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I received my Bachelor of Science (Honours) in Biochemistry at the University of Manitoba in 2018. I was first exposed to scientific research in Dr. Georg Schreckenbach's laboratory during my undergraduate honours project. This was also where I first learned to use supercomputing resources with Compute Canada/ Digital Research Alliance of Canada where I studied transuranium actinide elements produced in nuclear reactors, aiming to correlate their experimental spectroscopic properties with computational models, with the ultimate goal of advancing knowledge in the field to support the development of solutions for radioactive nuclear waste management.

Having developed this passion for scientific research during my undergraduate research experience, I decided to continue my training in scientific research and enrolled in the graduate studies program during the winter of 2019 at the University of Alberta in the laboratory of Dr. Howard Young. Early in my graduate work, I came to appreciate both the significance and complexity of studying membrane proteins, which play key roles in human health and disease. This experience was further enriched by exposure to research from various laboratories within the Membrane Protein Disease Research Group (MPDRG) at the university, all focused on the study of membrane proteins.

During graduate studies, my research involved the calcium-transporting membrane protein sarco/endoplasmic reticulum calcium ATPase (SERCA) and its regulation by the Regulin family of micropeptides, with particular emphasis on its regulation by the peptide phospholamban (PLN). Several mutations in PLN have previously been reported to be implicated in familial cardiomyopathy and heart failure, with affected individuals often experiencing early mortality. In this study, we characterized alanine-scanning mutations within the transmembrane region of PLN using *in vitro* functional assays and correlated the findings with *in silico* binding affinity studies using supercomputing resources at Compute Canada/ Digital Research Alliance of Canada to elucidate the loss- and gain-of-function effects of these mutations on calcium transport by SERCA.