Chemical Biology Seminar

"Synthetic polypeptide-based materials for biological applications"

Abstract: As more attention is focused on biomaterials for medical applications, synthetic polypeptides offer a useful approach towards designing novel biomimetic materials. Polypeptides are inherently biodegradable and biocompatible, and offer wide-ranging properties seen in living systems. The peptide backbone is enzymatically degradable while their side chain functionality can be modified to create an array of stimuli-responsive materials. Here, I will present work on unnatural amino acids incorporated into synthetic polypeptides to design new biomaterials, including vesicles, hydrogels, and coacervates. Synthesis of these materials are modular and can be processed into an assortment of self-assembled macromolecular structures through secondary structure and self-assembly, relevant for stem cell therapies, gene and protein therapeutics, and imaging guides, among many other biomedical applications.

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