

**Faculty Name:**

Allie Obermeyer

**Faculty Email:**

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**Lab:**

Obermeyer Lab

**Project Title:**

Engineering protein assembly and phase behavior

**Description:**

We are interested in promoting protein interactions with a host of biological and synthetic polymers for applications in protein stabilization, purification, and delivery as well as in biocatalysis and sustainable materials. By facilitating these interactions we can combine the biological functionality of the protein with the physical properties of the (bio)polymeric materials. The projects will involve genetic engineering of model proteins to increase non-specific intermolecular interactions or to introduce specific binding interactions. These genetically engineered proteins will be produced in host organisms, such as *E. coli* or *S. cerevisiae*, and then purified for materials characterization. As an example, protein net charge and charge distribution will be genetically engineered on fluorescent or enzymatic proteins to promote phase separation with nucleic acids. The phase behavior of the engineered proteins will be evaluated through spectroscopy, fluorescence microscopy, and materials characterization in vitro and/or in living cells. The student will work closely with the PI, including regularly meetings with the PI to discuss research goals and progress.

**Location of Research:**

On Site

**# of hrs/week:**

40

**Department/Program:**

Chemical Engineering

**Eligibility:**

BS, First Year, BS, Second Year, BS, Third Year, BS, Fourth Year, MS

**To apply, please contact:**

Allie Obermeyer, aco2134@columbia.edu