Collaborative Program in Neuroscience (CPIN)
University of Toronto
Newsletter – Vol. 37, No. 3 – November 2020

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2020-21 CPIN Distinguished Lectureship Series

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

CPIN Emerging Leaders in Neuroscience/ Physiology Seminar Series
Speaker | **Gyorgy Lur**, PhD, Assistant Professor, Department of Neurobiology & Behavior, University of California, Irvine
Title | *Differential impact of stress on the parietal top-down and bottom up circuitry*
Date | **Thursday, December 3, 2020, 4:00 PM**

Link | https://zoom.us/j/94624014894?pwd=Wit0dTdYTVhaYTdHRFhqL2xIdm42UT09
Host | Dr. Evelyn Lambe, Associate Professor, Departments of Physiology, Obstetrics and Gynecology, and Psychiatry, University of Toronto
Co-Sponsor | Department of Physiology

CPIN Distinguished Lecture/Physiology Seminar Series
Speaker | **Sean Hill**, PhD, Director, Krembil Centre for Neuroinformatics; Senior Scientist, CAMH; Professor, University of Toronto; Infrastructure Co-lead, T-CAIREM, University of Toronto; Titular Professor, École polytechnique fédérale de Lausanne, Switzerland
Title | *A multiscale approach to brain disorders*
Date | **Thursday, December 10, 2020, 4:00 PM**

Link | https://zoom.us/j/93610649139?pwd=QjZpRWkxVjRFcnN5eldaekhqNVdyZz09
Host | Dr. Scott Heximer, Ernest B. and Leonard B. Smith Chair, Department of Physiology Temerty Faculty of Medicine, University of Toronto
Co-Sponsor | Department of Physiology

CPIN Newsletter

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

Contributors:
Heart & Stroke/Richard Lewar Centre of Excellence in Cardiovascular Research

Human Biology Program

Krembil Research Institute

St. Michael's Neuroscience Research Program

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In Memoriam: Dr. Betty Ida Roots, Pioneer in Neuroscience

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

The CPIN Community marks the passing of Dr. Betty Ida Roots. Dr. Roots was an accomplished professor and scientist, and notably, a pioneer in the initiative of collaborative graduate education in neuroscience at the University of Toronto. To read more about Dr. Roots' academic contribution, please see the U of T archives and news:
https://discoverarchives.library.utoronto.ca/index.php/roots-betty-i
https://csb.utoronto.ca/in-memoriam-professor-betty-ida-roots/

Dr. Roots' research interests included acclimation, evolution, glia, myelin, and neuron-glia relations. She supervised many doctoral students in neuroscience in her laboratory, including Dr. Roberta Bondar, who would later become the first neurologist in space.

Dr. Roots passed away at the age of 93 on October 24th, 2020. Dr. Betty Roots' obituary may be found at:
https://humphreymiles.com/tribute/details/6093/Dr-Betty-Roots/obituary.html#content-start

CPIN Orientation

http://www.neuroscience.utoronto.ca/events/orientation.htm

We invite all new CPIN students and faculty members to join us for a virtual **CPIN Orientation** on **Wednesday, December 9, 2020 from 10-11:30am**. We will update you with program and connection information. Please RSVP to p.neuroscience@utoronto.ca.

Winter 2020 Virtual CPIN Research Day

http://www.neuroscience.utoronto.ca/events/CPIN_Research_Day.htm

We are very pleased to invite you to our **Winter 2020 Virtual CPIN Research Day** on **Friday, December 18, 2020**. Research Day will feature opportunities for CPIN Trainees to present their work. The online registration is now open at
http://www.neuroscience.utoronto.ca/events/CPIN_Research_Day.htm
The deadline for abstract submission is **Friday, December 11, 2020**.

We will update you with the program details and the information will also be made available on our website. We are extremely excited to have you all join us on December 18th!

CPIN Undergraduate Mentorship Program

http://www.neuroscience.utoronto.ca/events/undergraduate_mentorship.htm

The CPIN Mentorship Program is underway for the 2020/2021 Year. This program pairs undergraduate students (mentees) at U of T interested in Graduate School with Graduate neuroscience mentors, who provide them with support in aspects of the Graduate School application process. This includes information on funding opportunities, scholarship applications, contacting and meeting potential supervisors, as well as research and life as a Graduate student. The program will run from November 2020 – April 2021, and includes workshops hosted by the CPIN program on areas such as CV preparation, scholarship applications, and neuroscience research. All undergraduates are welcome to apply.

The response so far has been extremely positive, with over 100 mentees registered. Are you a Graduate student or postdoc interested in becoming a mentor? Please contact cpin.mentorship@gmail.com or p.neuroscience@utoronto.ca. Stay tuned for future updates and events!

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Congratulations CPIN Graduating Students

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

Congratulations to CPIN student member **Vanessa Breton** (Physiology, Dr. Peter Carlen) on recently completing the CPIN requirements and graduating from her PhD program.

Vanessa's doctoral work integrated the fields of physiology and biomedical engineering to provide a unique insight into epilepsy research. Her research focused on using electrophysiology and statistical modelling to investigate the cellular mechanisms of seizure state transitions, which resulted in two first author papers, two co-author papers, and one currently in review. Her work has been presented in various national and international conferences, receiving CPIN Excellence in Poster Presentation and Krembil Research Day poster presentation awards. Nominated as a top graduate student in the Department of Physiology, she had the honor of attending a CIHR student research forum.

Outside her studies, Vanessa was a teaching assistant, mentored other students in the lab, and organized a departmental running club. In the future, she hopes to continue to contribute her research and critical thinking skills to improve the lives of people with neurological diseases.

Recent Publications:
"Phase Coherent Currents Underlying Neocortical Seizure-Like State Transitions"
https://www.eneuro.org/content/6/2/ENEURO.0426-18.2019

"Transitions between neocortical seizure and non-seizure-like states and their association with presynaptic glutamate release" https://www.sciencedirect.com/science/article/pii/S0969996120303995?via%3Dihub

Victoria Dawson
Program: MSc
Department: Cell and System Biology
Supervisors: Dr. Kaori Takehara-Nishiuchi, Dr. Junchul Kim

Thesis Title: Investigating the Sufficiency of Chronic Hippocampal Hyperactivity for the Development of Alzheimer's Disease Pathology

Welcome New CPIN Students

http://www.neuroscience.utoronto.ca/students/currentstudents.htm

CPIN extends a warm welcome to the following new Trainees:

Last Name	First Name	Home Unit	Degree	Supervisor
Huang	Sicong	CS	PhD	Dr. Frank Rudzicz
Kong	Tian	PSL	PhD	Dr. Lu-Yang Wang
Rybnicek	Jonas	PSL	PhD	Dr. Evelyn Lambe
Williams	Erin	PCL	PhD	Dr. Ali Salahpour

Post Doctoral Member

Last Name	First Name	Home Unit	Supervisor
Chaves	Hellíada	PCL	Dr. Barry Sessle

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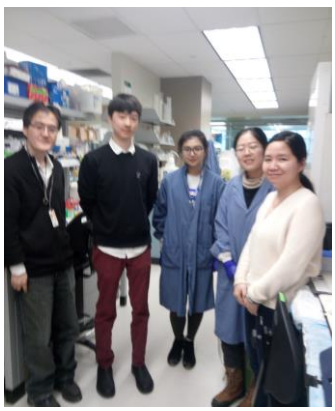
News – CPIN Faculty Members

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

Congratulations to CPIN Faculty member **Dr. Taufik Valiante** (Staff Neurosurgeon, Toronto Western Hospital; Director, Center for Advancing Neurotechnological Innovation to Application (CRANIA); Scientist, Krembil Research Institute (Krembil); Surgical Director, Epilepsy Program, Toronto Western Hospital; Associate Professor, Division of Neurosurgery, Department of Surgery; Associate Professor, Institute of Medical Sciences; Faculty, Institute of Biomaterials and Biomedical Engineering, University of Toronto) on his ground-breaking work towards preventing epileptic seizures.

Dr. Valiante's lab at the Krembil Research Institute is working on a chip which, implanted in the brain, could monitor brain activity, sense a coming seizure and prevent it from happening. The chip is called 'NURIP' – the acronym for neural interface processor is inspired from the engineering concept of control theory applied to the brain. Dr. Valiante explains that NURIP "is this idea that we can modulate, alter brain activity in a way to push the brain away from states that are bad for it, and epilepsy is just an example." NURIP is entering the animal model testing phase and if successful would be a game changer in the treatment of epilepsy.

Source:
https://www.uhn.ca/corporate/News/UHN_PodCast/Behind_the_Breakthrough/Pages/S2_Episode3_Taufik_Valiante.aspx?utm_source=UHN&utm_medium=PodcastBehindBreakthrough&utm_campaign=UHNPodcast_S2_Episode3



Congratulations to **Dr. Shuzo Sugita** (Senior Scientist, Krembil Research Institute (Krembil); Professor, Department of Physiology, University of Toronto) and his lab whose study "Open syntaxin overcomes exocytosis defects of diverse mutants in C. elegans" was recently published in Nature Communications.

With its work, Sugita lab lays groundwork for therapies for childhood neurological disorders. For healthy brain function, brain cells must communicate between each other using neurotransmitters. Children with genetic mutations in certain proteins in their brain cell synaptic terminals -- such as syntaxin and Munc13 -- can develop a range of neurological disorders, including epilepsy, due to the dysfunction of neurotransmitter release.

Using the small worm, C. elegans, as a model, the Sugita group studied how structurally opening the syntaxin protein influences neurotransmitter release. The study shows that facilitating the opening of syntaxin rescues neurotransmitter release defects caused not only by Munc13 mutations but also by diverse mutations of other synaptic proteins.

The results provide a novel insight to the interaction between syntaxin and Munc13, and suggest that chemicals that help the opening of syntaxin will provide a general means to enhance synaptic transmission in normal and disease states. Thus, the work will lay the groundwork for developing novel therapies for some devastating childhood neurological disorders.

The publication can be found here: https://www.nature.com/articles/s41467-020-19178-x

Dr. Sugita primary research interest is to understand the molecular mechanisms of exocytosis from neuronal and immune cells with particular emphasis on the roles of Munc18, Munc13, CAPS1 and V-ATPase. Dr. Sugita uses PC12 cells and RBL-2H3 cells as cellular models for neuroendocrine cells and mast cells, respectively. Dr. Sugita also uses C. elegans as an in vivo model. Dr. Sugita is also generating conditional knockout mice for these proteins to analyze their functions in vitro and in vivo. Dr. Sugita also aims to elucidate the role of Munc18-1 in neuroprotection by revealing why Munc18-1 knockout in neurons causes severe neurodegeneration.

Source: https://www.physiology.utoronto.ca/news/sugita-lab-lays-groundwork-therapies-childhood-neurological-disorders