

Collaborative Program in Neuroscience (CPIN)

University of Toronto

Newsletter – Vol. 31, No. 7 – March 2015

Featured In This Issue

Announcement The **2015 Collaborative Program In Neuroscience (CPIN) Research Day** will be held on **June 19, 2015 at the Medical Sciences Building at the University of Toronto**. This year, the event will be organized by the CPIN Graduate Student Executives and Postdoctoral Fellows. Further event details will be forthcoming on the CPIN website: http://www.neuroscience.utoronto.ca/events/CPIN_Research_Day.htm

News – CPIN Faculty Members Congratulations to CPIN Faculty members **Dr. Fang Liu** (Departments of Psychiatry, Physiology and Institute of Medical Science), **Dr. Andres Lozano** (Department of Surgery) and **Dr. John Peever** (Departments of Cell & Systems Biology and Physiology) on **their recent publications**. Please see page 2 and 3 for more details.

News – CPIN Students Congratulations to CPIN student member **Brittany Matthews** (Department of Pharmacology and Toxicology) on recently completing the CPIN requirements and graduating from the program. Please see page 3 for more details.

2014-15 CPIN Distinguished Lectureship Series

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



Speaker | **Dr. Denis Burdakov**, Chair in Systems Neuroscience, Kings College London, Division of Neurophysiology, MRC National Institute for Medical Research and MRC Centre for Developmental Neurobiology, King's College London, UK

Title | *Neural circuits, instincts, appetite, sleep*

Date | **Thursday, March 12, 2015**

Time | 4:00 pm

Location | 1105 Blue Room, Sandford Fleming Building, 10 King's College Road, University of Toronto

Hosts | (i) Dr. John Peever, Professor, Departments of Cell & Systems

Biology and Physiology, Director, Centre for Brain Sciences, Vice-President, Canadian Sleep Society; (ii) Dr. Richard Horner, Professor, Departments of Medicine and Physiology, Canada Research Chair in Sleep and Respiratory Neurobiology, Director, Sleep and Biological Rhythms Toronto

Sponsors | Department of Physiology Cardiovascular and Respiratory Platform



Speaker | **Dr. Alcino Silva**, Professor, Neurobiology, Psychiatry & Biobehavioral Sciences, and Psychology, David Geffen School of Medicine at UCLA, Director of the Integrated Center for Learning and Memory Brain Research Institute, UCLA, Founding President of the Molecular and Cellular Cognition Society

Title | *Molecular, cellular and circuit mechanisms that link memories across time*

Date | **Tuesday, April 21, 2015**

Time | 2:00 pm

Location | Peter Gilgan Centre for Research and Learning, Second-floor

686 Bay Street (at Elm)

Co-Hosts | (i) Dr. Jason Lerch, Associate Professor, Department of Medical Biophysics, University of Toronto; (ii) Dr. Sheena Josselyn, Associate Professor, Department of Psychology, University of Toronto; (iii) Dr. Paul Frankland, Associate Professor, Department of Psychology, University of Toronto

Co-Sponsors | Dr. Jason Lerch, Scientist, Mouse Imaging Centre, Hospital for Sick Children, Associate Professor, Department of Medical Biophysics, University of Toronto

Note: CPIN Trainees should fill the online lecture report form following the lecture

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

CPIN Newsletter

Zhong-Ping Feng
Director
CPIN
Graduate Studies

Suhail Asrar
Administrator
CPIN Office

CPIN Graduate Executives

CPIN Office

p.neuroscience@utoronto.ca

Tel.: 416 978 8637

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

News - CPIN Faculty Members

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



Congratulations to CPIN Faculty member **Dr. Fang Liu** (Professor, Departments of Psychiatry, Physiology and Institute of Medical Science) on the recent novel drug target discovery in her laboratory that was published in the journal *Neuron*.

Citation: *Su P, Li S, Chen S, Lipina TV, Wang M, Lai TK, Lee FH, Zhang H, Zhai D, Ferguson SS, Nobrega JN, Wong AH, Roder JC, Fletcher PJ, Liu F. A dopamine D2 receptor-DISC1 protein complex may contribute to antipsychotic-like effects. Neuron. 2014 Dec 17;84(6):1302-16. doi: 10.1016/j.neuron.2014.11.007. Epub 2014 Nov 26.*

Dr. Fang Liu is a senior scientist at the Centre for Addiction and Mental Health (CAMH) and a Professor in the Departments of Psychiatry, Physiology and Institute of Medical Science at the University of Toronto.

Dr. Liu received her medical degree from Shanghai Medical University in China. She practiced as a pediatrician for 5 years in China before pursuing a basic research career in Canada. She obtained her Master's and PhD degrees, both from the Institute of Medical Science, University of Toronto.

Research focus in Dr. Liu's lab includes 1) Identification of novel protein-protein interaction and its down-stream signaling pathway; 2) Functional characterization of protein-protein interactions under physiological and pathological conditions; 3) Discovery of etiologically important protein complex as a therapeutic target to develop peptides/small organic molecule drugs for the treatment of neuropsychiatric diseases.

The most significant research accomplishments in Dr. Liu's lab are highlighted as follows: 1) Providing the first direct evidence that two structurally and functionally divergent families of neurotransmitter receptors can exert functional cross-talk through direct protein-protein interactions (Liu et al., 2000 *Nature*; Lee et al., 2002 *Cell*); 2) Providing direct evidence that abnormal protein-protein interactions are likely involved in the path-physiology of human diseases such as schizophrenia and addiction (Lee et al., 2007 *EMBO J.*; Li et al., 2012 *J. of Experimental Medicine*); 3) Development of peptides that can disrupt abnormal protein-protein interactions and exert therapeutic effect in animal models of depression and schizophrenia (Pei et al., 2010 *Nature Medicine*; Su et al., 2014 *Neuron*).



Congratulations to CPIN Faculty member **Dr. Andres Lozano** (Professor, Department of Surgery) on the recent publication from his laboratory in the journal *Brain Stimulation* on the effects of deep brain stimulation in Alzheimer's patients.

Citation: *Sankar T, Chakravarty MM, Bescos A, Lara M, Obuchi T, Laxton A, McAndrews MP, Tang-Wai DF, Workman CI, Smith GS, Lozano AM. Deep Brain Stimulation Influences Brain Structure in Alzheimer's Disease. Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation. DOI: <http://dx.doi.org/10.1016/j.brs.2014.11.020>.*

Dr. Andres Lozano holds the rank of University Professor and serves as Chairman of the Division of Neurosurgery at the University of Toronto. He also holds both the R.R. Tasker Chair in Functional Neurosurgery at University Health Network and a Tier 1 Canada Research Chair in Neuroscience.

Dr. Lozano's research focuses in the area of Functional Neurosurgery and the development of novel therapies for movement disorders and psychiatric disease. He is best known for his work in Deep Brain Stimulation (DBS). His team has mapped out cortical and subcortical structures in the human brain and have pioneered applications of DBS for various disorders including Parkinson's disease, depression, dystonia, anorexia, Huntington's and Alzheimer's disease.

Dr. Lozano has been identified by Thomson Reuters Essential Science Indicators as the most highly cited neurosurgeon in the world for the 11 year period from 2002 to 2012 and the only neurosurgeon to be named to the highly cited authors list <http://highlycited.com/>. He has over 450 publications in neuroscience, serves on the board of several international organizations, including the scientific advisory boards of the Michael J Fox Foundation (founding member), Weston Brain Institute (Chair) and Neuroscience Canada.

Dr. Lozano has received a number of awards including the Margolese National Brain Award, Olivecrona medal and the Pioneer in Medicine Award, has been elected a Fellow of the Royal Society of Canada and the Canadian Academy of Health Sciences and has received the Order of Spain.

Collaborative Program in Neuroscience (CPIN)

University of Toronto

Newsletter – Vol. 31, No. 7 – March 2015

News - CPIN Faculty Members (contd.)

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



Congratulations to CPIN Faculty member **Dr. John Peever** (Professor, Departments of Cell & Systems Biology and Physiology) for his recent publication with the National Sleep Foundation that recommends sleep time durations during the human lifespan.

Citation: *Hirshkowitz M, Whiton K, Albert SM, Alessi C, Bruni O, DonCarlos L, Hazen N, Herman J, Katz ES, Kheirandish-Gozal L, Neubauer DN, O'Donnell AE, Ohayon, M, Peever J, Rawding R, Sachdeva RC, Setters B, Vitiello MV, Ware JC, PJA Hillard. National Sleep Foundation's sleep time duration recommendations: methodology and results summary. Sleep Health: Journal of the National Sleep Foundation, Volume 1, Issue 1, 40 – 43.*

Dr. John Peever is a Professor in the Departments of Cell & Systems Biology and Physiology at the University of Toronto. He is the Director for the Centre in Biological Timing and Cognition, and is the Vice-President of the Canadian Sleep Society. He is also actively involved in the National Sleep Foundation, which advocates for healthy sleep practices in North America.

Dr. Peever's research is broadly focused on understanding how and why we sleep. His research team is currently working on three general themes in sleep biology and medicine. They are identifying the neural circuits that promote normal sleep and arousal; dissecting the neural mechanisms underlying sleepiness and cataplexy in narcolepsy; and, identifying neurodegenerative processes underlying REM sleep behaviour disorder.

Recent reviews of Dr. Peever's work are published in Nature Reviews Neurology, Trends in Neuroscience, Current Biology, Journal of Neuroscience and Sleep Health. Research in the Peever Laboratory is supported by CIHR and NSERC.

News - CPIN Students

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



Congratulations to CPIN student member **Brittany Matthews (Department of Pharmacology and Toxicology, Supervisor Dr. Jeffrey Meyer)** on recently completing the CPIN requirements and graduating from the program.

Brittany Matthews received her PhD from the department of Pharmacology and Toxicology at the University of Toronto. She conducted her research at the Centre for Addiction and Mental Health, where she focussed on identifying pathological markers in psychiatric disorders using human brain imaging and animal models. Her findings have opened up new doors for treatment strategies in alcohol dependence, and were published in a top psychiatry journal in 2014.

During her graduate studies, Brittany earned over \$85,000 in awards, including a Canada Graduate Scholarship, an Ontario Graduate Scholarship, and a 3-year Studentship from the Ontario Mental Health Foundation. Brittany has authored 5 peer reviewed publications and 15 abstracts presented at several national and international scientific conferences, where she won best presentation at the University of Toronto's Harvey Stancer Research Day in Psychiatry (2011).

Outside of the lab, Brittany spent her time leading a number of student organizations, as former President of the Pharmacology Graduate Student Association, and co-chair of the Life Sciences Career Development Society. Brittany also volunteered for SciHigh, an outreach program where she participated in school visits to promote science to students through hands-on experiments. Brittany has a strong passion for translation from bench to bedside, and her future career goals include communicating scientific knowledge to medical professionals and the general public, and enhancing the field of clinical research in Canada and beyond.

Select Publications:

Matthews BA, Kish SJ, Xu X, Boileau I, Rusjan PM, Wilson AA, DiGiacomo D, Houle S, Meyer JH. Greater Monoamine Oxidase A Binding in Alcohol Dependence. *Biol Psychiatry* 2014; 75(10):756-64.

Manwell LA, Charchoglyan A, Brewer D, Matthews BA, Heipel H, Mallet PE. A vapourized Δ^9 -tetrahydrocannabinol (Δ^9 -THC) delivery system part I: Development and validation of a pulmonary cannabinoid route of exposure for experimental pharmacology studies in rodents. *J Pharmacol Toxicol Methods* 2014; 70(1):120-7.

Manwell LA, Ford B, Matthews BA, Heipel H, Mallet PE. A vapourized Δ^9 -tetrahydrocannabinol (Δ^9 -THC) delivery system part II: Comparison of behavioural effects of pulmonary versus parenteral cannabinoid exposure in rodents. *J Pharmacol Toxicol Methods* 2014; 70(1):112-9.

Gmaz JM, Matthews BA, McKay BE. Toluene inhalation modulates dentate gyrus granule cell output in vivo. *Neurotoxicol Teratol* 2012; 34(4):403-12.

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

Collaborative Program in Neuroscience (CPIN) University of Toronto

Newsletter – Vol. 31, No. 7 – March 2015

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

SickKids Centre for Brain & Mental Health's Annual Brain and Mental Health Day Conference on “Generation-Regeneration-Degeneration”

Event Date: **April 23, 2015**

PGCRL Auditorium, with overflow room (686 Bay Street), Toronto, Canada

The SickKids Centre for Brain & Mental Health hosts an exciting annual spring neuroscience research and education symposium called Brain & Mental Health Day. To find out more about this event, please visit the conference website:

<http://www.cvent.com/events/annual-sickkids-centre-for-brain-mental-health-day/event-summary-520162e584614832819d80508cc3c5c1.aspx>

UHN's 3rd International Conference on Knowledge Gaps in Parkinson's Disease & other Movement Disorders

Event Dates: **May 7-10, 2015**

Sheraton Centre Toronto Hotel, 123 Queen Street West, Toronto, Ontario, Canada

This conference will focus on aspects of Parkinson's disease (PD) and other movement disorders which are still insufficiently understood or have been recently challenged on genetic, pathogenetic, clinical and/or therapeutic grounds. To find out more about this event, please visit the conference website: www.gapsinmds.com

45th Meeting of the Jean Piaget Society: Neuroplasticity and Change

Event Dates: **June 4-6, 2015**

Toronto, Canada

In the past two decades a wealth of evidence has accumulated which supports a neural constructivist approach to characterizing human development. This characterization, in which learning and individual experiences play a central role in constructing mental representations and their corresponding neural changes, is of course one of the central themes of Piaget's theory. This meeting will bring together researchers who examine neural plasticity in a variety of ways, across varied domains of development. It will provide an overview of the state-of-the-science in examining how experiences and biology interact to shape brain development and it will provide an important platform for discussing the implications of this neuroscience-based research for the broader understanding of child development.

Symposium Website: <http://www.piaget.org/Symposium/2015/index.html>

IUPESM World Congress (WC) on Medical Physics (MP) and Biomedical Engineering (BME)

Event Dates: **June 7-12, 2015**

Toronto, Canada

The IUPESM World Congress (WC) on Medical Physics (MP) and Biomedical Engineering (BME) comes but once every three years. WC2015 will be in Toronto from June 7-12. This WC will be the largest gathering of MPs and BMEs from 86 countries. This is truly a unique opportunity to discuss important Global issues, e.g., Global Health, Food and Water Safety, Environmental toxins, Personalized Medicine, Brain-Machine interfaces, Education and Outreach, etc. When together, we will be able to discuss the Global Challenges we face now and those our children will face. We are working with WHO to address many of these issues. We invite abstracts and papers that will address this issue. Congress Website: www.wc2015.org

Reminders

Submissions for News Updates The CPIN Office welcomes 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

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