2025-2026 Seminar Series

GALLOGLY COLLEGE OF ENGINEERING
STEPHENSON SCHOOL OF BIOMEDICAL ENGINEERING
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GALLOGLY COLLEGE OF ENGINEERING
OKLAHOMA COBRE IN CANCER IMAGING RESEARCH
The UNIVERSITY of OKLAHOMA

PET DIAGNOSTIC AGENT FOR MYOCARDIAL FIBROSIS: [^{18}F]FLUORO-GLUCARIC ACID

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Gallogly Hall, Room 126

ABSTRACT

Each year millions of individuals suffer from heart ailments such as infarction, myocarditis, cardiomyopathies, etc., that lead to heart failure. Most heart failures are due to the loss of conductivity and contractility secondary to fibrosis that develops as a common response to these cardiac conditions. Cardiac fibrosis is characterized by tissue thickening, scarring, and exacerbated deposition of extracellular matrix in the myocardium. It is recognized as a strong predictor of sudden cardiac arrest because the stiff fibrotic tissue is unable to contract and relax. Early localization of fibrosis can help in clinical resolution as some types of fibrosis can be reversed by timely treatment before changes become irreversible. Current diagnostic methods to localize cardiac fibrosis are limited to either myocardial biopsy or contrast-MRI. Whereas biopsy is invasive and cannot assess the entire myocardium, MRI only detects fibrosis at an advanced and irreversible stage. To overcome these limitations, our lab in the OU-College of Pharmacy is investigating a novel radiotracer 18F-fluoroglucaric acid (FGA) for the detection of cardiac fibrosis by positron emission tomography (PET). In this seminar, the pre-clinical R&D efforts aimed at development of FGA as a diagnostic product will be described and recent advances in understanding related to FGA's mechanism will be discussed. In addition, an attempt will be made to expand FGA/PET diagnostic technology to other clinically impactful indications.

BIO

Dr. Awasthi is a Professor of Pharmaceutical Sciences and Associate Dean of Research at the OU-College of Pharmacy. He also holds Sandra K and David L Gilliland Chair Endowed Chair in Nuclear Pharmacy. Trained as a formulation development scientist, Dr. Awasthi achieved his PhD degree in Nuclear Medicine in India. Before moving to Oklahoma, he was Radiology faculty in the University of TX Hlth Science Center at San Antonio. As is evident from his significant and internationally recognized contributions in the fields of nuclear pharmacy, pharmaceutics, and drug development in general, he is a highly productive researcher. Recognized as a scholar and teacher among peers, Dr. Awasthi has mentored several students, clinical fellows, and faculty during his tenure in the OUHSC. Dr. Awasthi has over 115 research articles to his credit and his research has been continually funded by the NIH, NSF, and DoD agencies. The primary focus of his research has been in the development of novel diagnostics, therapies, and drug delivery technologies for life-threatening diseases, such as cancers, myocardial infarction, brain stroke, and hemorrhagic shock.