ANNOUNCEMENT

Interested Members of the University community are invited to attend the Final Oral Examination for the degree of Master of Science of

Priya Mistry

of the Department of Biomedical Sciences (Ontario Veterinary College) on Friday, December 7th at 1:00pm in the Lifetime Learning Centre Room 1715 (Seminar); and OVC Main Building Room 3648 (Examination)

The Role of the Circadian Microbiome in Healing Post-Myocardial Infarction

Examination Committee
Dr. Tami Martino, Advisor
Dr. Emma Allen-Vercoe, Committee Member
Dr. John Dawson, Graduate Faculty
Dr. Neil MacLusky, Exam Chair

Advisory Committee
Dr. Tami Martino
Dr. Emma Allen-Vercoe
Dr. Roger Moorehead

ABSTRACT

The circadian clock is critical for cardiovascular physiology and plays a role in the pathophysiology of cardiovascular disease. The gut microbiome is involved in many diseases and has been linked to cardiovascular disease, however the role of the circadian microbiome in benefiting outcome post-myocardial infarction (MI) is unknown. This thesis investigates the contributions of the circadian microbiome to healing processes post-MI. Here, we demonstrate that disrupting the gut microbiome with antibiotics leads to worsened cardiac outcomes post-MI. Mechanistically, this is attributed with reduced functional metabolites of the microbiome and correlates with altered immune responses required for infarct healing post-MI. Re-establishing a healthy microbiome can rescue cardiac outcomes post-MI, despite microbiome disruption. Importantly, the circadian clock coordinates
microbiome responses post-MI, as Clock$^{A19/A19}$ mice with gut dysbiosis have preserved cardiac structure and function. Collectively, these are the first studies to demonstrate the pivotal role of the circadian microbiome in post-MI outcome.

ABSTRACTS/PRESENTATIONS


PUBLICATIONS


**BIOGRAPHICAL DATA**

Priya Mistry graduated from the University of Guelph in 2016 with a Bachelor of Science Honours degree in Bio-Medical Sciences. Priya’s interest for cardiovascular research began when she was a research assistant at the Hamilton General Hospital in the cardiac surgery department. Interested in the translation of research to clinical practice, she joined Dr. Tami Martino’s lab as a 4th Year Research Project student investigating the benefits of chronotherapy for treating heart disease in a pre-clinical porcine model. Priya further pursued her research interests in the circadian system and cardiovascular health and enrolled in the Master of Science program in Biomedical Sciences with Dr. Tami Martino in the fall of 2016. Supported by CIHR and OVC funding, Priya’s research focuses on the role of the circadian gut microbiome in healing post-myocardial infarction (heart attack) and how to therapeutically target this system to improve outcomes. Throughout her Master’s, Priya has also been Co-Chair of the Student Executive Council for the Centre for Cardiovascular Investigations (CCVI) to promote the outstanding cardiovascular research at the University of Guelph and provide networking opportunities for students.

**AWARDS RECEIVED**

CIHR Canada Graduate Scholarship – Masters (2017-2018)

OVC Incentive Stipend Fund, University of Guelph (2018)

Ontario Graduate Scholarship (MSc), University of Guelph (2017-2018)

OVC MSc Scholarship, University of Guelph (2016-2018)

Gary Partlow Prize for Leadership and Academic Performance, University of Guelph (2016)

Biomedical Science Research Award of Merit, University of Guelph (2016)