

Organic Seminar

Title: "Indole Alkaloids and Phenazine Antibiotics: New Platforms for Discovery"

Guest Speaker:

Professor

Robert W. Huigens III

University of Florida

Department of Medicinal Chemistry



Friday, November 8th, 9:00am

473 Hutchison Hall

University of Rochester

Department of Chemistry



Abstract: Various natural products, such as taxol, morphine and vancomycin, play a prominent role in medicine due to their ability to modulate biological targets critical to human disease. Our lab has two natural product inspired synthetic medicinal chemistry programs, driven by the structural complexity of indole alkaloids and the function of phenazine antibiotics. Each program aims to address major biomedical problems, including: (1) enhancing the chemical diversity of screening libraries used to drive drug discovery in high throughput screening campaigns and (2) the discovery of small molecules capable of targeting and eradicating surface-attached bacterial biofilms. Our first program aims to rapidly generate diverse and complex compounds, which can be accessed through short synthetic sequences motivated by the dramatic alteration of the inherent complex ring system of indole alkaloids. From these efforts, we have generated a library of >200 complex and diverse small molecules, which are producing an array of interesting hit compounds in diverse disease areas. Our second program aims to target bacterial biofilms, which contain specialized persister cells that are metabolically dormant and demonstrate tolerance towards every class of conventional antibiotic currently available. Biofilms are the underlying cause of chronic and recurring bacterial infections. Our lab has discovered that the marine phenazine antibiotic 2-bromo-1-hydroxyphenazine is a tunable molecular scaffold that provides access to highly potent antibacterial agents that are able to eradicate drug-resistant and antibiotic-tolerant bacterial biofilms.

Host: Rudi Fasan • Email: rudi.fasan@rochester.edu