MAZANKOWSKI
ALBERTA HEART INSTITUTE

Maz Connects:
Meet the Researchers

Atherosclerosis and Coronary Syndromes

Role of hepatic glycerolipid metabolism in atherosclerosis

Dr. Richard Lehner (Professor, Department of Pediatrics and Director, Group on Molecular and Cell Biology of Lipids) and Dr. Dennis Vance (Distinguished University Professor, Department of Biochemistry) focus on the role of hepatic triglyceride (Lehner) and phosphatidylcholine (Vance) in the production of very-low density lipoproteins, precursors of LDL (bad cholesterol). Using various mouse knockout models and target-specific inhibitors they have shown that decreasing either triglyceride mobilization or phosphatidylcholine synthesis proved very effective in decreasing plasma LDL levels. Research in Dr. Lehner and Dr. Vance laboratories is supported by CIHR, HSFA and pharmaceutical industry.

Regulation of cholesterol homeostasis

Dr. Dawei Zhang is an Assistant Professor in the Group on Molecular and Cell Biology of Lipids, Department of Pediatrics. Dr. Zhang holds a CIHR New Investigator salary award, an AIHS Scholar and a HSFC New Investigator salary award. Research in Dr. Zhang's lab focuses on studying the factors that are involved in regulation of cholesterol homeostasis in circulation and macrophages. Employing a multidisciplinary approach, Dr. Zhang investigates the impact of ATP-binding cassette (ABC) transporters and proprotein convertase subtilisin/kexin-type 9 (PCSK9) on HDL (good cholesterol) and LDL (bad cholesterol) metabolism, respectively. Dr. Zhang's group is supported by funding from CIHR, HSFC, Pfizer Canada, AIHS, and CFI.

Ischemia reperfusion injury

Dr. John Seubert is an Associate Professor in Faculty of Pharmacy and Pharmaceutical Sciences and holds both a HSFC New Investigator Salary Award and AHFMR Scholar Award. A major focus of Dr. Seubert's research group is to investigate the role of cytochrome P450 (CYP) derived metabolites of arachidonic acid in cardiac ischemia reperfusion injury. More specifically, Dr. Seubert's lab focuses on understanding how these metabolites limit mitochondrial damage cause by cellular injury. Dr. Seubert's group employs complimentary molecular, cellular and animal models of ischemia reperfusion injury to address these questions. Recent studies include the role of BNP in EET-mediated cardioprotection and how can EETs limit mitochondrial damage and maintain mitochondrial membrane potential following cellular injury.

Accelerated atherosclerosis during insulin resistance and diabetes

Dr. Spencer Proctor is an Associate Professor in the Division of Nutrition, is the Director of the Metabolic and Cardiovascular Diseases Laboratory and holds a HSFC New Investigator Salary Award. Dr. Proctor's research group has primary affiliations in both the Alberta Diabetes Institute (ADI) and the Maz and a large focus of their program is to investigate the factors that lead to accelerated atherosclerosis during insulin resistance and diabetes. Dr. Proctor is a leader in the understanding of how cholesterol-rich remnant lipoproteins (hepatic and intestinal original) become entrapped in arterial vessels and how they either accumulate or are removed. His group employs molecular, cellular, animal model and clinical approaches to their research program, and is supported by provincial and national grant bodies (HSFC/NSERC) and the pharmaceutical industry (Pfizer and Merck). Recent studies include the impact of lipid lowering compounds (Ezetimibe and Statins) on both metabolism (*in vivo*) and arterial accumulation of cholesterol (*ex-vivo*) in a rat model of the Metabolic Syndrome (JCR:LA-cp rat).