School of Molecular Sciences
Arizona State University

SMS Spring 2023 Seminar Series

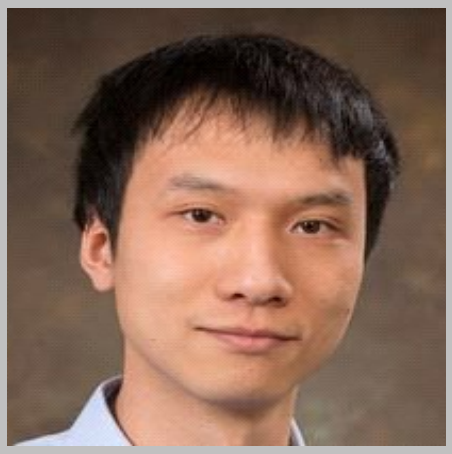
Friday Apr 14 | 3pm | PSH-150

Building Biomimetic Structures with DNA Nanotechnology

In eukaryotic cells, myriad molecular machineries control the formation of membrane-bound compartments and the molecular transport amongst them. However, evolution hands us these beautiful end products without a user manual, making these sophisticated systems difficult to dissect or re-engineer. Our research seeks to unlock mechanistic details of cellular organization and dynamics at the single-molecule level by establishing cell-free platforms that robustly recapitulate the structure and dynamics of membranous compartments and protein complexes. Specifically, we use DNA nanotechnology, an emerging technique that programs supramolecular assembly in three dimensions, to build various biomimetic constructs with precisely controlled geometry and molecular placement. Here, I will share our progress on building a versatile nanoscale toolkit for high-precision membrane engineering and an adaptable framework for building nuclear pore mimics. I will also discuss how we tackle some of the long-standing questions about biomolecular interactions using such a "DNA-guided" engineering approach.

Chenxiang Lin, PhD

Associate Professor, Yale University



Chenxiang Lin is an Associate Professor of Cell Biology and has been a faculty member at the Nanobiology Institute, Yale University since 2012. Before joining Yale, he studied chemistry at Peking University, completed his Ph.D. thesis on DNA nanotechnology at Arizona State University (advisors: Drs. Hao Yan and Yan Liu), and received postdoctoral training at the Wyss Institute at Harvard University (advisor: Dr. William Shih). He is interested in developing DNA-nanostructure-based molecular tools for biological studies, aiming at understanding nature's engineering principles of biomolecular machineries and creating artificial systems with similar complexity.

**ZOOM option available: https://asu.zoom.us/j/89234740626*