UNIVERSITY OF RHODE ISLAND
Department of Chemistry
SEMINAR

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Room 105 – Beaupre Center

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Yale University

The development of synthetic methods for biomedical applications

HOST

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The development of synthetic methods for biomedical applications

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Abstract: My lab focuses on the development of synthetic methods for the efficient preparation of drug relevant structures, and in particular, compounds that incorporate nitrogen. At a project's outset, we target a specific class of pharmaceutically relevant compounds or type of disconnection, but because we are receptive to the serendipitous discovery of new reactivity, research programs often evolve in unanticipated directions. Regardless of whether a project deviates from its original goal, readily available starting materials and high functional group compatibility are underlying priorities. Mechanistic studies on newly discovered transformations have contributed to an understanding of reaction pathways and have facilitated further advances. Collaborations with biomedical and pharmaceutical researchers have guided our development of synthetic methods and technologies for the more efficient discovery of potent and selective small molecule ligands to biomolecular targets. In this presentation, I will provide examples of both targeted and serendipitous reaction discovery and will discuss emerging programs on new types of C-H functionalization, photoredox-catalyzed highly stereoselective epimerization of non-aromatic nitrogen heterocycles, and asymmetric catalysis for the convergent synthesis of drug relevant high oxidation state sulfur pharmacophores.