RFHS / **College of Pharmacy**

RESEARCH SEMINAR SERIES

From Molecules to Mechanisms: Lipidomics and Cardiovascular Disease

October 22, 2025 | 12:00 pm – 12:50 pm

164 Apotex Centre, Bannatyne Campus

Dr. Amir Ravandi

Associate Professor

Research Director (Section of Cardiology)

Max Rady College of Medicine

Internal Medicine - University of Manitoba

St. Boniface Hospital Research Centre

Dr. Amir Ravandi received his undergraduate degree in Biochemistry, from University of Toronto and went on to complete a PhD at the Banting and Best Medical Research Institute at University of Toronto. After obtaining his MD at University of Toronto he went on to complete an internal medicine and cardiology training at McMaster University. He completed a fellowship in coronary and peripheral vascular interventions at University of California at San Diego. He is currently a professor of medicine and a clinician scientist at University of Manitoba and staff interventional cardiologist at St. Boniface Hospital. He also serves as the Research Director for Section of Cardiology at University of Manitoba.

The focus of Dr. Ravandi's lab is to utilize the power of novel omics technologies to better understand the role of lipid molecules in Cardiovascular pathology. He has established the Cardiovascular Lipidomics Facility at St. Boniface Hospital Research Centre as the largest dedicated lipidomics facility in Canada. He has developed a high throughput LC/MS/MS Lipidomics platform that can identify 2000 lipids in plasma and tissue. He has utilized this platform to identify novel lipid markers of myocardial reperfusion injury (1-5) in patient presenting with STEMI. He has also utilized this technology towards valvular lipidomics and have determined the metabolomic atlas of human aortic valve stenosis (7). He is an active interventional cardiologist at St. Boniface Hospital and performs 700 procedures annually, including 300 coronary interventions, with a focus on high-risk angioplasty requiring mechanical circulatory support.

1. Cayer L, Surendran A, Karakach T, Aukema HM, **Ravandi A.** Valvular Prostaglandins are Elevated in Severe Human Aortic Valve Stenosis (2024) ***Arteriosclerosis, Thrombosis, and Vascular Biology.*** *Feb 15. doi: 10.1161/ATVBAHA.123.320001*
2. Surendran A, Atefi N, Ismail, U, Shah A, **Ravandi A.** Rapid Lipidomic Shift in Human Plasma During Myocardial Ischemia and Reperfusion. (2022) ***iScience.*** Jan 29;25(2):103828. doi: 10.1016/j.isci.2022.103828
3. Solati Z, Surendran A, Edel A, Roznik M, Allen D, **Ravandi A**. Increase in Plasma Oxidized Phosphatidylcholines (OxPCs) in Patients Presenting With ST- Elevation Myocardial Infarction (STEMI). **Front Med**. 2021 Dec1;8:716944. doi: 10.3389/fmed.2021.716944.
4. Surendran A, Atefi N, Zhang H, Aliani M, **Ravandi A** Defining Acute Coronary Syndrome through Metabolomics. ***Metabolites*** 2021 Oct 6;11(10):685. doi: 10.3390/metabo11100685.
5. Stamenkovic A, O'Hara KA, Nelson DC, Maddaford TG, Edel AL, Maddaford G, Dibrov E, Aghanoori M, Kirshenbaum LA, Fernyhough P, Aliani M, Pierce GN, **Ravandi A.** Oxidized phosphatidylcholines trigger ferroptosis in cardiomyocytes during ischemia/reperfusion injury. **Am J Physiol Heart Circ Physiol.** 2021 Jan 29. doi: 10.1152/ajpheart.00237.2020.
6. Solati Z, Surendran A, Aukema HM, **Ravandi A**. Impact of Reperfusion on Plasma Oxylipins in ST-Segment Elevation Myocardial Infarction. ***Metabolites*** (2023). 14 (1), 19

   Surendran A, Edel A, Chandran M, Bogaert P, Hassan-Tash P, Kumar A, Solati Z, Sandhawalia S, Raabe M, Kass M, Shah AH, Jassal DS, Jaleel A, **Ravandi A**. Metabolomic signature of human aortic valve stenosis (2020) ***JACC Basic to Translational Science*** 16;5(12):1163-1177. doi: 10.1016/j.jacbts.2020.10.001. eCollection.