

# BIOENGINEERING

PRESENTS

## **Probing Cellular-Particle Interactions in the Design of Nanocarriers for Vascular-Targeted Drug Delivery.**



WEDNESDAY, OCTOBER 19, 2016

1:00 – 2:00 PM

2101 ENGINEERING V

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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 possibility of targeted therapeutics to reach the vascular wall include the ability to 1) identify disease-specific target epitope expressed by the vascular cells; 2) identify optimum drug carrier type, shape and size for efficient interaction with the vascular wall; and 3) identify a drug-carrier combination that allow for the effective release of therapeutics at the intended site. 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 therapeutic. This presentation will highlight key carrier-blood cell and carrier-plasma protein interactions that affect drug carrier binding to the vascular wall and suggest the optimum drug carrier geometry and material chemistry for vascular-targeted drug delivery applications in a solid tumor microvascular network and in large vessels associated with many cardiovascular diseases.

### **BIOGRAPHY:**

**Dr. Omolola Eniola-Adefeso** is currently an Associate Professor of Chemical Engineering and Biomedical Engineering at the University of Michigan-Ann Arbor. She graduated from the University of Maryland Baltimore County (UMBC) with a bachelor's in Chemical and Biomolecular Engineering. She then went on to complete a masters (2000) and doctoral degree (2004) in Chemical and Biomolecular Engineering at the University of Pennsylvania. She was postdoctoral associate at Baylor College of Medicine in Houston, Texas in the Pediatrics/Leukocyte Biology Department. Dr. Eniola-Adefeso joined the faculty of Chemical Engineering at the University of Michigan in 2006 where she runs the Cell Adhesion and Drug Delivery Laboratory. Since her arrival at Michigan, Dr. Eniola-Adefeso has received several honors and awards including the NSF CAREER Award, Lloyd Ferguson Young Investigator Award, American Heart Association Innovator Award, and the American Heart Association Scientist Development Grant. Her research is currently funded by multiple grants from the National Heart, Lung and Blood Institute and the National Science Foundation.