

(20) Today

Chap 21.3: Reactions of Carboxylic Acids

Chap 21.4: Reactions of Acid Halides

Chap 21.6: Reactions of Esters

Next Class (21)

Chap 21.6: Reactions of Esters

Chap 21.7: Reactions of Amides

Chap 10.6: Grignard Reagents

Chap 19: Aldehydes and Ketones

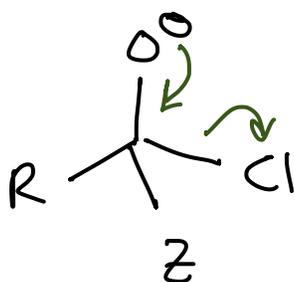
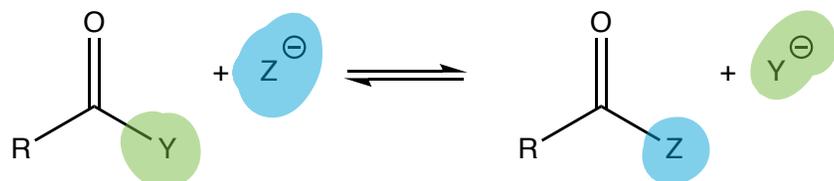
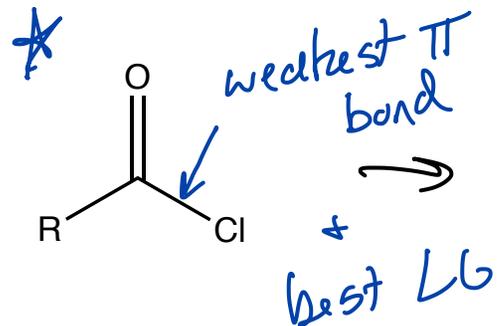
(22) Second Class from Today

Test 2: MS, IR, and NMR and 21.1-21.2

Third Class from Today (23)

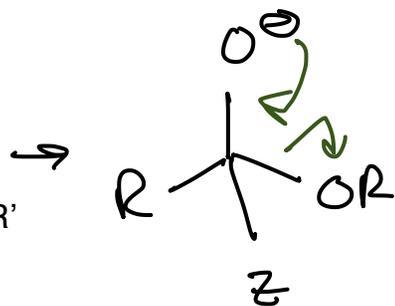
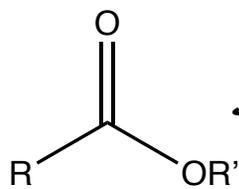
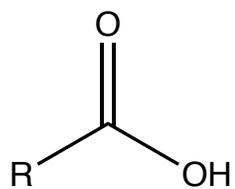
Chap 19: Aldehydes and Ketones

most reactive



LG
 Cl^-

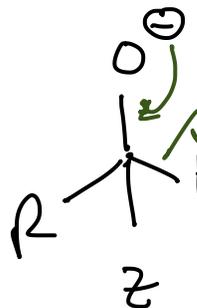
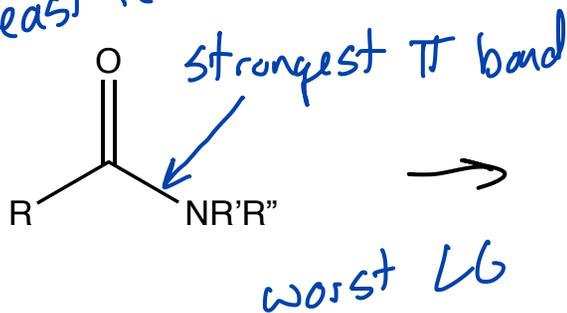
pretty good LG



$\ominus \text{OR}$

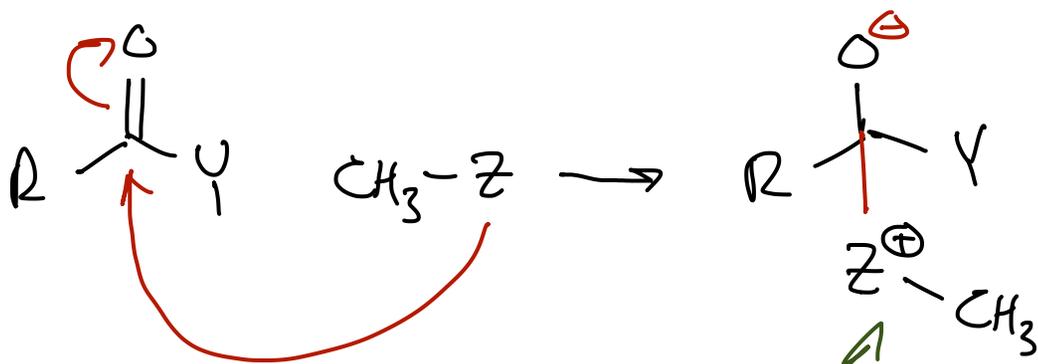
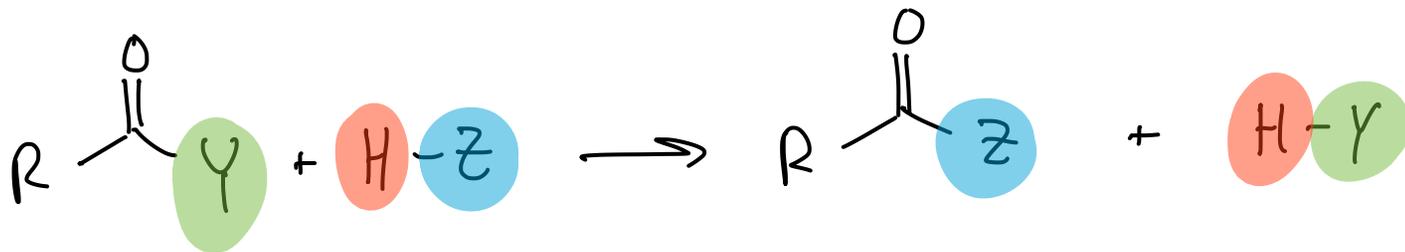
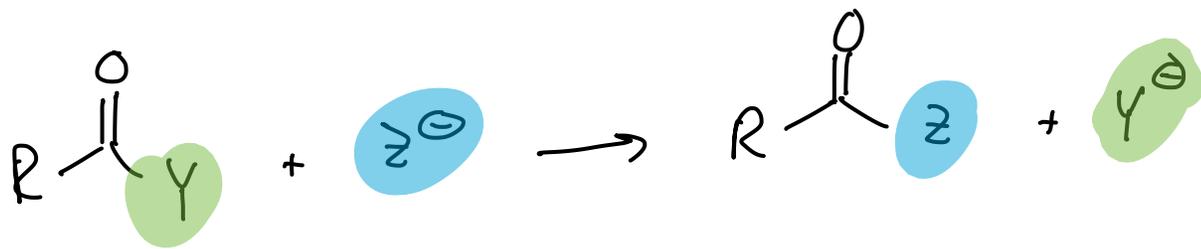
alkoxides are not good LG's

least reactive

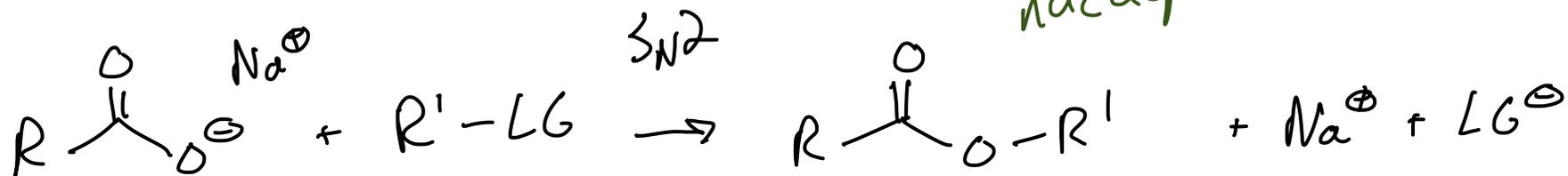
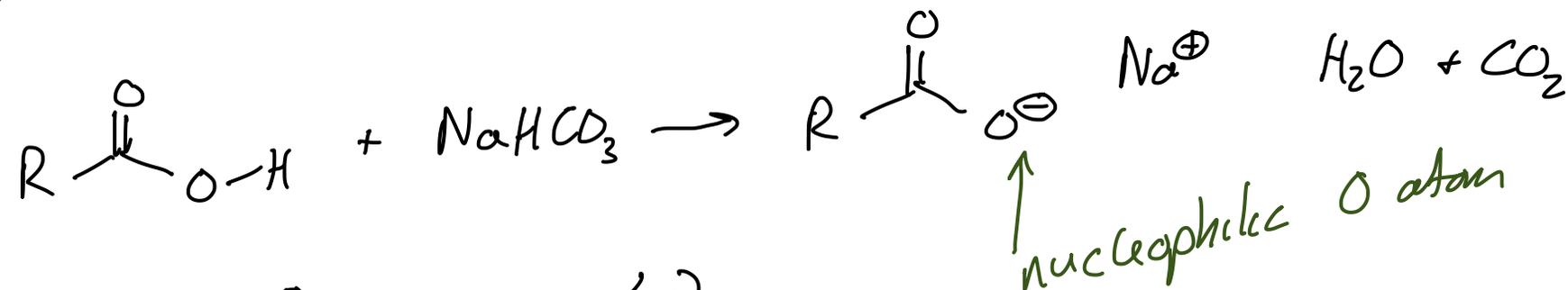
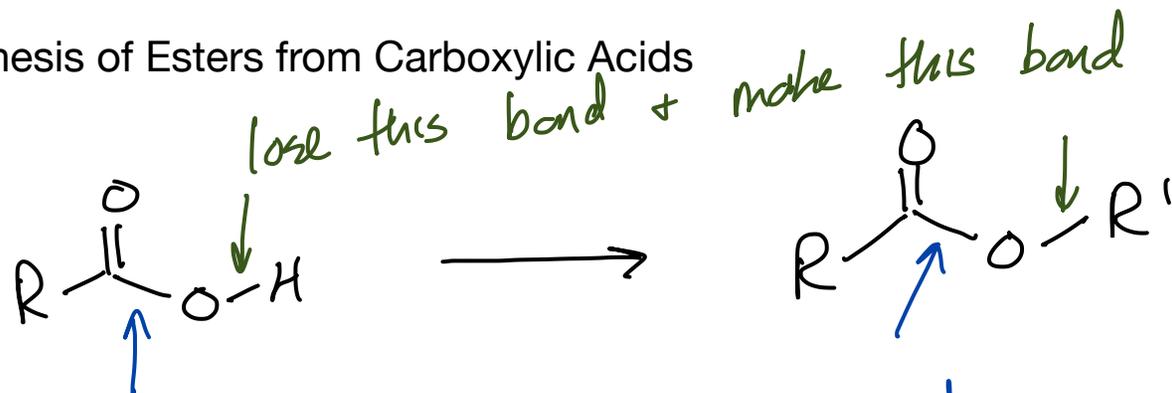


$\ominus \text{NR}'\text{R}''$

really bad LG



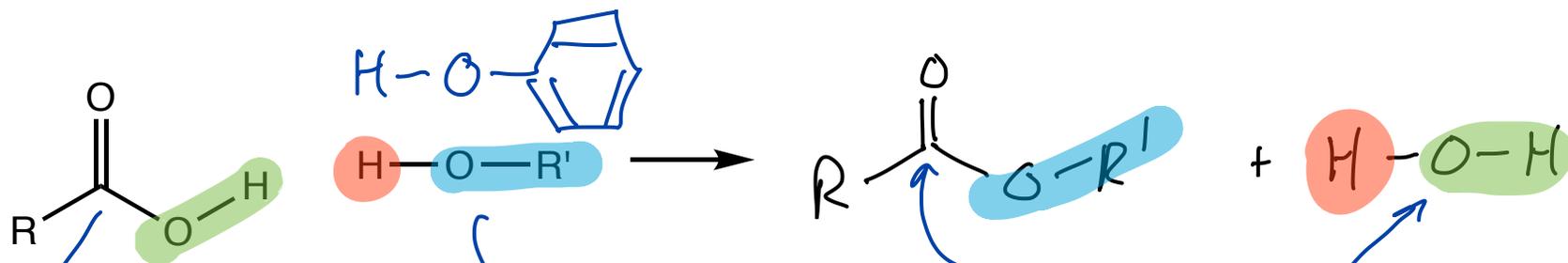
no H^+ to lose \sim so
this Z is not a good dr



slow
 $1^{\circ} \alpha-C$, $2^{\circ} \alpha-C$, $3^{\circ} \alpha-C$



this method would be a nucleophilic acyl sub



R = H, CH₃, CH₂CH₃, etc.

R' ≠ H, R' = CH₃, CH₂CH₃, etc.

nucleophile is
O with 2 pair lp e⁻'s
+ an H to lose

electrophilic C of C=O
with O next to it

electrophilic C of C=O
with O next to it

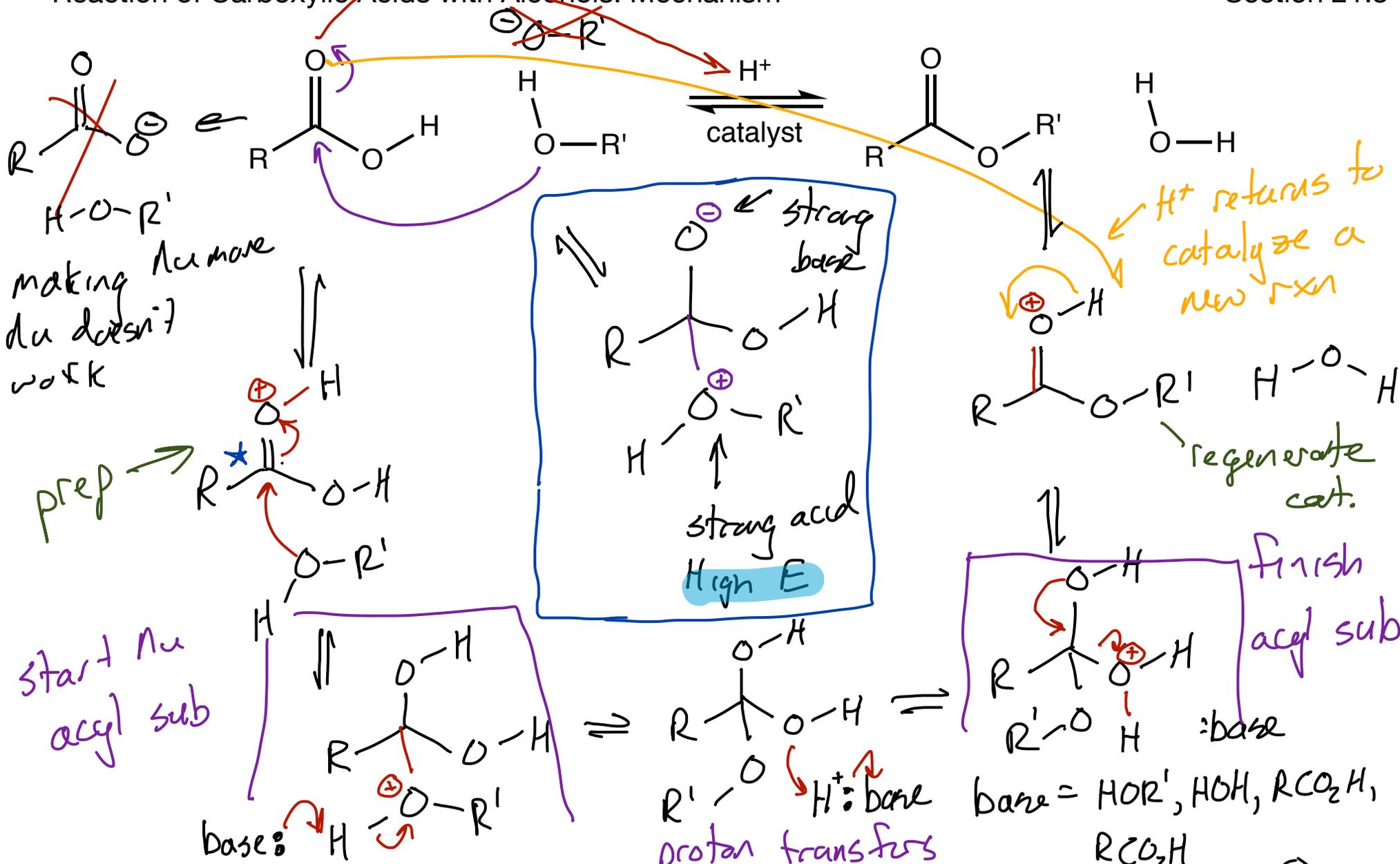
reactivity of reactants + products are extremely similar
so $K \approx 1$ use Le Châtelier's Principle to push the
rxn toward the products.

slow equilibrium rxn

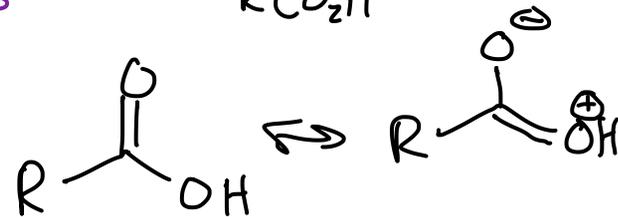
Speed up rxn by making ~~the more the~~ or electrophile more electrophilic?

Reaction of Carboxylic Acids with Alcohols: Mechanism

Section 21.3

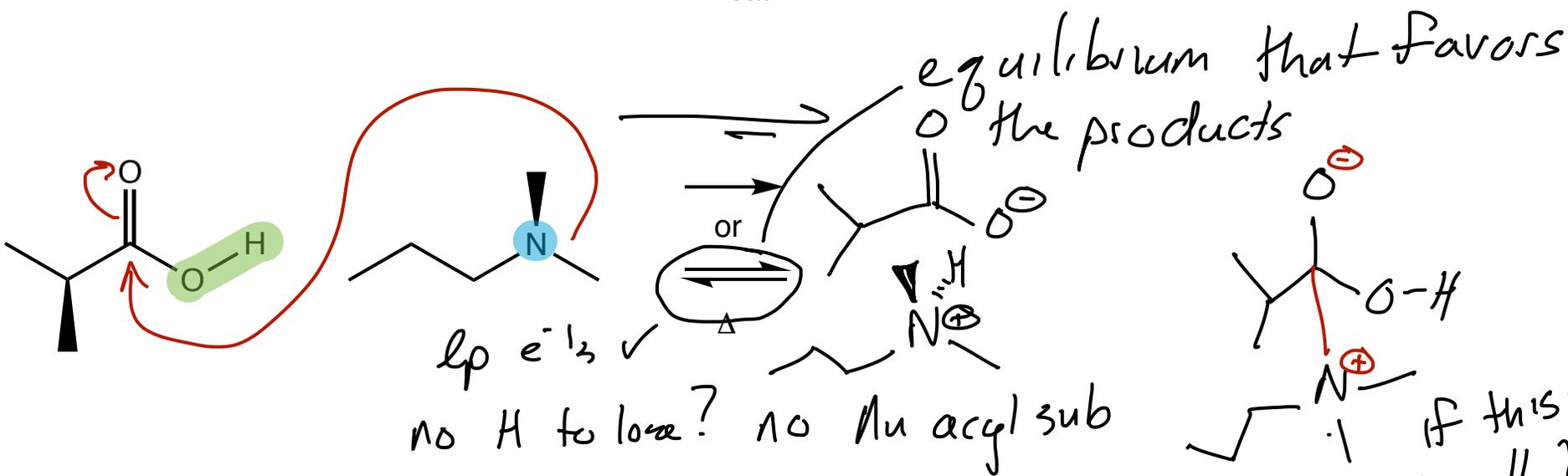
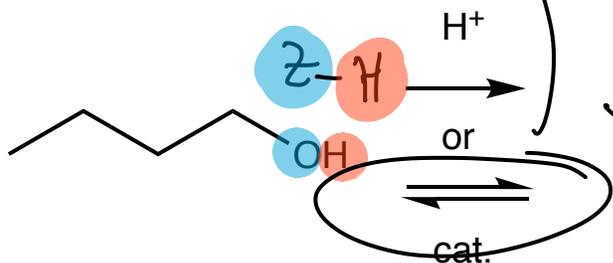
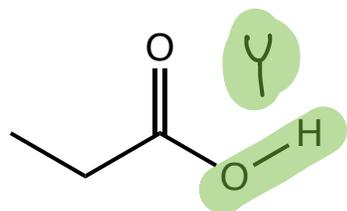


* O is pulling more strongly on e⁻'s in C=O bond, so C is more electrophilic

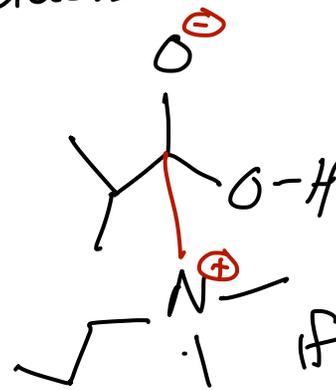


Practice: Reactions of Carboxylic Acids

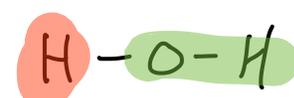
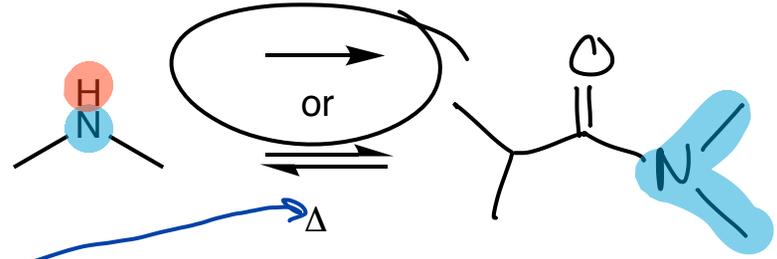
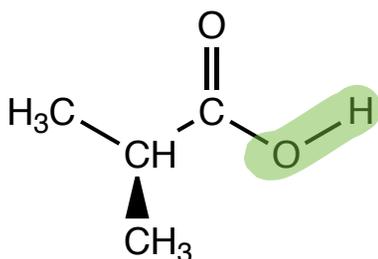
equilibrium with $K \approx 1$



lp e^- 's ✓
no H to lose? no Nu acyl sub



If this forms it will just go back to reactants



heat and an H^+ to lose means we can do Nu acyl sub
This rxn goes to completion because the water is boiled off