Understanding Cellular-Particle Interactions in Blood: Implications for Disease Pathology and Treatment

Wednesday, September 16, 12:00 p.m.

Link: https://vcu.zoom.us/j/92911193735?pwd=Z2laWGRWM05wbC8waklZT1FZZkZBdz09
Passcode: tF2x4G^@hD

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Abstract
Localized delivery of therapeutics offers the possibility of increased drug effectiveness while minimizing side effects often associated with systemic drug administration. Factors that influence the likelihood of targeted particle therapeutics to reach the vascular wall are the ability to identify: 1) a disease-specific target, 2) the appropriate drug carrier type and geometry for efficient interaction with the vascular wall, and 3) a drug-carrier combination that allows for the desired release of the targeted therapeutics. Existing literature has focused on identifying target epitopes and the degradation/drug release characteristics of a wide range of drug-carrier formulations. Our work focuses on probing the role of particle geometry, material chemistry, and blood rheology/dynamics on the ability of vascular-targeted drug carriers to interact with the blood vessel wall - an important consideration that will control the effectiveness of drug targeting regardless of the targeted disease or delivered therapeutically. This presentation will highlight the carrier-blood cell interactions that affect drug carrier binding to the vascular wall and alter critical neutrophil functions in disease. The talk will present the optimal drug carrier geometry for active and passive use of VTC in the treatment of many inflammatory diseases.

Biography
Dr. Omolola (Lola) Eniola-Adefeso is the University Diversity and Social Transformation Professor of Chemical Engineering and Biomedical Engineering at the University of Michigan-Ann Arbor (UM); Associate Director of the Cellular Biotechnology Training Program; and Vice-Chair for Graduate Studies in Chemical Engineering. Eniola-Adefeso's research interest in the design and evaluation of particulate carriers and has contributed significantly to advancing the field of vascular-targeted drug delivery, which is applicable in various diseases, including cancer and heart and lung diseases. Recent discoveries from her lab led to two US patent filings, one of which was recently licensed to Orange Grove Bio, which formed a startup with Dr. Eniola-Adefeso as the CSO. In recognition of her pioneering research, she has received two National Institute of Health (NIH), multimillion-dollar research grants (R01), is a Fellow of the American Institute for Medical and Biological Engineers (AIMBE) and Biomedical Engineering Society (BMES), and is appointed to the NIH BTSS study section. She is currently a Deputy Editor for Science Advances and on the board of directors for BMES.

Host: Dr. Olivares-Navarrete