

Dr. F.C. MacIntosh Lectureship Seminar

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GUEST SPEAKER

Dr. Anastassia Voronova

Associate Professor and CRC in Neural Stem Cell Biology at the University of Alberta



FRIDAY, NOVEMBER 10, 2023
11:00AM

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"How to make oligodendrocytes from neural stem cells"

In 1928, Santiago Ramón y Cajal, founder of modern neuroscience, wrote “in the adult centers, the nerve paths are something fixed and immutable. Everything may die, nothing may be regenerated”. Today, we know that regeneration of neurons and glia (non-neuronal cells) is performed by adult neural stem cells that are located in two distinct niches in the mammalian brain: the subgranular zone in the hippocampus and the subventricular zone (SVZ) lining the lateral ventricles. The latter represents the largest pool of adult neural stem cells and is the focus of my independent research program. Specifically, we study how the neural stem cell niche, which includes molecules secreted by neighbouring neurons (“neurochemicals”), regulates oligodendrocyte genesis by neural stem cells. Oligodendrocytes are the only cells in the brain that form myelin, a fatty substance that insulates nerve axons and facilitates neuronal conduction. Dysfunction or loss of oligodendrocytes is the main driver of neurological impairments in schizophrenia and autism, as well as multiple sclerosis and Alzheimer’s disease. Oligodendrocyte regeneration is critical for brain health and function, yet the mechanisms underpinning adult oligodendrocyte genesis have remained mysterious. I will present our published and ongoing studies on the mechanisms of oligodendrocyte genesis from neural stem cells