

## KUDO LAB.

Bioinspired Synthetic Organic Chemistry  
- Learn from Metabolic Reactions,  
and then Surpass Them



Department of Materials and Environmental Science

Synthetic Organic Chemistry

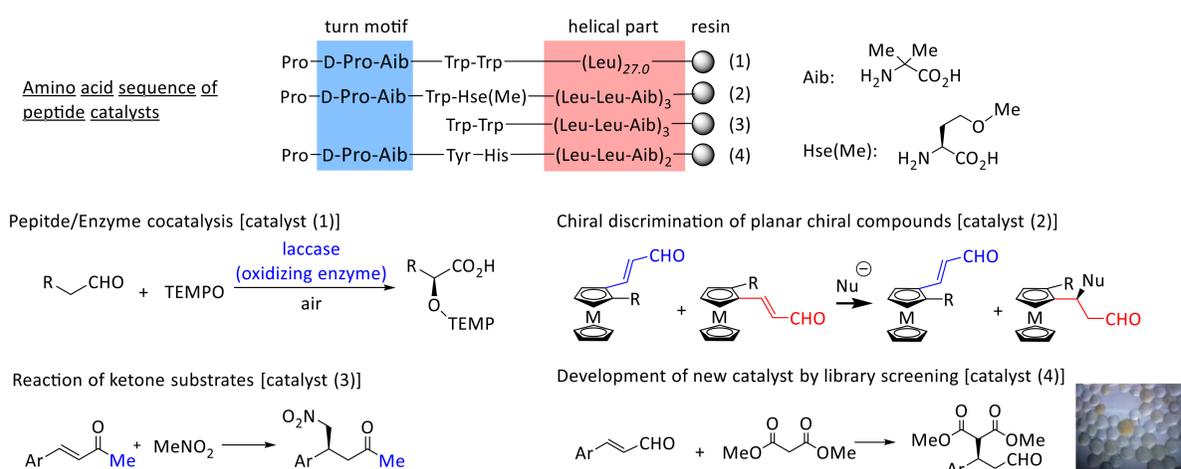
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<http://www.iis.u-tokyo.ac.jp/~kkudo/enindex.html>

## (1) Peptide Catalysis – To Learn from Function of Enzymes

Enzymes efficiently catalyze various reactions in living organism. However, enzymes catalyze only the biogenic reactions, hence are not directly applicable to industrial production. To solve this problem, we developed peptide catalysts because the peptides consist of amino acids, just as enzymes do. We found some reactions that are unique to peptide. This research might shorten the synthetic route of fine chemicals and is expected to contribute to waste reduction and energy saving in chemical industry.

- ◆ Catalyze reactions under ambient conditions
- ◆ Catalyze otherwise difficult selective reactions
- ◆ Catalysts could be easily recovered and reused
- ◆ Library screening method is applicable



## (2) Polyketide Synthesis – To Learn from Biosynthetic Mechanism

Starting from simple compounds, living organisms synthesize a wide variety of compounds in their body and use them for life activities. Some of them are known to show pharmacological activities such as antibiotic or anticancer activities. Therefore, the development of efficient synthetic methods for them is important. We are developing a biomimetic synthesis for a series of compounds called polyketides. It is expected that various polyketide compounds can be made by a combination of relatively simple reactions.

