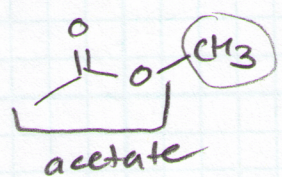
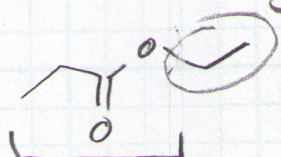


Esters methyl



acetate
methyl acetate

ethyl



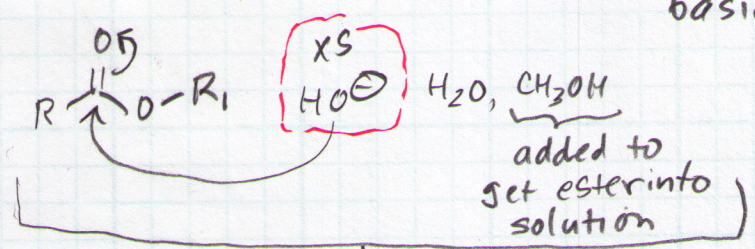
propanoate
ethyl propanoate

Acid Catalyzed (H^+/H_2O) Ester Hydrolysis

Base " (OH^-/H_2O) " " (Final Acid/Base) rxn drives this

Base-catalyzed hydrolysis of an ester

"OH" cleavage: ester is cleaved by the addition of OH^- under basic conditions.

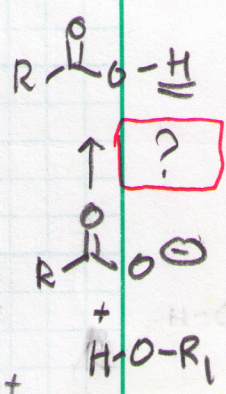


Reversible

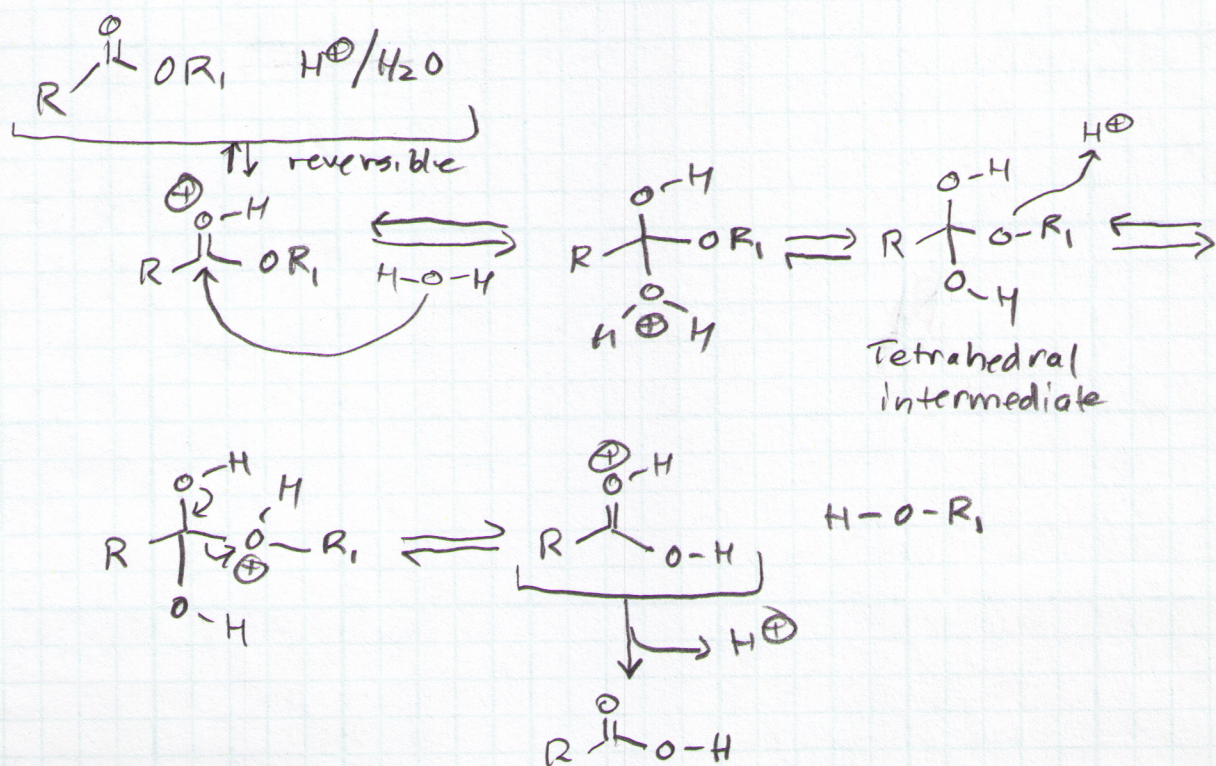


Tetrahedral intermediate

NOTE: here the ΔG of the favorable $C=O$ group helps collapse the tetrahedral intermediate even though OR_1^- is a poor L.G.



Acid-catalyzed Ester Hydrolysis

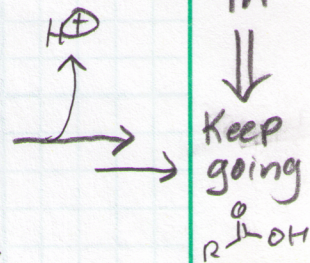
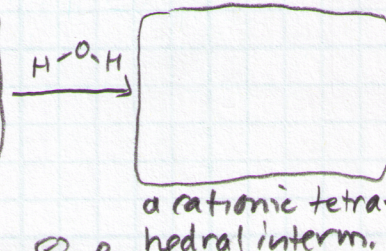
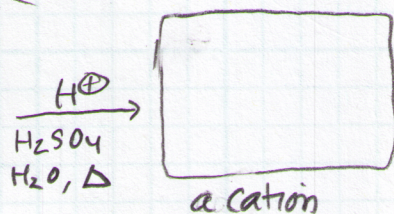
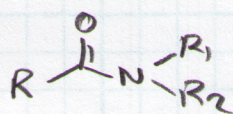


Earlier, we saw how to make amides effectively using an acyl halide e.g. $R-\overset{\overset{O}{\parallel}}{C}-Cl + HN(R_1)(R_2) \rightarrow R-\overset{\overset{O}{\parallel}}{C}-N(R_1)(R_2) + H-Cl$

Acid and Base Hydrolysis in Analogous to acid and base hydrolysis of esters except an amine ($\ddot{N}$) or ammonium ($-\overset{\oplus}{N}\equiv$) is lost

Practice Here

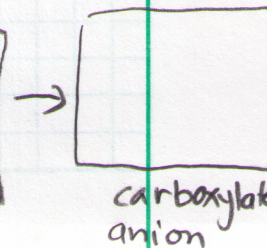
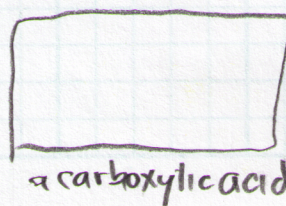
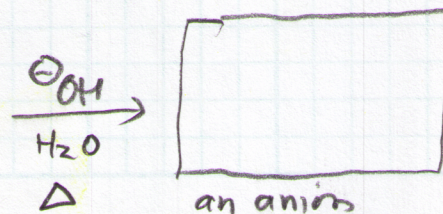
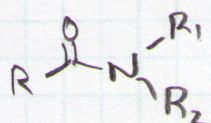
ACID CAT.



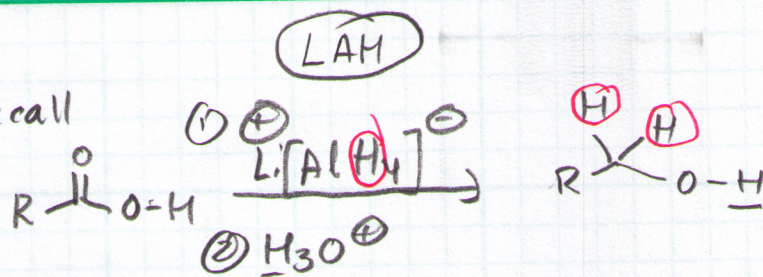
CHECK w/ TA

Keep going $R-\overset{\overset{O}{\parallel}}{C}-OH$

BASE CAT.

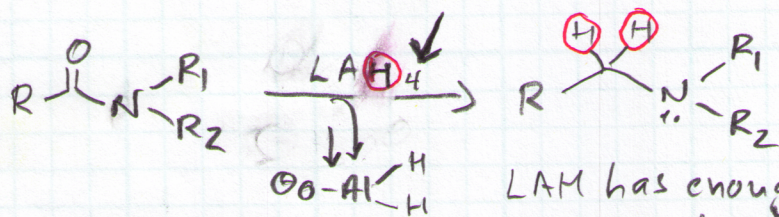


Recall



via $R-\text{C}(=\text{O})$

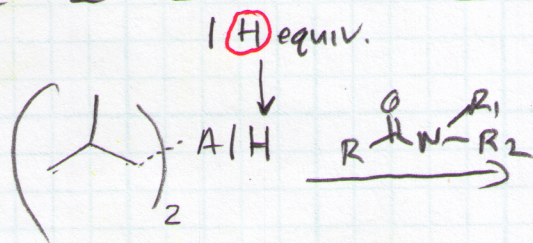
See the similarity



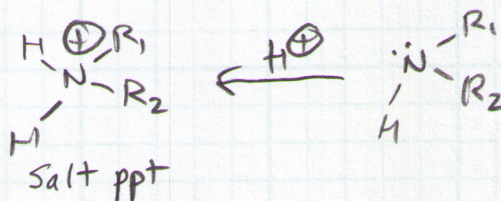
via $R-\overset{\text{H}}{\underset{\text{||}}{\text{C}}}=\overset{\oplus}{\text{N}}(\text{R}_1)(\text{R}_2)$

LAM has enough hydride equiv. to donate 2 H^- to the

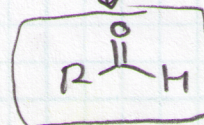
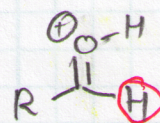
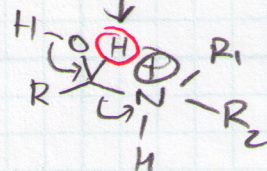
$C = 0$ group. What about this...?



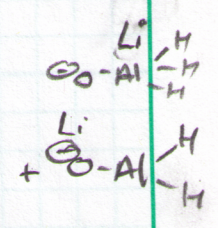
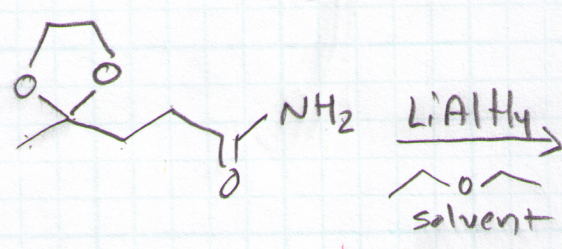
hemiamina



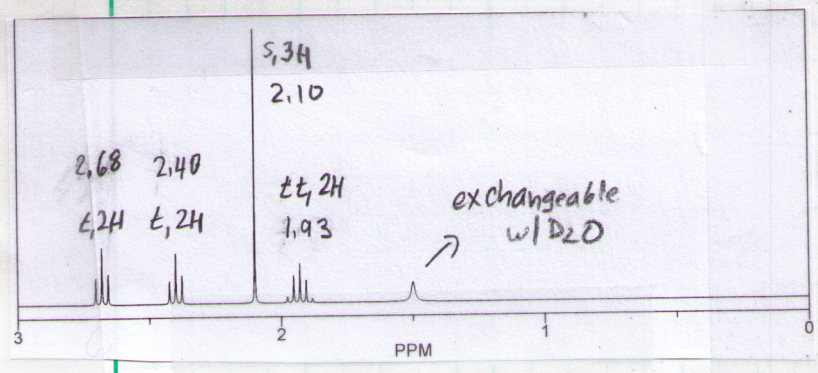
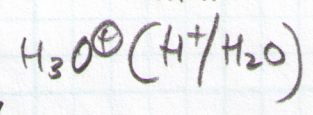
ppt: precipitate



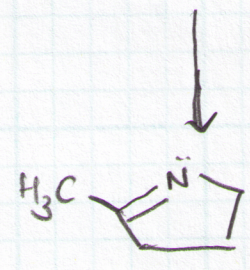
show the intermediates for the following.

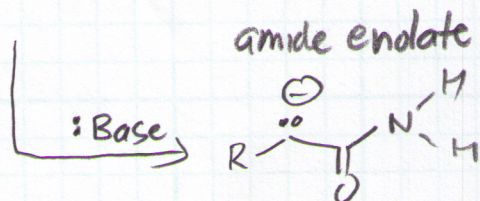
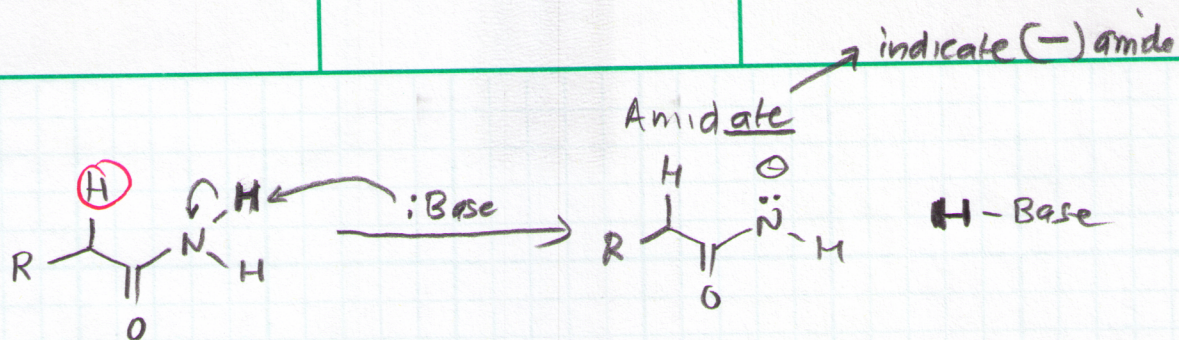


imine intermediate



$\text{C}_5\text{H}_{11}\text{NO}$ (How many DOUS?)



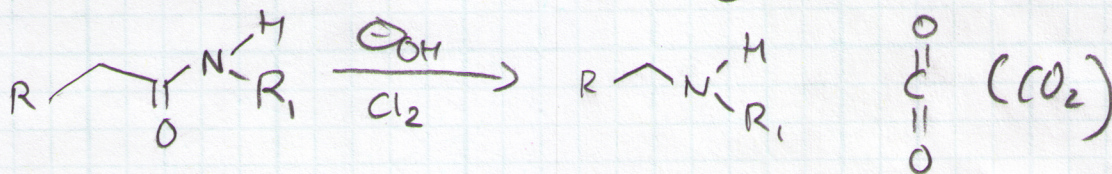


which has a lower
pKa H or H ?

Evaluate the
rel. stability of
the conj bases!

why?

Knowing that an amide with an α -H can be deprotonated
N with two acidic H can be removed and thus can become
nucleophilic via its amidate, the following transformation
can occur via a haloamide ($\text{R}-\text{CH}_2-\text{N}(\text{R})-\text{X}$)



Mechanism (Hoffman Rearr)