Asymmetric Induction via Chiral Auxiliaries
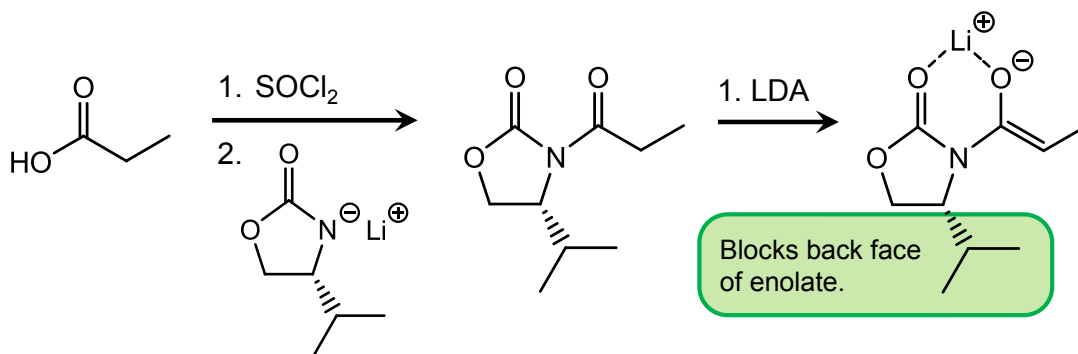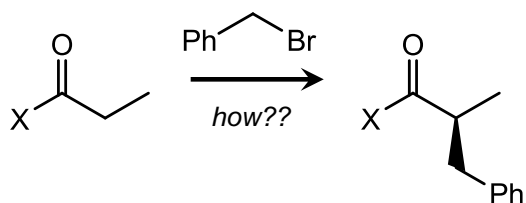
So what if you wanted an enolate alkylation to generate enantiomerically pure product?
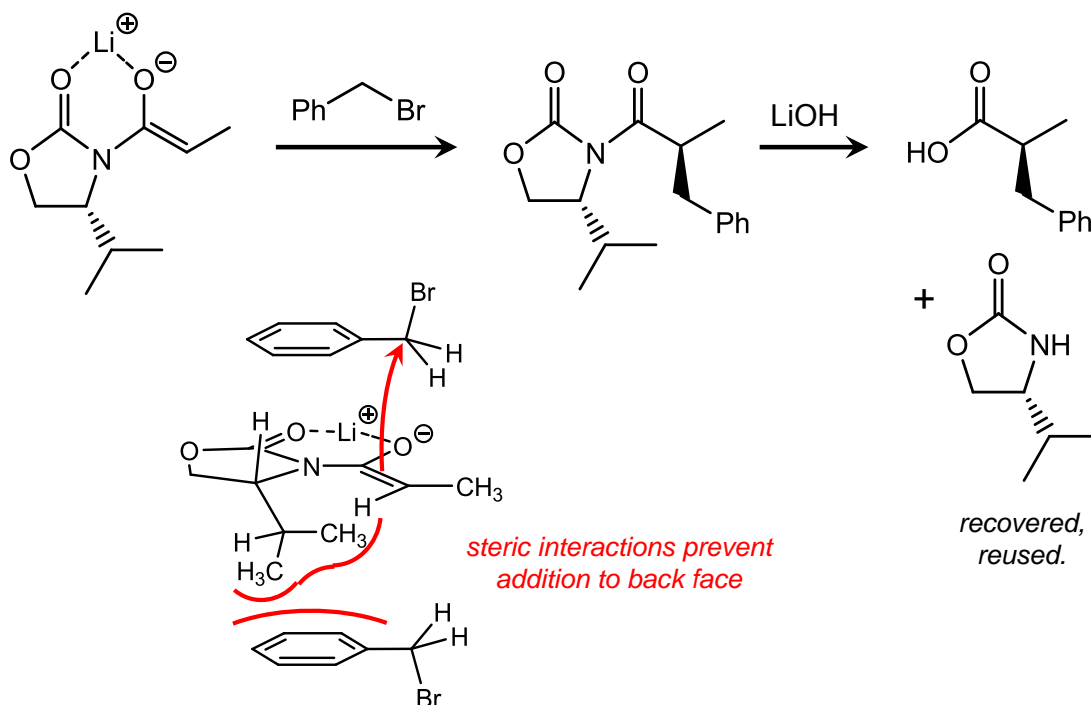
Example:

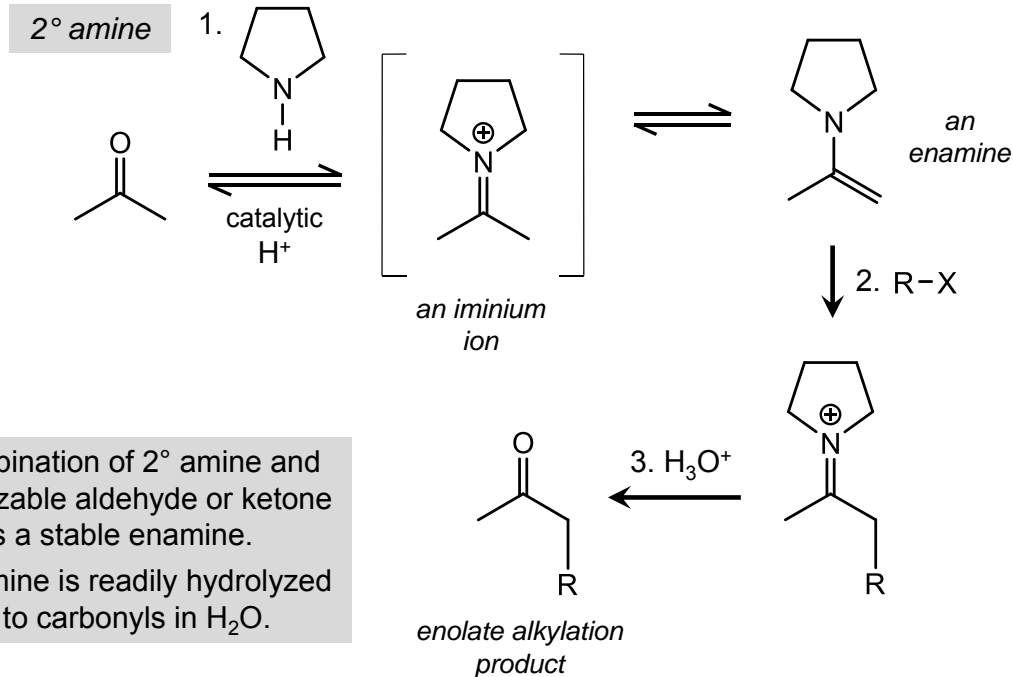*Solution:*
Use a temporary chiral group to direct enolate addition.

Blocks back face of enolate.

Asymmetric Induction via Chiral Auxiliaries

steric interactions prevent addition to back face

recovered, reused.

Enamine Alkylation

2° amine

1.

catalytic
H⁺

an iminium
ion

an
enamine

2. R–X

3. H_3O^+

enolate alkylation
product

Combination of 2° amine and enolizable aldehyde or ketone forms a stable enamine.

Enamine is readily hydrolyzed back to carbonyls in H_2O.