

JESSICA STARK

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**"Targeting Sugars for
Immunotherapy in
Cancer and Beyond"**

Wednesday

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3:30 PM

Wu and Chen Auditorium
Levine Hall

ABSTRACT

New paradigms to harness the immune system are urgently needed to address unmet needs in human health. I am working to understand and engineer glycoimmunology – the roles of sugars, or glycans, in the immune system – to bridge this gap. During my PhD, I developed a platform called iVAX for rapid and portable production of conjugate vaccines, a class of FDA-approved vaccines that use glycans to elicit antibacterial immunity. I showed that iVAX-derived conjugate vaccines protected mice against lethal pathogen challenge. My iVAX approach has the potential to accelerate development and distribution of vaccines to address emerging drug-resistant bacteria. As a postdoctoral fellow, I designed antibody-lectin (AbLec) chimeras to target glycans that act as immune checkpoints in cancer. I showed that AbLecs potentiated tumor killing by binding and blocking tumor-associated glycans that otherwise inhibit anti-cancer immune responses. AbLecs represent a new modality of cancer immunotherapy that promises to increase the fraction of patients who benefit from treatment. My independent group will work to realize the full potential of glycoimmunology for human health, by developing new immunotherapy modalities and uncovering new drug targets. While we will initially focus on fundamental questions and therapeutic applications in cancer, in the long term we will apply our synergistic platform technologies to additional therapeutic contexts, including autoimmunity, infection, and neurodegeneration.

BIO

Dr. Jessica Stark is currently an American Cancer Society Postdoctoral Fellow with Prof. Carolyn Bertozzi at Stanford University. Her postdoctoral work focuses on identifying and targeting glycans that act as immune checkpoints for next-generation cancer immunotherapy. As an NSF Graduate Research Fellow with Prof. Michael Jewett at Northwestern University, Jessica developed cell-free technologies for protein therapeutic and vaccine production that promise to enable portable and personalized medicine. Previously, she received her B.S. in Chemical and Biomolecular Engineering from Cornell University, supported by an Irwin and Joan Jacobs Engineering Scholarship. Jessica's work has been recognized with multiple awards and honors, including an NIH/NCI Postdoctoral Fellowship, a Hanna H. Gray Fellow Finalist Award, a Clare Boothe Luce Graduate Fellowship, an NIH Biotechnology Training Program Fellowship, induction to the Sigma Xi Scientific Research Honor Society, and the Northwestern Chemical Engineering Department's Distinguished Graduate Researcher Award. Jessica is committed to enhancing diversity, equity, and inclusion in STEM through mentoring, outreach, and service activities, most recently as a selected member of the Stanford Chemistry Department's Equity and Inclusion committee. To support this work, she co-developed and commercialized BioBits® educational kits that promise to increase access to high-quality biology education by facilitating hands-on learning.