FIU Engineering & Computing
Biomedical Engineering

Miami Heart ♥ Month
Friday, February 7, 2020

Wallace H. Coulter Foundation
Biomedical Engineering Seminar Series

DR. JIANYI ZHANG, MD, PHD has extensive experience and knowledge in cardiovascular physiology and stem cell biology, myocardial metabolism in normal or ischemic conditions, hypertrophy and heart failure using large animal models. His lab has also been working extensively with human induced pluripotent stem cells (hiPSC) and human embryonic stem cell (hESC) cell lines for engineering functional cardiac tissues, and exploring their therapeutic potential in cardiovascular pathologies. These pre-vascularized cardiac tissue patches that are electro physiologically similar to naïve cardiac tissue can be used for drug testing, deciphering mechanisms of congenital heart diseases, and potentially serve as therapeutic products for their ability to survive, electrically integrate, and exert long-term beneficial effects on failing heart. He also have extensive experience and knowledge in biomaterials, cellular therapy, and myocardial bioenergetics of in vivo normal or hypertrophied dysfunctional hearts at basal- and high- cardiac work-states using MR imaging, spectroscopy, and large animal models. A unique feature of the NMR tools they have developed, applied, and impacted the field with is the fine spatial localization of the metabolic measurements in the in vivo heart. Once the new NMR technology has been tested and validated in his porcine model, the identical method may be readily applied in the clinical situation.

DR. JIANYI ZHANG

Professor and Chair, Department of Biomedical Engineering

University of Alabama at Birmingham

THE CONVERGENCE OF MEDICAL SCIENCES AND ENGINEERING: hiPSC to Rebuild the Failing Heart – Roadblocks to Overcome

ABSTRACT: Transplantation of engineered tissue patches with either progenitor cells or cardiomyocytes for cardiac repair has emerged as an exciting treatment option for post infarction LV remodeling. Beneficial effects may be due to direct remuscularization or paracrine mechanisms leading to mobilization and/or activation of endogenous progenitors with subsequent promotion of neovascularization, remuscularization and inhibition of apoptosis, and thus attenuation of disease progression.

Wallace H. Coulter Foundation

Through the generous support of the Wallace H. Coulter Foundation the Department of Biomedical Engineering facilitates weekly lectures each year during academic terms. Experts in all areas of Biomedical Engineering are invited to campus to provide a research seminar and to meet with faculty and students and to tour our academic and research facilities.

Friday, February 7, 2020
9:00AM-10:00AM Room EC 2300