-intrinsic E/I balance regulation; and firmly established that the neuronal K⁺/Cl⁻ cotransporter KCC2, neuronal chloride homeostasis and GABAergic inhibition are critically regulated by the members of excitatory neurotransmission, particularly the ionotropic glutamate receptors.

Vivek has won several scholarships and awards, including the CIHR Sleep and Biological Rhythms Training Program Toronto graduate award, the SFN travel award to the FENS Forum, and the Ramsay Wright Zoology International Student Award from the Dept. of Cell and Systems Biology. Vivek also served as a CPIN graduate student executive between 2012-2015, running the neuroscience seminar series Cortex Club. Vivek will be joining the group of Dr. Chris McBain at the NICHD, NIH campus Bethesda in 2016, for his postdoctoral research; and he will examine the cellular and physiological decisions regulating the developmental origins of diverse hippocampal interneurons.

Select Peer-Reviewed Publications:

Mahadevan V, Dargaei Z, Ivakine E, Hartmann A, Ng D, Chevri er J, Ormond J, Nothwang HG, McInnes R and Woodin MA. Neto2-null mice have impaired GABAergic inhibition and are susceptible to seizures. *Front. Cell. Neurosci.* (2015) 9:368. doi: 10.3389/fncel.2015.00368.

Mahadevan V, Pressey JC, Acton BA, Uvarov P, Huang MY, Chevri er J, Puchalski A, Li CM, Ivakine EA, Airaksinen MS, Delpire E, McInnes RR, Woodin MA. Kainate receptors coexist in a functional complex with KCC2 and regulate chloride homeostasis in hippocampal neurons. *Cell Reports.* (2014) Jun 26;7(6):1762-70. doi: 10.1016/j.celrep.2014.05.022.

2015-16 CPIN Cortex Club

<http://www.neuroscience.utoronto.ca/events/cortexclub.htm>

Speaker: Dr. Shawn Lockery, Professor, Institute of Neuroscience, University of Oregon

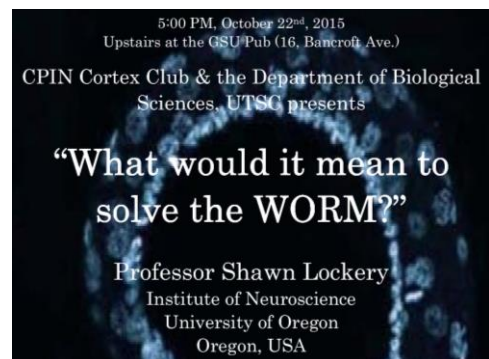
Title: *What would it mean to solve the WORM?*

Date: **October 22, 2015**

Time: 5:00PM

Location: GSUpub, 16 Bancroft Ave.

Sponsors: The Lunenfeld-Tanenbaum Research Institute (LTRI), The Department of Physiology, U of T, The CIHR Sleep and Biological Rhythms Training Program, The Neuroscience and Mental Health Program, Sick Kids, The Department of Psychology, U of T, The Faculty of Dentistry, U of T



Upcoming Events

U of T Neuroscience Seminars

<http://neuroscience.utoronto.ca/events/seminar.htm>

Conferences and Meetings

http://neuroscience.utoronto.ca/events/Conf_M.htm

<http://www.neuroscience.utoronto.ca/communications/newsletter.htm>

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Neuroscience Opportunities

http://www.neuroscience.utoronto.ca/communications/Positions_Available.htm

Postdoctoral Position

Centre for Addiction and Mental Health
Toronto, Canada

Description: The Centre for Addiction and Mental Health, Complex Mental Illness Program is currently seeking a motivated, independent postdoctoral research candidate interested in psychotic illness and the interface between illness psychopathology and the metabolic burden that characterizes this population (with a focus on diabetes and weight gain). Background in physiology, particularly glucose metabolism is considered a strong asset. Preference will be given to psychiatrists interested in undertaking advanced training in schizophrenia research, and the position will include clinical work associated with the different lines of research.

To apply, please send a brief letter stating research interests, a CV, and contact information for 3 references to: Dr. Margaret Hahn (Margaret.hahn@camh.ca).

Postdoctoral Position

Faculty of Pharmacy, University of Toronto
Toronto, Canada

Description: A postdoctoral position in sensory neuroscience is immediately available in the Leslie Dan Faculty of Pharmacy in the lab of Robert Bonin. Our group focuses on the role of plastic changes in the spinal cord that contribute to the development of persistent pain, and how these changes are maintained or modified by ongoing sensory activity. These aims are met through the complimentary use of behavioural, electrophysiological, and optogenetic techniques. Our group is also focused on the development of novel methods for the study of sensory processing. The successful candidate will conduct patch clamp and field recordings in acutely isolated spinal cord slices, and record neuronal activity using an in vivo spinal preparation. Additional research may also involve behavioural pain assays, immunohistochemistry, or confocal microscopy. Qualified candidates will have extensive experience with in vitro (patch clamp) electrophysiological techniques. Experience with in vivo electrophysiological recording, in vivo or slice calcium imaging, optogenetic, or advanced tissue clearing and imaging techniques are strong assets. The Leslie Dan Faculty of Pharmacy is located in a modern research facility in the heart of the Toronto Discovery District. Salary will be highly competitive and determined by the experience of the applicant.

To apply, please send a brief statement of research interests, CV, and contact information for 3 references to: Dr. Robert Bonin (rob.bonin@utoronto.ca).

Reminders

Volunteer Opportunity at the 2016 Toronto Brain Bee CPIN Faculty and trainee members are invited to volunteer at the **18th Annual Toronto Brain Bee** that will be held on **Friday, April 1, 2016** at the University of Toronto. Please fill out the online volunteer form at <http://www.neuroscience.utoronto.ca/events/brainbee.htm>

Submissions for News Updates The CPIN Office requests trainee and faculty members to submit updates in research discoveries, events, and other achievements involving CPIN members. Please send your submissions to p.neuroscience@utoronto.ca

Trainee Record Updates The CPIN Office is currently updating its records & requests that all CPIN students & postdoctoral fellows provide information pertaining to awards, publications & other achievements on the online form at the link below: http://www.neuroscience.utoronto.ca/students/Trainee_Awards_and_Publications_Form.htm

Faculty Profile Update The CPIN Office is looking to update the CPIN faculty member profiles on the website: <http://www.neuroscience.utoronto.ca/faculty/list.htm> If you wish to add or update your profile on the CPIN website, please contact the CPIN Office at p.neuroscience@utoronto.ca.

Neuroscience Opportunities The CPIN website now includes postings for available positions in the Toronto neuroscience community (http://www.neuroscience.utoronto.ca/communications/Positions_Available.htm). Please contact the CPIN Office at p.neuroscience@utoronto.ca to list your available positions.

<http://www.neuroscience.utoronto.ca/communications/newsletter.htm>