

New Sustainable Production Platforms by Merging Polyketide Synthase Biotechnology with Microbial Electrosynthesis

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Efficient material conversion technologies based on raw materials and energy from renewable sources are at the centre of a sustainable economy. Electrochemistry and biotechnology are rapidly developing fields of research that can make valuable contributions to this goal. Bioelectrosynthesis (BES) as a fusion of both combines efficient energy transfer with environmentally friendly, highly specific catalytic processes. It is therefore considered a potential key technology of a future bioeconomy. Polyketide synthases (PKS) are giant multidomain enzymes that contribute to the biosynthesis of bioactive polyketides in nature. PKS have moved into the focus for biotechnological production of natural product-like drugs and other value-added chemical products that are difficult to access via other biosynthetic systems. Merging electrochemistry and PKS biotechnology holds tremendous potential and could provide particularly efficient and sustainable access to these products. The lab has a long-standing interest in the application of PKS in natural product synthesis and biotechnology. The goal of the concept is to establish BES as the second research focus of the professorship and to develop PKS-based bioelectrosynthetic platforms for the sustainable synthesis of selected fine chemicals and natural product drugs.

Projektbeteiligte

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