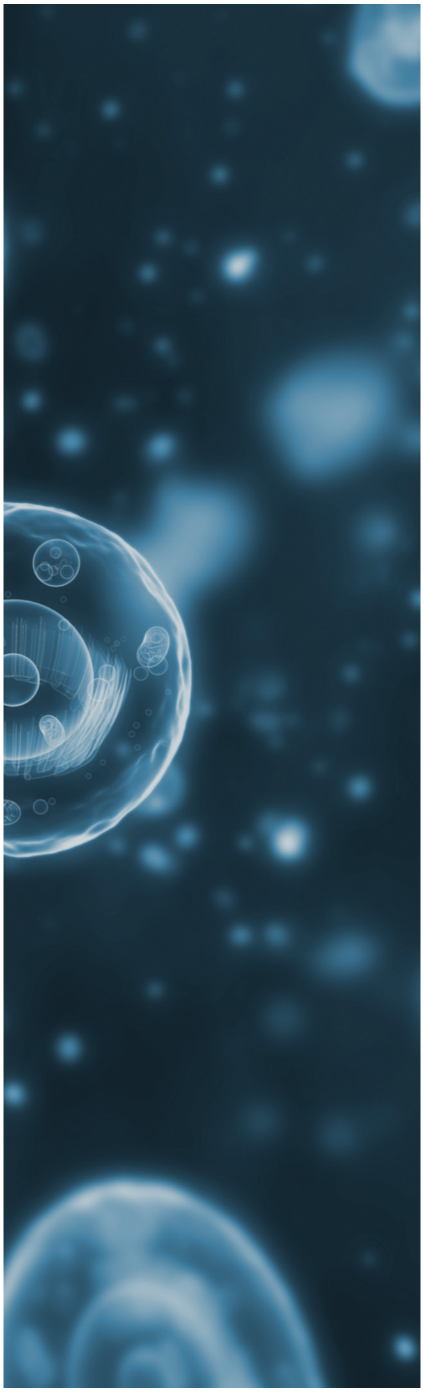
DIVISION OF MEDICAL SCIENCES

SEMINAR SERIES



Harnessing Lysosome Biology to Treat Diseases

Dr. Abhinav Diwan

Washington University School of Medicine

Tuesday, October 8, 2019

12:00 p.m. – 1:00 p.m.

Lysosomes are degradative organelles present in all eukaryotic cell types and perform multiple functions in addition to their role as an 'incinerator' in the cell. Lysosomes are the epicenter of all trafficking pathways and integrate cellular metabolism to permit critical decisions on life and death, and growth or quiescence. They are critically important organelles as evidenced by genetic inborn errors collectively termed 'lysosome-storage diseases'; which result from deficiency of structural or enzymatic proteins in the lysosomes and trigger global lysosome dysfunction. These diseases affect the central nervous system and/or the heart in every single instance, indicating how critical lysosome function is in these differentiated primary cell types. My lab's primary interest is to define the role of lysosomes in cellular homeostasis and response to stress. Work from our lab as well as others, has uncovered evidence for acquired lysosome dysfunction in cardiovascular, metabolic, and neurodegenerative diseases. Acquired lysosome dysfunction is a major contributor to cardiac myocyte loss in myocardial ischemia-reperfusion injury and in cardiomyopathy and heart failure. We have also uncovered evidence for lysosome dysfunction in various CNS cell types in Alzheimer's disease and in pancreatic beta cells in obesity-induced diabetes. Remarkably, all these diseases are predisposed to by a common set of risk factors. In this presentation, I will highlight both physiologic, genetic, and pharmacologic approaches we have undertaken to stimulate lysosome function to prevent and/or treat these diseases. These preclinical studies will serve as the basis for developing small molecule-based approaches to stimulate lysosome biogenesis and function to treat these diseases.

Northern Ontario School of Medicine

École de médecine du Nord de l'Ontario

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NOSM at Lakehead University – ATAC 6030

NOSM at Laurentian University – MSE 215

Lunch will be provided.