

## Reaction Control in Megasyntases

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Polyketide synthases (PKS) and fatty acid synthases (FAS) belong to the same protein family. Both are multistep enzymes, and both catalyze reactions by a similar working concept. However, as compared to FAS, PKS show variations in their functional spectrum, and their products, termed polyketides, are of more complex chemistry than fatty acids. Polyketides are produced by many microorganisms to mediate a growth advantage by being toxic to other (micro)organisms in the same habitat. This intrinsic high bioactivity of polyketides has been used in medicine for decades to target acute and degenerative diseases. Erythromycin, epothilone or rapamycin are just a few of the currently used drugs. Our research interest is to study the catalytic potential of FAS and PKS, with the ultimate goal to train these proteins for synthesis of variants of the natural polyketides. This will establish protein-mediated biosynthesis of polyketides as a tool in modern chemistry, and complement classical synthetic chemical strategies. For realization, we work on improved methods for manipulation and expression of FAS and PKS, and on establishing and refining structure-function relationships for efficient reaction control.

### Projektbeteiligte

#### **Dr. Martin Grininger**

Universität Frankfurt am Main

Institut für Organische Chemie und Chemische  
Biologie

Buchmann Institute for Molecular Life Sciences  
Frankfurt am Main