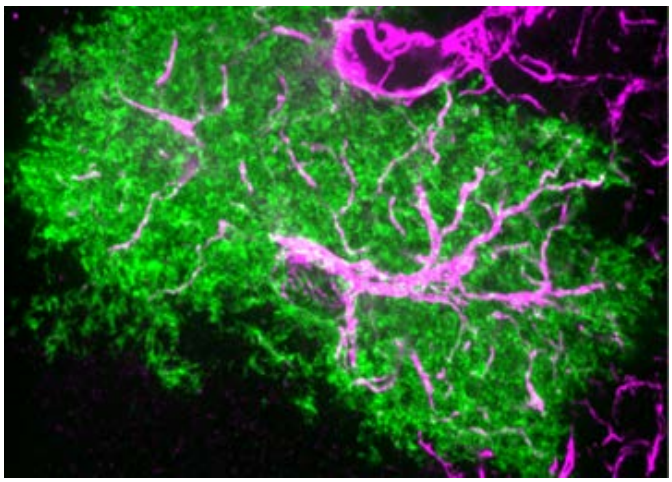
GUEST SPEAKER SEMINAR

Molecular Genetics
UNIVERSITY OF TORONTO

# Neuron-astrocyte communication in brain homeostasis



Astrocytes are important partners for neurons in the healthy brain and have active roles in the physiology and homeostasis of neural circuits. Astrocytes perform diverse functions through their rich structural and molecular properties. However, the mechanisms that generate differences among astrocytes that enable them to fulfill unique roles in the brain remain poorly understood. In this presentation, results will be presented showing that astrocytes have remarkable molecular plasticity in the mature, healthy brain. Moreover, mature neurons signal to neighbouring astrocytes in various brain regions to direct their molecular and physiological features. This neuron to astrocyte communication is both necessary and sufficient for astrocyte molecular diversification including the expression of key molecules including glutamate transporters and receptors, potassium channels, and water channels. Thus, neurons in the mature brain actively control astrocytes to ensure that astrocytes acquire and maintain their specialized properties that are tuned to their associated brain circuits. This neuron-astrocyte communication may become disrupted in the injured or diseased brain.

## Dr. Keith Murai

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Host: Dr. Kenichi Okamoto

**Date:** Wednesday, October 11th, 2017
**Time:** 3PM
**Place:** Medical Sciences Building, Room 2172