



Minority University Research and Education Project (MUREP)

Institution: University of Hawaii at Manoa

City/State: Honolulu, HI

Award Name: MUREP Partnership Learning Annual Notification (MPLAN)

Award Number: N/A

Title: Ultrasound Methods for Monitoring Carcinogenesis/ HRP-4: Health and/or disease monitoring capabilities

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PI Email: N/A

Award Fiscal Year: FY2024

Summary:

The overarching goal of this project is to develop a non-invasive, low-cost, and portable ultrasound system to assess multiple tissue properties (morphological, vascular, functional, and stiffness) for monitoring space radiation-induced carcinogenesis. Over the last decades, the typical bedside ultrasound system has transitioned to a point-of-care system based on laptops and cell phones. While point-of-care ultrasound systems are good for anatomical or morphological imaging, these systems do not assess vascular, functional, and stiffness properties of tissue necessary for monitoring carcinogenesis. Over the past 10 years, I have been developing novel ultrasound methods for improving the diagnosis of atherosclerosis, musculoskeletal disorders, kidney dysfunction, and breast cancer. Two of these methods are single transducer-harmonic motion imaging and multi-frequency oscillation shear wave elastography which assess multiple stiffness parameters for improving diagnosis of cancers. The objective of this project is to investigate the performance of these methods in low-powered scenarios and the feasibility of detecting tissue property changes due to simulated space radiation.