CYCLE DE CONFÉRENCES DE CHIMIE

Avec le concours de : Université Clermont Auvergne
SIGMA Clermont
Ecole Doctorale des Sciences Fondamentales de l'UCA
Société Chimique de France, Section Auvergne

Jeudi 14 mars à 16 h

Amphi Rémi (site des Cézeaux)

Michael MULLER

Institute of Pharmaceutical Science - University of Freiburg

Diversity of Asymmetric Thiamine Catalysis

Catalytic asymmetric C–C bond formations are key transformations in synthetic organic chemistry. Benzoin reactions, proceeding through 'umpolung' of an acyl group, provide 2-hydroxy ketones (or acyloins) as valuable chiral building blocks. Thiamine diphosphate (ThDP) dependent enzymes, which catalyse, for example, the decarboxylation of 2-keto acids and the formation of chiral 2-hydroxy ketones in nature, can be efficiently applied in asymmetric acyloin syntheses. More recently, enzymatic Stetter reactions and acyloin syntheses starting from ketones have been developed. The focus of the lecture will be on the diversity of substrates and products amenable for thiamine catalysis in the course of asymmetric C–C bond formations.

References:

1. Hampel et al.,Structural and Mutagenesis Studies of the Thiamine-Dependent, Ketone-Accepting YerE from *Pseudomonas protegens*, *ChemBioChem* **2018**, *19*, 2282–2293.
2. Sudar et al.,Mathematical Model of the MenD-Catalyzed 1,4-Addition (Stetter Reaction) of α-Ketoglutaric Acid to Acrylonitrile, *J. Biotechnol*. **2018**, *268*, 71–80.
3. Beigi et al., Regio- and Stereoselective Aliphatic–Aromatic Cross-Benzoin Reaction: Enzymatic Divergent Catalysis, *Chem. Eur. J*. **2016**, *22*, 13999–14005.

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