



Roles of the subfornical organ in homeostatic regulation

NEUROSCIENCE GRAND ROUNDS

SPEAKER

Mark Fry, PhD

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University of Manitoba

DATE

Friday, May 17th, 2024

9:00 AM - 10:00 AM

LOCATION

Psychiatry Bldg. 2nd Floor Rm PX236/238

BIO

Dr. Mark Fry's academic career focused on the regulation of ion channels and electrical excitability of neurons.

- 2001 Phd at Memorial University of Newfoundland (Development of neuromuscular junction).
- 2001-2004 Postdoctoral Fellowship at Dartmouth Medical School in New Hampshire (Developmental acquisition of ion channels in Purkinje Neurons).
- 2004-2007 Postdoctoral Fellowship at Queen's University in Kingston, ON (Regulation of electrical excitability of Area Postrema neurons).
- 2007-2016 Assistant Professor at University of Manitoba, Department of Biological Sciences.
- 2016-present Associate Professor at University of Manitoba, Department of Biological Sciences.

Zoom Link: <https://us06web.zoom.us/j/83267302150>

Meeting ID: 832 6730 2150

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ABSTRACT

In the vertebrate brain, the blood-brain barrier (BBB) isolates most neurons from circulating molecules within the blood. However several areas, called sensory circumventricular organs (CVOs), lack a BBB and the CVO neurons within are exposed to hormones and signaling molecules from the circulation. These signaling molecules activate receptors within the sensory CVOs and ultimately cause changes in neuronal action potential frequency. This information is communicated by axons to homeostatic control centres such as hypothalamus. The subfornical organ (SFO), a forebrain sensory CVO, is of particular interest as it detects numerous circulating hormones and regulates thirst, blood pressure and water balance, food intake, sympathetic output and more. Understanding SFO physiology will ultimately contribute to developing treatments for hypertension, obesity and other conditions. Dr Mark Fry's research program is focused on (1) understanding how important circulating signals influence electrical activity of SFO neurons by activation of second messenger signaling pathways and downstream regulation of ion channel activity and (2) how homeostatic challenges regulate gene expression in SFO to influence its sensory abilities.

OBJECTIVES

1. Discuss roles of sensory circumventricular organs in regulation of homeostasis.
2. Discuss examples of clinical importance.
3. Discuss ongoing research investigating roles in regulation energy balance, and potential role in COVID-related autonomic dysregulation.

Dr. Mark Fry website: Obesityresearch.ca