(22) **Today**

Chapter 21.3 – 21.4, 21.6

**Next Class** (23)

Chapter 21.7 – 21.9 , Chemistry Matters

(24) **Second Class from Today**

Chapter 21.4 – 21.7

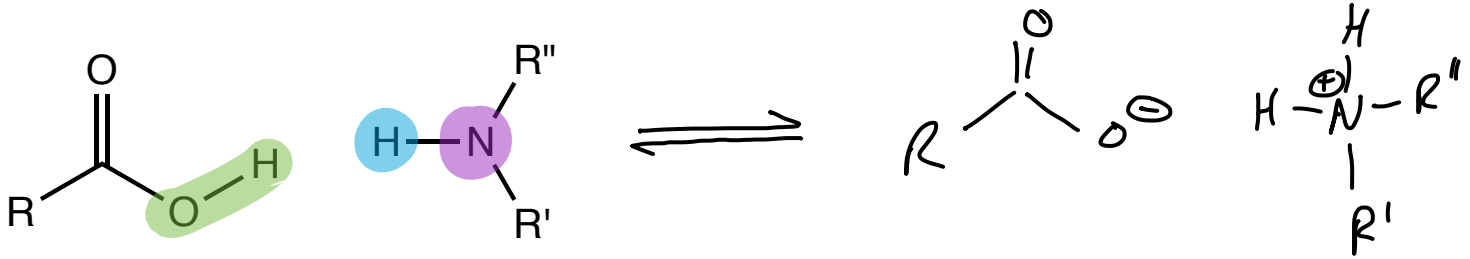
Chapter 21.8 – 21.9 , Chemistry Matters

**Third Class from Today** (25)

Chapter 15.2 – 15.6

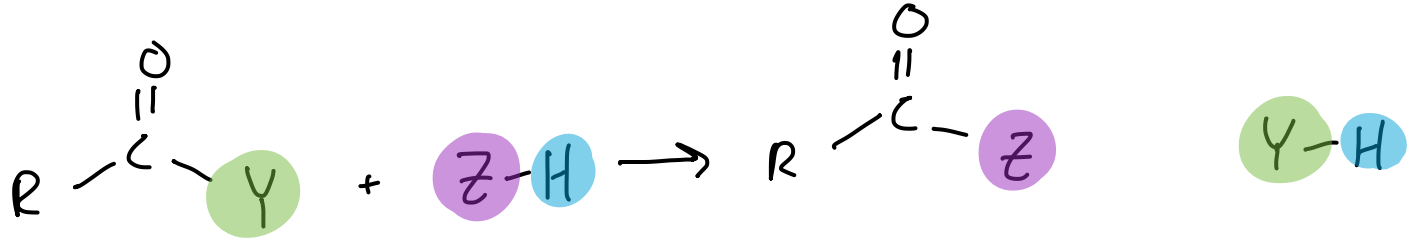
Aromaticity

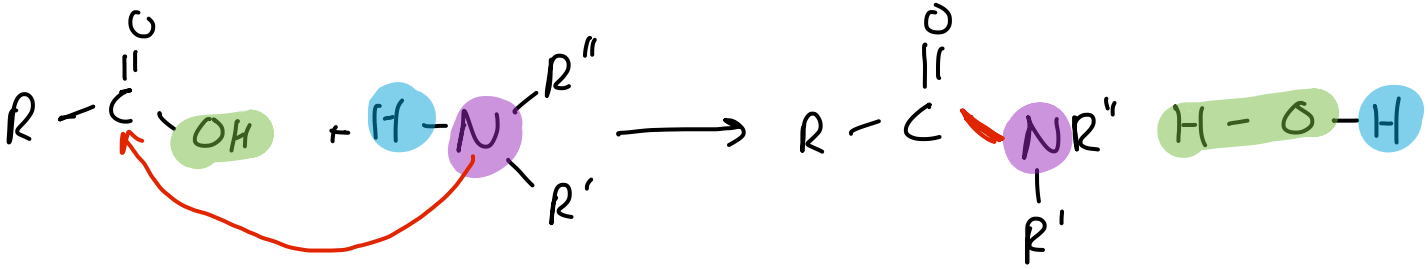
Skipping reactions with Grignard reagents and $LiAlH_4$ for now

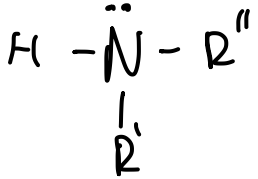


R, R', and/or R" = H, $CH_3$, $CH_2CH_3$, etc.

an acid-base neutralization rxn occurs, but since they are weak acids & bases a small amt. of the reactants remain

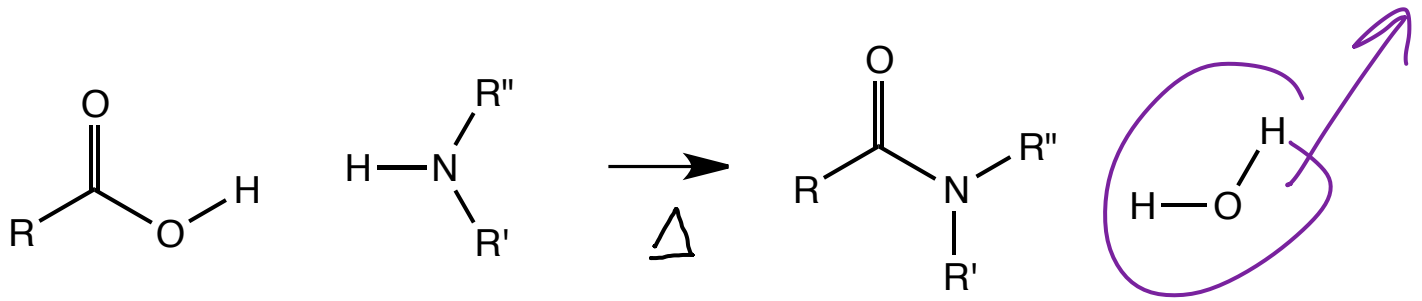






are organic analogs of $\ddot{N}H_3$

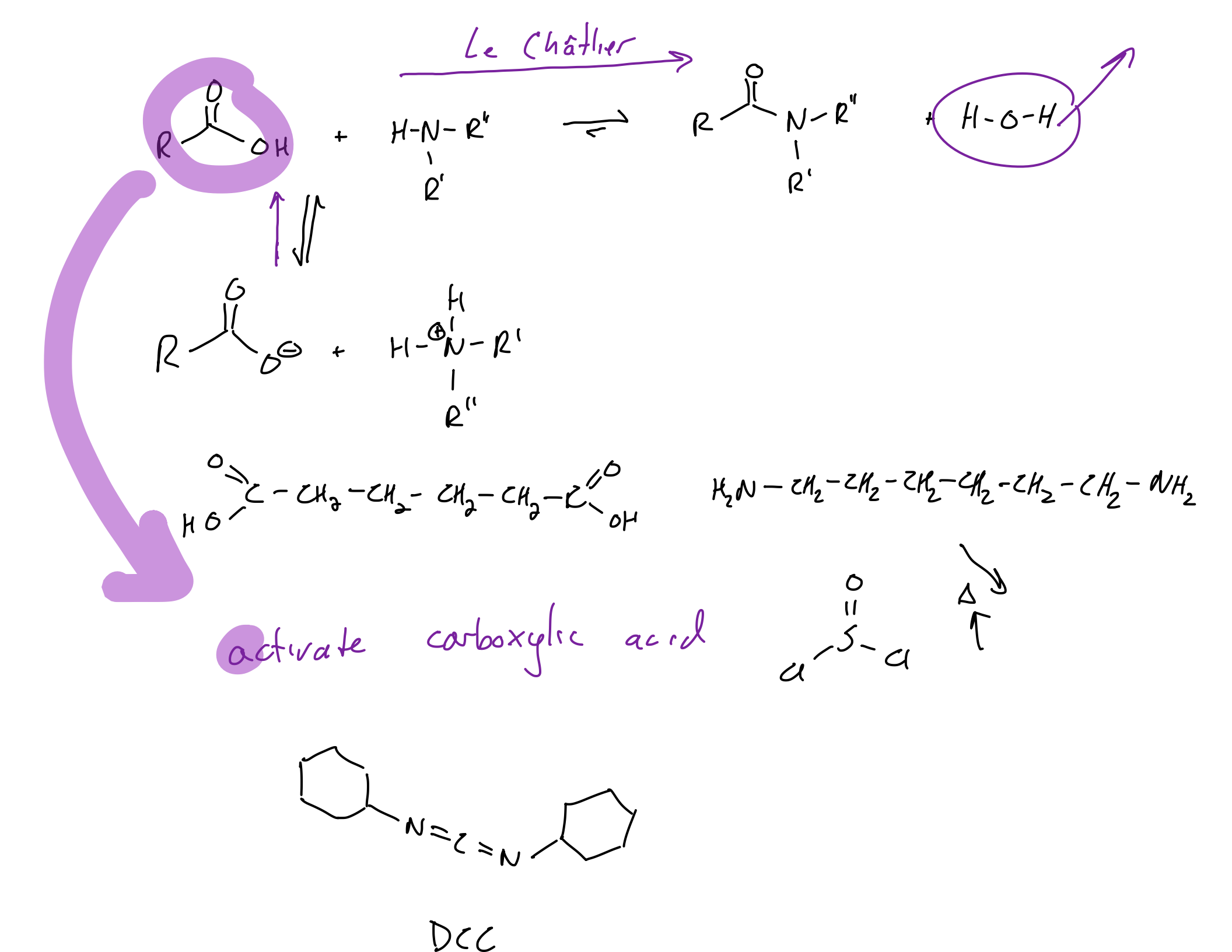
$NH_3$ is a weak base



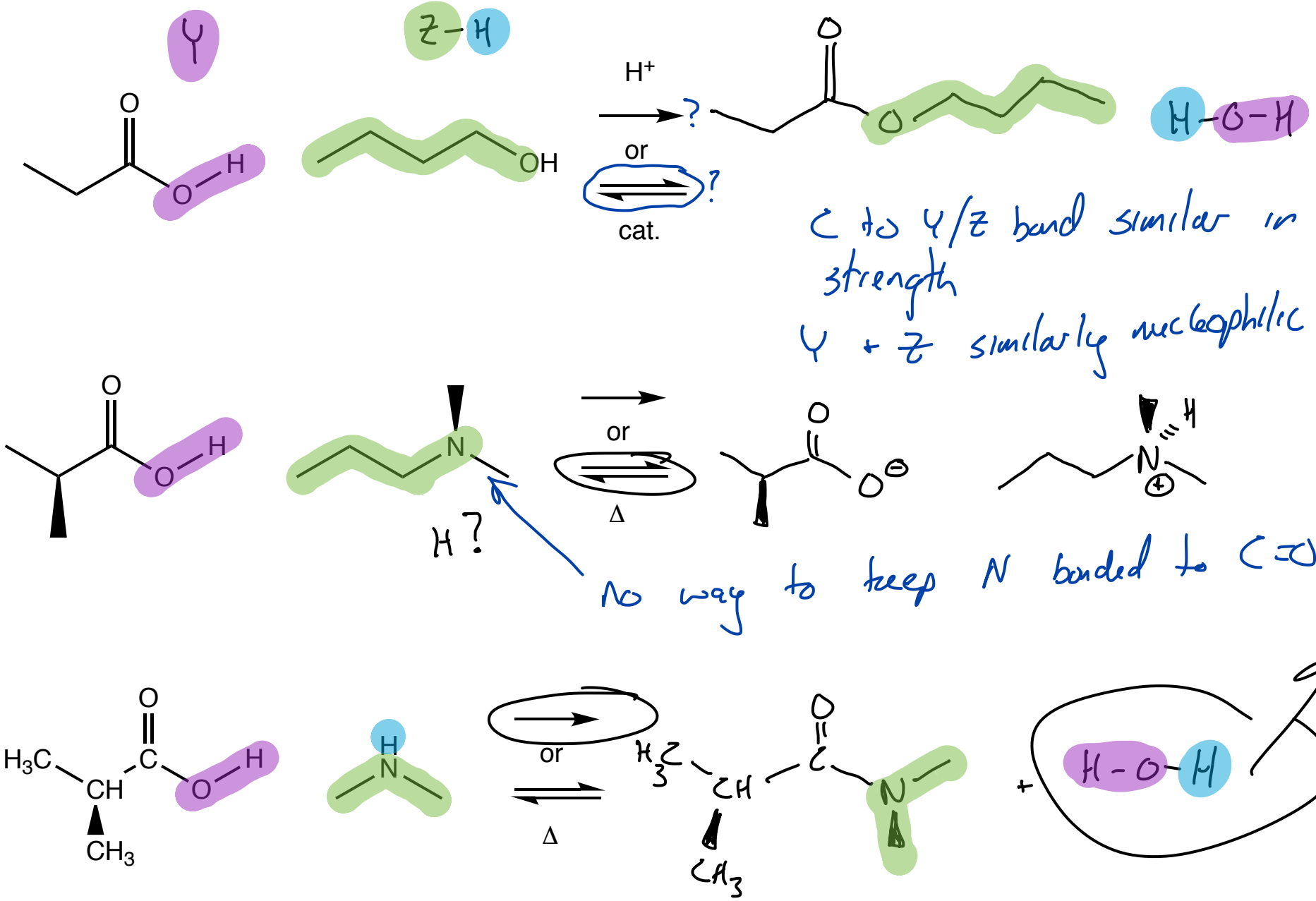

$H^+$ catalyst? Nope... the N is a better base so it would get protonated, the N would no longer be nucleophilic.

There is a small amt. of carboxylic acid + amine left after the acid-base reaction occurs. Heat strongly (in lab 220°) drive off water, drag equilibrium to completion by removing all the water.

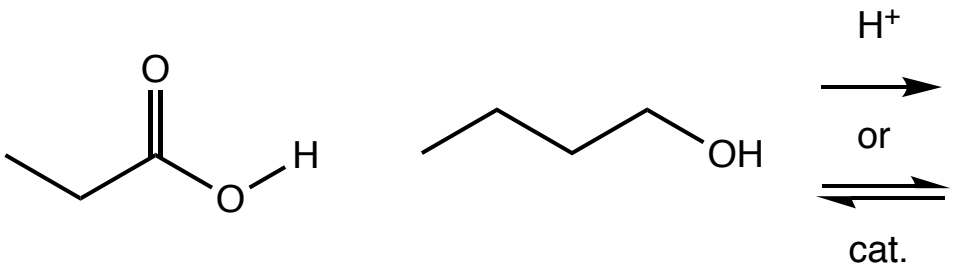
or you can activate the carboxylic acid

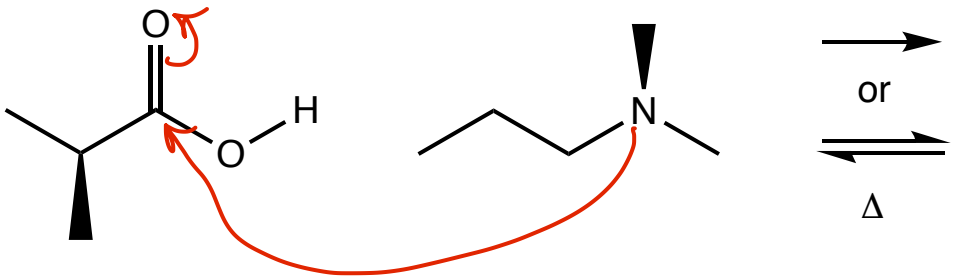

Le Châtlier
activate carboxylic acid
DCC

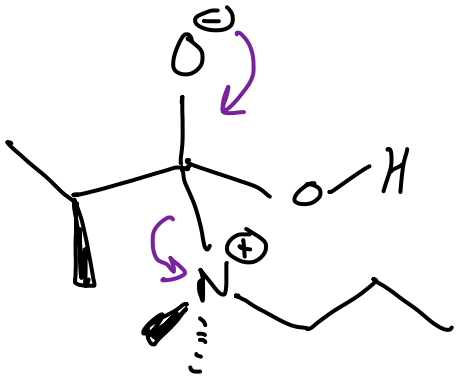
Practice: Reactions of Carboxylic Acids



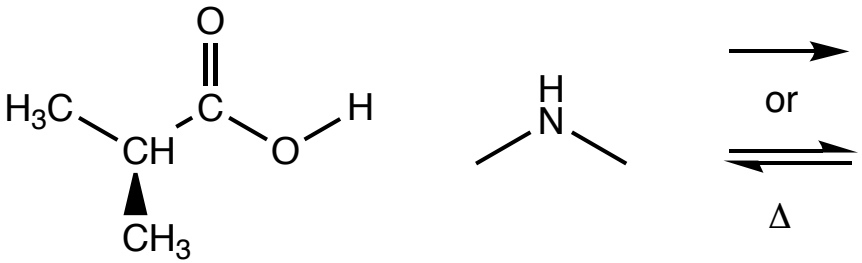
Practice: Reactions of Carboxylic Acids

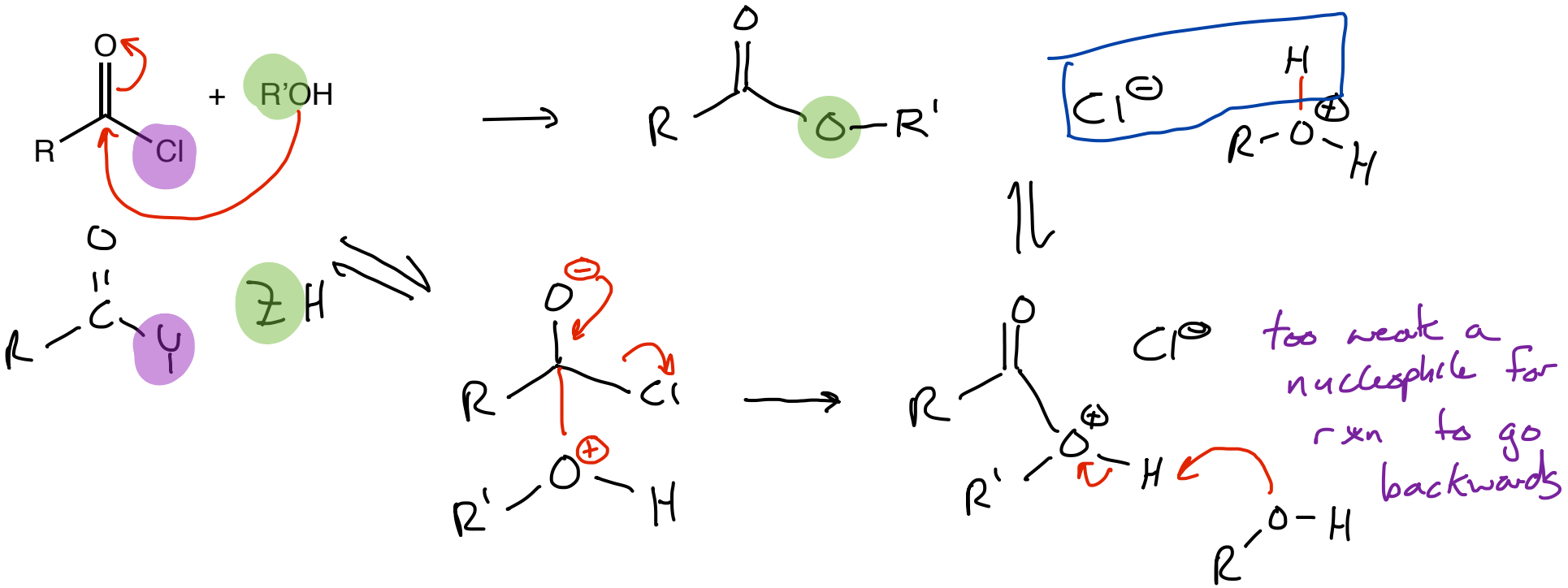


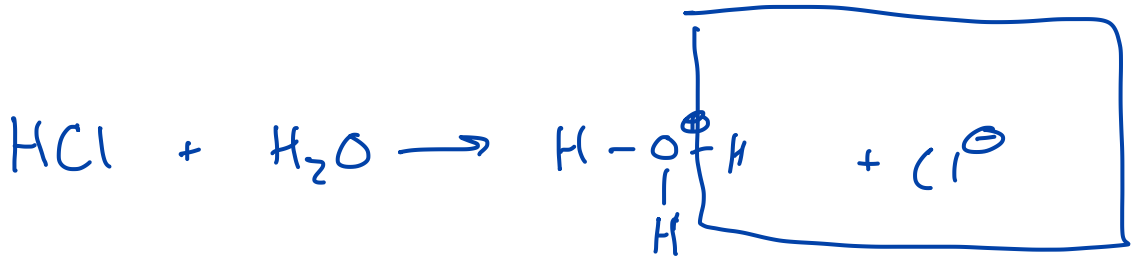



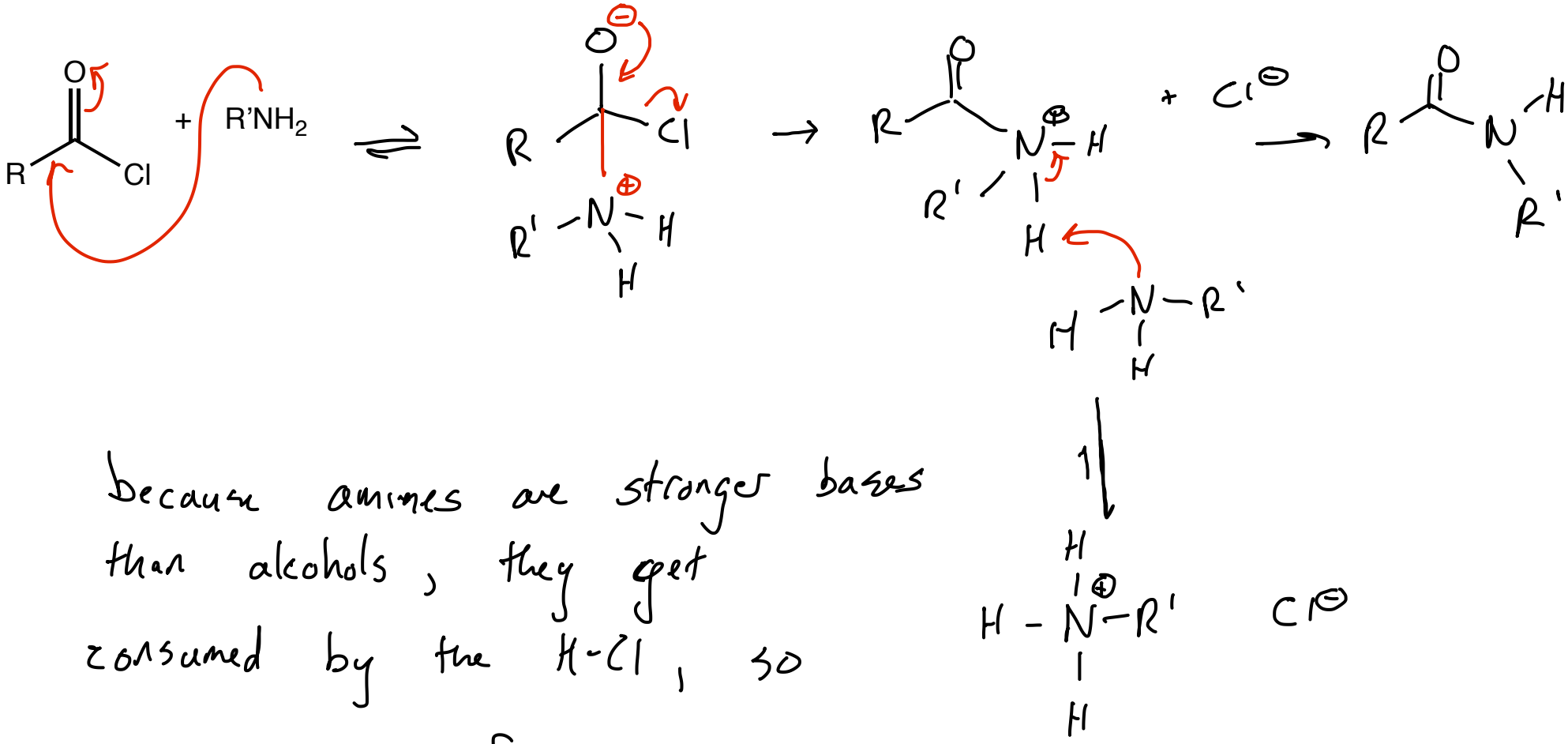

no $H^+$ to move to do the proton transfer steps






"HCl" is produced




Because amines are stronger bases than alcohols, they get consumed by the H-Cl, so 2 equivalents of amines are required for these reactions