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Functionality and plasticity of bacterial polyketide synthases

Polyketide synthases (PKS) are enzymes catalyzing the synthesis of polyketides, a huge family of natural products, including clinically relevant compounds, such as antibiotics, immunosuppressive, or cholesterol-lowering drugs. One class of polyketides are the enediynes, whose members possess remarkably high DNA damaging activities, whereby they can be used as antibiotic and antitumoral agents.
One focus of this work is the exploration of the biosynthesis of a new enediyne natural product catalyzed by an iterative type I PKS in a bacterial strain previously not described as enediyne producer. Further goals are the extraction of the enediyne, the optimization of the production conditions as well as the manipulation of the enediyne
synthesizing PKS by mutagenesis.
A second focus of this work is the manipulation of a modular PKS, which is involved in the synthesis of new natural compounds called gulmirecins. Aims are the increase of the gulmirecin production as well as the generation of new biologically active derivatives of this compound.

Publications

Korp J, Vela Gurovic MS, Nett M (2016) Antibiotics from predatory bacteria. *Beilstein J Org Chem* 12, 594-607. Details PubMed

Korp J, König S, Schieferdecker S, Dahse HM, König GM, Werz O, Nett M (2015) Harnessing Enzymatic Promiscuity in Myxochelin Biosynthesis for the Production of 5-Lipoxygenase Inhibitors. *Chembiochem* , Details PubMed

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