manitoba neuroscience network

The shifting roles of a population of spinal neurons in health and injury.

SEMINAR & VISITING SPEAKER SERIES

DATE Thursday, December 12th, 2024

TIME 12:00 PM to 1:00 PM

LOCATION BMSB THEATRE C

SPEAKER

Tuan Bui, PhD

Professor, Chair, Department of Biology,
University of Ottawa

BIO

Tuan Bui received a PhD in Physiology from Queen's University under the supervision of Dr. Ken Rose. He then completed a postdoctoral fellowship with Rob Brownstone at Dalhousie University. In 2013, he started as an Assistant Professor in the Department of Biology at the University of Ottawa. He received an Ontario Early Researcher Award in 2017. He has been Vice-Dean of Graduate Studies in the Faculty of Sciences and is now Chair of the Department of Biology. His main interests is the discovery of how spinal circuits in vertebrates control specific movements using a host of different animal models including cats, zebrafish, and mice (and computer simulations). His research is funded by NSERC, CIHR and NIH.

ABSTRACT

Spinal circuits are involved in most movements that we make yet their contributions to most movements remain unidentified. We have investigated the role of a population of spinal neurons named dI3 neurons in the control of hand grasp and locomotion. Using an array of electrophysiology, optogenetics, immunohistochemistry, circuit mapping, and behavioural tests, we have revealed how dI3 neurons form sensorimotor circuits. These circuits are involved in several forms of movements whose involvement range from accessory to critical. Furthermore, studies in a complete transection model of spinal cord injury have revealed dI3 neurons to play a central role in the recovery of locomotor movements. We discuss whether these neurons could be targeted to improve the recovery of motor function following spinal cord injury.

OBJECTIVES

- Determine how intrinsic properties of neurons shape motor control
- Determine how specific spinal circuits control movements
- Investigate whether targeting specific populations of spinal neurons could improve recovery from spinal cord injury

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