Research Statement

Research interests in this laboratory lie at the interface of chemistry and medicine.

For the past two decades, we have studied and engineered assembly line polyketide synthases, with the concomitant goal of harnessing their programmable chemistry for preparing medicinally relevant natural products. In the coming years, we expect to focus on the structure and mechanism of the erythromycin polyketide synthase, arguably the most well understood assembly line antibiotic synthase. At the same time, we are developing methods to decode the vast and growing number of orphan polyketide assembly lines in the sequence databases.

For more than a decade, we have also investigated the pathogenesis of celiac disease, an HLA-DQ2 associated immune disorder of the small intestine, with the goal of discovering therapies and related disease management tools for this widespread but overlooked condition. Our efforts in the coming years focus on understanding the pivotal role of transglutaminase 2 in triggering gluten-dependent inflammation in the celiac intestine.

Representative Publications


http://cheme.stanford.edu/
http://www.stanford.edu/group/khosla/Home.html
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