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Chernoff Hall, Room 117

Discovery, Biosynthesis, and Synthesis of Peptide-Based Natural Products

Peptide natural products have incredible structures and function and have played key roles in the development of pharmaceutical agents across all therapeutic areas. Accessing new chemical and functional diversity from these compounds is thus critically important. Two key strategies for this are 1) the discovery of new peptide natural products and 2) the synthesis of derivatives of known natural products. Both are challenging, with new natural product discovery limited by rediscovery of known compounds and synthesis of new derivatives limited by synthetic methods and the complexity of these natural products. In this seminar we will show how using insights from biosynthesis we can address both of these challenges. Relying on understanding the evolutionary pressures that lead to the development of new natural products, we will describe the discovery, biosynthesis and synthesis of two new peptide natural products. Relying on understanding how biosynthesis accesses macrocyclic peptides, we will describe how the enzymes responsible for macrocyclization can be engineered in improve their performance with new to nature substates.

Host: David L. Zechel