



BRITTANY GONZALEZ, PHD is a Postdoctoral Associate working in the CV-PEUTICS laboratory under supervision of Dr. Sharan Ramaswamy. Dr. Gonzalez completed her B.S. in Biomedical Engineering in Georgia Institute of Technology and her PhD in Biomedical Engineering at Florida International University. Her research

focused on creating an ideal tissue engineered heart valve (TEHV) for children with critical congenital heart valve defects. Dr. Gonzalez was able to work with a team of surgeons and vets to do implants in non-human primates for investigation of functionality and growth of valves overtime. Dr. Gonzalez recently graduated and decided to continue her work with the CV-PEUTIC laboratory to test the developed extracellular matrix enriched valves in non-human primates.



HOOI HOOI NG, PHD graduated with a first class Honours in Bachelor of Biomedical Science from RMIT University, and a PhD in vascular physiology from The University of Melbourne, Australia in 2017. Following the completion of her PhD, she joins FIU as a postdoctoral associate

to continue her research examining the role of a naturally occurring peptide hormone, relaxin, in pre-clinical animal models. She recently completed an American Heart Association (AHA) postdoctoral fellowship, which aimed to investigate the therapeutic potential of a small molecule relaxin mimetic for the treatment of vascular calcification.

EARLY CAREER INVESTIGATORS SERIES

REGENERATIVE VALVE FOR THE TREATMENT OF CRITICAL MITRAL VALVE DISEASES IN THE YOUNG

ABSTRACT: Congenital heart disease, which includes heart valve defects, is the most common type of birth abnormality in the US. Critical congenital valve disease has no established treatment-measure other than compassionate care of the infant. This is due to an absence of prosthetic valves in small sizes and their inability to support somatic growth. Thus, a regenerable valve would be appealing since these barriers could be overcome, with the potential of being a more permanent treatment approach. In this study, porcine small intestinal submucosa (PSIS) bioscaffolds were used to create valvular constructs with the possibility to grow overtime. A pilot study investigated handmade PSIS mitral valves in a juvenile baboon model to assess their longitudinal functionality and somatic growth capacity. Additionally, PSIS tubular mitral bioscaffold valves were seeded in vitro with bone marrow stem cells and exposed to fluid-induced shear stress patterns in a perfusion bioreactor in order to enhance the extracellular matrix (ECM) of the valves. These valves will soon be implanted into juvenile baboons to determine the potential of the ECM-enriched valves to accelerate in vivo valve tissue formation, thereby facilitating its longer-term success.

TARGETING THE RELAXIN RECEPTOR TO DEVELOP NOVEL TREATMENTS FOR VASCULAR CALCIFICATION

ABSTRACT: The presence of calcium mineral in cardiovascular tissues is now accepted as the most significant predictor of coronary artery disease and heart failure. Despite increasing incidence of calcification-related cardiovascular diseases and massive healthcare costs associated with it, effective therapeutic strategies remain elusive. Relaxin has vaso-protective actions, but there are several drawbacks for relaxin to be used therapeutically for chronic diseases due to its pharmacokinetics. Discovery of a selective agonist of the relaxin receptor, ML290, provides an alternative to the endogenous ligand. This presentation focuses on the therapeutic potentials of ML290 to mitigate vascular calcification in chronic kidney disease and atherosclerosis mouse models. These studies may ultimately lead to the discovery of clinically-viable therapies for the treatment of vascular calcification that can benefit the rapidly increasing patient population.

FRIDAY, JANUARY 29 / 9:00 AM / VIA ZOOM

▶ Zoom Registration <https://bme.fiu.edu/seminars>



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.