Comprehensive Research Experience for Medical Students
Summer Research Program 2020

Supervisor/Project Information Form
Due February 6, 2020 by email to crems.programs@utoronto.ca

Supervisor Name: Adrian Sacher MD MMSc FRCPC

Project Title: Mechanisms of primary and acquired resistance to immunotherapy in metastatic non-small cell lung cancer and renal cell carcinoma

Hospital/Research Institution: Princess Margaret Cancer Centre

Email: adrian.sacher@uhn.ca

Field of Research (2 keywords): Lung Cancer Tumor Immunology

Department: Medical Oncology & Immunology

School of Graduate Studies Appointment (IMS, LMP, IHPME etc)? Yes/No: Yes  If YES, please name: Department of Immunology, University of Toronto

Brief Project Description (<300 words):

- The use of immunotherapy has revolutionized the treatment of multiple solid tumors including metastatic non-small cell lung cancer (mNSCLC) as well as renal cell carcinoma (RCC). These agents have demonstrated superior and potentially durable survival benefit compared to previous systemic therapies. However, the clinical predictors and
immunologic mechanisms that underpin durable clinical benefit in mNSCLC and RCC patients treated with immunotherapy are poorly understood. Furthermore, the mechanisms of primary and acquired resistance to immunotherapy are similarly ill-defined. The proposed research project seeks to correlate patient clinical characteristics as well as blood and tumor tissue biomarkers with radiographic response to immunotherapy as well as overall survival. The CREMS research student assigned to this project will work with a research fellow to collect clinical data on a large cohort of patients actively receiving immunotherapy as well as integrate these data with ongoing plasma and tumor tissue biomarker analysis performed within the Tumor Immune Profiling program at Princess Margaret Hospital. The research student will ultimately work to identify key factors associated with durable response as well as resistance to immunotherapy in mNSCLC as well as RCC. Students will acquire experience in translational oncology research, clinical data collection, biomarker analysis (cfDNA, PBMC flow cytometry, tumor genomics) and statistical analysis during their research experience through both formal and ad hoc teaching sessions.