Engineering of ω-Transaminase for Synthesis of Aromatic Amino Acids

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Recently, ω-transaminase (ω-TA) is increasingly applied to the synthesis of unnatural amino acids. However, substrate specificity is limited by severe steric hindrance in a small substrate-binding pocket precluding entry of bulkier than a ethyl substituent. Here, we engineered an ω-TA to endow the enzyme with capability of producing aromatic amino acids. Through site-directed mutagenesis of the active site residues based on homology structure modeling, we enlarged the small pocket enough to accept even a benzyl substituent.