Congratulations to the 2022-2023 TBCRU Scholarship/Fellowship Awardees!

	**Harjot Athwal** is an MSc student in the Department of Anatomy & Cell Biology, working under the co-supervision of Dr. Armen Parsyan and Dr. Alison Allan. Harjot's research focuses on understanding the role of specific DNA repair genes in causing resistance to radiotherapy in triple negative breast cancer. This study will explore the therapeutic potential of targeting specific DNA repair genes to enhance the effectiveness of radiotherapy in the treatment of breast cancer.
	**Nitara Fernando** is an MSc student in the Department of Medical Biophysics, working under the supervision of Dr. Paula Foster. She is investigating the abscopal effect, a phenomenon caused by radiation therapy that occurs when a targeted tumour treatment also results in therapeutic benefit to other areas in the body where cancer has spread. The immune system plays an important role in this by recruiting cells that can fight cancer throughout the body. Nitara aims to investigate the abscopal effect using specialized cellular imaging and radiotherapy in a breast cancer model by looking at the role of immune cells in tumour growth, allowing us to better understand how it can improve breast cancer treatment.
	**Urvi Patel** is an MSc student in the Department of Anatomy & Cell Biology, working under the supervision of Dr. Alison Allan. Urvi's research will investigate the mechanisms of metastasis (the spread of cancer cells to distant organs), specifically to the lung which is a common location for metastasis in triple negative (TN) breast cancer patients. The formation of new blood vessels (neo-angiogenesis) is important to metastasis because it supplies nutrients and oxygen to help tumour growth. Special cells in the lung called endothelial cells are involved in neo-angiogenesis and tiny particles released from breast cancer cells called extracellular vesicles (EVs) can alter the lung to promote breast cancer metastasis. This project will explore whether EVs released from triple negative breast cancer cells can induce changes in lung endothelial cells to promote neo-angiogenesis and metastasis. With these findings, strategies to prevent production or release of EVs from the primary breast tumour could be developed along with new biomarkers to improve clinical outcomes and achieve earlier detection of breast cancer metastasis.

	**David Susman** is an MSc student in the Department of Anatomy & Cell Biology, working under the supervision of Dr. Alison Allan. David is investigating how triple negative breast cancers can alter the lung microenvironment to facilitate metastasis by releasing extracellular vesicles (EVs). Using SILAC-based mass spectrometry, David will conduct a proteomics analysis of primary lung endothelial cells and fibroblasts to identify differentially expressed proteins in response to EVs released from triple negative breast cancer cells. In the future, these findings could aid in the development of new clinical drugs and strategies to improve patient prognosis and reduce breast cancer-related morbidity and mortality.
	**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 is studying 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. Sawyer is participating in the TBCRU Program as the recipient of an Ontario Graduate Scholarship.
	**Sean McRae** is a PhD student in the Department of Medical Biophysics, working under the supervision of Dr. Timothy Scholl. Sean is working on developing novel imaging tools that will allow breast cancer-targeting immune cells to be tracked using magnetic resonance imaging (MRI). These tools are currently being tested at the pre-clinical stage, and preliminary results indicate that this system could potentially revolutionize the delivery of therapeutic cells for breast cancer patients, giving previously unavailable information on cell distribution and therapeutic specificity and effectiveness.
	**Liam Ratushny** is a PhD student in the Department of Pathology & Laboratory Medicine, working under the co-supervision of Dr. Fred Dick and Dr. Chris Howlett. Liam's project is focused on how breast cancer cells can enter a state of dormancy to evade treatment, enhance their survival, and contribute to formation of secondary tumors (called metastases). A group of proteins called the mammalian DREAM protein complex is capable of repressing cellular growth and has been shown to be important for the dormancy and survival of circulating tumour cells during metastasis of other cancer types. Liam will investigate the contributions of the DREAM complex to the metastatic capabilities of breast cancer and identify therapeutic targets that could re-sensitize dormant tumour cells to treatment and reduce disease recurrence.

	**Tasnim Reza** is a Ph.D. student in the Department of Biochemistry, working under the supervision of Dr. Michael Boffa. Tasnim's research focuses on two proteins called thrombin activatable fibrinolysis inhibitor (TAFI) and thrombomodulin, and the role that they have in the formation of new blood vessels and the spread of breast cancer, a process called metastasis. This research will determine how and why breast cancer cells respond to a drug based on thrombomodulin in test tubes and mouse models. The results obtained through this research should allow translation of this novel potential anti-metastatic therapy into additional pre-clinical trials and ultimately into clinical trials. As metastasis is the leading cause of breast cancer-related mortality, this research promises a new path for the development of anti-metastatic therapies that could improve outcomes for breast cancer patients.
	**Dr. Vasudeva Bhat** is a Postdoctoral Fellow in the Department of Anatomy & Cell Biology, under the supervision of Dr. Alison Allan and Dr. David Palma. Dr. Bhat's 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"). Dr. Bhat will carry out combined assessment of circulating tumour cells, circulating tumour DNA, and host immune cells; and compare these biomarkers to patient survival and disease progression following radiation treatment. This blood-based multi-biomarker panel may represent a useful prognostic and/or predictive approach in breast cancer patients with oligometastatic disease.
	**Dr. Paola Arteaga** is a Clinical Fellow in the Department of Oncology (Medical Oncology), working under the supervision of Dr. Ana Lohmann. Throughout this study, Dr. Arteaga aims to bridge the gap between the detection of circulating tumour DNA in the blood of breast cancer patients with suspected metastatic breast cancer and its clinical use. The goal of this approach is to replace an invasive tissue biopsy with minimally invasive techniques. Furthermore, these liquid biopsies may provide important information to the clinicians confirming diagnosis and guiding treatment decisions in breast cancer.