Molecular diversity sculpted by fungal PKS-NRPS hybrids.

Boettger D, Hertweck C (2013) Molecular diversity sculpted by fungal PKS-NRPS hybrids. *Chembiochem* 14(1), 28-42.

Details

PubMed

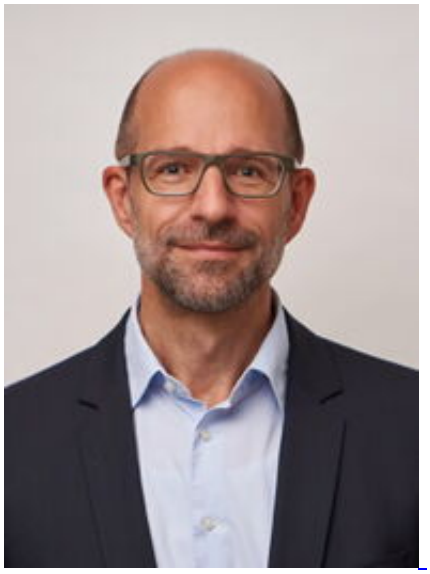
Abstract

Fungal polyketide synthase-nonribosomal peptide synthetase (PKS-NRPS) hybrids manufacture a wide range of structurally diverse secondary metabolites that play an eminent role in the environment, as molecular tools and leads for therapeutic development. To date, a dozen PKS-NRPS megasynthetases can be linked to the corresponding secondary metabolites, which stand out because of their structural complexity. The diversity of their structures, biological activities, and biosynthetic routes are particularly intriguing considering the iterative use of the catalytic domains of the biosynthetic enzymes-implying an enigmatic biosynthetic code. This review provides an overview of the characterized fungal PKS-NRPS hybrids, their manifold functionalities, and the diversity of the resulting secondary metabolites, as well as molecular engineering attempts that highly improved the understanding of their cryptic programming.

Beteiligte Forschungseinheiten

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Details

Identifier

doi: 10.1002/cbic.201200624

PMID: 23225733