RMB CVRC
&
School of Medicine Molecular Physiology & Biological Physics Seminar

The Robert M. Berne Cardiovascular Research Center and The School of Medicine Molecular Physiology & Biological Physics Department Presents

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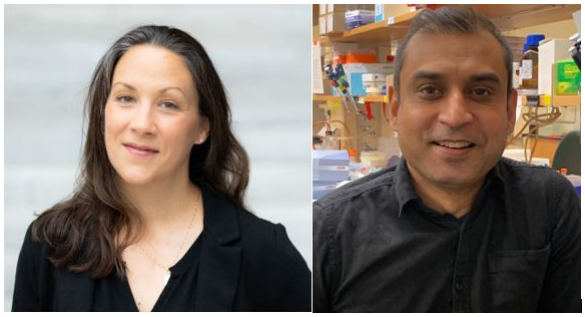

Role of extracellular myeloperoxidase in atherosclerosis development and late-stage pathogenesis

Atherosclerosis is a chronic inflammatory disease whose clinical complications, including major adverse cardiovascular events (MACE) such as myocardial infarction (MI) and stroke, are the leading causes of death worldwide. While compelling evidence shows that inflammation plays an important role in atherosclerosis progression, broad-acting anti-inflammatory treatment may not be a viable therapy, in part due to increases in lethal infections. Thus, there is a need to identify targeted therapies that mitigate the adverse effects of chronic inflammation while preserving immune defenses, inflammation resolution, and injury-repair processes, including formation of the protective fibrous cap that is essential for atherosclerotic lesion stability. Basic science studies have been hindered by the lack of a preclinical mouse model that develops coronary atherosclerosis and replicates the late-stage complications seen in human atherosclerotic disease. This talk will introduce a novel new mouse model of diet-induced coronary atherosclerosis (SR-BI$^{\Delta CT/\Delta CT}$/*Ldlr* $^{-/-}$) and explore the therapeutic potential of targeting extracellular Myeloperoxidase to reduce MACE.

Role of Stem Cell Antigen-1 (Sca1) in Atherosclerosis Development and Late-Stage Pathogenesis

Atherothrombosis-associated complications, including myocardial infarction (MI) and stroke, remain the leading causes of death worldwide. Whereas single cell RNA sequencing (scRNAseq) and Myh11-smooth muscle cell (SMC) lineage tracing studies by our lab and others have provided extensive evidence that SMC-derived cells within atherosclerotic lesions exhibit a wide range of distinct phenotypes including a subset of Myh11+ medial cells that activate stem cell antigen-1 (Sca1), the functional role of Sca1 in lesion development and late-stage pathogenesis is unknown. By utilizing a unique Myh11 Sca1 dual recombinase mouse model we provide evidence that Myh11+ medial SMC activate Sca1+ early in lesion development and that many but not all Myh11+ medial SMC within neointimal lesions of advanced atherosclerotic lesions go through a Sca1+ transition state. I will also discuss results from our newly developed SMC-specific Sca1 knockout mice which provide direct evidence of Sca1's role in SMC investment into the lesions.

Thursday November 21, 2024
11:00 AM-12:00 PM
MR5 Room 3005

Refreshments served

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