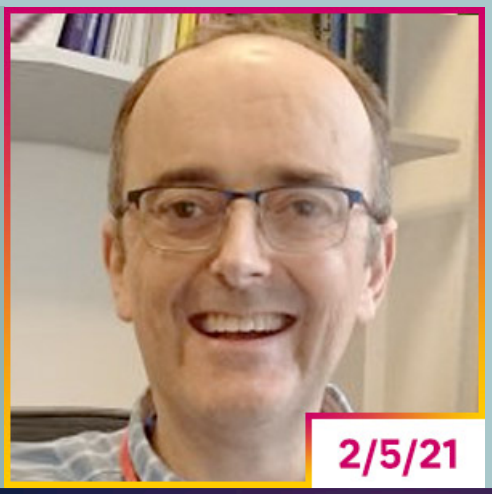
FIU Engineering & Computing
Biomedical Engineering

Wallace H. Coulter Foundation
Biomedical Engineering Seminar Series

ADRIAN CHESTER, PH.D. obtained a B.Sc (Hons) in Pharmacology from Portsmouth Polytechnic in 1986. After a period working in industry, he moved to the Harefield Heart Science Centre to study for a Ph.D under the supervision of the eminent cardiac surgeon Professor Sir Magdi Yacoub. Dr. Chester helped established a laboratory at Harefield that was dedicated to examining vascular mechanisms in human blood vessels. His work included examining the role of 5-HT receptor subtypes, endothelium-derived mediators and the activity of the renin-angiotensin system in human coronary arteries and vessels used for coronary artery bypass grafting. Dr. Chester's current work investigates the role of valve endothelial and interstitial cells in the regulation of heart valve function and in the processes that lead to the calcification of the aortic valve. These projects are closely related to a programme of research that has the goal of tissue engineering a human heart valve. Dr. Chester is currently the Deputy Director of Research at the Magdi Yacoub Institute and is Honorary Senior Research Fellow at Imperial College London. He is an Associate Editor for a number of journals and a Director of the Heart Valve Biology & Tissue Engineering series of meetings.



DR. ADRIAN CHESTER

Faculty of Medicine

National Heart & Lung Institute, Imperial College London

BIOLOGICAL COMPLEXITY OF THE AORTIC VALVE – WHAT IS RELEVANT FOR TISSUE ENGINEERED HEART VALVES?

ABSTRACT: The success of projects to produce a tissue engineered heart valves will rely on the production of a valve that can replicate the complex function and durability of native valves. The function and durability of currently used valve substitutes of undermined by their lack of viable cells. Cells that populate tissue engineered valves will need to replicate of ability of valve interstitial cells to synthesize extracellular matrix proteins and remodeling enzymes and secrete protective mediators released by endothelial cells. Scaffold materials need to provide the same mechanical strength and flexibility as the native extracellular matrix in order for the valve to function, as well as communicating with the cells that are bound within.

There are a number of regulatory mechanisms that influence valve function, which include neuronal mechanisms and the regulation of growth and angiogenic factors. Studies into valve biology have provided a blueprint for what a tissue engineered valve would need to be capable of, in order to truly match the function of the native valve. This presentation addresses how the biological functions of heart valve cells are addressed within the current strategies for tissue engineering heart valves in vitro, in vivo, and in situ.

FRIDAY, FEBRUARY 5 / 9:00 AM / VIA ZOOM

▸ Zoom Registration https://bme.fiu.edu/seminars

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 5, 2021

9:00AM-10:00AM | https://bme.fiu.edu/seminars