

University of Houston - Biomedical Engineering Seminar

Friday, April 1, 2022, 12 noon

Via Zoom:

<https://uh-edu-cougarnet.zoom.us/j/97219977403?pwd=VOIRTGhJMTdDQ1dwUDRJcGhYNTVFZz09>

The Biomechanics of Pulmonary Hypertension Secondary to Left Heart Failure



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Abstract

Pulmonary hypertension (PH) due to left heart failure (PH-LHF) is the most common cause of PH. This disease begins as pulmonary venous hypertension and then progresses to combined arterial and venous hypertension, which increases morbidity and mortality. The biomechanical and mechanobiological mechanisms that drive the transition from the first to the second, identified hemodynamically by increased pulmonary vascular resistance, are not well understood. We take an integrated experimental-modeling approach to advance knowledge in this area. We take a similar approach to understanding the impact of impaired left heart function on right heart function. Robust assessment of right heart mechanical function requires invasive catheterization with pressure-volume loop analysis at varying preloads. Discovering the mechanical mechanisms of pulmonary vascular and right ventricular dysfunction in PH-LHF is critical to understanding disease progression and developing novel therapies to prevent right ventricular and pulmonary vascular deterioration in response to LHF progression.

Biosketch

Naomi C. Chesler obtained her BS in Engineering from Swarthmore, MS in ME from MIT and PhD in Medical Engineering from Harvard-MIT. She Directs the Edwards Lifesciences Center for Advanced Cardiovascular Technology at UC Irvine and is Professor of Biomedical Engineering. Her efforts are in two main areas: cardiovascular biomechanics and engineering education. She has been the recipient of numerous awards, including the NSF Career award, Denice D. Denton Emerging Leader Award, Polygon Teaching Award for Biomedical Engineering, two Fulbright Scholar Awards, and is a fellow of several national and international professional societies. Lastly, she is founder and principal of Building STEM Equity, LLC (buildingSTEMequity.com), which seeks to promote diversity, equity and inclusion in science, technology, engineering, and mathematics (STEM) disciplines through education and training.