Contribution ID: 17

How methyltransferases can contribute to CO2-neutral production of methylated chemicals

Monday, October 14, 2024 4:30 PM (20 minutes)

Methylation reactions are highly versatile in the chemical industry, playing a crucial role in both bioenergy and pharmaceuticals. Traditionally, these reactions in the chemical industry rely on strong bases, metal catalysts, and often toxic methyl group donors such as methyl halides and methyl sulfates, requiring extreme conditions like high temperatures, pressures, and pH levels. However, these chemical methylations are often neither chemo- nor regioselective, which is particularly critical in the synthesis of pharmaceuticals and natural products. Methyltransferases (MTases) offer a sustainable, biological, and environmentally friendly alternative to the conventional chemical reactions. In my group, modular cobalamin (B12)-dependent methyltransfer shuttle systems are investigated, which can be used for various methylation reactions, utilizing simple C1 compounds like methanol, methylamines, or acetyl-CoA –derived from CO2 fixation –as methyl group donors. This modular B12 methylation systems present new opportunities for sustainable methylation processes across various sectors, contributing to a reduced CO2 footprint and supporting the bioeconomy.

Presenter: DEOBALD, Darja

Session Classification: Session 3: Carbon-Based Materials