Joint Department of

BIOMEDICAL ENGINEERING

UNC CHAPEL HILL | NC STATE UNIVERSITY

Coulter Seminar Series Presents

"Understanding Cellular-Particle Interactions in Blood: Implications for Vascular-Target Drug Carrier Design"

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University Diversity & Social Transformation Professor
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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. She graduated from the University of Maryland Baltimore County (UMBC) with a bachelor's in Chemical and Biomolecular Engineering. She earned her master's (2000) and doctoral degree (2004) in Chemical and Biomolecular Engineering at the University of Pennsylvania. Eniola-Adefeso's research interest in the design and evaluation of particulate carriers 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 numerous research awards, including the NSF CAREER award, Lloyd Ferguson Young Investigator Award, American Heart Association Innovator Award, and the BMES MIDCAREER Award. She 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. Dr. Eniola-Adefeso currently serves on the UM's CoE executive committee (Elected), Biosciences Initiative Coordinating Committee (BICC), and Provost's Academic Affairs Advisory Committee. She is currently a Deputy Editor for Science Advances and on the board of directors for BMES. Her research is currently funded by multiple grants from the NIH National Heart, Lung and Blood Institute, AHA, and the National Science Foundation.

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 treating many inflammatory diseases.

Friday, February 26th
12:00 Noon

Seminar will be presented virtually via Zoom:
https://go.unc.edu/j5W3E