



APP Seminar Series

Department of Anatomy,
Physiology, and Pharmacology



UNIVERSITY OF
SASKATCHEWAN

11:30 am on Thursday, 25 November 2021

Via Zoom:

<https://usask-ca.zoom.us/j/97920982039?pwd=M0kwbmZhSGRFQitWRINjc2ovcWdYQT09>

*Arc as a master regulator synaptic plasticity:
toward a molecular understanding of how the brain works*

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Synaptic plasticity is essential for the adaptive capacity of the brain, from development to memory and cognitive flexibility. Research in my lab focuses on the molecular control and cell biological organization of long-term synaptic plasticity in the mammalian brain. The study of synaptic plasticity is crucial to explaining how subcellular control systems impact neural circuit properties, brain function and dysfunction.

Our current efforts focus on Arc – a neuronal activity-dependent dependent gene and pivotal regulator of synaptic plasticity. But what is Arc protein? How does it work? Recent work has provided surprising insights into the structural and biochemical properties of the Arc protein. Inside the neuron, Arc is a protein interaction hub and dynamic regulator of synaptic plasticity. In radical contrast, Arc protein can also self-assemble into retrovirus-like capsids that are released in extracellular vesicles and capable of intercellular transfer of RNA. Resolving this dichotomy is of major importance for understanding how neuronal activity shapes connectivity in neural networks.