



Comprehensive Research Experience for Medical Students  
Summer Research Program 2019

Supervisor/Project Information Form

*Due February 20 2019 by email to [crems.programs@utoronto.ca](mailto:crems.programs@utoronto.ca)*

Supervisor Name: Alberto Martin

Project Title: Evaluating the role of the gut microbiota in colon cancer using pre-clinical mouse models

Hospital/Research Institution: University of Toronto, Medical Sciences Building

Email: [alberto.martin@utoronto.ca](mailto:alberto.martin@utoronto.ca)

Field of Research (2 keywords): Colon cancer, Gut microbiota

Department: Immunology

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

Project Title: Evaluating the role of the gut microbiota in colon cancer using pre-clinical mouse models

Brief Project Description (< 300 words):

Although the gut microbiota has beneficial effects to the host, it has also been linked to the development of certain pathological disorders, including inflammatory bowel diseases, and possibly colorectal cancer. Using different animal models of colorectal cancer, our work shows that the gut microbiota promotes this disease. The project is currently examining two questions related to pre-clinical models being used: (1) which bacterial species and what bacterial metabolite is/are promoting the development of colorectal cancer? (2) What is the underlying mechanism by which this occurs? Our current findings suggest that gut microbes stimulate an inflammatory reaction in the guts of these mice, which in turn leads to the production of iNOS and secretion of the DNA mutagen Nitric Oxide. Our data suggests that blunting oxidative DNA damage caused by nitric oxide with iNOS inhibitors or the use of antioxidants reduces colon cancer in different models of colorectal cancer. The project involves working with a Postdoctoral Fellow using mouse models of colon cancer to address these outstanding questions.