

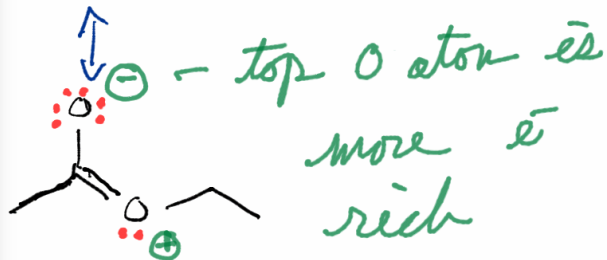
which ester O atom is most likely protonated?

Modeling says

C=O O atom.

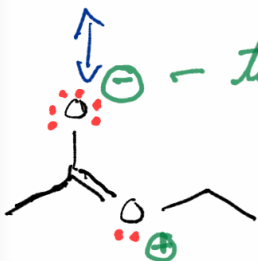
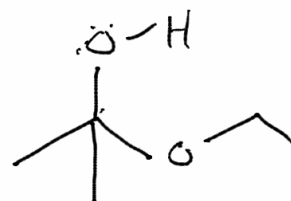
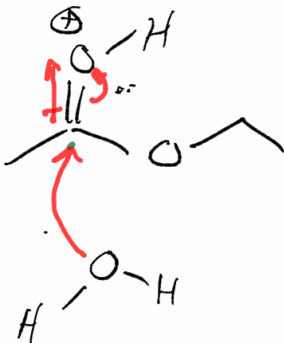
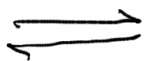
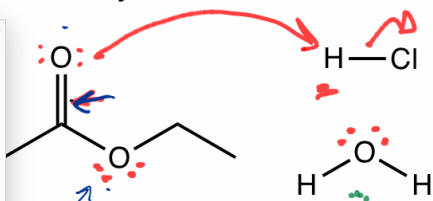
lp \bar{e} + adjacent π bond = delocalized \bar{e} 's

Swap lp \bar{e} + π bond to generate a resonance structure



Acid-Catalyzed & Base-Promoted Hydrolysis

Section 15.8 & 15.9

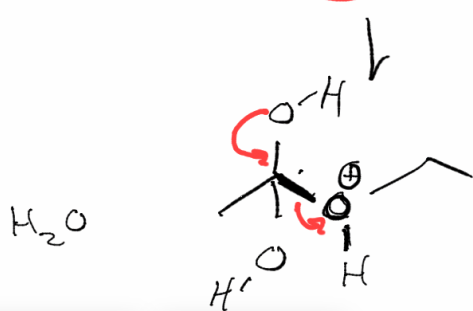
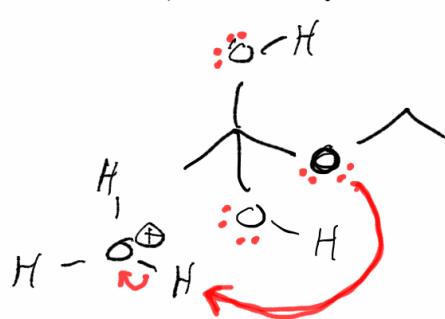
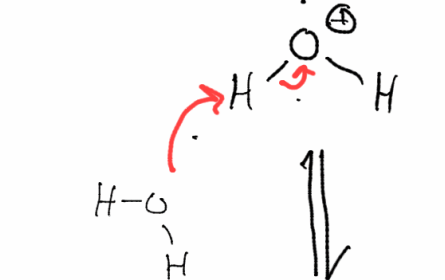


top O atom is more e^- rich

① protonation makes $C=O$ bond more polar... makes C more electrophilic

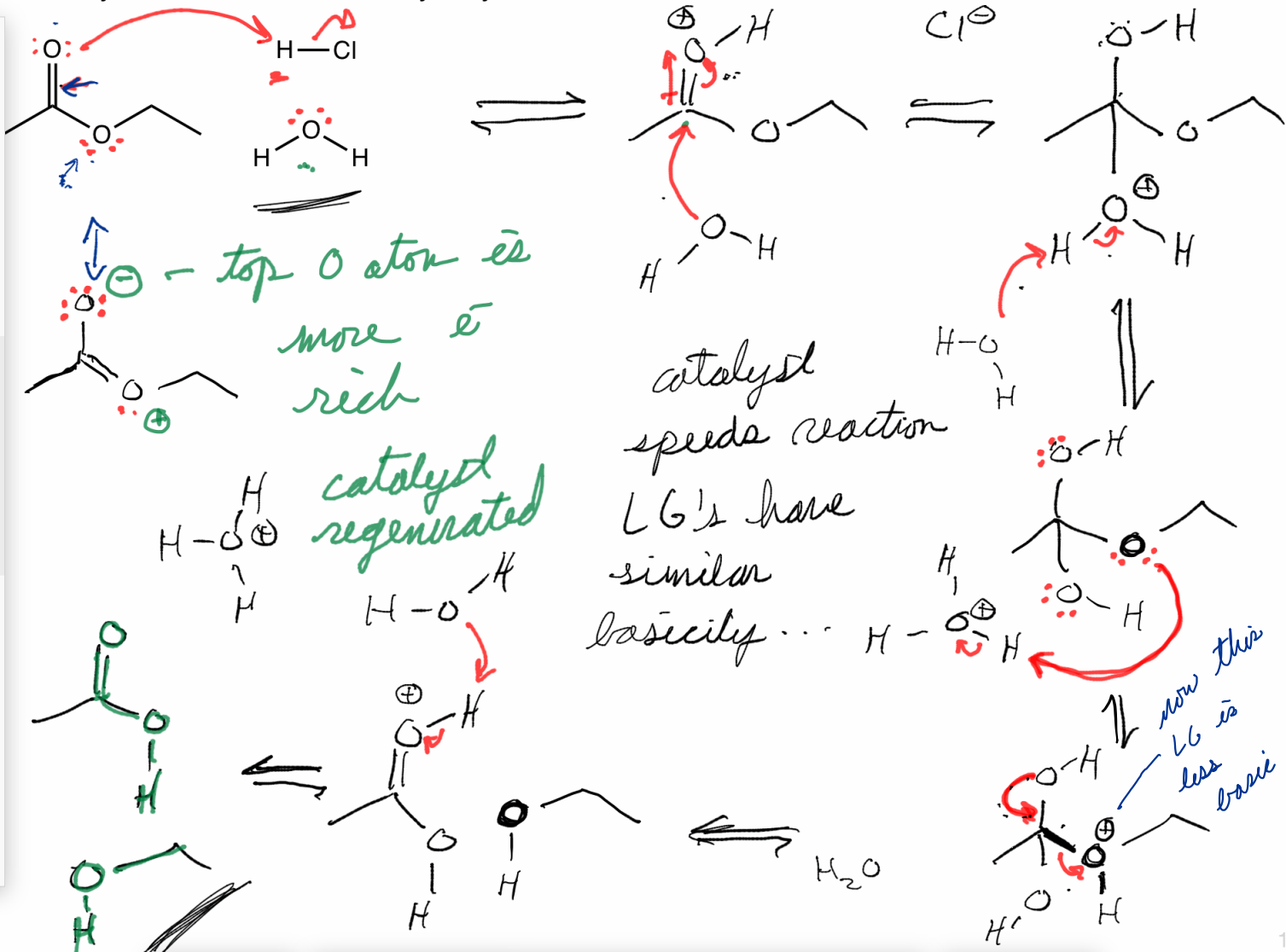
② nucleophilic O on H_2O attacks electrophilic C of $C=O$

③ weakest bond is broken to make room for incoming e^- 's



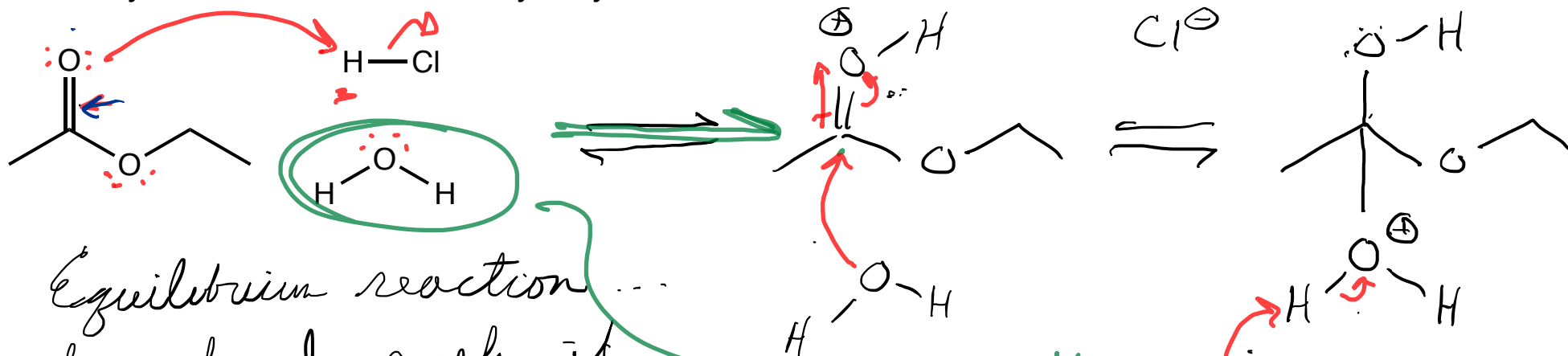
Acid-Catalyzed & Base-Promoted Hydrolysis

Section 15.8 & 15.9



Acid-Catalyzed & Base-Promoted Hydrolysis

Section 15.8 & 15.9

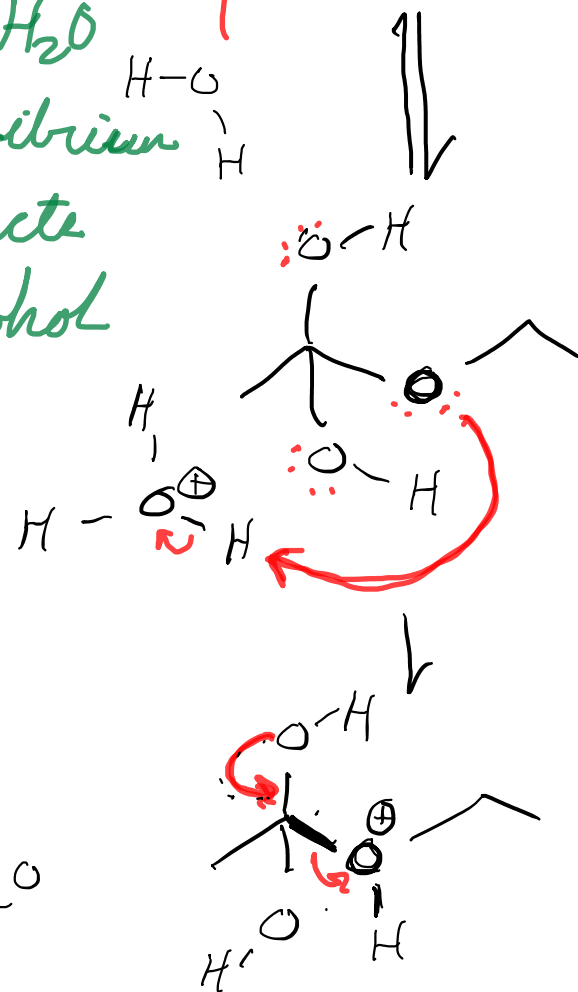
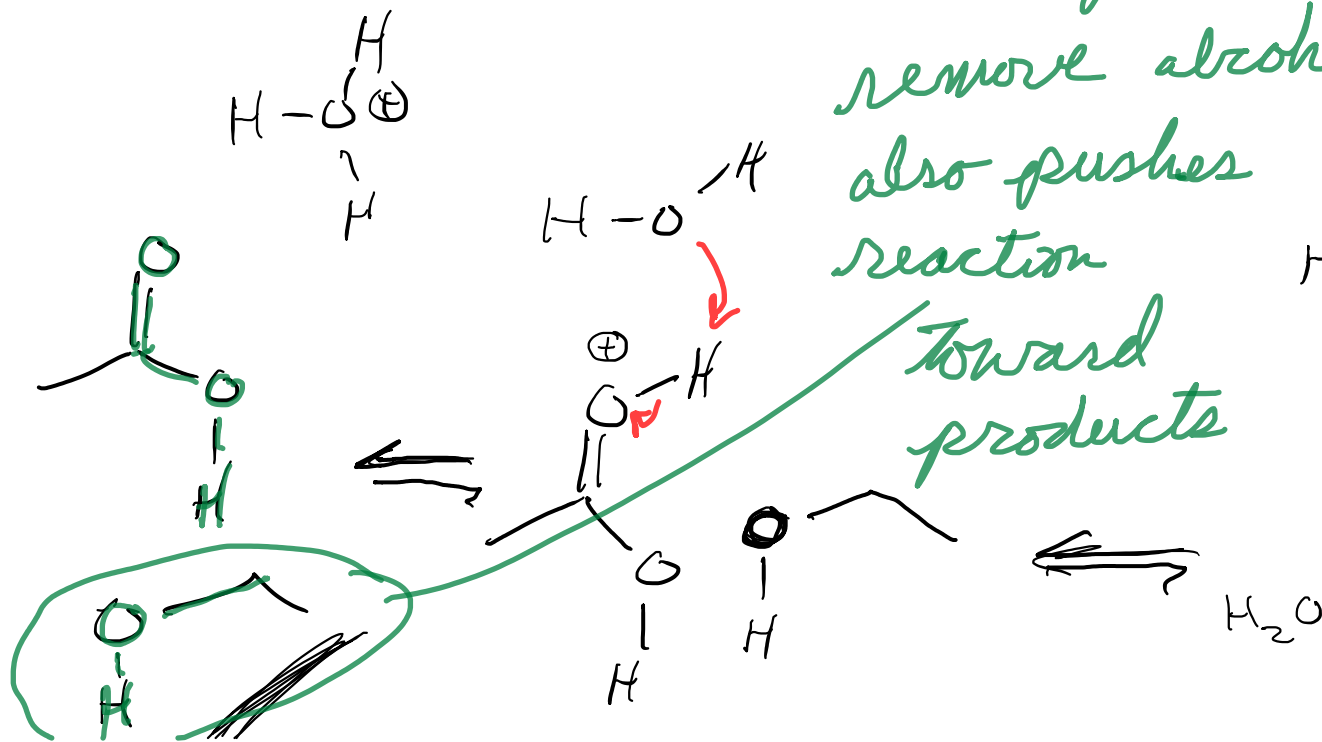


Equilibrium reaction
how do I push it
to completion?

add lots of H_2O
pushes equilibrium
toward products

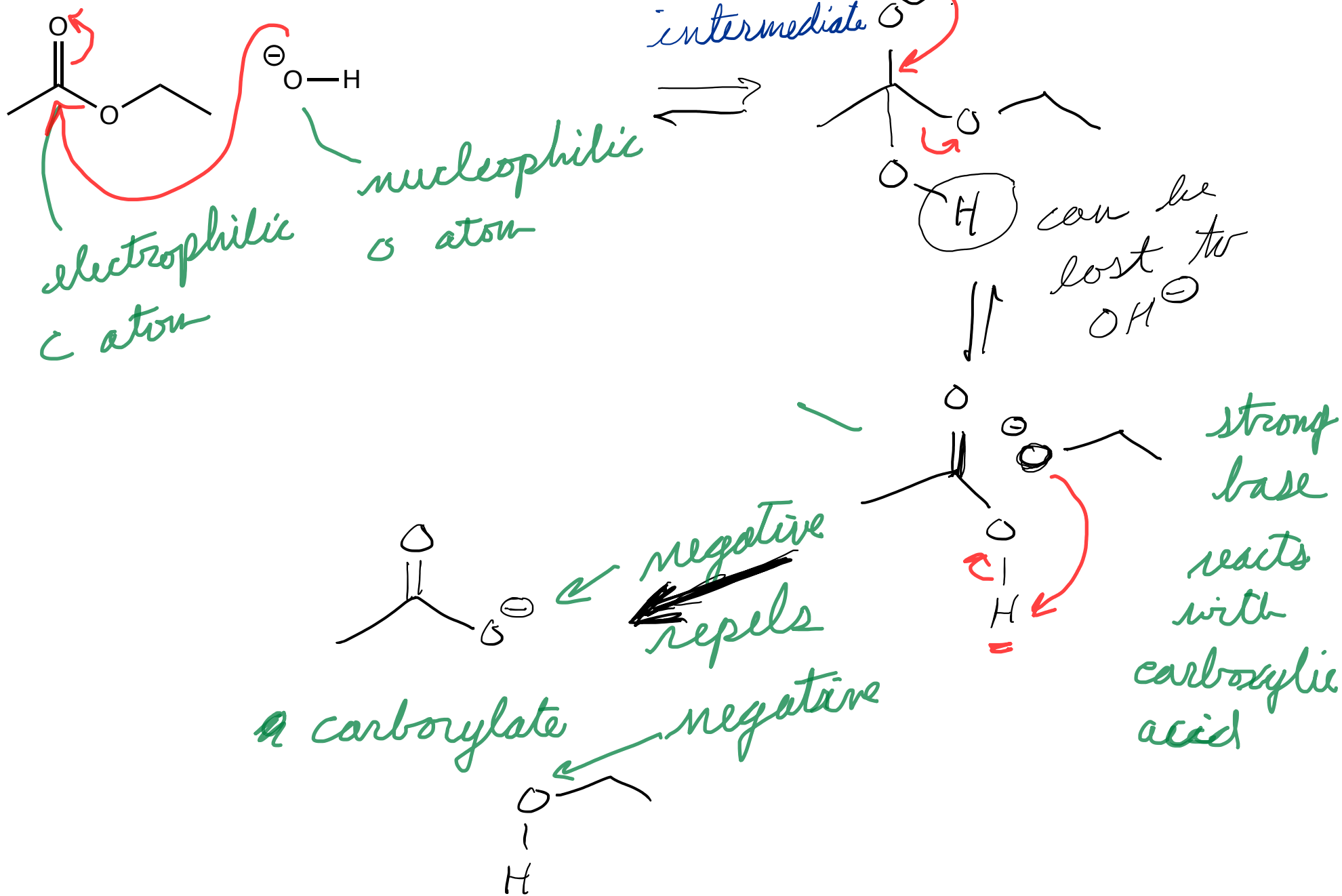
remove alcohol
also pushes
reaction

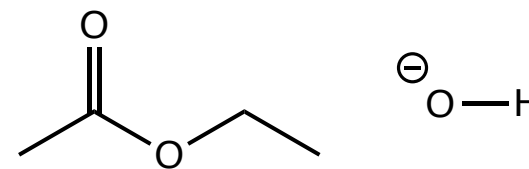
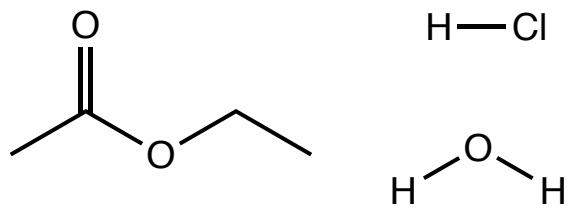
toward
products



Acid-Catalyzed & Base-Promoted Hydrolysis

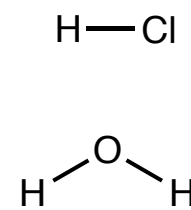
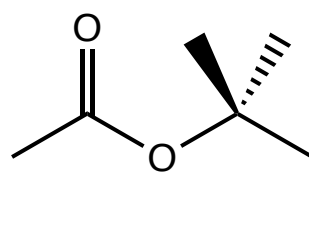
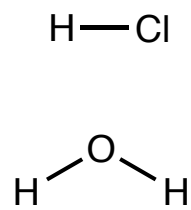
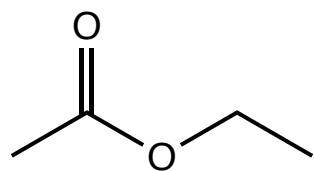
Section 15.8 & 15.9





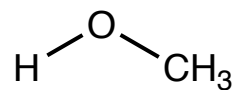
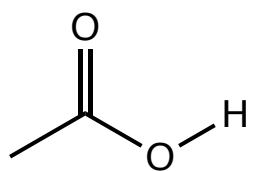
Complications in Acid Catalyzed Hydrolysis...

Section 15.8



Reaction of Carboxylic Acids with Alcohols

Section 15.10



Reaction of Carboxylic Acids with Amines

Section 15.10

