(23) **Today**

Chapter 21.6

Next Class (24)

Chap 21: Chemistry Matters

Chap 19.4 and 19.7: Nucleophilic Addition to Aldehydes and Ketones

Chap 10.6: Grignard Reagents

(25) **Second Class from Today**

Chap 15.2 – 15.6: Aromaticity

Third Class from Today (26)

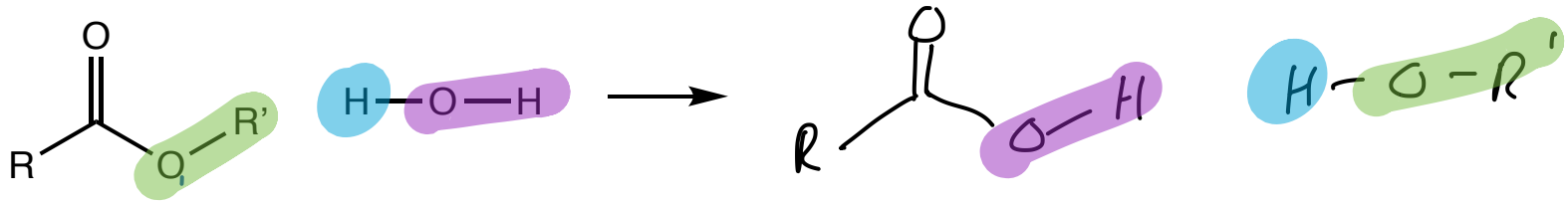
Chapter 15.2 – 15.6

Skipping reactions of carboxylic acid derivatives with Grignard reagents and $LiAlH_4$ for now

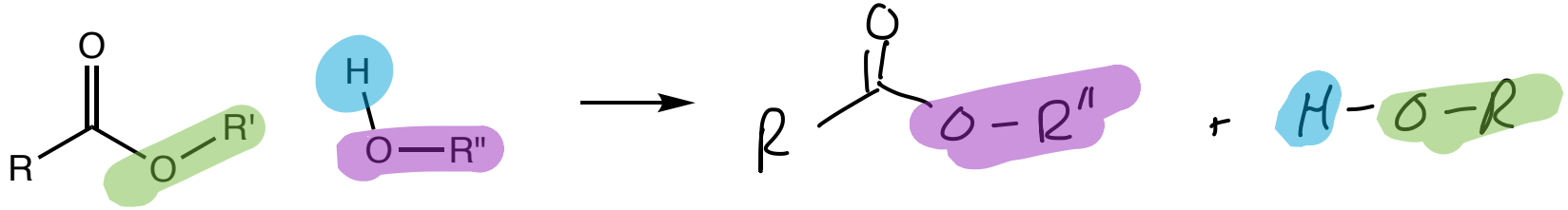
Z⁻ = purple = nucleophile

Y⁻ = green = leaving group

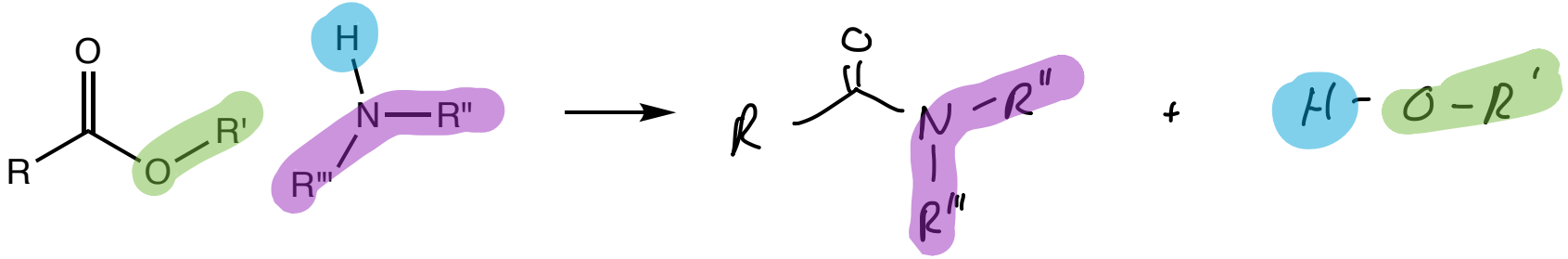
Hydrolysis

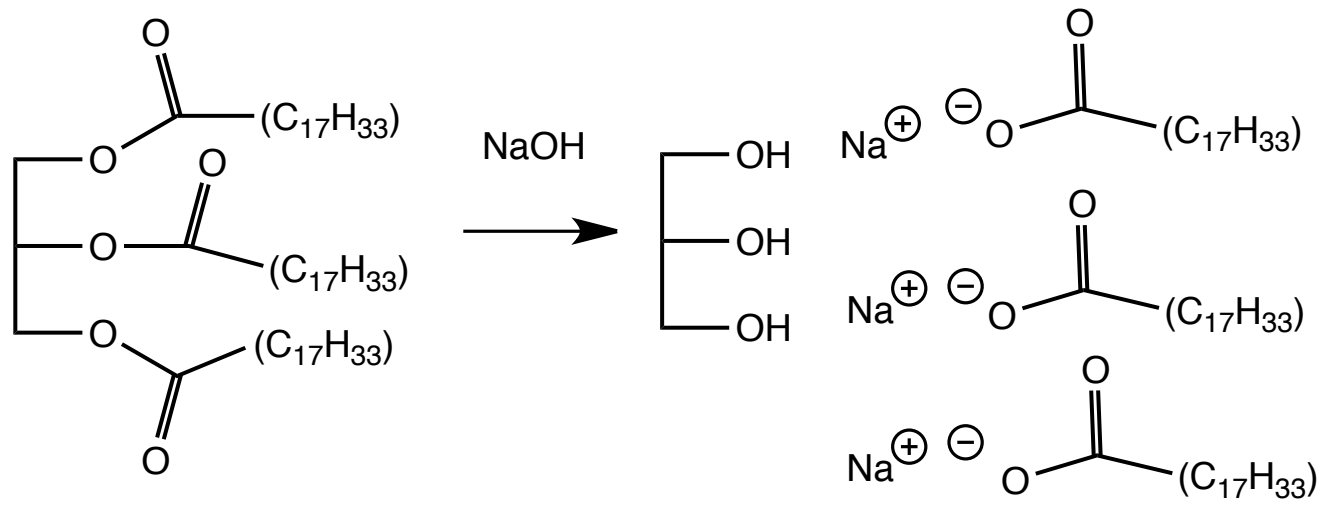


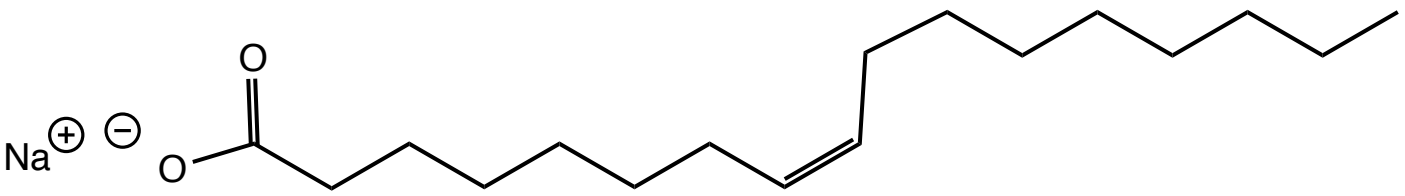
Transesterification



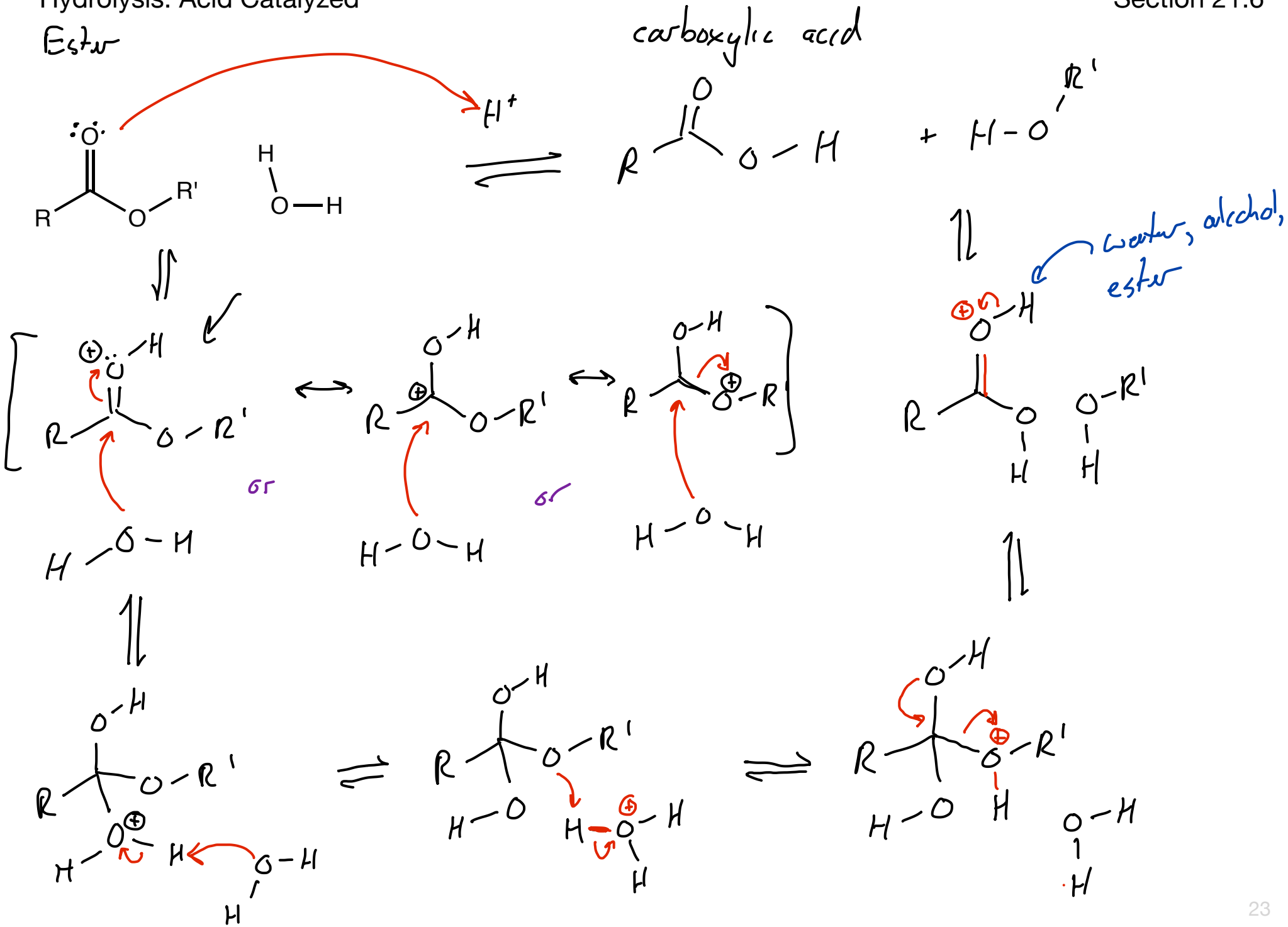
Aminolysis




O
(C17H33)
O
O
O
(C17H33)
O
(C17H33)
O
NaOH
OH
OH
OH
Na
O
O
(C17H33)
Na
O
O
(C17H33)
Na
O
O
(C17H33)

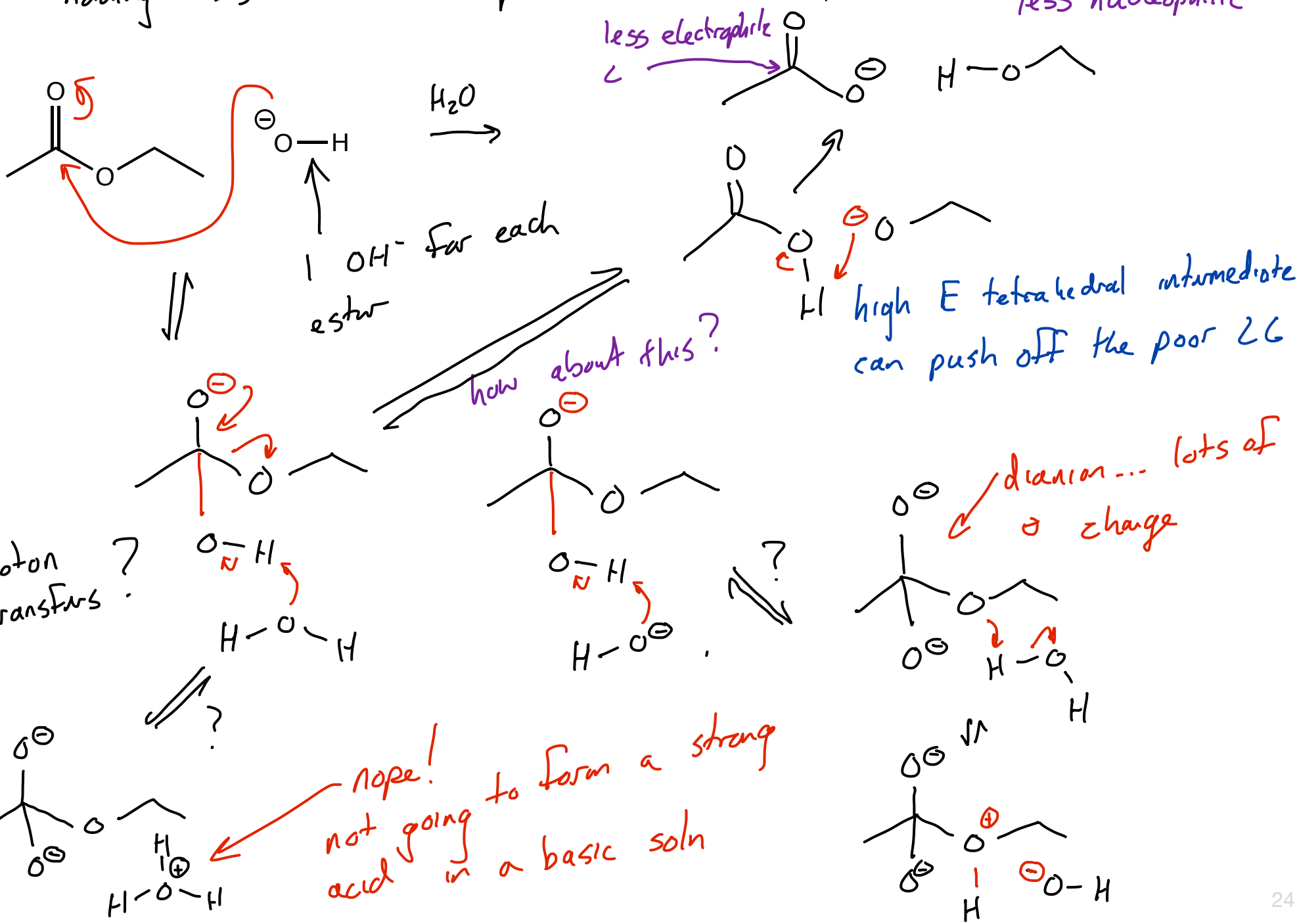

Na
O
O

Soap

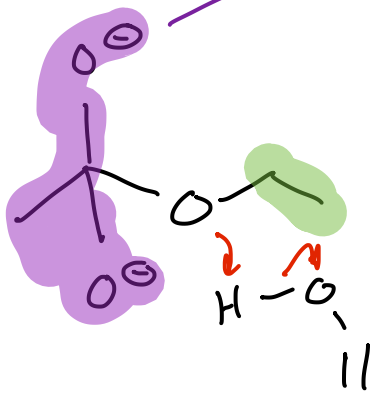

Ester
carboxylic acid
H+
R
R'
O
H
O—H
or
or
water, alcohol, ester

Adding acids makes electrophiles more electrophilic

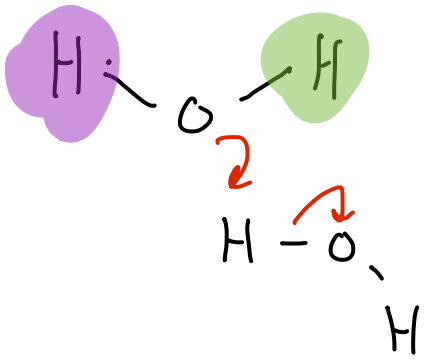
Adding bases makes nucleophiles more nucleophilic



these ⊖ charged O's would be more attractive, so unlikely that H will go to neutral O.



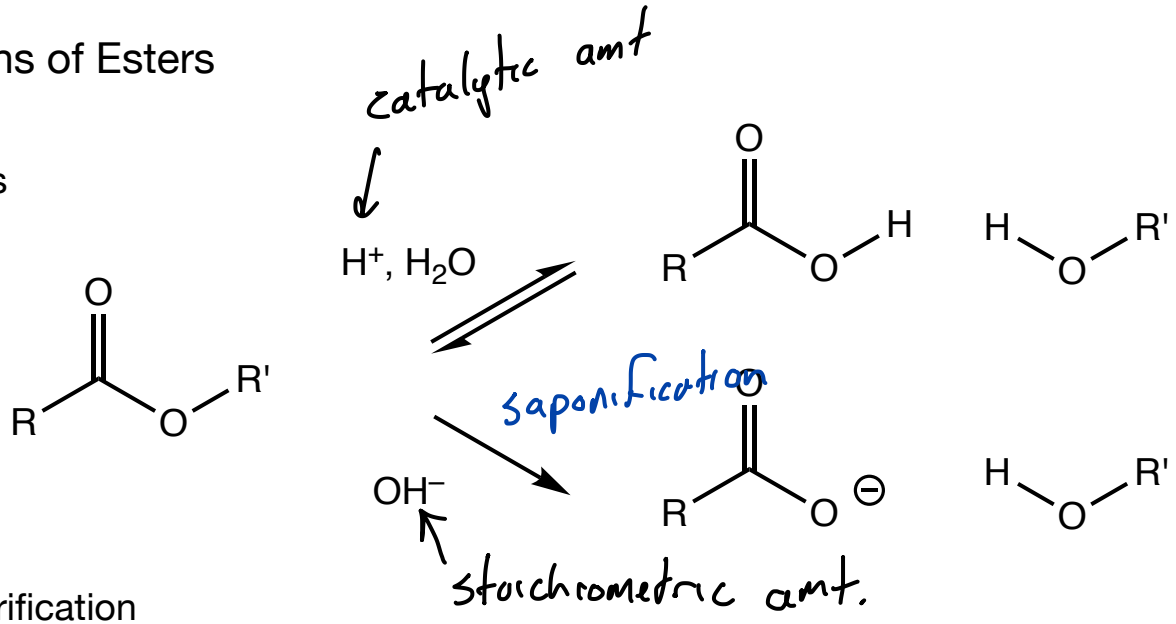
this reaction resembles



the auto ionization of H_2O

$$K_w = 10^{-14}$$

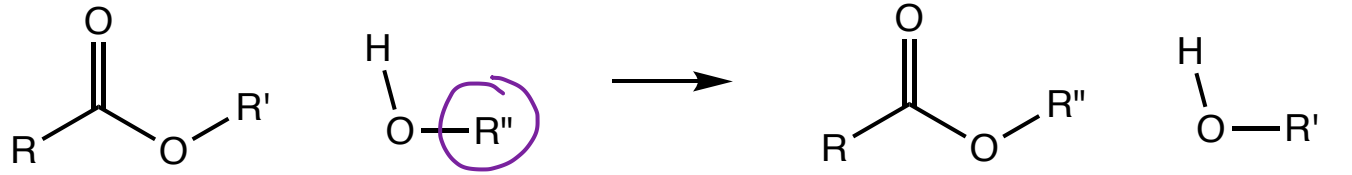
Hydrolysis



hydrolysis catalyzed by H+

hydrolysis performed by $OH^{\ominus}$

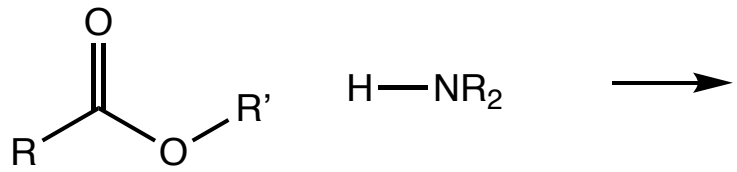
Transesterification

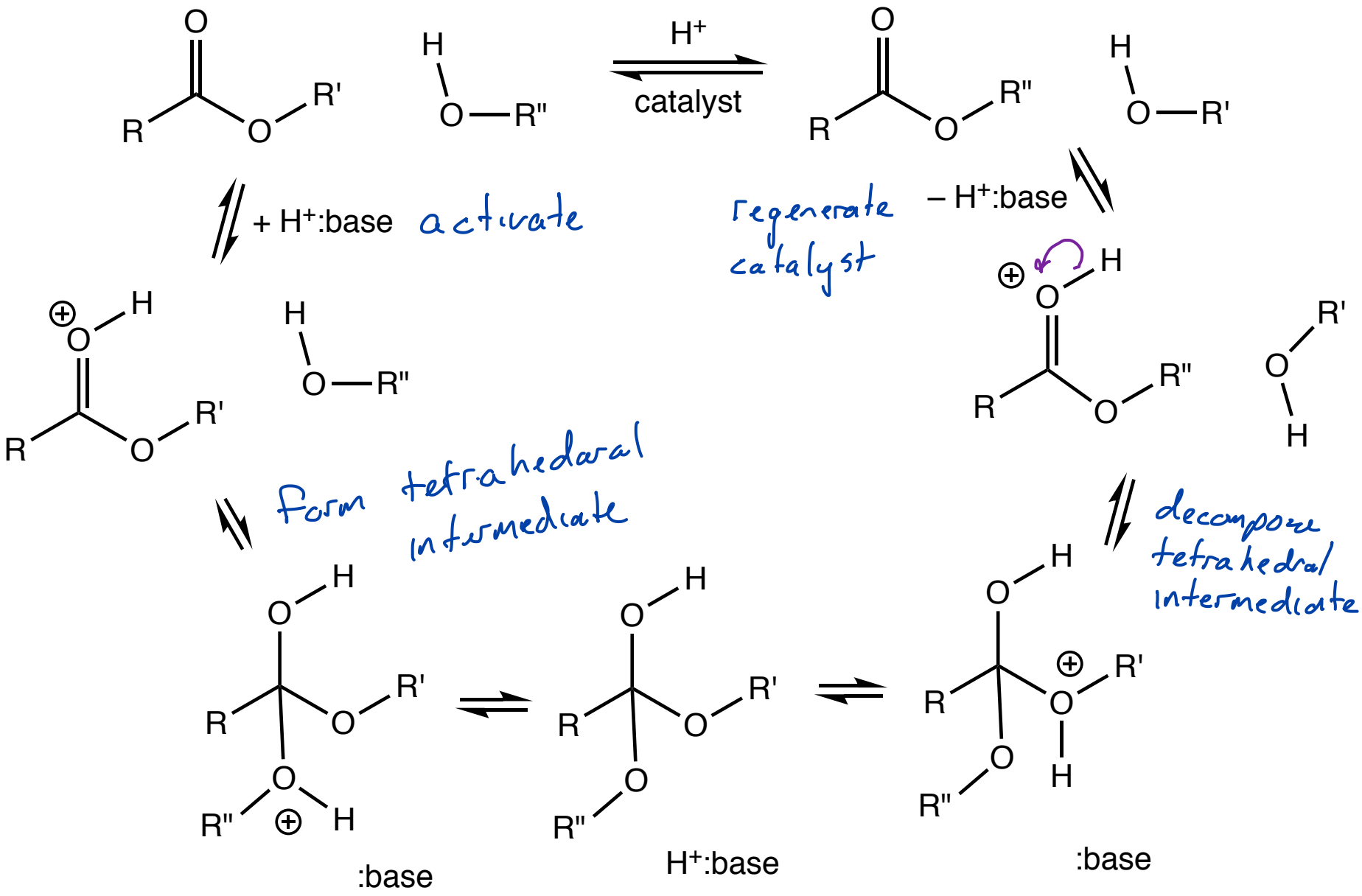


ester + alcohol

new ester new alcohol

Aminolysis




H+
catalyst
+ H+:base
activate
regenerate catalyst
– H+:base
form tetrahedral intermediate
decompose tetrahedral intermediate
:base
H+:base
:base
proton transfer to generate a new LG

Biodiesel: Transesterification Put to Work to Reduce CO_2 Emissions