

Today

Next Class

Esters and Carboxylic Acid Derivatives  
Section 15.7 – 15.9

Reaction of Amides , Nitriles, and Acid Anhydrides  
Sections 15.10 – 15.16

Last week of video conferencing office hours.

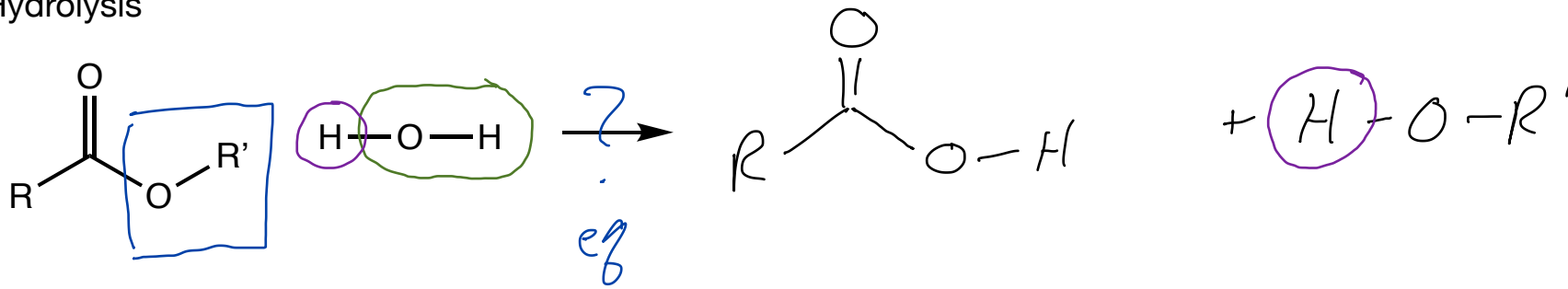
Test 2 will be postponed to March 25, so we can finish chapter 15.

Reworked test one due Monday.

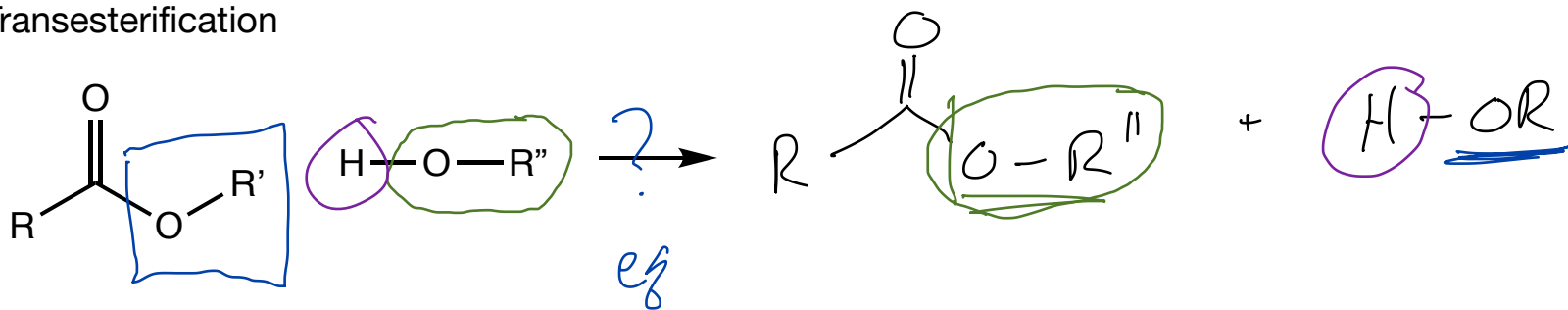
# Reactions of Esters



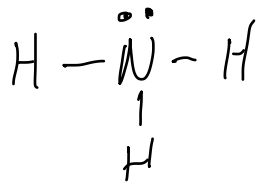
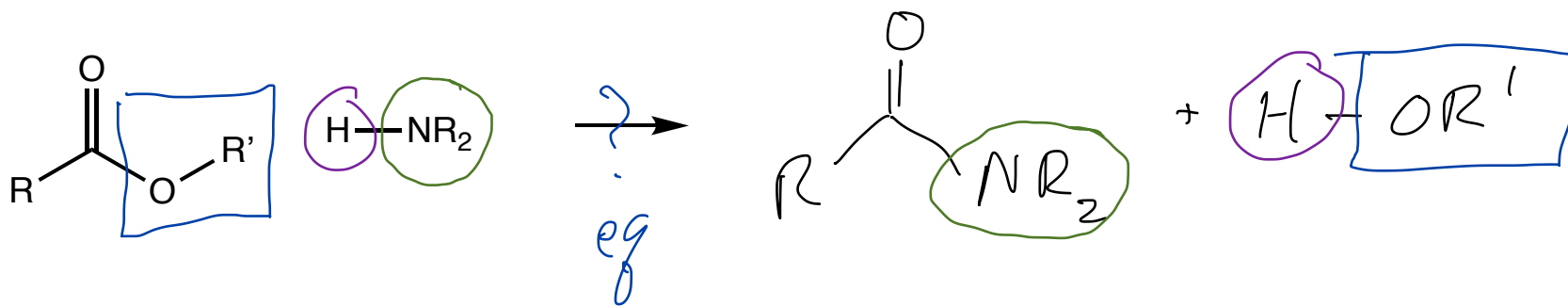
## Hydrolysis



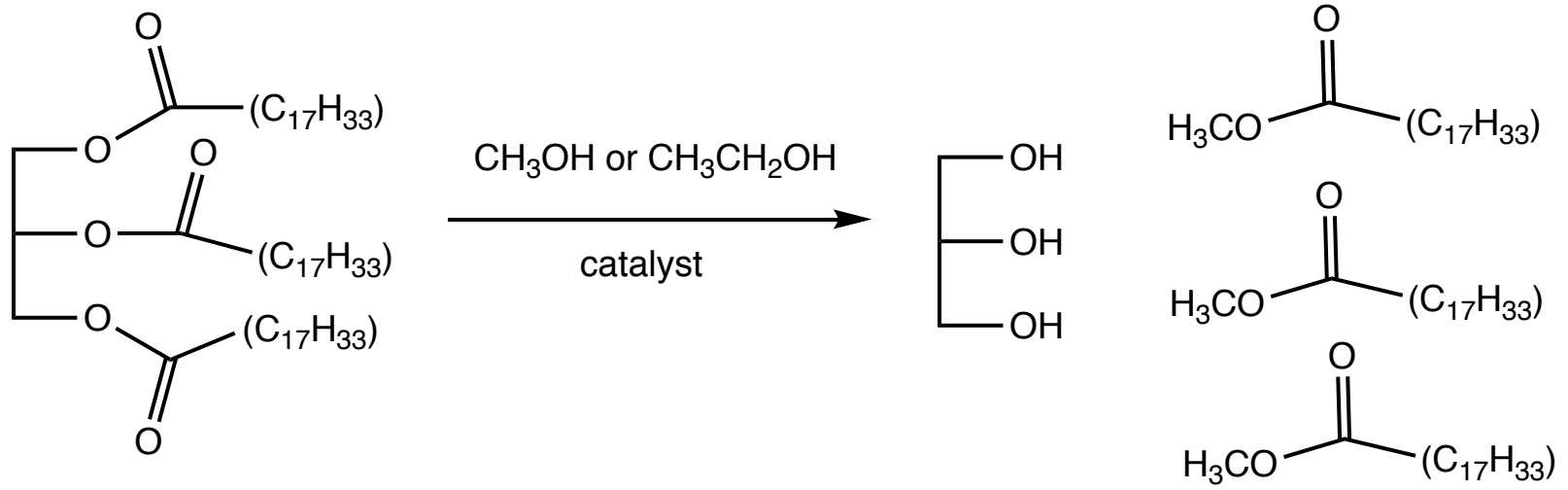
## Transesterification



## Aminolysis

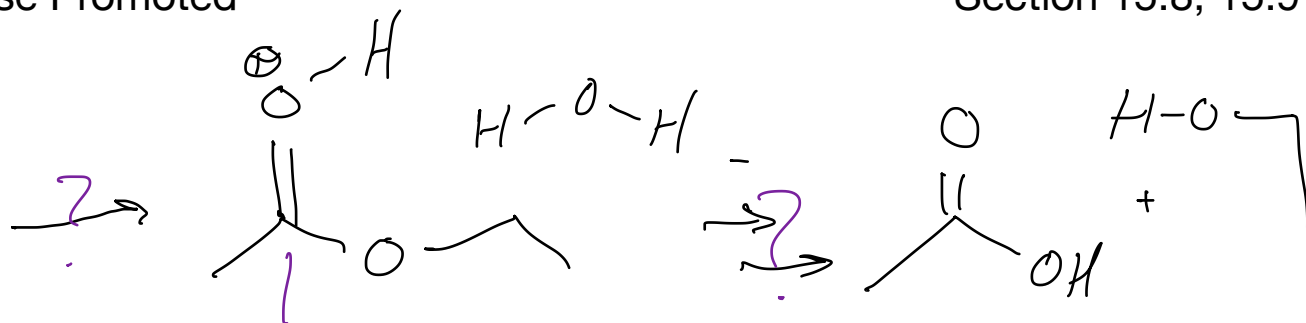
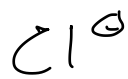
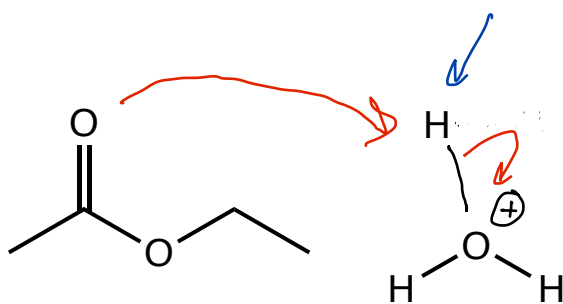


# Biodeisel : Transesterification Put to Work to Reduce CO<sub>2</sub> Emissions

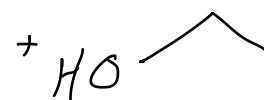
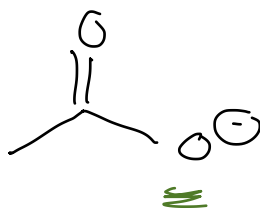
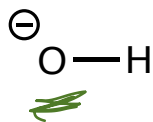
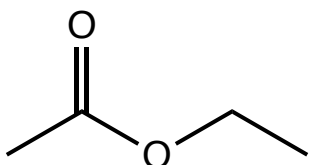


# Hydrolysis - Acid Catalyzed or Base Promoted

Section 15.8, 15.9



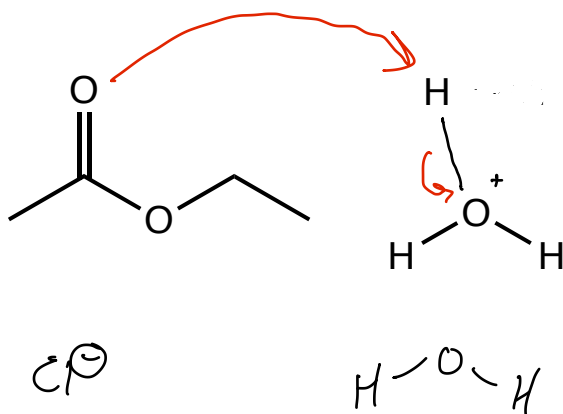
this C atom has become more electrophilic



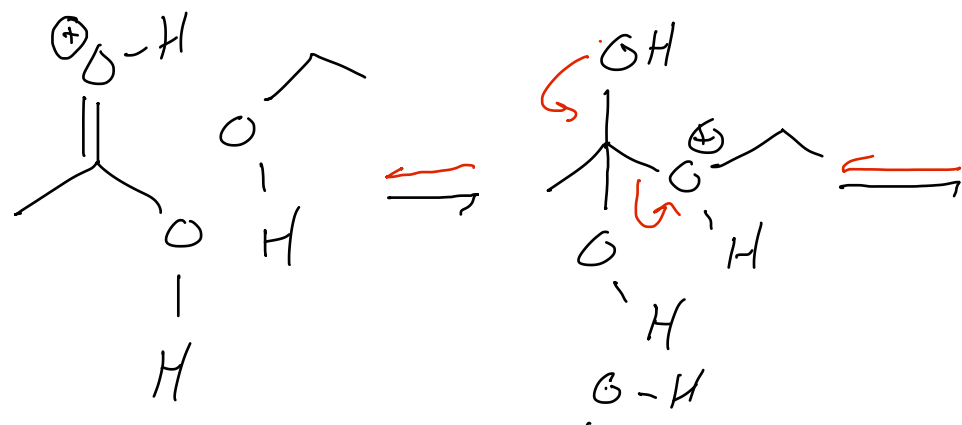
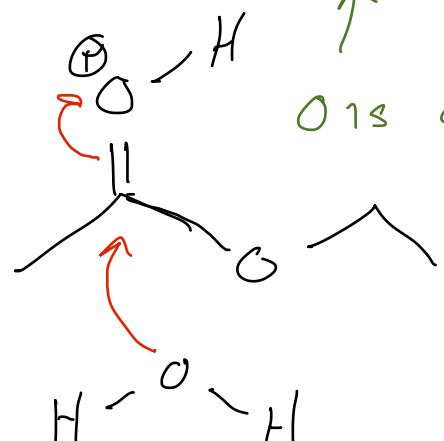
how did this H get here

# Hydrolysis - Acid Catalyzed Mechanism: A closer look

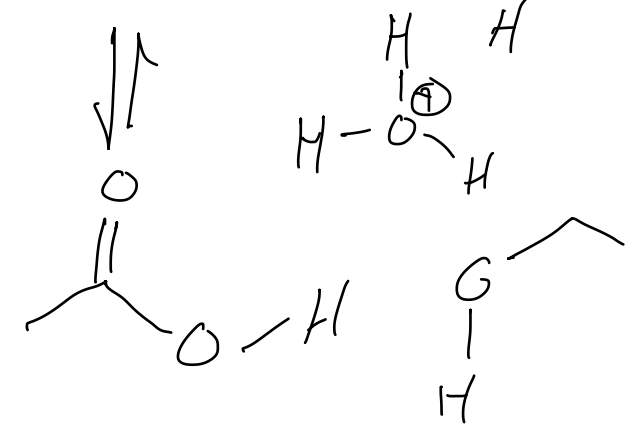
Section 15.8



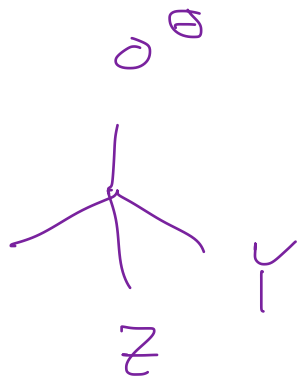
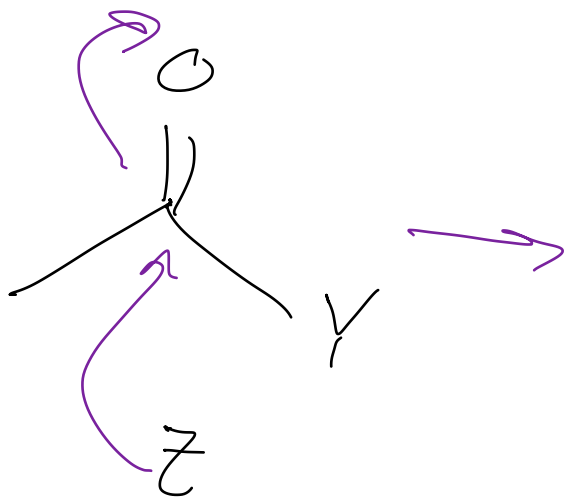
$1 + -1 = 0$  gets an extra  $e^-$   
 O is already + not a good LG  
 good LG



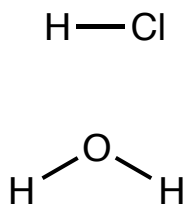
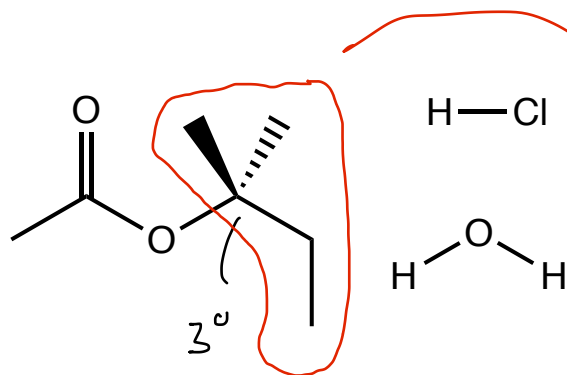
tetrahedral intermediate  
 $H^+$  transfers between weak bases are reversible



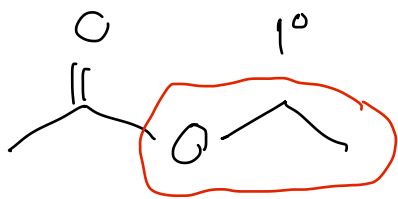
$1:1$  ester + water = equilibrium with similar amounts of prod + reactant, use  $\approx 5 H_2O$  to drive reaction



original charge +  
 $0 + -1 = -1$  extra  $e^-$



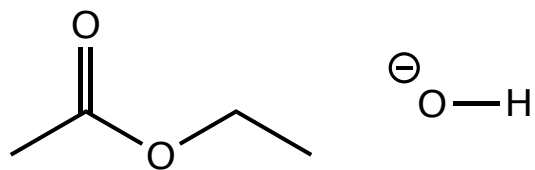
this  $3^\circ$  C atom is in a protic solvent, protic solvents encourage  $\text{C}^+$  formation, and if there is a good LG....



this  $1^\circ$  C won't be able to form a  $\text{C}^+$

# Hydrolysis - Base Promoted Mechanism: A closer look

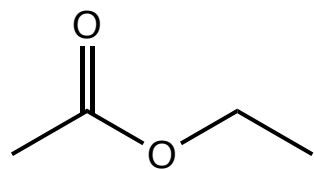
## Section 15.9





# Aminolysis

# Section 15.9



# Practice

