Submitted by: William R. Decatur, Vice President, Finance and Business Operations

I2C Building Magnetic Resonance Imaging System for Laboratory Applications (MRI Installation) Project

Recommendation

It is recommended that the Board of Governors authorize the President, or his designee, to approve spending to design, solicit bids and award contracts for the remodeling of Lab 5 and the installation of a .35 Tesla Nuclear Magnetic Resonance Imaging (MRI) System for Laboratory Application for a cost not to exceed $1,000,000. Funding for this project will be provided from multiple sources as indicated below.

Background and Project Description

The Wayne State Industry Innovation Center or the I2C Building, is located at 461 Burroughs. It was built in 2004 and purchased by Wayne State University in May of 2018.

The proposed project is to support the Wayne State University research mission in the area of development and application of biomedical imaging modalities for disease diagnostics and treatment. This project is part of the recruitment commitment to Dr. Eduard Chekmenev (Tenured Associate Professor appointed in the Department of Chemistry in the College of Liberal Arts & Sciences and the Department of Oncology – Karmanos Cancer Center in the School of Medicine). This renovation is required to conduct research and technology development projects supported by the Department of Defense, the National Science Foundation and the National Institutes of Health.

There is currently no widespread clinical imaging modality to perform high-resolution functional lung imaging. This project involves the placement of advanced low-field MRI instrumentation in the renovated space as a platform to address this challenge and for the development of inexpensive technologies for high-throughput and low-cost functional 3D MRI of lungs, providing three imaging biomarkers of lung diseases.

Funds to purchase the instrumentation are provided as part of the grants awarded to Dr. Chekmenev. The development of this technology has the potential to revolutionize lung imaging and lung-related healthcare and is part of a primary institutional focus and commitment to biomedical imaging as core elements for programs in the Karmanos Cancer Center and the Neurosciences and Brain Health programs. It is expected that the access to this enabling technology platform will lead to partnerships with technology development companies, health care provider networks and a range of expanded applications in areas of institutional focus (e.g., metabolic diseases, neurodegeneration).

The remodeling of Lab 5 area in approximately 910 sf will provide a chemical room, a control room to support the MRI room, and an equipment room. All contracts for this project will be awarded in accordance with University policies and procedures.

Extramural grant support relative to this project includes the following.

- $425,000 for purchase of the 035 MRI instrument
- ~%500,000 for instrumentation embedded with the MRI project platform.

CURRENT GRANT AWARDS TO WSU RELATED SPECIFICALLY TO THIS PROJECT

Title: *"Low-Cost, High-Throughput 3D Pulmonary Imager Using Hyperpolarized Contrast Agents and Low-Field MRI"*
Department of Defense W81XWH-15-1-0271 $1,125,000 (total direct costs)

Title: "*Magnetic Resonance Spectroscopy and Molecular Imaging of Metabolic Pathways in Cancer"*
National Institutes of Health 1R21 CA220137 $179,000 (Total direct costs)

PENDING GRANT AWARDS TO WSU RELATED SPECIFICALLY TO THIS PROJECT

Title: *"Sub-second Functional Lung Proton MRI Using Hyperpolarized Propane Gas in a Clinical Scanner"*
National Institutes of Health -RHL152027A $3,074,142 (total award)

Title *"Ultrafast Cancer Theragnostic Hypoxia Imaging using Hyperpolarized Nitroimidazoles"*
National Institutes of Health R01 CA248523 $2,767,363 (total award)

Title: *"Low-Cost, High-Throughput 3D Pulmonary Imaging Using Hyperpolarized Propane Gas"*
Department of Defense PR192075 $1,752,500 (total award costs)

Title: "*A Hyperpolarized Imaging Probe for Hypoxia Sensing"*
National Institutes of Health R01NS115931-01 $643,498 (total subcontract award for Wayne State University site)

Project Budget

Funding Sources	
TOTAL Sources (not including direct grant funding)	**$1,000,000**
Karmanos Cancer Center	$387,500
School of Medicine	$200,000
Provost VPR	$100,000
VPR	$300,000
College of Liberal Arts & Sciences	$12,500
Expenditures Plan	
Design Fees	$116,000
Construction	$760,000
Project Management	$33,000
Contingency	$91,000
TOTAL Expenditures (Institutional)	**$1,000,000**