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Thema: **Chemoenzymatic synthesis of homochiral alpha-hydroxyketones**

Abstract: The use of Biotransformations in Organic Chemistry is becoming increasingly more significant as a tool for obtaining homochiral compounds, key molecules in the preparation of fine chemicals. In this sense, Enantiomerically pure α-hydroxy ketones are important building blocks in the asymmetric synthesis of biologically active compounds. More concretely, benzoins (1,2-diaryl-2-hydroxyethanone structures) are useful as urease inhibitors or as building blocks for the synthesis of different heterocycles. In this work we present two different complementary biocatalytic methodologies as a good and more environmental friendly alternative for obtaining enantiomerically pure benzoins: lipase catalysed dynamic kinetic resolution (DKR) of racemic mixtures and enzymatic reduction of □-dicarbonyl compounds.
Through the DKR protocol, optically active benzoins and benzoins esters can be obtained by the combination of a lipase (from *Pseudomonas stutzeri*) catalysed enantioselective transesterification process and the racemisation of the remnant substract by the action of a Ruthenium catalyst (Shvo´s catalyst).
another complementary strategy, the DKR of allylic alcohols followed by an oxidative cleavage and hydrolysis yielded enantiomerically pure aciloins,
Anyway, benzoins formed from non-identical aromatic moieties can not be obtained by the DKR, due to the formation of an intermediate diketone which would lead to the rearrangement of the starting material. As an alternative, we propose the reduction of crossed diarylethanodiones catalysed by lyophilised whole cells from *Pichia glucozyma*, obtaining not only symmetrical but also crossed optically active benzoins in high yields and enantiopurity.

Organisation: Prof. Dr. Marion Ansorge-Schumacher (TUB)

Gäste sind herzlich willkommen!

Prof. Dr. Matthias Drieß, Sprecher des Exzellenz-Clusters UniCat