



Chemical Engineering Spring 2023 Seminar Series

Targeting Sugars for Immunotherapy in Cancer and Beyond



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66-110
4:15-5:15pm
4:00pm Reception

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.

<http://cheme.mit.edu/seminar-series/>