

生命理工学トピックス1(2010)対応講義

Bioscience & Biotechnology Topics 1 (2010)

場所が変更になりました

## Microbial lipases in organic syntheses: from bio-active molecules to the bioconversion of renewables

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日時 : 2010. 6. 2 (Wed) 15:00~16:30

場所 : ~~B2-222 講義室~~ → **大会議室**

Biocatalysts (microorganisms and/or their enzymes) have emerged in recent decades as highly efficient and attractive catalysts in organic synthesis. This is particularly true for esterhydrolases (esterases, lipases) which are conveniently accessible and highly stable under a variety of conditions. Many of them ideally combine high reaction selectivities with the synthetically important broad substrate tolerance. They have been applied successfully in the past for the solution of numerous synthetic problems.

In the lecture several examples will be given for such applications based on the major modes of substrate recognition displayed by these enzymes: differentiation of a) enantiomers; b) enantiotopic groups attached to prochiral centers and c) enantiotopic groups in *meso*-compounds. The presented examples are ranging from flavor compounds, insecticides, pharmaceuticals, including L-nucleosides all the way to molecules involved in signal transduction processes.

In view of the dwindling supplies of fossil raw materials, the use of renewables from plant sources as raw materials for the chemical industry is of ever increasing importance. Exemplified in the lecture are approaches regarding the use of lipases for the regioselective bioconversion (*biorefinery*) of triglycerides (fats and oils), carbohydrates and proteins (amino acids) and thus for the synthesis of combination products displaying surface active properties (detergents), such as mono- and diglycerides, *N*-acylated amino acids and sugar esters.

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