Today

Electron Delocalization in and Reactions of Carboxylic Acids and Carboxylic Acid Derivatives
Section 15.6 – 15.10

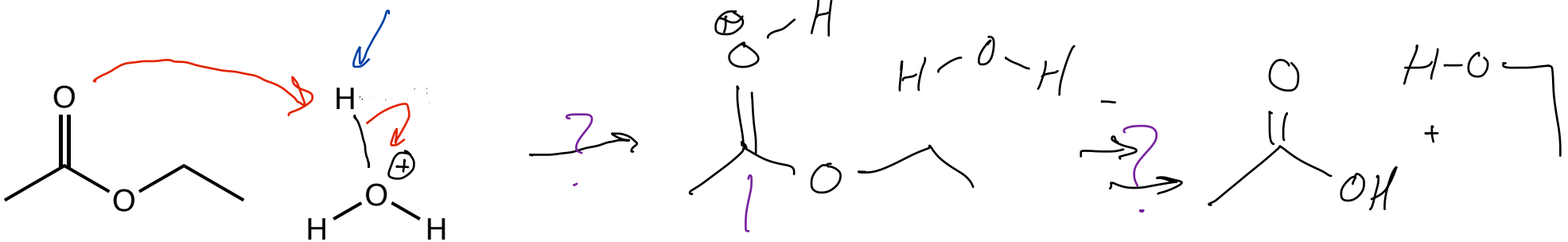
Next Class

Reaction of Amides , Nitriles, and Acid Anhydrides
Sections 15.11 – 15.16

Last week of video conferencing only office hours.

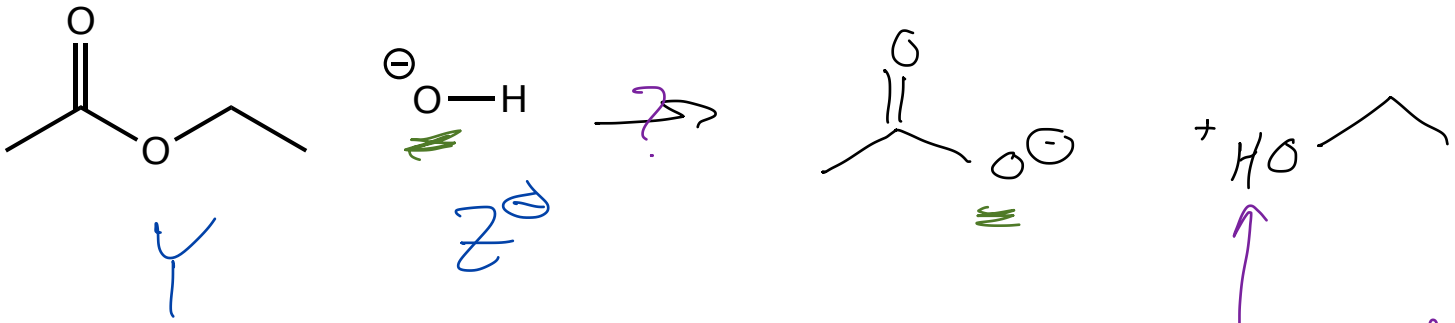
Test 2 will be postponed to March 25, so we can finish through chapter 15.10.

Reworked test one due Monday.



$Cl^{\ominus}$ H_2O

this c atom has become more electrophilic

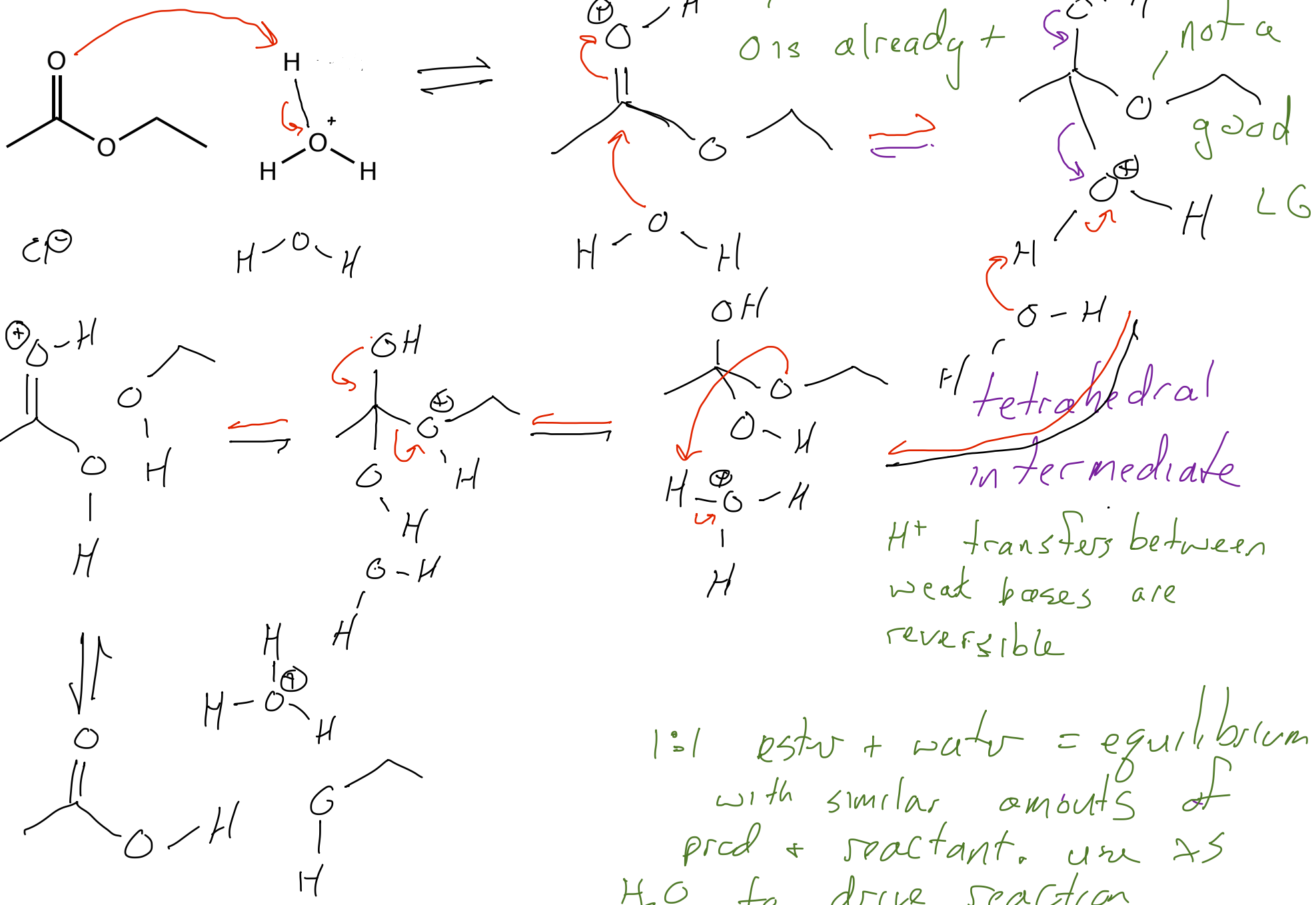


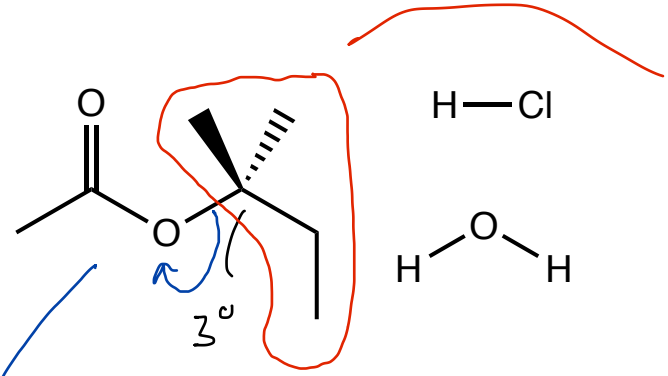
Y $Z^{\ominus}$

how did this H get here

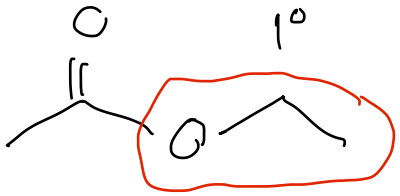
Hydrolysis - Acid Catalyzed Mechanism: A closer look

Section 15.8



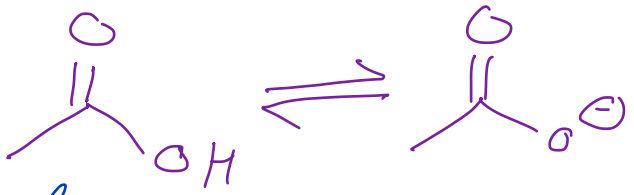


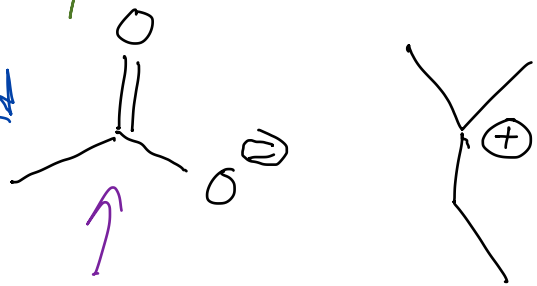
this 3° C atom is in a protic solvent, protic solvents encourage C^+ formation, and if there is a good LG....



this 1° C won't be able to form a C^+

a good LG is a weak base

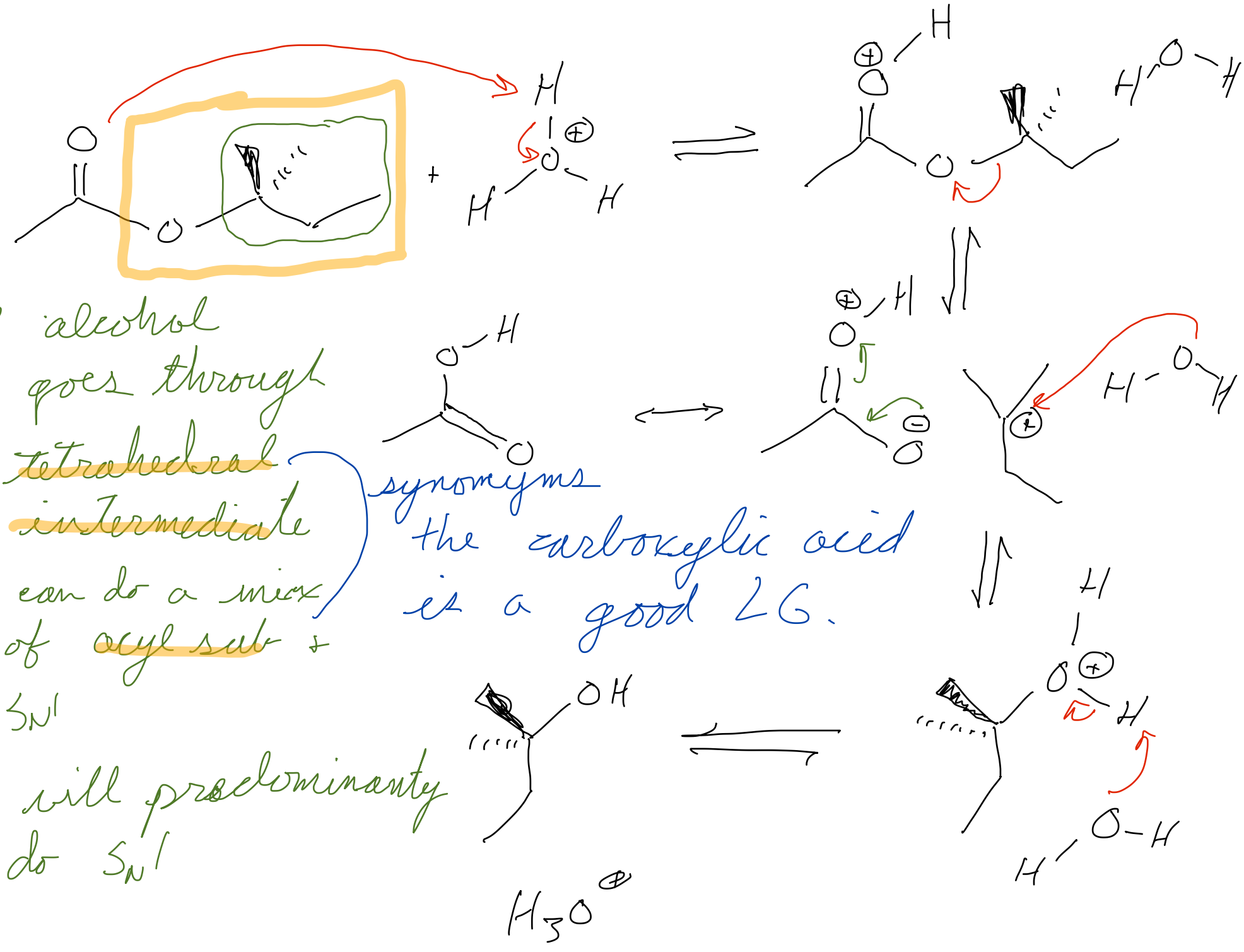




since carboxylates are weak bases they a pretty good LG's

$H^{\oplus}$

is this a weak or a strong base?


1° alcohol goes through tetrahedral intermediate
2° can do a mix of acyl sub + SN1
3° will predominantly do SN1
synonyms
the carboxylic acid is a good LG.
H3O⊕

What's a weak base... Villians

Think about the conjugate acid

$Cl^{\ominus}$

$\downarrow$

$HCl \longrightarrow H^{\oplus} + Cl^{\ominus}$

strong acid extremely weak base

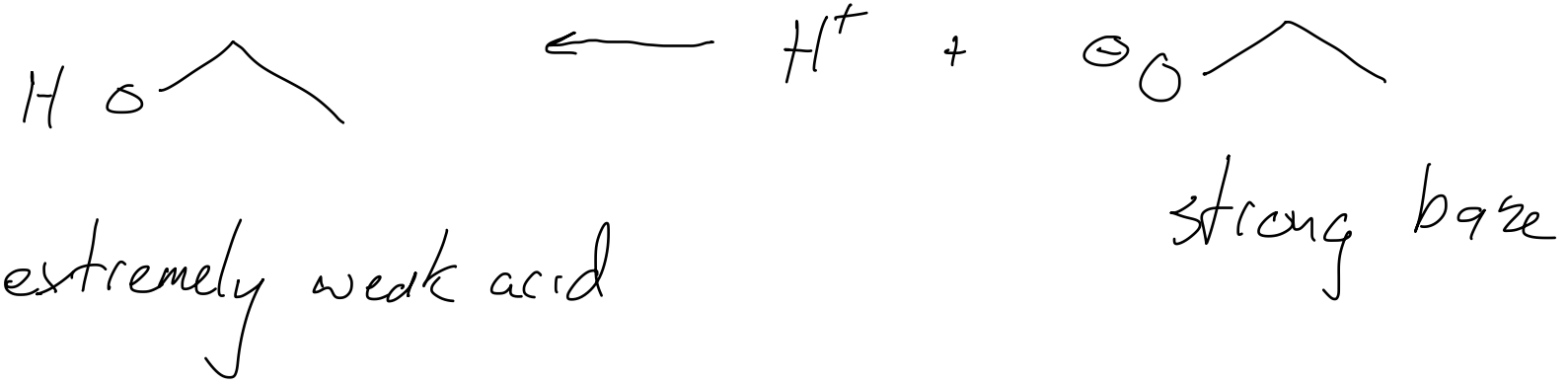
$CH_3CO_2^{\ominus}$

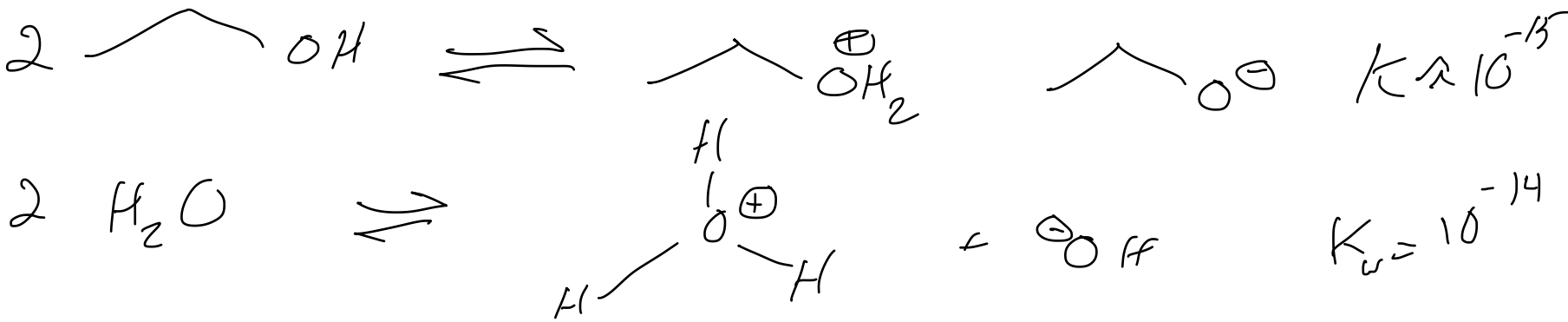
$CH_3CO_2H \rightleftharpoons CH_3CO_2^{\ominus} + H^{\oplus}$

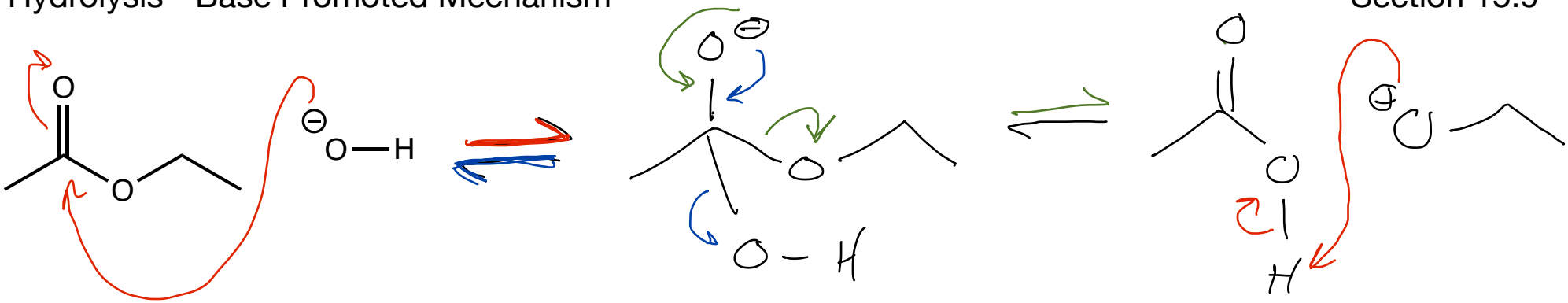
weak acid weak base

strong acid $\longrightarrow$ H^+ extremely weak base

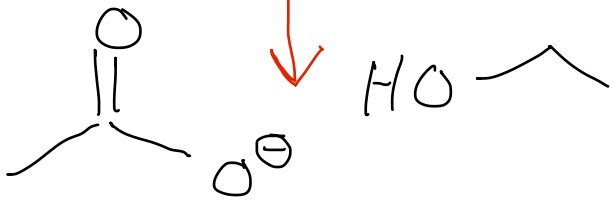
weak acid $\rightleftharpoons$ H^+ + weak base

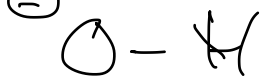




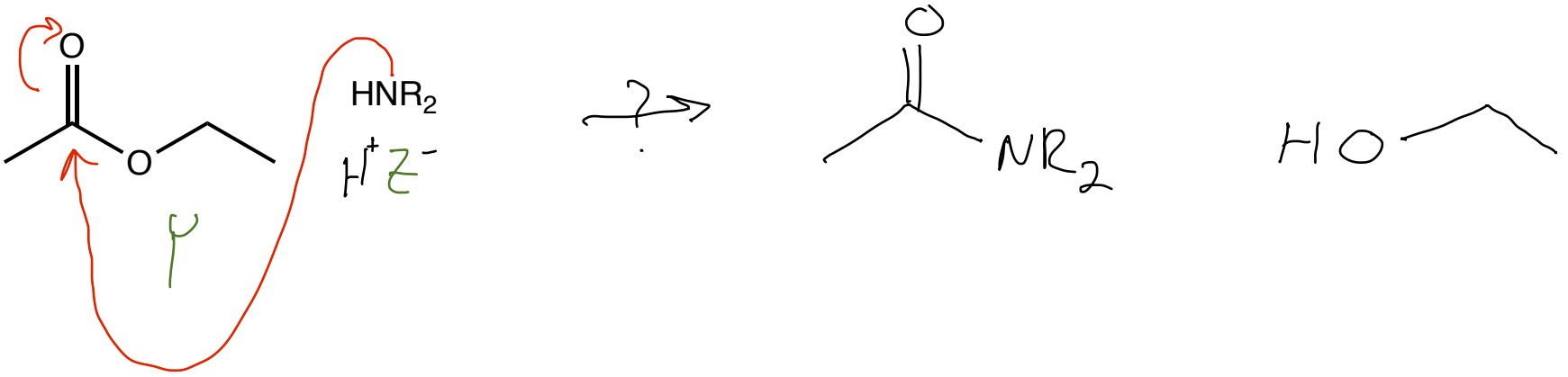


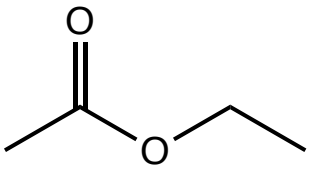
carboxylates are e⁻ rich the ⊖ on the carboxylate repells the electron rich (thus δ⊖) alcohol





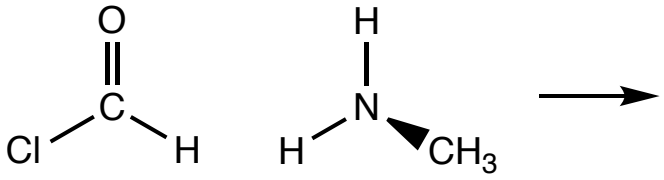
Aminolysis

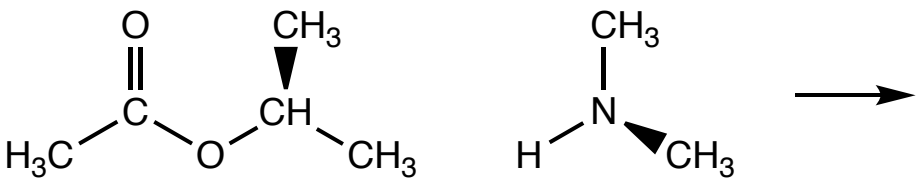


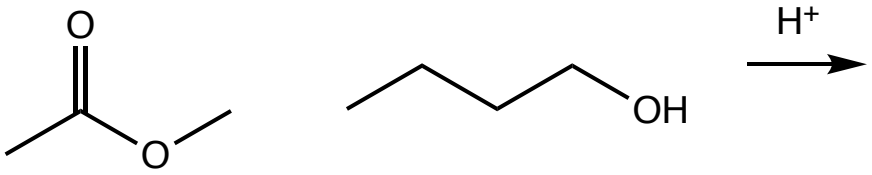


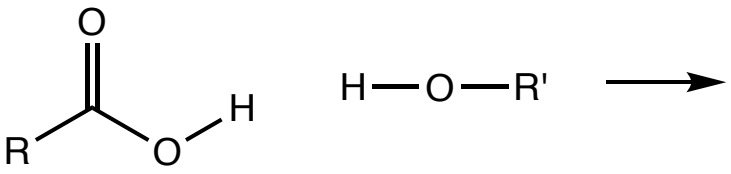
HNR_2

Practice



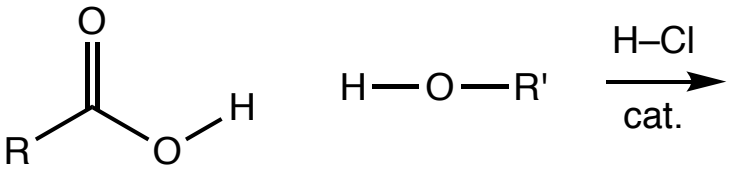






R = H, CH_3, CH_2CH_3, etc.

R' ≠ H, R' = CH_3, CH_2CH_3, etc.



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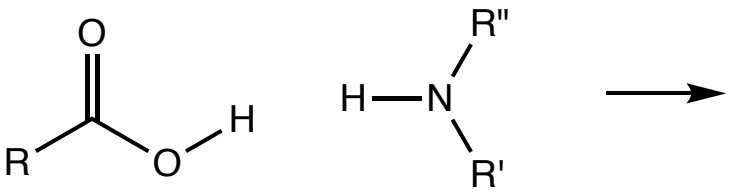
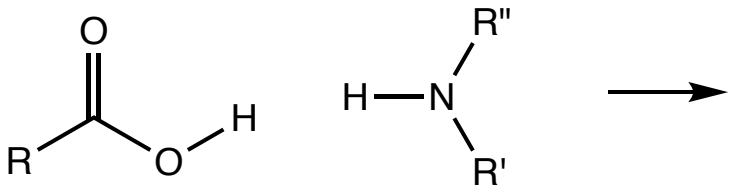


R, R', and/or R" = H, CH_3, CH_2CH_3, etc.



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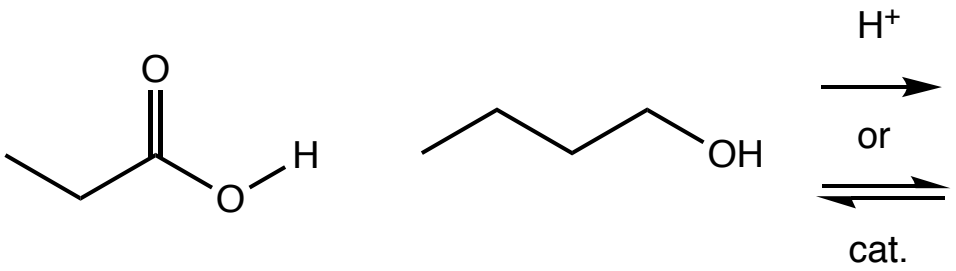
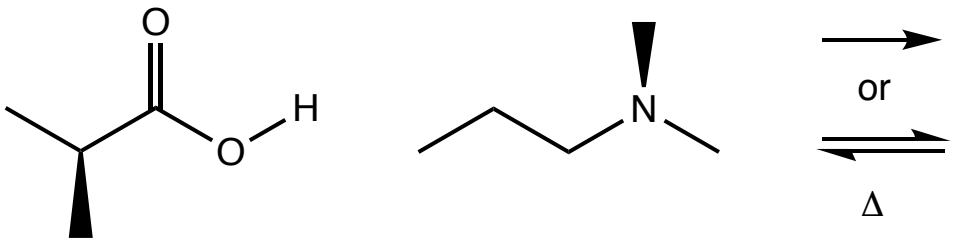
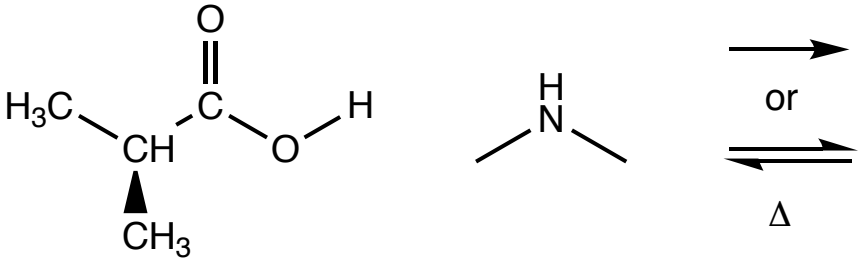

O
H
O
OH
H+
or
cat.


O
H
O
N
or
Δ


O
H3C
C
H
O
CH3
H
N
or
Δ