



SoFlacs



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Virtual Section Meeting

Friday, October 28, 3:30-4:30 PM

Join via Zoom

<https://miami.zoom.us/j/96492713882> Meeting ID: 964 9271 3882, Passcode: 2022

Hai-Quan Mao, PhD

Director, Institute of NanoBioTechnology, Johns Hopkins University

Kinetically Controlled Assembly of Nanoparticles for Delivery of Macromolecular Therapeutics

Abstract:

This seminar will cover a kinetically controlled nanoparticle assembly process, called flash nanocomplexation (FNC), as a scalable manufacturing method to produce size-controlled polymer- and lipid-based nanoparticles for delivery of plasmid DNA and mRNA. Several case studies using these kinetically assembled nanoparticles (KNPs) will be discussed, including (1) composition and size-dependent gene delivery using nucleic acid KNPs and (2) peptide and protein-loaded KNPs for therapeutic and vaccine delivery. This KNP platform has strong translational potential and can generate a series of off-the-shelf nanoparticle therapeutics.

Bio. Prof. Hai-Quan Mao is Director of the Institute of NanoBioTechnology (INBT) and Professor of Materials Science and Engineering and Biomedical Engineering at Johns Hopkins University. Prof. Mao's research focuses on engineering nanomaterials for regenerative medicine and for the delivery of molecular and cellular therapeutics. His lab has developed nanofiber scaffolds from synthetic and natural biomaterials for engineering and delivery of stem cells and regeneration of soft tissues. His lab also established nanoparticle manufacturing platforms for controlled assembly of nanotherapeutics to deliver DNA, RNA and protein therapeutics and demonstrates their efficacy in local and systemic delivery of macromolecular therapeutics and vaccines. Prof. Mao currently serves as an Associate Editor of the journal "Biomaterials" and on the editorial boards of *ACS Biomaterials Science & Engineering* and *Journal of Materials Chemistry B*. He has published more than 200 peer-reviewed research articles and is a co-inventor of 31 U.S. patents and more than a dozen provisional applications. He has been elected a Fellow of the Royal Society of Chemistry and the American Institute for Medical and Biological Engineering, and a member of the National Academy of Inventors.

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