

DEPARTMENT OF PHARMACOLOGY AND SYSTEMS PHYSIOLOGY
COLLEGE OF MEDICINE

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

FOR APPLICATION YEAR: 2024

PROJECT TITLE: Post transcriptional Regulation in Cardiometabolic Disorder

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Project Description

Heart failure with preserved ejection fraction (HFpEF) affects half of the heart failure patients and so far no effective therapy is available. HFpEF is a multi-organ disorder that affects heart, fat, liver, lung and immune systems (cardiometabolic disorder). Our lab research aims at establishing novel laboratory animal models mimicking human cardiometabolic patient symptoms and to utilize different animal models to uncover the underlying molecular mechanisms as well as therapy options.

Post-transcriptional regulation, including mRNA alternative splicing, modification, translation and degradation is dynamically regulated in cardiovascular disease and plays important role in normal cardiac physiology. The lab is interested in understanding the dynamic landscape of post-transcriptional regulation in cardiometabolic diseases and identify important regulators that are responsible for the disease causing post-transcriptional regulation event.

The research tools in our lab include state-of-art sequencing approaches including snRNA-seq, Ras1-Seq, BRIC-Seq and CLIP-Seq as well as a variety of animal based cardiovascular disease models. Our goal is to understand both the underlying molecular mechanism for cardiometabolic disorder and to discover potential therapeutic options based on animal physiology models.