

College of Engineering

Department of Mechanical Engineering

2009 Robert M. and Mary Haythornthwaite  
Foundation Distinguished Lecture Series



Dr. Doug Goetz  
Chair, Chemical & Bio-  
molecular Engineering  
Ohio University

## Engineering Novel Vascular-Based Therapeutics and Diagnostics

April 24, 2009  
12:40 - 1:30 PM  
College of Engineering  
Room 126

Our research seeks to advance the understanding of molecular and cellular mechanisms of pathological processes and to use this knowledge for the development of novel therapeutics and diagnostics. We currently focus on adhesion based targeted drug delivery, the identification of vasculature-related molecular signatures of disease, and the development of small molecule inhibitors of pathological signaling. This talk will concentrate on our recent work in the area of atherosclerosis (a.k.a. hardening of the arteries). Atherosclerosis starts with a fatty streak within the vessel wall and can culminate in a life threatening vulnerable plaque that occludes a significant portion the vessel. Several studies have demonstrated that the luminal surface of the vessel wall at the site of a plaque is biochemically distinct from other regions of the vasculature. We have recently shown that this heterogeneity can be exploited to target biodegradable drug carriers to sites of atherosclerosis. In addition, we have found that a molecule involved in proliferative disease, and implicated in pathological inflammation, is increased at sites of atherosclerosis opening up a possible new diagnostic/prognostic avenue. Finally, our previous work demonstrating that a small molecule can inhibit endothelial cell inflammation in vitro has expanded into numerous in vivo studies probing the efficacy of this compound.

### Profile

Doug Goetz received a Bachelorette and Masters degree in Chemical Engineering from Purdue University in 1985 and 1987 respectively and a Ph.D. in Chemical Engineering from Cornell University in 1995. He worked as a Post-Doc at Harvard between 1995 and 1997 before joining the Biomedical Engineering department at University of Memphis as an Assistant Professor. He later joined Ohio University as an Assistant Professor and is presently a Full Professor and Chair of Chemical and Biomolecular Engineering. His research interests are in the field of biomedical engineering, specifically on cell adhesion & drug delivery.