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During my Bachelor of Science, I was exposed to research as a summer student in the lab of Matthias Braun studying islets of Langerhans. I completed my BSc specializing in Pharmacology at the University of Alberta and I began my graduate studies as an MSc student in Matthias Braun’s lab. I eventually joined the lab of Patrick MacDonald after Matthias passed away in 2013. In the summer of 2014, I had the opportunity to travel to Berlin, Germany to work on a small research project at the Max Delbrück Centrum. I completed a project under the supervision of Daniela Panáková, imaging the development of cardiac tissue during embryonic development in Zebrafish. This experience further encouraged me to pursue research and I am now a PhD student in the Department of Pharmacology here at the University of Alberta.

Our paper published in Diabetes investigates the glycine receptor and how it regulates islet β-cell insulin secretion. Importantly, we found the glycine receptor is specific to human as we could not detect it in rodent islets. The glycine receptor mediates neurotransmitter signaling and we show it stimulates insulin secretion in islets. Additionally, β-cells secrete glycine causing a positive feed forward mechanism which drives insulin secretion. Finally, we found glycine receptor signaling is impaired in islets from donors with type 2 diabetes. Our findings describe a new pathway that regulates insulin secretion and a potential mechanism for the pathophysiology of type 2 diabetes.

I am fortunate to be able to study islets of Langerhans from cadaveric human donors. Thanks to the Alberta Diabetes Institute IsletCore and the Clinical Islet Laboratory at the University of Alberta for providing a steady supply of human tissue for research. Lastly, this publication would not be possible if it were not for all the help from the members of the lab and the guidance of both my past and present supervisors Matthias and Pat.