

SMS Fall 2022 Seminar Series

Friday Dec 2 | 2:30pm | Biodesign Auditorium

Cell-Inspired Design of BioInteractive Materials: Expanding the Supramolecular Toolbox

Peptides, nucleic acids, lipids, and sugars are the most versatile building blocks that underlay cellular structures and functions. Key to their emergent functionality is the dynamic interplay between components across length scales, and their responsiveness to physical and biochemical cues. While nature only uses a fraction of the available sequence and structural space, more is beginning to become accessible by innovative design strategies and chemistries, advanced characterization techniques, and computational tools that uncover design principles for the construction of structures with high complexity. I will give an overview of our recent work involving the design of cell-inspired assemblies and interfaces using peptides, nucleic acids, and sugars that provide expanded complexity and functionality towards materials with life-like properties.

Ronit Freeman, PhD

Associate Professor, University of North Carolina at Chapel Hill

Dr. Ronit Freeman leads a multidisciplinary team and conducts cross-functional research in the area of molecular self-assembly and biomaterials. She is trained in multiple fields such as Chemistry, Nanotechnology, and Computer Science, Freeman's unique entrepreneurial approach to research focuses on issues that can be solved using science and technology and directly benefit the society by commercialization of bench discoveries. Dr. Freeman's designs innovative scientific solutions to existing health problems with the power of self-assembly of peptides, nucleic acids, and sugars, from rapid diagnostics to reconfigurable scaffolds for tissue engineering, and targeted biomimetic therapies.

Most recently Dr. Freeman designed GlycoGrip, a COVID-19 test strip, that detects multiple variants of the SARS-CoV-2 virus, and works to bring her innovative peptidomimetic therapies to reverse lung fibrosis into the clinic.

