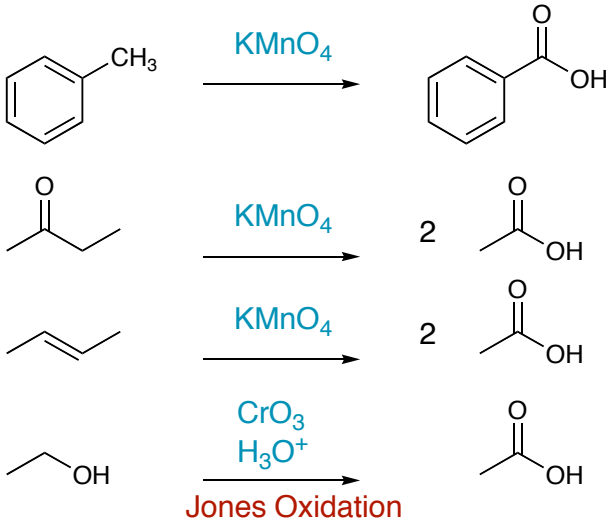
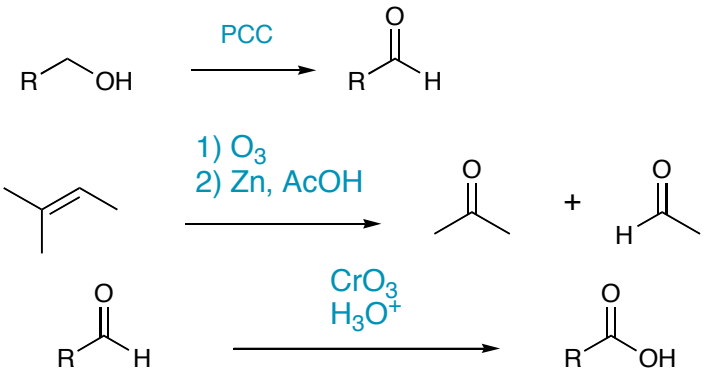
Chem 342

Need to Know Reactions
Exam 03

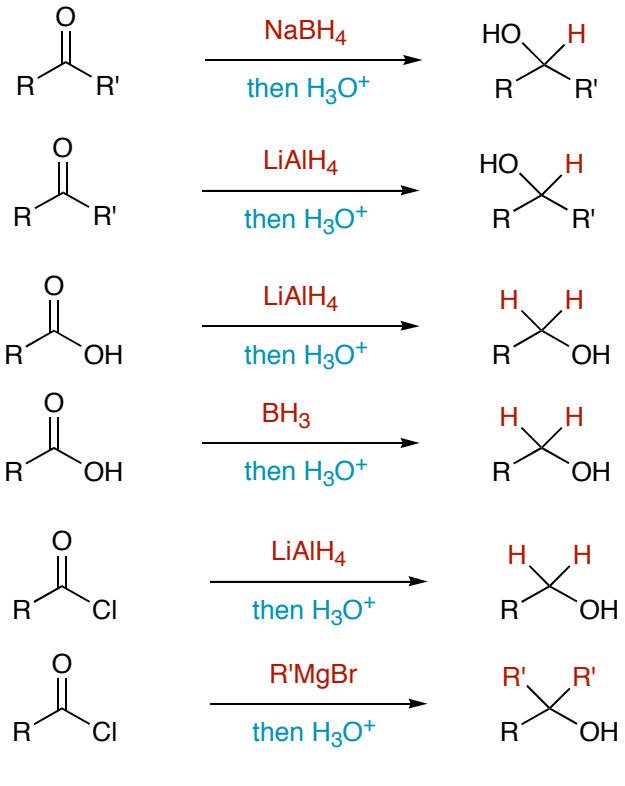
You should be able to answer questions about the following reaction types on exam 3.

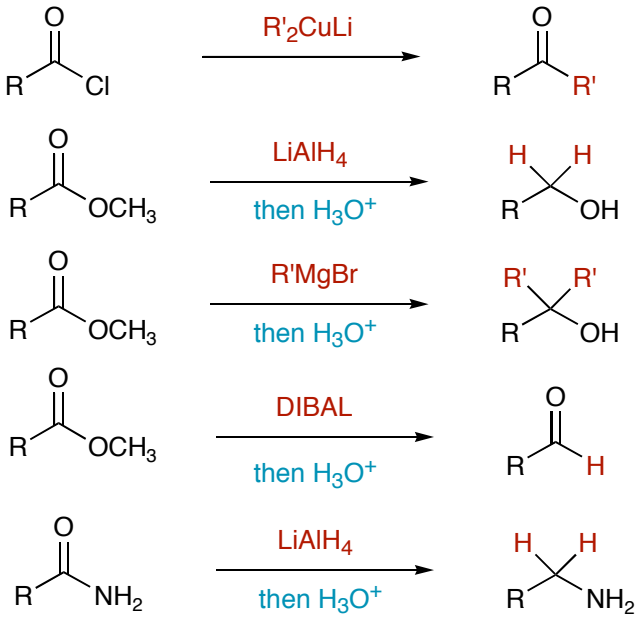
Oxidations





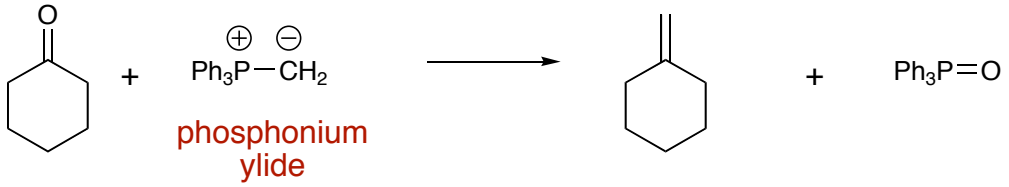
Reductions (Hydrides, Grignards and Gilman Reagents)

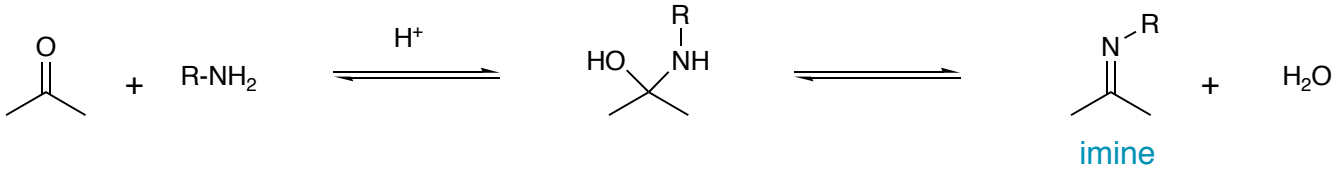


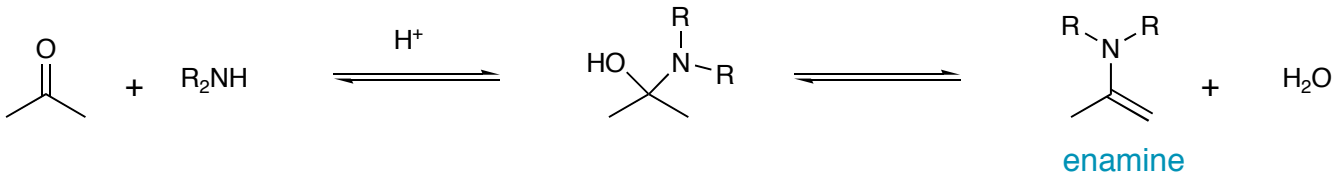


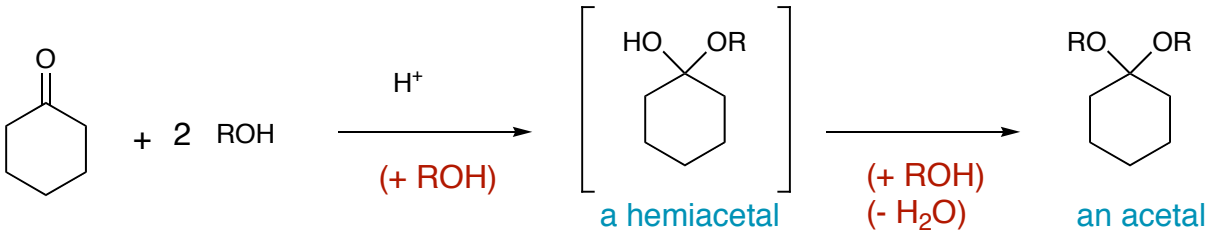
Other Reactions of Aldehydes and Ketones

Wittig Reaction

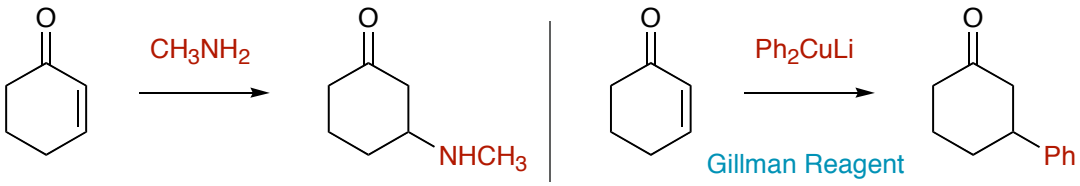




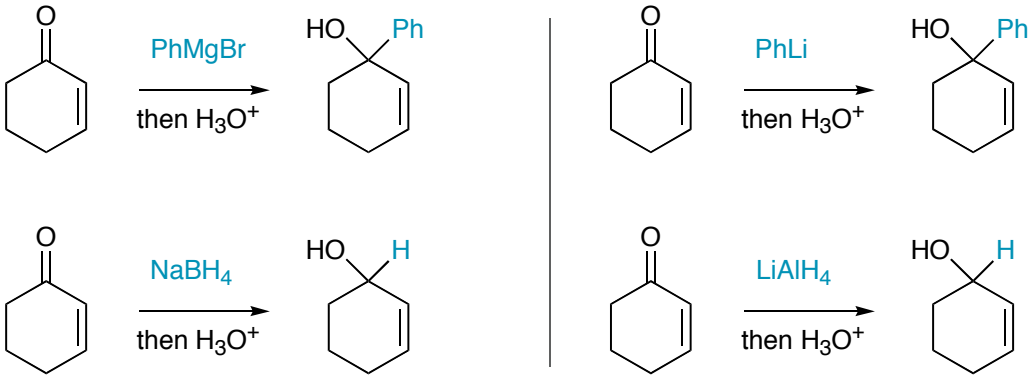




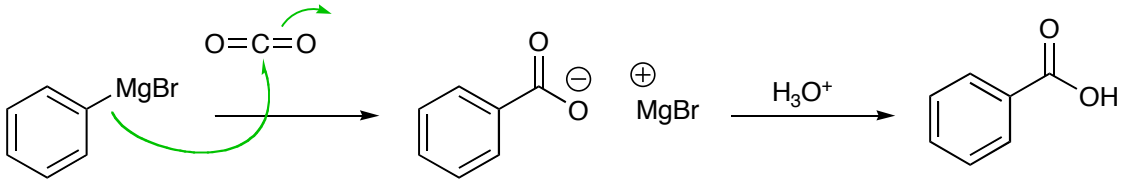
1,4-Addition

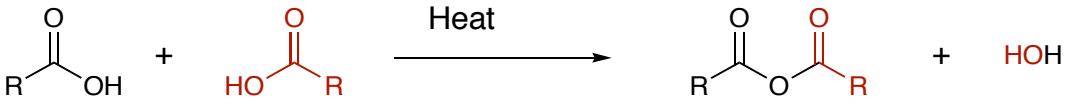


1,2-Addition

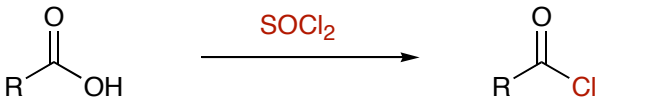


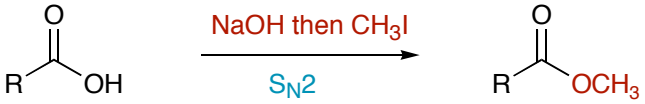
Making Carboxylic Acids and Derivatives



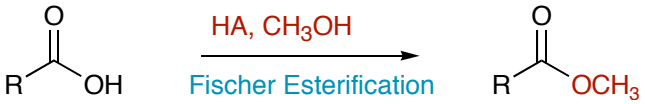


Carboxylic Acids



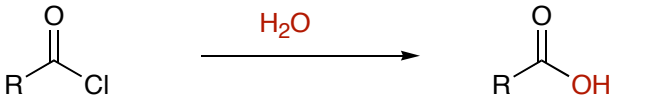


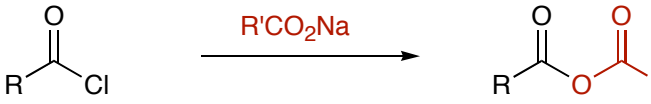
limited to primary alkyl halides

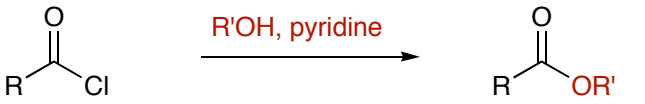


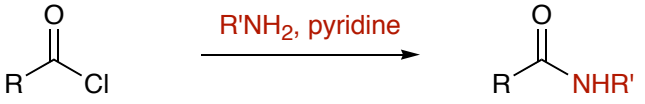
limited to inexpensive alcohol solvents - methanol and ethanol most practical

Acid Chlorides

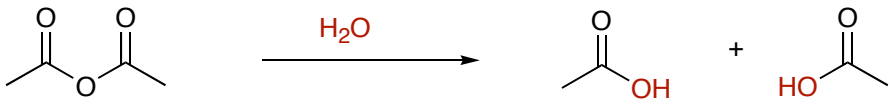


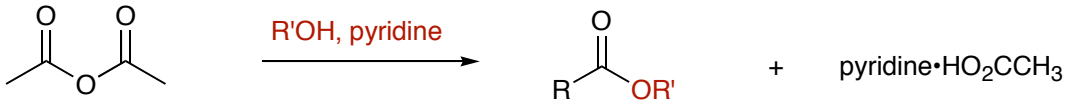


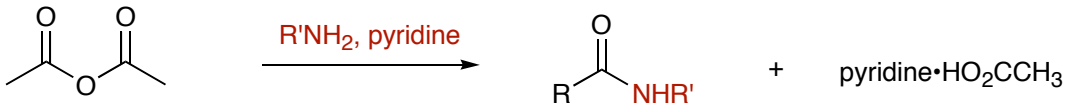




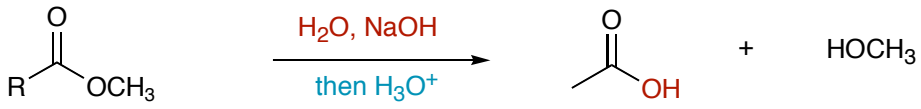
Acid Anhydrides



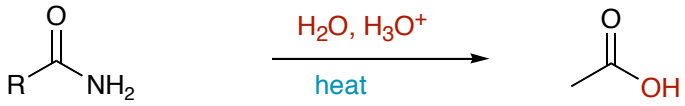




Esters

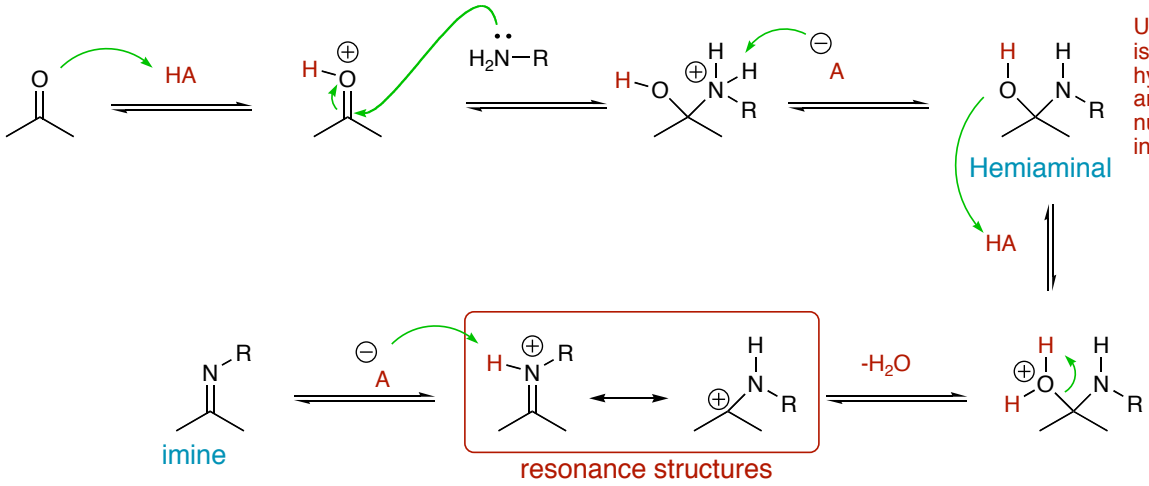


Amides



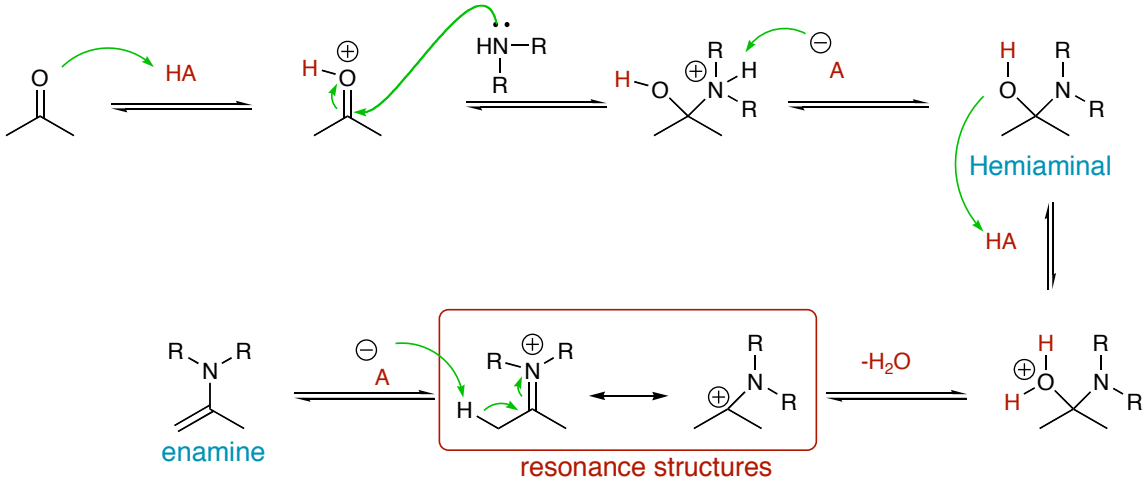
NEED TO KNOW MECHANISM

Mechanism for Imine Formation



NEED TO KNOW MECHANISM

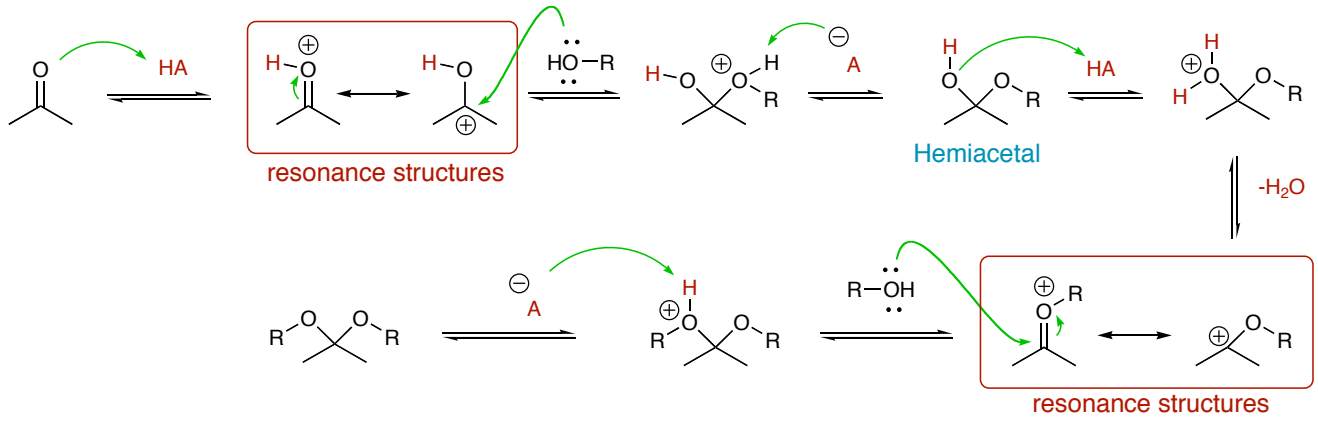
Mechanism for Enamine Formation



The only difference is this last step. There is no proton on the nitrogen to come off, so a proton is taken off of the alpha carbon

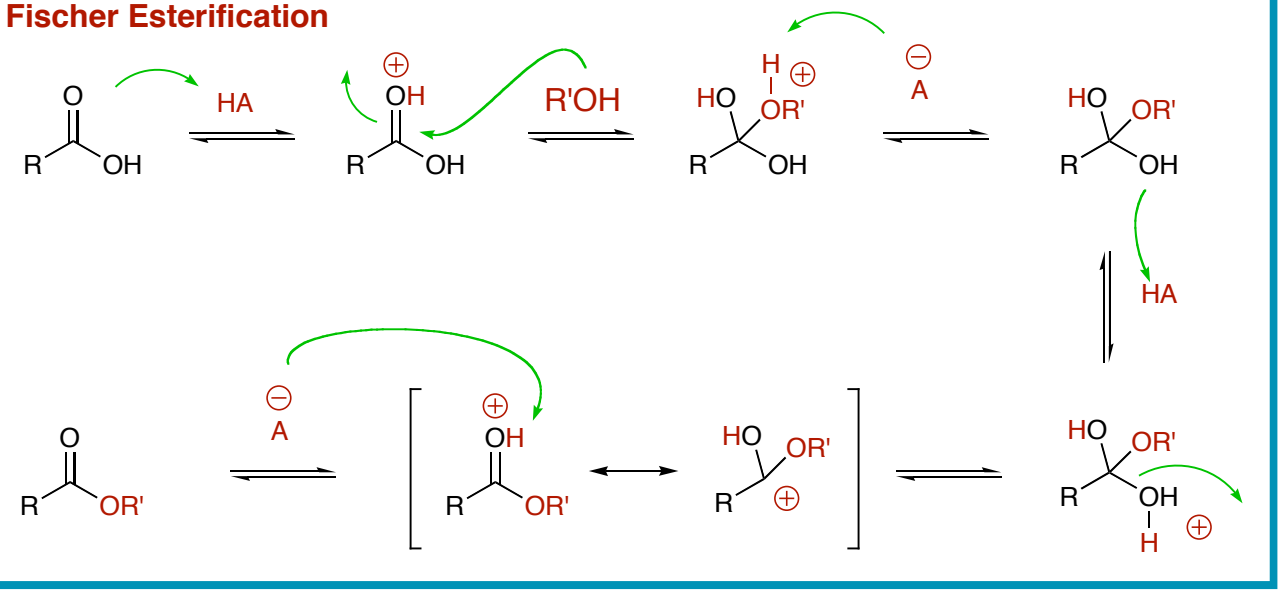
NEED TO KNOW MECHANISM

Mechanism for Acetal Formation



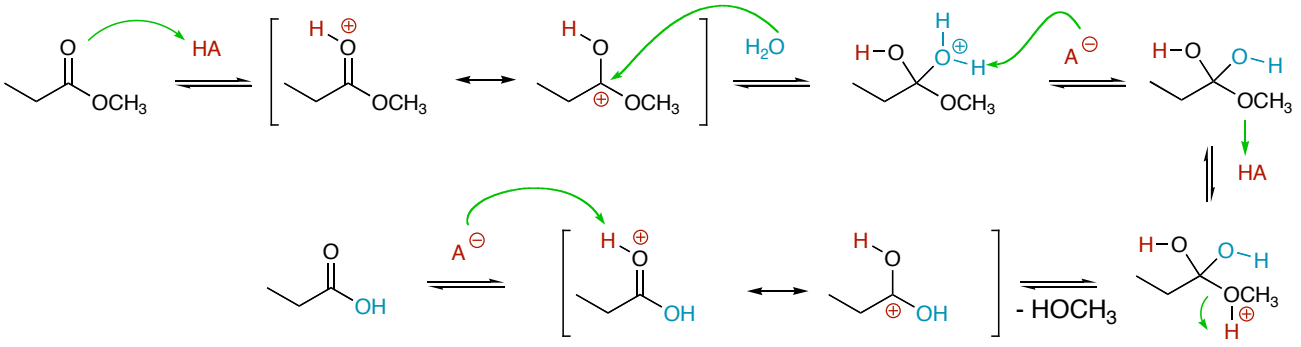
NEED TO KNOW MECHANISM

Fischer Esterification



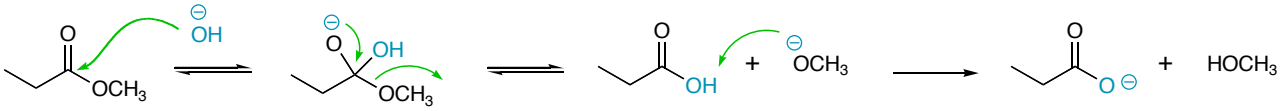
NEED TO KNOW MECHANISMS

Acid Catalyzed Hydrolysis



BEST METHOD

Base Catalyzed Hydrolysis (Saponification)



Rapid acid-base reaction takes place

Carboxylate is a thermodynamic sink and makes the reaction essentiall non-reversible. To get the carboxylic acid, add acid to protonate.