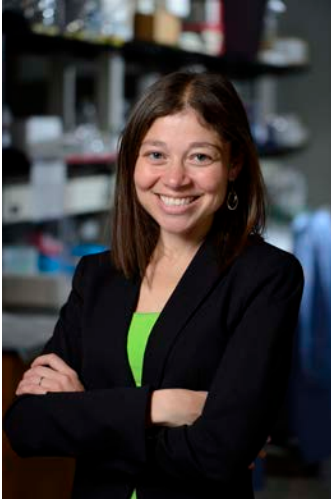


BIOENGINEERING

PRESENTS

Reshaping the immune landscape through molecular engineering



THURSDAY, May 16, 2018

12:00 – 1:00 PM

2101 ENGINEERING V

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ABSTRACT:

The repertoire of naturally occurring proteins is finite and many molecules induce multiple confounding effects, limiting their efficacy as therapeutics. Recently, there has been a growing interest in redesigning existing proteins or engineering entirely new proteins to address the deficiencies of molecules found in nature. Researchers have traditionally taken an unbiased approach to protein engineering, but as our knowledge of protein structure-function relationships advances, we have the exciting opportunity to apply molecular principles to guide engineering. Leveraging cutting-edge tools and technologies in structural biology and molecular design, our lab is pioneering a unique structure-based engineering approach to elucidate the mechanistic determinants of protein activity, in order to inform therapeutic development. Our group is particularly interested in engineering immune proteins, such as cytokines, growth factors, and antibodies, to bias the immune response for targeted disease treatment. Despite the recent explosive growth of protein drugs within the pharmaceutical market, limitations such as delivery, acquired resistance, and toxicity have impeded realization of the full potential of these therapeutics, necessitating new approaches that synergize with existing strategies to address clinically unmet needs. This talk will highlight ongoing work in our lab that spans the discovery, design, and translation of novel molecular therapeutics for applications ranging from cancer to autoimmune disorders to regenerative medicine.

BIOGRAPHY:

Dr. Jamie Spangler earned a Bachelor of Science degree in Biomedical Engineering at Johns Hopkins University and went on to conduct her Ph.D. research in Biological Engineering in Professor K. Dane Wittrup's group at MIT, studying antibody-mediated down-regulation of epidermal growth factor receptor as a new mechanism for cancer therapy. She then completed a postdoctoral fellowship in Professor K. Christopher Garcia's lab in the Molecular & Cellular Physiology and Structural Biology departments at Stanford University School of Medicine, focusing on engineering cytokine systems to bias immune homeostasis. Dr. Spangler launched her independent research group at Johns Hopkins University in July 2017, jointly between the departments of Biomedical Engineering and Chemical & Biomolecular Engineering. Her lab, located in the Translational Tissue Engineering Center at the School of Medicine, applies structural and mechanistic insights to re-engineer natural proteins and design new proteins that therapeutically modulate the immune response. Dr. Spangler's work has been recognized with honors including a National Defense Science and Engineering Graduate Fellowship, a Leukemia & Lymphoma Society Career Development Fellowship, and most recently a V Foundation V Scholars award.