

DEPARTMENT OF INTERNAL MEDICINE  
COLLEGE OF MEDICINE

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

FOR APPLICATION YEAR: 2026

PROJECT TITLE: Monitoring and Using Ultrasound Emissions for Guiding Therapies

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**Project Description**

Ultrasound is well known as a medical imaging tool and perhaps best known for visualizing a fetus in utero. However, there are a growing range of applications where ultrasound can be used therapeutically, such as for drug delivery or tissue ablation. Our laboratory currently is involved in ultrasound-based studies to produce images to guide drug delivery for peripheral arterial disease, to improve removal of blood clots in deep vein thrombosis, and to optimize drug delivery to the brain through temporary permeabilization of the blood-brain barrier. This project will use existing data acquired from different types of experiments and the UPRISE student will process ultrasound signals to improve image-quality and enhance therapeutic efficacy. Interested students should either have experience with coding in MATLAB or a similar language or a strong interest in developing those skills. Additionally, a strong mathematical background would enable more progress.