

Strategies for Stereocontrolled Synthesis

★ Thermodynamic Control

★ Kinetic Control

☆ Substrate Control

- * Steric Approach Control
- * Stereoelectronic Control
- * Internal Stereodirection

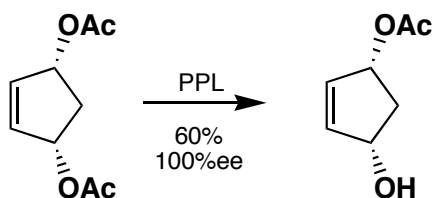
☆ Reagent Control

- * Achiral Substrate: enantiotopic face selectivity
- * Achiral Substrate: enantiotopic group selectivity
- * Chiral Substrate: Double Asymmetric Synthesis

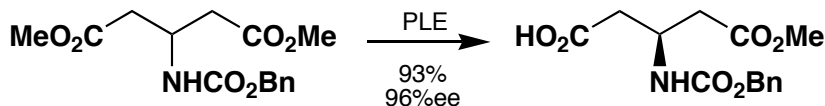
☆ Dynamic Kinetic Resolution

Reagent Control Strategies: Examples of Enantiotopic Group Selectivity

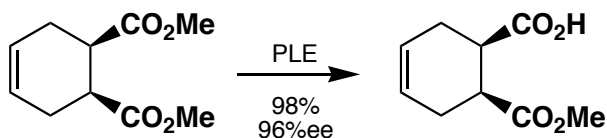
Lipase-Based Desymmetrization Reactions



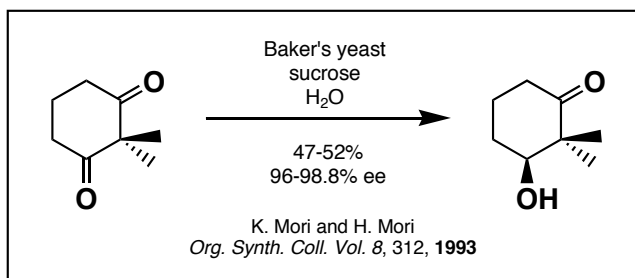
J. Nokami
Tetrahedron Lett. 32, 2409, 1991



M. Ohno
J. Am. Chem. Soc. 1981, 103, 2405



M. Ohno
Tetrahedron Lett. 1984, 25, 2557



K. Mori and H. Mori
Org. Synth. Coll. Vol. 8, 312, 1993

Another example of biotransformations in asymmetric synthesis

S. L. Schreiber
J. Am. Chem. Soc. **1987**, *109*, 1525

70-80%
 >97% de
 ([A + ent-A]/[B + ent-B])

1 h 93% ee
 44 h >97% ee

