Decoding and reprogramming complex polyketide assembly lines: prospects for synthetic biology.

Hertweck C (2015) Decoding and reprogramming complex polyketide assembly lines: prospects for synthetic biology. *Trends Biochem Sci.* 40(4), 189-199. (Review)

Details

PubMed

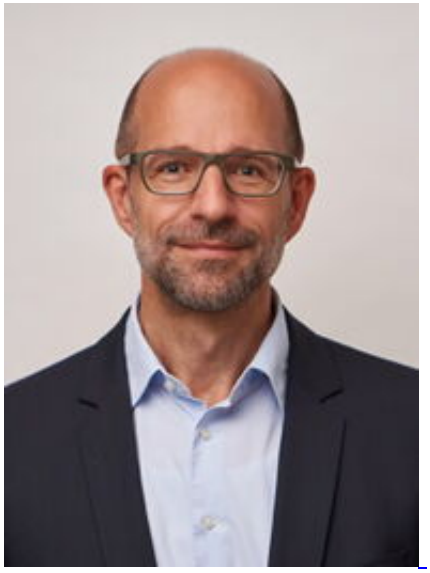
Abstract

Bacterial modular type I polyketide synthases (PKSs) represent giant megasynthases that produce a vast number of complex polyketides, many of which are pharmaceutically relevant. This review highlights recent advances in elucidating the mechanism of bacterial type I PKSs and associated enzymes, and outlines the ramifications of this knowledge for synthetic biology approaches to expand structural diversity. New insights into biosynthetic codes and structures of thiotemplate systems pave the way to rational bioengineering strategies. Through advances in genome mining, DNA recombination technologies, and biochemical analyses, the toolbox of non-canonical polyketide-modifying enzymes has been greatly enlarged. In addition to various chain-branching and chain-fusing enzymes, an increasing set of scaffold modifying biocatalysts is now available for synthetically hard-to-emulate reactions.

Beteiligte Forschungseinheiten

Biomolekulare Chemie Christian Hertweck Mehr erfahren

Leibniz-HKI-Autor*innen



Christian Hertweck

Details

Identifier

doi: 10.1016/j.tibs.2015.02.001

PMID: 25757401