



SPRING 2023

**Biochemistry and Molecular Biology
Brown Bag Series**

John Karanja Kamau

Ph.D. Student

“A novel role of lipin1 in cardiac function”

Tuesday, March 14, 2023

11:00 AM

Location 135 Oelman Hall

Lab: Hongmei Ren, Ph.D.



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<https://science-math.wright.edu/biochemistry-and-molecular-biology>

Abstract:

Maintenance of the structural and functional integrity of the plasma membrane is crucial for cardiac muscle viability and functions. Moreover, the plasma membrane serves as a barrier to protect the cell's interior from the external environment and regulates ions' flow, which is critical for the heart's electrical activity. However, in cardiomyopathy, the integrity of the cardiac plasma membrane can be compromised leading to the loss of essential intracellular components and disrupting the balance of ions and molecules inside the cell. This can ultimately lead to inflammation, fibrosis, cell death, and further weakening of the heart muscles.

Lipin1 has dual functions acting as phosphatidic acid phosphatase required for lipid synthesis and as a transcriptional coactivator. Our recent study showed that lipin1 plays an important role in maintaining plasma membrane integrity. Since plasma membrane integrity is crucial for cardiac muscle viability and functions, we evaluated the role of lipin1 in cardiac function using a novel mouse model, cardiac-specific lipin1 KO mice. We found that lipin1 deficiency in cardiac tissue leads to cardiac muscle membrane instability, increased inflammation, necroptosis, fibrosis, and high blood pressure. These findings suggest a critical role of lipin1 in cardiac function.