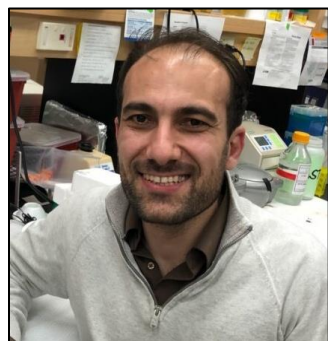




Sean McRae is an MSc student in the Department of Medical Biophysics, under the co-supervision of Dr. Timothy Scholl and Dr. John Ronald. Sean is working on developing tools to track the spread of breast cancer from the primary tumor site in pre-clinical animal models. By engineering cancer cells to express a transporter, cells are able to take up an administered contrast agent that increases their visibility relative to surrounding tissue on magnetic resonance imaging (MRI). Sean is working on developing new and improved contrast agents that will further improve our ability to study the spread of breast cancer in patients.



Monique Morin is an MSc student in the Department of Pathology & Laboratory Medicine, under the co-supervision of Dr. Muriel Brackstone and Dr. Jeremy Burton. Her research focuses on characterizing the breast microbiome in women at high risk of breast cancer and subsequently modifying it with probiotics. The goal is to see if harmful bacteria in the breast can be replaced with "healthy" bacteria to reduce inflammation in the breast tissue, a major contributor to the morbidity of breast cancer. Linking abnormal microbiota in breast tissue to breast cancer risk could contribute to improved early diagnosis and therapy.



Rober Abdo is a PhD student in the Department of Pathology & Laboratory Medicine, under the co-supervision of Dr. Qi Zhang and Dr. Shawn Li. His project focuses on molecular profiling of breast cancer brain metastases. He will study samples from breast cancer patients with brain metastases to identify changes in the cancer cells that allow the cells to spread, evade brain defense mechanisms, and flourish in the brain microenvironment, using cutting-edge techniques known as NanoString Digital Spatial Profiling and mass spectrometry. Rober hopes that his work will identify critical changes that may serve as targets for the future treatment of breast cancer brain metastasis.



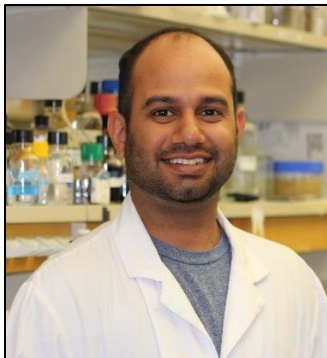
Sawyer Badiuk is a PhD student in the Department of Medical Biophysics, under the co-supervision of Dr. Eugene Wong and Dr. Jeff Chen. Sawyer studies the effectiveness of radiation therapy treatments for breast cancer that has spread to the brain using novel imaging techniques. Her research involves monitoring the response of the brain and cancer cells after treatment, to find an optimal radiation treatment that controls the cancer while also reducing side effects. The overall goal of her research is to prevent new and recurring brain metastases.



Tasnim Reza is a PhD student in the Department of Biochemistry, under the supervision of Dr. Michael Boffa. Her research focuses on the anti-metastatic and anti-angiogenic role of two proteins called thrombin activatable fibrinolysis inhibitor (TAFI) and thrombomodulin in breast cancer. Her research will encompass the mechanistic study of breast cancer cells and their response to a protein drug based on thrombomodulin in test tubes and animal models. Tasnim hopes that the results obtained through this research will allow future translation of a novel anti-metastatic therapy into the clinic to benefit breast cancer patients.



Shanshan (Jenny) Zhong is a PhD student in the Department of Biochemistry, under the supervision of Dr. Shawn Li. She is currently developing a series of inhibitors for breast cancer immunotherapy and evaluating their therapeutic potential using animal models of breast cancer. It is commonly believed that immune cells such as T cells can effectively inhibit the growth of breast cancer, and a protein called PD-1 expressed on T cells can turn off immune responses. The inhibitors that Jenny is working on are able to block PD-1 signaling and restore the immunity against breast cancer. Her project will offer novel approaches for breast cancer therapy and also lead to a better understanding of PD-1 signaling in metastatic breast cancer.



Dr. Vasudeva Bhat is a Postdoctoral Fellow in the Department of Anatomy & Cell Biology, under the co-supervision of Dr. Alison Allan and Dr. David Palma. His project focuses on investigating the potentially paradigm-shifting concept that breast cancer patients with “oligometastasis” may represent a treatable (and potentially curable) subset of patients. Oligometastasis refers to a disease stage where the cancer has spread beyond the breast but is not yet widely metastatic. The goal of this project is to develop and validate a multi-biomarker approach for defining the oligometastatic state in breast cancer using minimally-invasive blood tests (“liquid biopsies”). Vasu is carrying out combined assessment of circulating tumor cells, circulating tumor DNA, and host immune cells. He will then compare these biomarkers to patient survival and disease progression following radiation treatment in order to develop a prognostic/predictive blood-based multi-biomarker panel.



Dr. Diana Paola Arteaga is a Clinical Fellow in the Department of Oncology, under the supervision of Dr. Ana Lohmann. Her project aims to bridge the gap between the detection of circulating tumor DNA in patients with suspected metastatic breast cancer and its clinical use. The goal of this approach is to replace tissue biopsy with minimally invasive techniques such as a simple blood test. This approach may also provide important information to clinicians confirming diagnosis and guiding treatment decisions in breast cancer patients.