FIU Engineering & Computing
Biomedical Engineering

Wallace H. Coulter Foundation
Biomedical Engineering Seminar Series

CYNTHIA A. REINHART-KING, PHD is the Cornelius Vanderbilt Professor of Engineering and the Director of Graduate Studies in the Department of Biomedical Engineering at Vanderbilt University. Prior to joining the Vanderbilt faculty in 2017, she was on the faculty of Cornell University where she received tenure in the Department of Biomedical Engineering. She obtained undergraduate degrees in Chemical Engineering and Biology at MIT and her PhD at the University of Pennsylvania in the Department of Bioengineering. Her lab's research interests are in the areas of cell mechanics and cell migration specifically in the context of cancer and atherosclerosis. She was awarded the Rita Schaffer Young Investigator Award in 2010 and the Mid-Career Award in 2018 from the Biomedical Engineering Society, an NSF CAREER Award, the 2010 Sonny Yau '72 Excellence in Teaching Award, a Cook Award for "contributions towards improving the climate for women at Cornell," the Zellman Warhaft Commitment to Diversity Award from the Cornell College of Engineering, and the Vanderbilt Chancellor's Award for Research. She is a fellow of the Biomedical Engineering Society and the American Institute for Medical and Biological Engineering (AIMBE), and she was an inaugural New Voices Fellow of the National Academies of Science, Engineering and Medicine. She is currently a standing member of the NIH CMT study section panel and Chair of the Diversity and Inclusion Committee of AIMBE.

DR. CYNTHIA A. REINHART-KING

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MECHANOMEDICINE IN CANCER: TARGETING MECHANICS TO TREAT METASTASIS

ABSTRACT: Mechanomedicine is an emerging area of mechano-biology that seeks to develop and apply therapeutics that target mechanical changes within cells and tissues. During cancer progression, there are numerous mechanical changes that are specific to the tumor microenvironment and tumor cells. In this talk, I will describe my lab's efforts to understand the forces driving cell movements in the tumor microenvironment. Combining tissue engineering approaches, mouse models, and patient samples, we create and validate in vitro systems to understand how cells navigate the tumor stroma environment with the goal of identifying novel targets of cancer metastasis. Microfabrication and native biomaterials are used to build mimics of the paths created and taken by cells during metastasis. Using these platforms, we have described a role for a balance between cellular energetics, cell and matrix stiffness, and confinement in determining migration behavior. Moreover, we have extended this work into investigating the role of the mechanical microenvironment in tumor angiogenesis to show that mechanics guides vessel growth and integrity. I will discuss the mechanical influences at play during tumor progression and the underlying biological mechanisms driving angiogenesis and metastatic cell migration with an eye towards potential therapeutic avenues.

FRIDAY, MARCH 12 / 9:00 AM / VIA ZOOM

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

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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, March 12, 2021

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