

Glycopolymer Probes to Control Immunity

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Molecular guidelines to design compounds that selectively augment immune responses (vaccines) or mitigate them (treatments for autoimmune diseases) are needed. Principles have been elusive because many immune system receptors (e.g., the B cell receptor or the lectin DC-SIGN) can transmit signals that lead to either immunity or tolerance. Synthetic conjugates can now be synthesized with exquisite control over antigen structure. We are capitalizing on these methods to elucidate how antigen scaffold structure influences immunity and tolerance. Specifically, features of an antigen's structure (e.g., valency, size, affinity, co-receptor binding) can be altered to optimize its function. By using living polymerization strategies, we are generating polymers and nanoparticles that function as antigens. This presentation will focus on our latest results in generating polymeric antigens that can elicit selective immune signaling pathways.