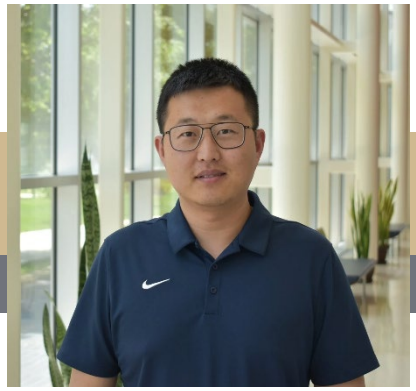
BIOCHEMISTRY SEMINAR

"Quantification and Characterization of Surface Density in Antibody-Conjugated LNP Formulations for Extrahepatic Delivery"

Feng Qu

Graduate Student

Purdue University



Lipid nanoparticles (LNPs) have revolutionized RNA therapeutics, enabling approved treatments for liver-related diseases due to their natural tropism. However, expanding to extrahepatic targets remains a key challenge, with antibody conjugation representing one promising approach to enhance specificity and efficacy in LNP formulations. This seminar explores a thesis project focused on process development for quantifying and characterizing surface antibody density in Ab-LNP formulations, a vital yet underexplored parameter for optimizing targeted delivery. Through innovative conjugation process and mathematical modeling to address measurement uncertainties, we prepared formulations with varying density levels and conducted comprehensive physicochemical and functional characterizations. These insights underscore the potential of refined Ab-LNP processes in advancing extrahepatic applications and highlight the industrial analytical challenges for complicated formulation containing protein, lipids, and nucleic acids. Ongoing studies aim to evaluate tissue distribution following systemic administration.

Monday, November 3rd, 2025, 3:30 pm BRWN 4102

PURDUE UNIVERSITY | James Tarpo Jr. and Margaret Tarpo Department of Chemistry