Amgen Seminar Series in Chemical Engineering

in

Cherry Auditorium, Kirk Hall, 12:45 PM

Presents on February 15, 2018

Dendrimer Nanocarriers and their Aerosol Formulations for the Delivery of Therapeutics to and through the Lungs

By

Dr. Sandro R. P. da Rocha
Director for Pharmaceutical Engineering - School of Pharmacy
Massey Cancer Center and Chemical and Life Science Engineering
Virginia Commonwealth University

In this presentation we discuss how the chemistry of dendrimer nanocarriers can be used to modulate their interaction with the pulmonary epithelium and how such knowledge can be used to develop efficient strategies for local or systemic delivery of drugs to and through the lungs. We also discuss particle engineering approaches that allow us to design portable oral inhalation formulations of the dendrimer nanocarriers with aerosols conducive to deep lung deposition. We employ a range of experimental and computational tools to probe the system at various size scales, from atomic to molecular to nano and micron, in order to design the nanocarriers and their formulations. We will discuss some of the potential applications of these carriers, including the formulation of biologics and small molecules, and targeting of intra-cellular organelles such as mitochondria, and demonstrate their applicability in treating an in vivo model of metastases to the lungs.

Bio: Dr. da Rocha is a Professor in the Department of Pharmaceutics, holds a joint appointment in Chemical and Life Science Engineering, and is also a member of the Massey Cancer Center at Virginia Commonwealth University (VCU). He obtained his Ph.D. in 2000 from the University of Texas at Austin in Chemical Engineering. After a postdoctoral position in Chemistry and Biochemistry also at the University of Texas at Austin, Dr. da Rocha joined the faculty in Chemical Engineering at Wayne State University in Detroit, MI. He joined VCU in October 2015, and is currently the director for Pharmaceutical Engineering - School of Pharmacy.

Prof. da Rocha has contributed to the area of pulmonary drug delivery, particularly through the development of novel portable inhaler formulations and of nanotherapeutics for the controlled delivery of small molecules and biologics to and through the lungs. Prof. da Rocha has written a number of peer reviewed publications, book chapters, and disclosed several technologies with his collaborators (visiting faculty, postdoctoral fellows, Ph.D., undergraduate, graduate and high-school students), who now hold positions in the various industries, government and academic institutions.

This series at the University of Rhode Island is made possible through the generosity of Amgen, West Greenwich, R.I.

Refreshments provided by the Joseph Estrin Endowment.