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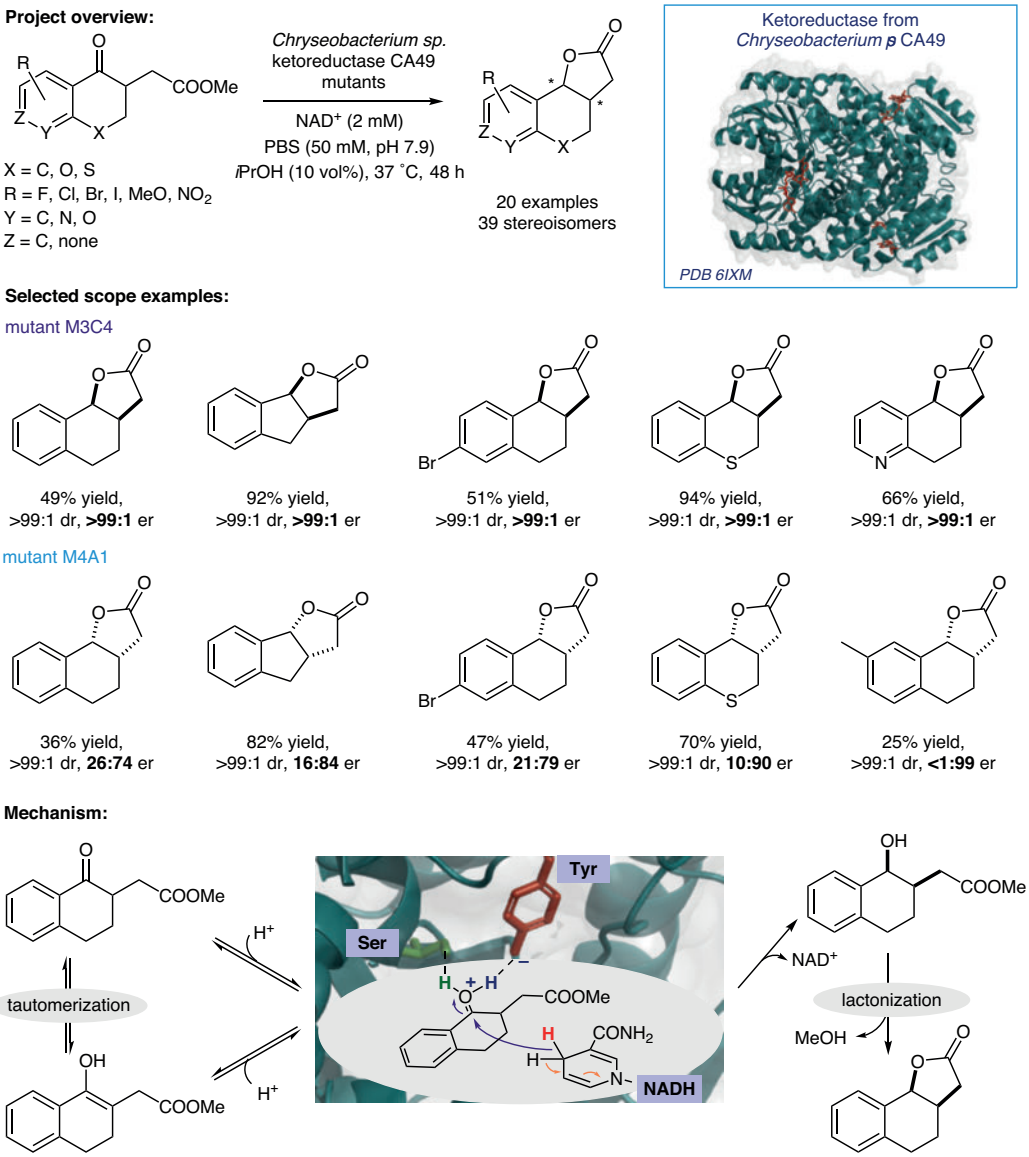
Reversing the Enantioselectivity of Enzymatic Dynamic Kinetic Asymmetric Transformations in the Synthesis of Fused Lactones
ACS Catal. **2024**, *14*, 17480–17488, DOI: 10.1021/acscatal.4c05196

One Enzyme – Two Variants: Enantioselective Synthesis of Fused Lactones Giving Access to Two Enantiomers



Significance: The authors present the design of an enzyme – ketoreductase – used to obtain polycyclic lactones from β-ketoesters by dynamic kinetic resolution. The usefulness of the method was demonstrated on 20 examples, obtained diastereo- and enantioselectively. By changing the enzyme mutant, the stereoselectivity of the reaction can be reversed, maintaining decent enantioselectivity.

Comment: Since an enzyme is a complex biochemical structure, it is difficult to design it to work enantioselectively on enantiomers opposite to the natural one. Shi et al. overcame this limitation by developing a ketoreductase and presented two variants of the enzyme that process both enantiomers via enantioselective dynamic kinetic resolution.

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Synfacts 2025; 21(02), 181 Published online: 28.01.2025
DOI: 10.1055/a-2497-0419; **Reg-No.:** B01425SF

Category
Organo- and Biocatalysis

Key words
ketoreductase
lactones
kinetic resolution
protein engineering

Synfact of the Month