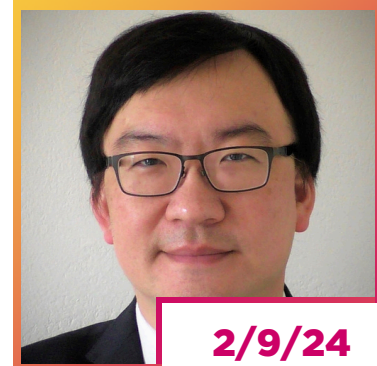


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Friday, February 9th | 9:00 AM | EC 2300

Leaflet-Specific and Layer-Specific Mechanisms of Calcific Aortic Stenosis

ABSTRACT: Aortic valve calcification is the hallmark of calcific aortic stenosis (AS) and has been the center of focus for many mechanistic studies. The increasing use of computed tomography in recent years for the clinical management of AS has facilitated the assessment of aortic valve calcification and its association with various risk factors or outcomes in patients with AS. While most computed tomography-based studies have generally indicated worse outcomes in AS patients with greater aortic valve calcification, supporting its clinical relevance, the highly heterogeneous nature of aortic valve calcification, both in terms of burden and distribution, is often underappreciated, if not neglected, in these studies. The large range of aortic valve calcification that can be seen in patients with similar degrees of AS raises the possibility that aortic valve calcification may not always be the dominant cause of valvular dysfunction in AS. In this seminar, we will describe our recent efforts using clinical computed tomography angiography as a platform to examine the relationship between leaflet calcification and leaflet excursion for the different aortic valve leaflets and identify regional anatomical/physiological factors that may influence the interleaflet differences in calcification and dysfunction. In this context, we will also highlight the leaflet-dependent contribution of non-calcific leaflet thickening as another important mechanism besides valvular calcification to underlie valvular dysfunction in AS. Lastly, we will present our latest development of contrast-enhanced micro-computed tomography methodology for uncovering interesting valve layer-specific pathologies in explanted human aortic valve tissues. Many of these pathologies not only fortify our leaflet-specific findings from clinical computed tomography but also present as exciting new targets for further mechanistic investigations of AS.



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 provide a research seminar and to meet with faculty and students to discuss the latest developments and research in Biomedical Engineering.

Friday, February 9th, 2024 | 9:00AM - 10:00AM | EC 2300

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