



SARAH LÉPINE, Class of 2026

Education: BSc (Molecular and Cellular Biology), Université de Sherbrooke

Supervisor(s): Thomas Durcan

Dpt: Neurology and Neurosurgery

Work location: Early Drug Discovery Unit, The Neuro (Montreal Neurological Institute-Hospital)

Project: Studying the effects of ALS-associated mutations in *TARDBP* using human motor neurons derived from induced pluripotent stem cells

Selected Award(s): Graduate Excellence Award, Dean's Honour list

Research Description:

I am studying amyotrophic lateral sclerosis (ALS), an incurable neurodegenerative disorder characterized by motor neuron loss resulting in progressive weakness, disability, and death. Our limitation in treating this disease reflects our incomplete understanding of the molecular mechanisms underlying neurodegeneration. The aim of my PhD project is to gain further insights into the cellular processes that are perturbed in human motor neurons with ALS-associated mutations using the advanced technologies of induced pluripotent stem cells (iPSCs), CRISPR/Cas9 genome editing and next-generation RNA sequencing.

Why did you decide to pursue both MDCM and PhD degrees? What are your career aspirations?

When I began my research training, I was sometimes frustrated by the disconnect between promising scientific breakthroughs and the development of medical applications that can tangibly improve the life of patients. I realized that I could make an impactful contribution by becoming a physician-scientist, a career which provides a unique perspective to view a disease as both a scientific question and a medical condition that affects people. The privileged relationship with patients and their families, the close collaboration with interdisciplinary teams as well as the mentorship of future researchers and clinicians are other aspects of this profession that led me to pursue both degrees in McGill's MDCM-PhD combined program.

Why did you choose to study at McGill University?

As McGill University is internationally renowned for the quality of its training and research in both medicine and neuroscience, McGill's MDCM-PhD program was the natural choice to achieve my professional goals. Furthermore, given the immense translational potential of stem cells for disease modeling and drug discovery in neuroscience - an expertise which I wish to integrate into my own research program one day - the laboratory of Dr Thomas Durcan immediately appeared to me to be the ideal learning environment for my graduate studies.

What aspect of the MD-PhD program do you enjoy the most or are looking forward to?

I am really looking forward to resuming the biweekly in-person MD-PhD seminars at Thomson House (the campus pub). Not only are those seminars preparing us for a career as physician-scientists through lectures and educational workshops, they're also a great opportunity to get to know our MD-PhD peers, seek for advice and exchange ideas around a good meal and drinks.

What advice do you have for incoming MDCM-PhD students?

This seven- or eight-year long program is a marathon, not a sprint. Set yourself short-term goals and block out "me-time" regularly in your schedule. Your personal life should not on hold because you're a

student in a demanding program. Keep doing what you love and having projects outside of the lab/med school.

What do you like to do in your spare time?

When I'm not in the lab, I enjoy hip hop dancing, walking my dog, taking care of my plants, and camping in my camper mini-van!