

# CARNEGIE MELLON UNIVERSITY

## BME 2020 SUMMER SEMINAR SERIES



### Macrophage engineering: New approaches for drug delivery and diagnostics



#### PRESENTED BY

**Elizabeth Wayne, Ph.D.**

Assistant Professor  
Biomedical Engineering  
Chemical Engineering  
Carnegie Mellon University

#### SCHEDULE

**Tuesday, July 28, 2020**  
(9:00 AM-10:00AM)

Most modern cancer drug formulations are encapsulated within nanoparticles, biomaterials, or protein conjugations. Macrophages are among the first cells to interact with these therapeutic materials making them prime candidates for observation. Until recently, it was largely believed that this was an obstacle, that macrophages phagocytose these therapies and inhibit the overall efficacy. However, newly available information, which I have developed throughout my postdoctoral career, demonstrates that macrophage can act as slow release reservoirs for nucleic acids in a polarization dependent manner. The precise manner in which macrophages respond to these signals is important to decipher because they yield insight into the processing of nano-formulated drugs which affect disease progression. This talk will discuss new strategies for engineering macrophages to control drug delivery and monitor disease progression.