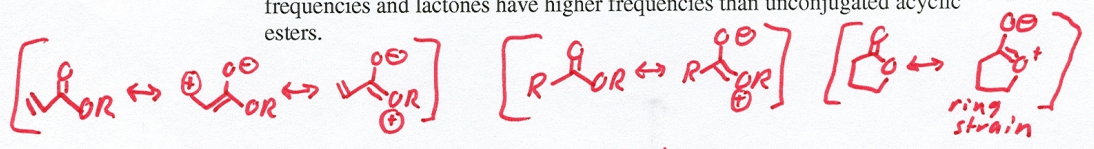


Key

Dr. Davies
Organic II lecture
Review for exam 4

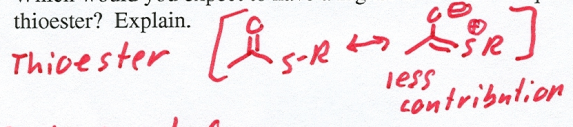
I. Nomenclature

2. Explain why the C=O bond of conjugated esters have lower vibrational frequencies and lactones have higher frequencies than unconjugated acyclic esters.



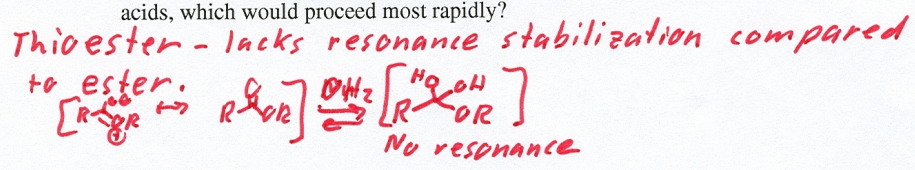
The greater the C-O single bond contrib., the weaker the C=O bond + lower the ν .

3. Which would you expect to have a higher C=O bond frequency, an ester or a thioester? Explain.



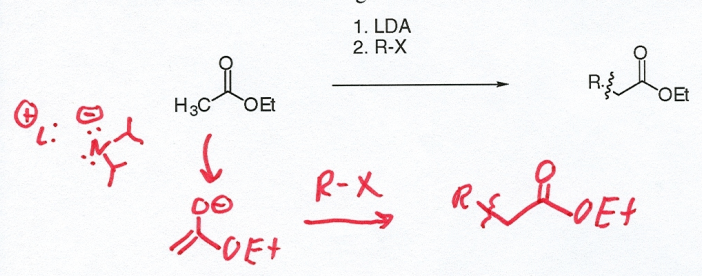
S does not form strong π bonds.

4. In considering the rate of hydrolysis of an ester and a thioester to carboxylic acids, which would proceed most rapidly?

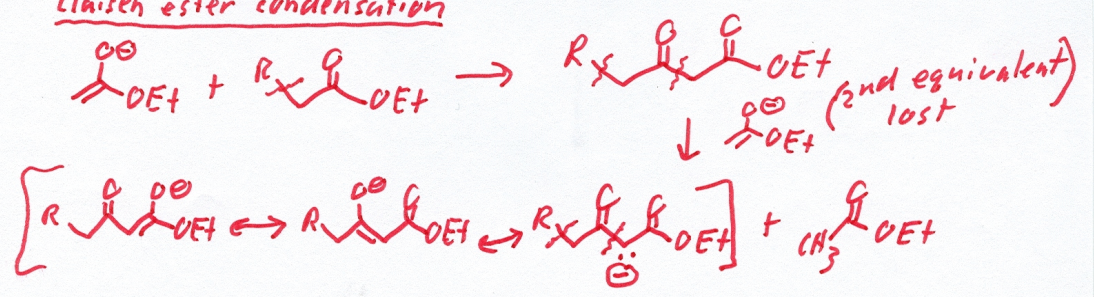


III. Reactions

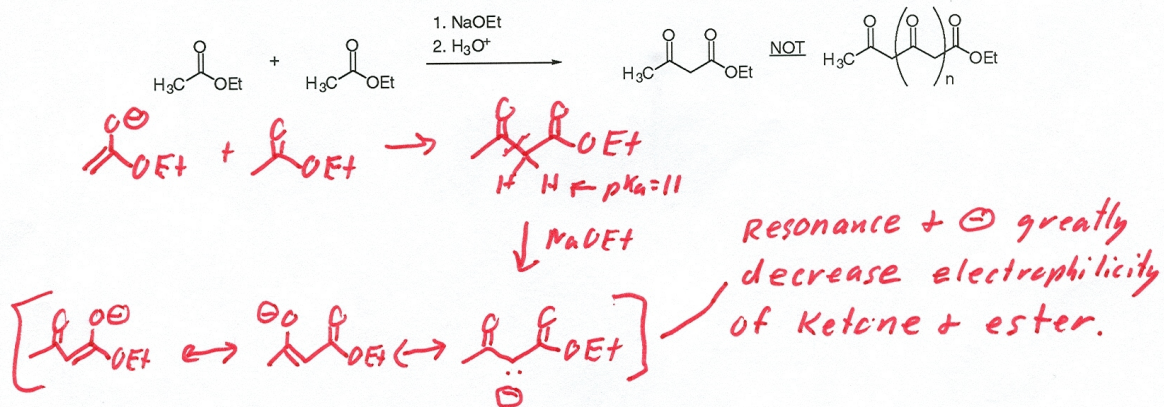
1. What might be a side reaction associated with the direct alkylation of an ester?



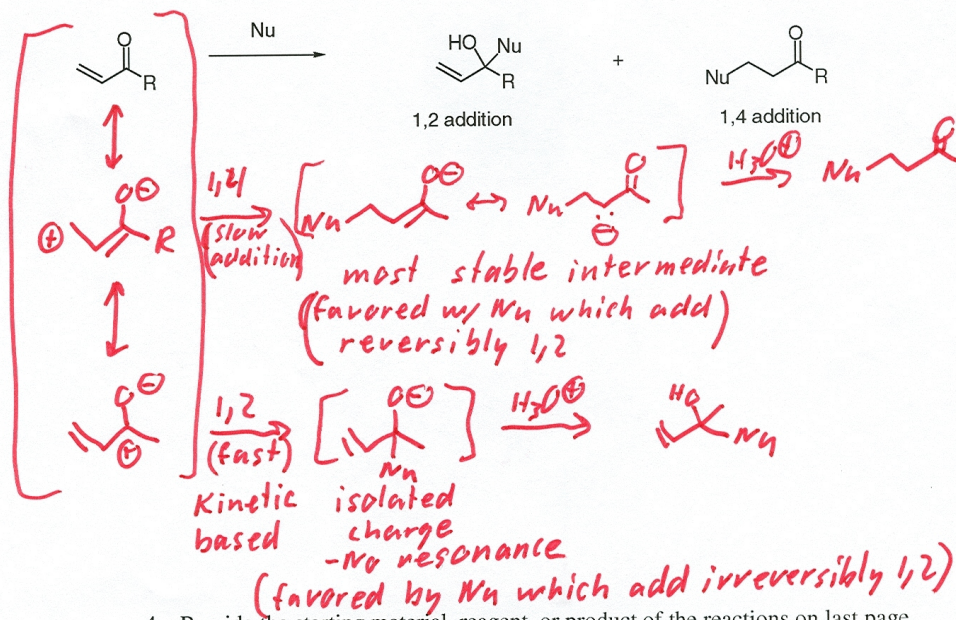
Claisen ester condensation



2. In the Claisen ester condensation reaction, why do only two molecules condense and not several to form a polymer?



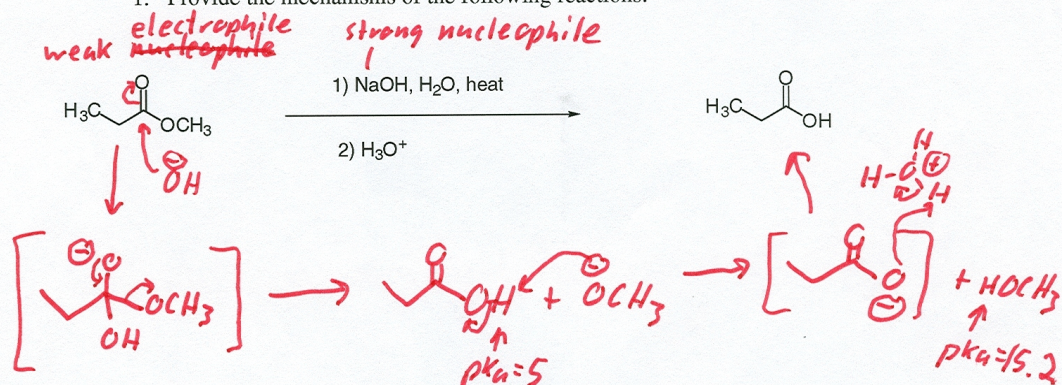
3. In nucleophilic addition to a conjugated ketone, explain the factors favoring 1,2 addition versus 1,4 addition. Draw out intermediates.



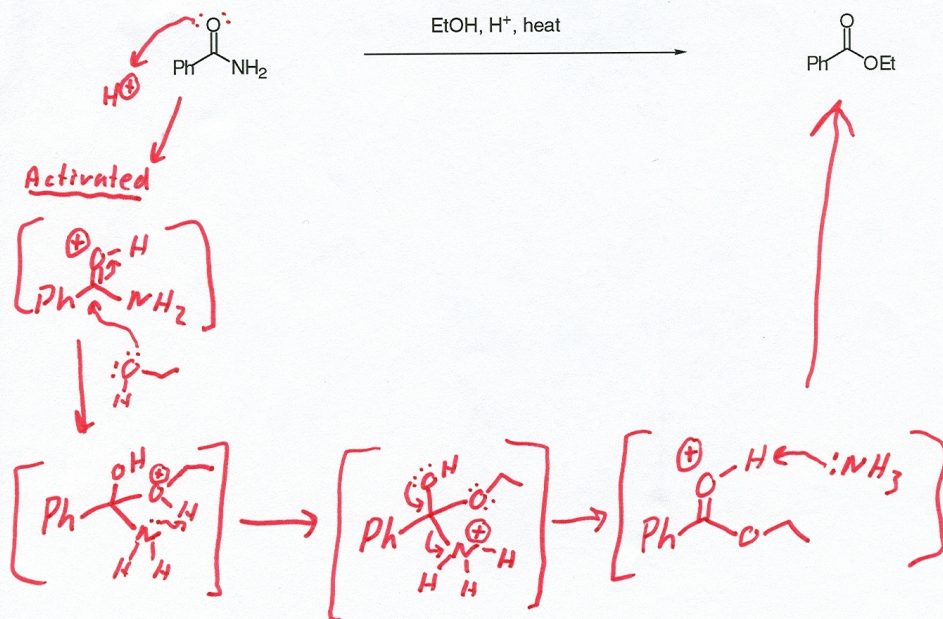
4. Provide the starting material, reagent, or product of the reactions on last page.

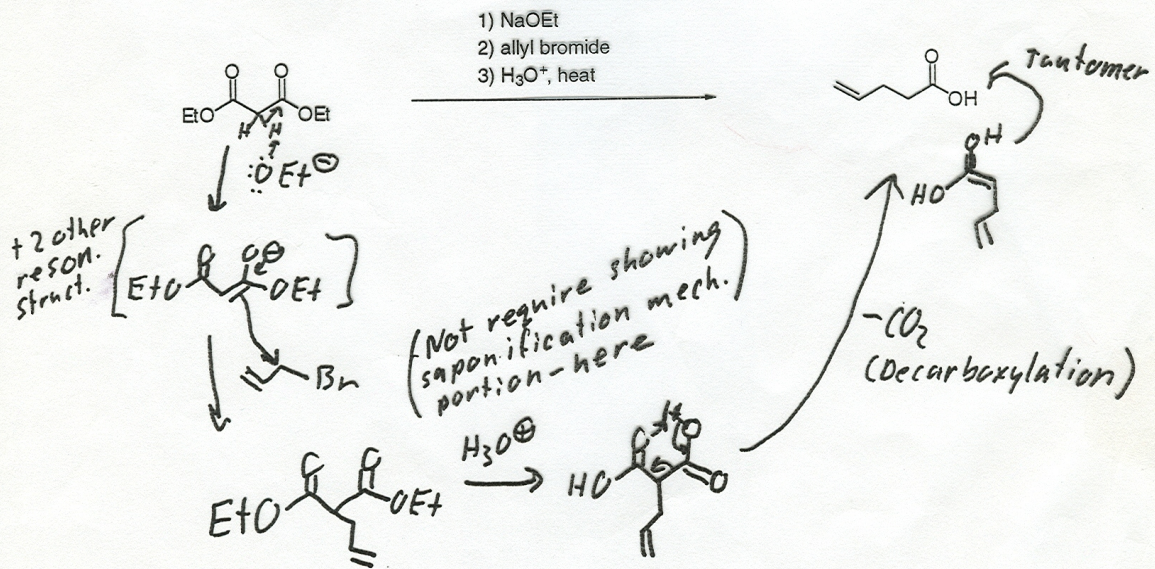
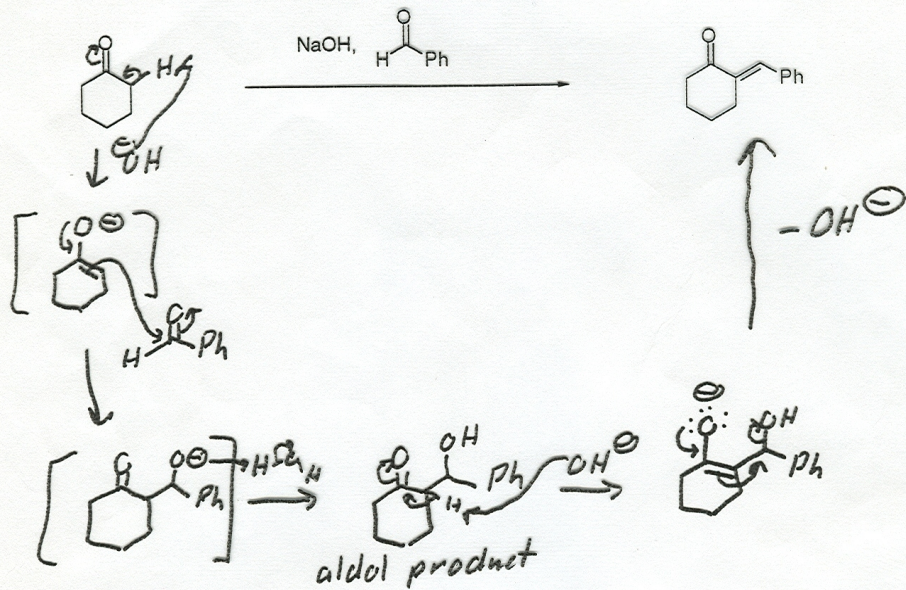
IV. Mechanisms

1. Provide the mechanisms of the following reactions:

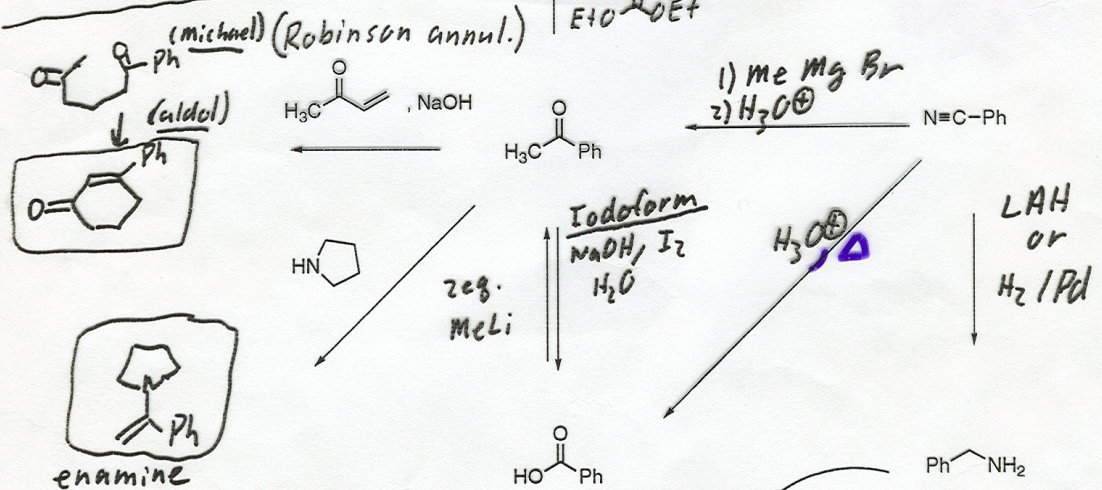
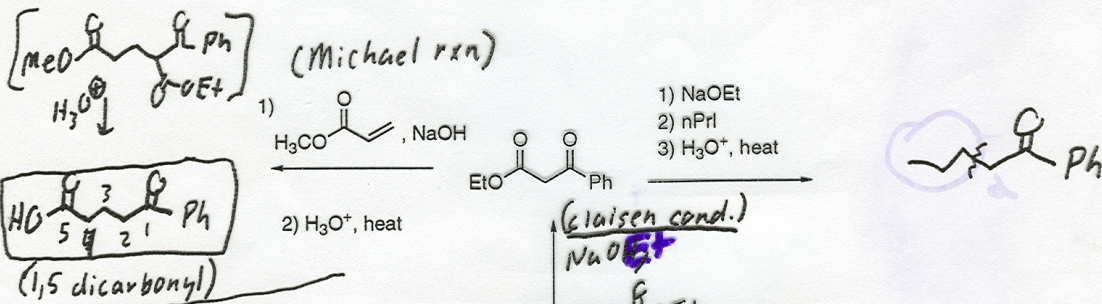
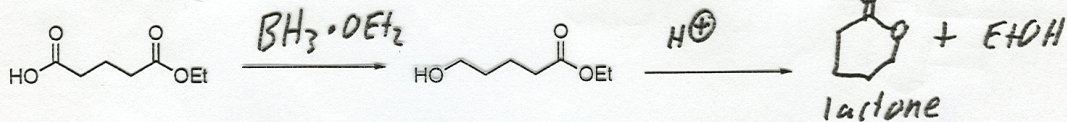


weak electrophile





(selectively reduces acids over all other C=O)



- Fischer 3 ways
- 1) CH3OH, H^+
 - 2) Diazomethane CH2N2
 - 3) acid chloride
1) SOCl2, 2) CH3OH
- H3CO-C(=O)-Ph

