

Unleashing Neurogenic Potential from Vascular Niche following Ischemic Injury-Bench to Bedside to Bench

Prof. Jing Wang

Associate Professor
Cellular and Molecular Medicine, Medicine
University of Ottawa, Canada



Date: 11 June 2025

Time: 4:00 pm - 6:00 pm

Venue: YEUNG-G5214, 5/F

Yeung Kin Man Academic Building

Abstract

Brian pericytes can acquire multipotency to produce multi-lineage cells following injury. However, pericytes are a heterogenous population and it remains unknown whether there are different potencies from different subsets of pericytes in response to injury. We used an ischemic stroke model to show that two distinct pericyte subpopulations, marked by NG2+ and Tbx18+, had different potency following brain injury. NG2+ pericytes expressed dominant neural reprogramming potential to produce newborn neurons, while Tbx18+ pericytes displayed dominant multipotency to produce endothelial cells, fibroblasts, and microglia following ischemic stroke. In addition, we developed a genomic integration-free methodology to reprogram human pericytes into functional neurons by targeting an epigenetic pathway. Current ongoing research project is to develop a clinically applicable biomaterial-guided local drug delivery system to not only enhance neural reprogramming of ischemia-activated pericytes into i-neurons at the site of injury, but also reduce post-stroke hostile microenvironment for maximizing post-stroke local neurogenesis from brain pericytes.

Biography

Dr. Jing Wang is a neuroscientist specializing in neural regeneration and neurovascular biology. She is a Senior Scientist at the Ottawa Hospital Research Institute and Associate Professor at the University of Ottawa's Department of Cellular and Molecular Medicine. Dr. Wang earned her M.D. from Xi'an Medical University, followed by an M.Sc. from McGill University and a Ph.D. in Biochemistry from University of Ottawa. She completed postdoctoral training in Developmental Biology at The Hospital for Sick Children. Her research focuses on adult neural stem cell regulation, neural reprogramming after ischemic injury, and environmental impacts on brain development. She has received multiple competitive grants from national agencies such as CIHR, NSERC, and the Heart and Stroke Foundation. Dr. Wang has published extensively in high-impact journals and actively mentors graduate students and postdoctoral fellows.