

City University of Hong Kong  
Department of Biomedical Sciences  
presents a seminar



## “METABOLIC ENERGY IN THE CENTRAL AND PERIPHERAL NERVOUS SYSTEMS: A TALE OF TWO NERVES.”

*by*

**Dr Brett MORRISON**  
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Department of Neurology,  
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**Date : 25 May 2016**

**Time: 10.30am to 12.00noon**

**Venue: LT-11, 4/F (near Lift 7), Academic 1 Building, CityU**

### **Abstract**

Glucose is the major metabolic fuel in both the central and peripheral nervous systems. Despite this, alternative forms of metabolic energy, specifically monocarboxylates such as lactate, have recently been shown to be important for support of central axons during health and disease, and peripheral axons during nerve regeneration. In the brain and spinal cord, attenuation of monocarboxylate transporter 1 (MCT1) produces axon degeneration and motor neuron degeneration. MCT1 is also reduced in oligodendrocytes and endothelial cells in the degenerative disease of motor neurons, amyotrophic lateral sclerosis (ALS), suggesting that this metabolic deficit may contribute to degeneration. In peripheral nerves, MCT1 is important in nerve regeneration following injury, with slower and less efficient axon regeneration in transgenic mice expressing 50% of MCT1. Using newly produced conditional flox MCT1 mice mated with cell-specific Cre driver mouse lines, we are currently determining the specific contribution of Schwann cells, dorsal root ganglion (DRG) neuron, and perineurial cells, which are the three cells in the peripheral nerve that express MCT1, to the support of peripheral nerves and the mechanism of axon regeneration. Dr. Morrison and colleagues continue to unravel the exact mechanisms for this metabolic support in both the central and peripheral nervous systems with the ultimate goal of developing new treatments for degenerative diseases such as ALS and peripheral nerve diseases such as trauma or peripheral neuropathies.

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**All are welcome**