



Gavin J Williams



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Biosynthesis and Diversification of Natural Products

Research emphasis:

Natural products are a proven source of new drugs, but are often difficult to synthesize and diversify for drug discovery due to their structural complexity. The Williams lab devises new approaches to synthesize natural product analogues. We probe, interrogate, and ultimately manipulate the biosynthesis of natural products and other small molecules, using a combination of strategies based on utilizing the power of organic chemistry (*chemical biology*) and the ability to build and test artificial pathways and microbes from the bottom-up (*synthetic biology*).

Application :

- Antibiotics
- Design of molecular probes
- Polyketides
- Pathway engineering

Collaboration potential:

- Design and synthesis of antibiotics
- Mechanism of action studies
- Target identification

Selected publications:

Ladner C, Williams GJ*. "Harnessing natural product assembly lines: structure, promiscuity, and engineering". *J Ind Microbial Biotechnol*, DOI 10.1007/s10295-015-1704-8

Williams GJ*. "Engineering polyketide synthases and non-ribosomal peptide synthetases". *Curr Opin Struct Biol*, **2013**, 23, 603-612

Williams GJ, Gantt RW, Thorson JS*. "The impact of enzyme engineering upon natural product glycodiversification". *Curr Opin Chem Biol*, **2008**, 12, 556-564