

University of Houston - Biomedical Engineering Seminar
Friday, Oct 25, 2019 Noon, Rm 204 SEC

**Using Biomolecules to
Overcome Biological Barriers for Drug Delivery**



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Abstract

A fundamental challenge in drug delivery is the ability to deliver therapeutic amounts of drugs to the target site. During homeostasis and in diseases, the body's biological barriers regulate drug transport and often prevent sufficient drug accumulation. Our lab is interested in using biomolecules to understand these barriers and leverage the insights for more effective drug delivery. We will discuss our efforts to screen peptide-presenting phage libraries as a combinatorial approach to identify peptides that facilitate transport through barriers such as mucus, the tumor extracellular matrix, and the blood-brain barrier. In a second advance, we will present how the intrinsic transport properties of biomolecules, such as albumin, can be harnessed to achieve therapeutic delivery in tumors. These studies reflect the potential of biomolecules to overcome difficult-to-penetrate barriers for drug delivery.

Biosketch

Dr. Ghosh is an Assistant Professor in the Division of Molecular Pharmaceutics and Drug Delivery in the College of Pharmacy at UT Austin. His BS is in Biomedical Engineering from Case Western and his PhD in Bioengineering from Rice. Rana then completed postdoctoral training at MIT using viruses for cancer nanotechnology. His lab is interested in engineering and using biomolecules to overcome the biological barriers of diseases for drug delivery. His work has been published in journals including Nature Nanotechnology, PNAS, and Nanoscale. Rana has received new investigator awards from the PhRMA Foundation and the Controlled Release Society, and the lab's research has been supported by PhRMA and the NIH.