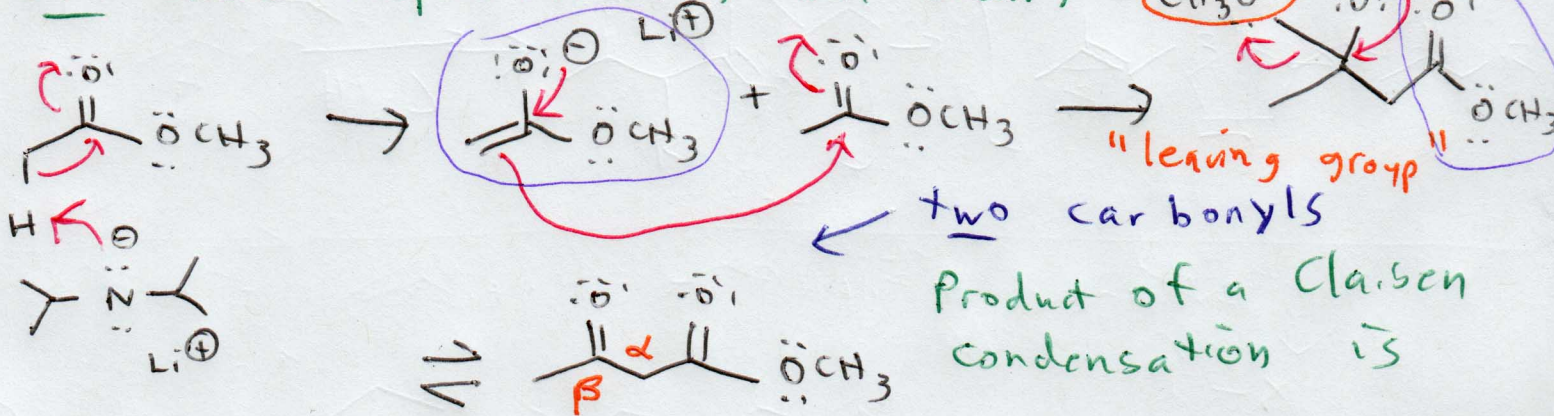


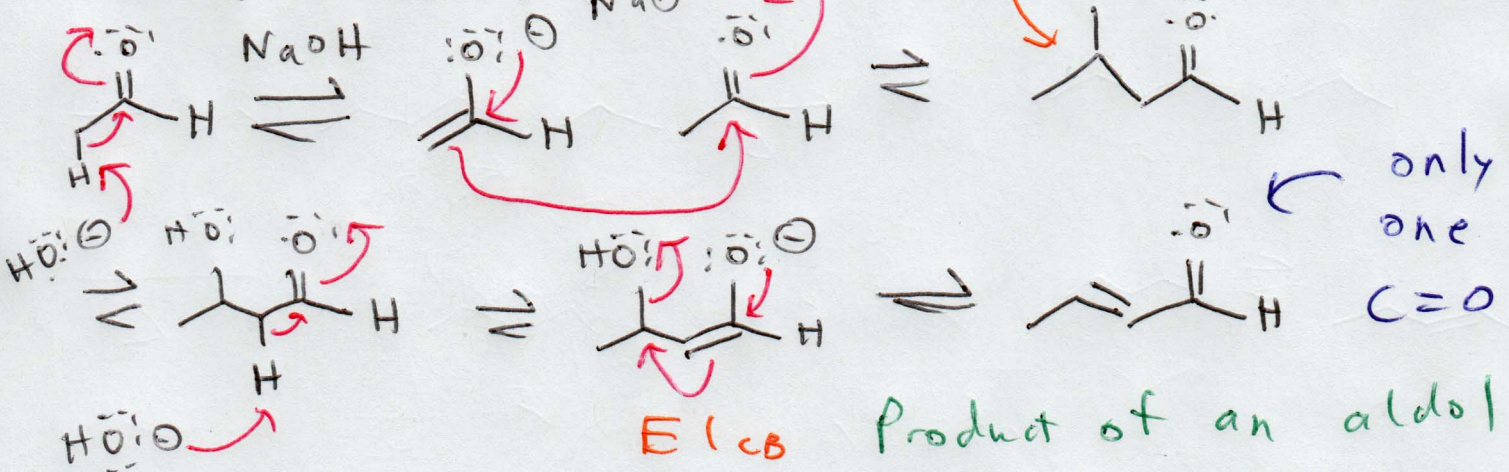
4/27/12 - Claisen Condensation

NaOH cannot be used to form enolates from esters because OH^- is not a strong enough base ($\text{H}_2\text{O} \rightleftharpoons \text{pK}_a \approx 16$; ester $\rightleftharpoons \text{pK}_a \approx 24$), and since saponification will occur,

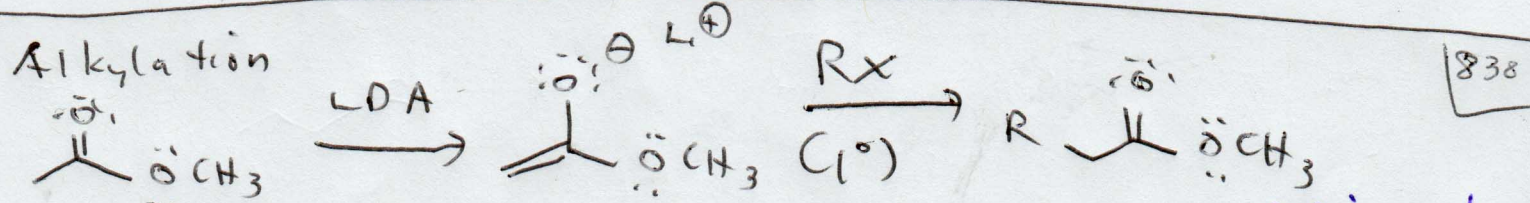


A β -keto ester, with a new C-C bond @ the $\alpha + \beta$ positions.

Aldol (review)

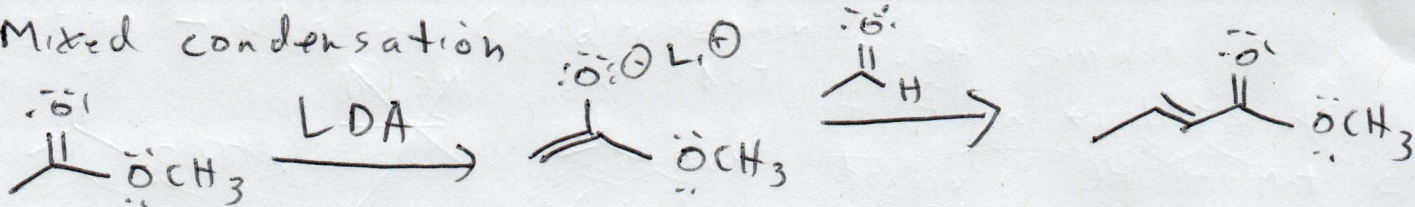


Alkylation

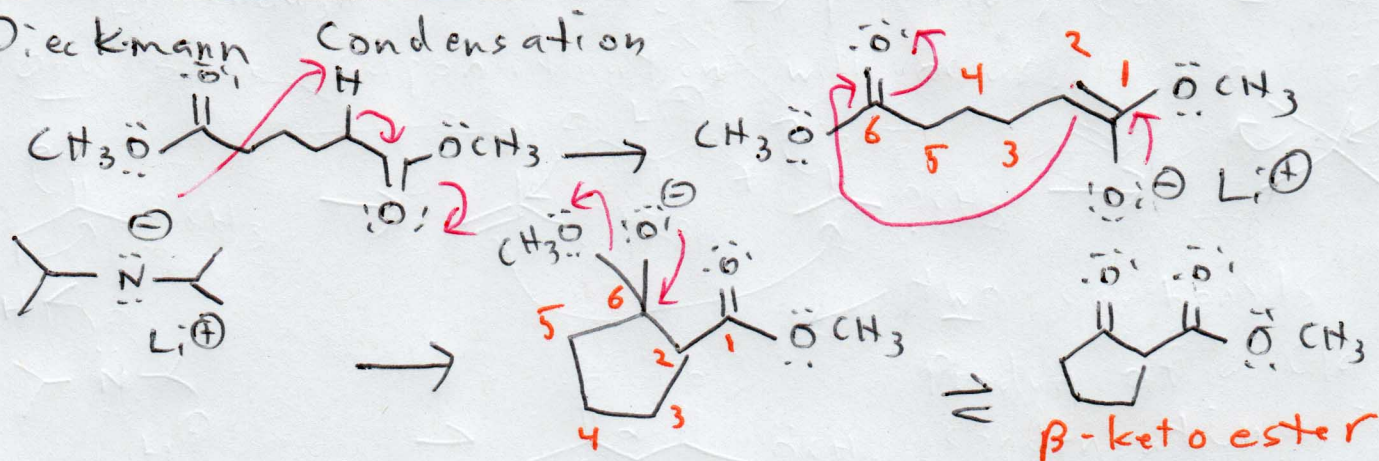


Claisen condensation can be avoided by adding the ester to a soln of LDA. This way, no significant quantity of the ester builds up for the enolate to react with.

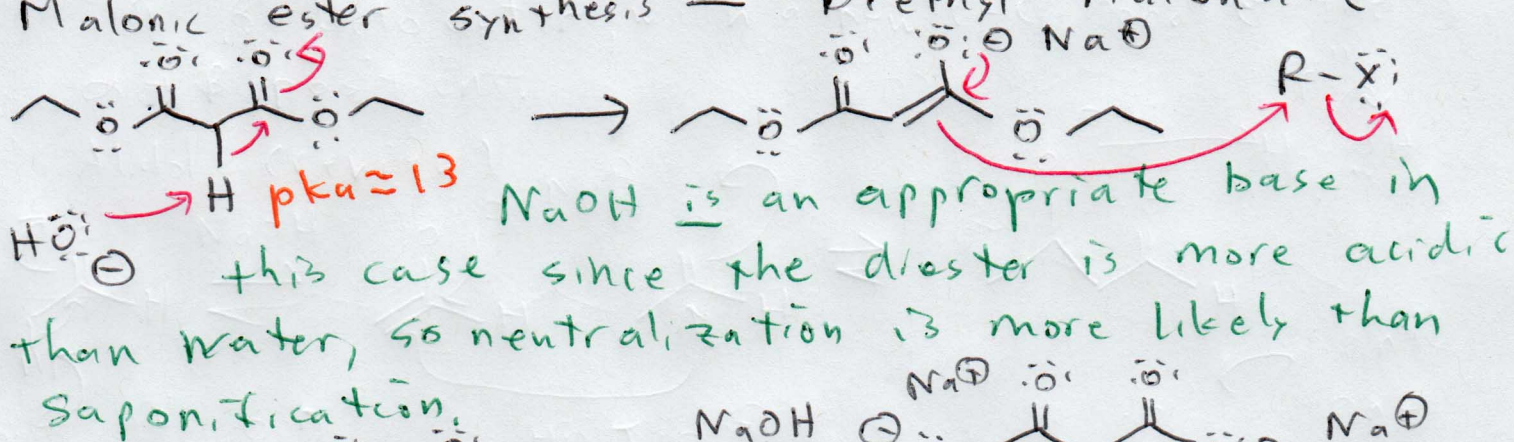
Mixed condensation



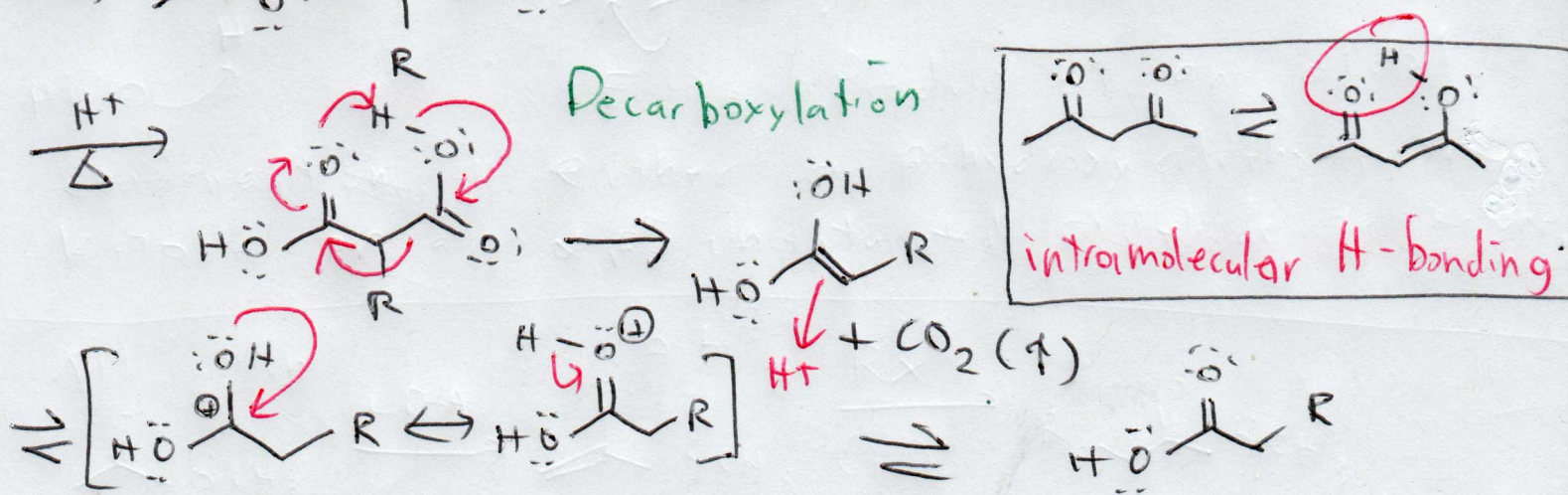
Dieckmann Condensation



Malonic ester synthesis — Diethyl malonate

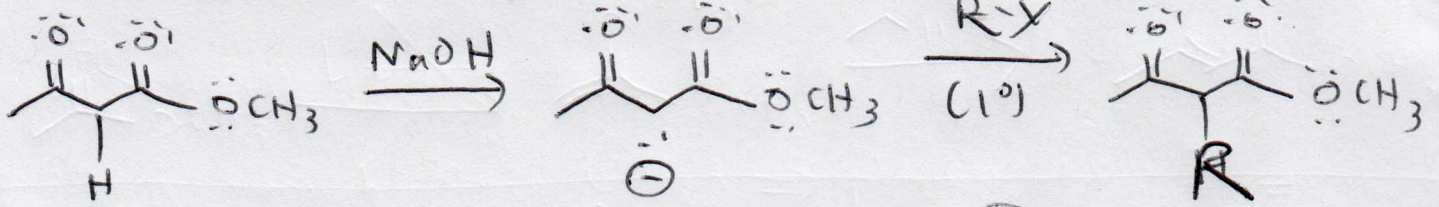


Decarboxylation



Malonic ester synthesis is used to prepare custom carboxylic acids under relatively mild conditions.

Acetoacetate synthesis



$\text{pKa} \approx 11$

