Today

Reactions of Carboxylic Acids and Carboxylic Acid Derivatives

Sections 15.4 -15.9

Next Class

Reactions of Carboxylic Acids and Carboxylic Acid Derivatives

Sections 15.4 -15.9

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

Second Class from Today

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

Aldehyde and Ketone Nomenclature
Section 16.1

Relative Reactivities
Section 16.2

Third Class from Today

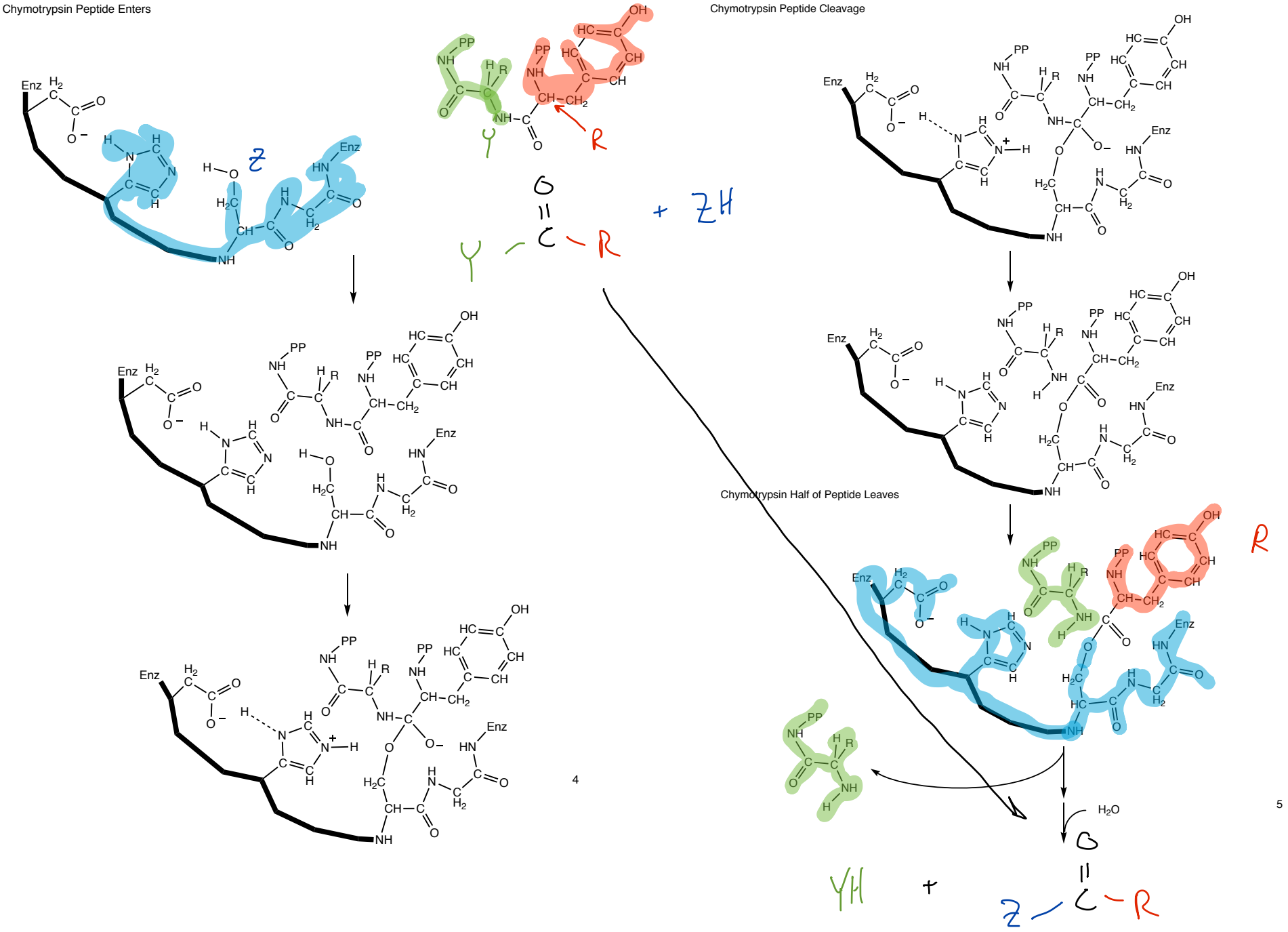
Aldehyde and Ketone Nomenclature
Section 16.1

Relative Reactivities
Section 16.2

How Aldehydes and Ketones React
Section 16.3

Reactions with Carbon Nucleophiles
Section 16.4

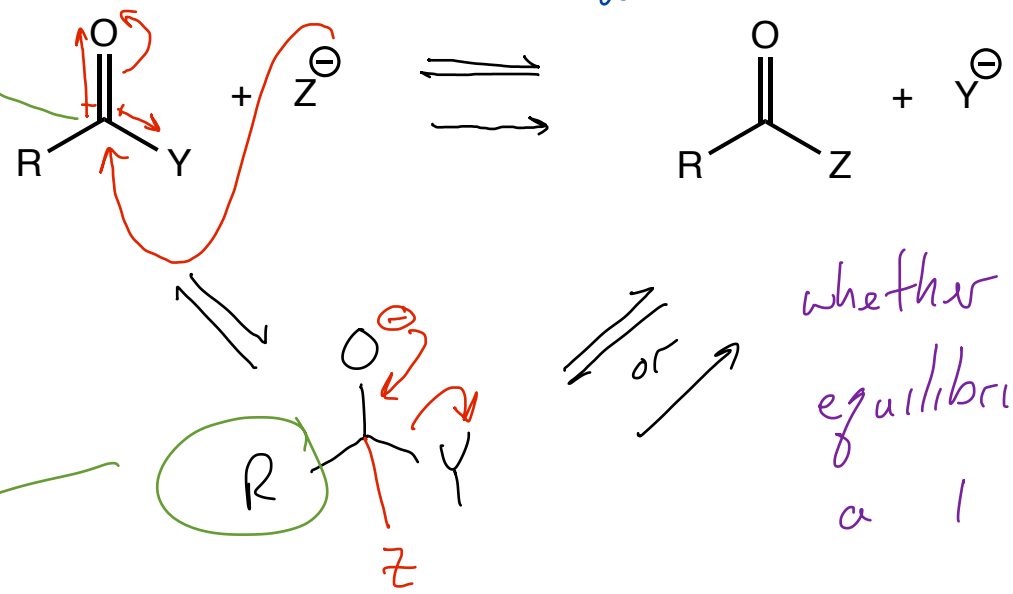
Chymotrypsin Hydrolyzes Proteins



Nucleophilic Acyl Substitution: General Mechanism

electrophilic C atom

electron rich nucleophile attracted to $\delta+$



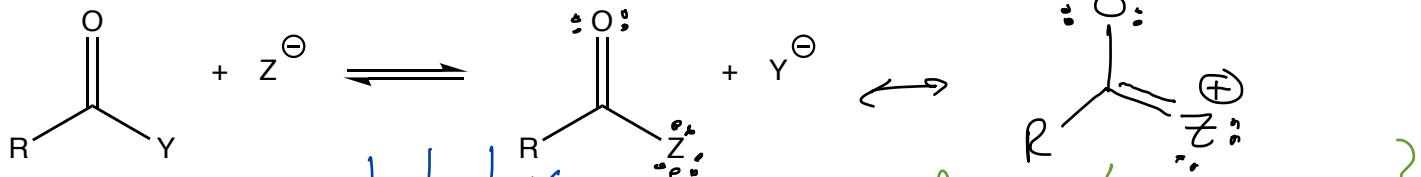
whether its an equilibrium rxn or a 1 direction rxn

depends on Z & Y & conditions

R isn't going to get kicked off because $R^{\ominus}$ would be a carbanion

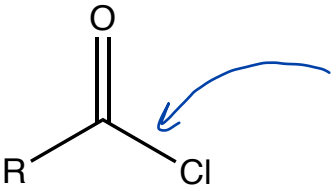
tetrahedral intermediate

these intermediates with 3 oneg atoms bonded to C are not stable



based on the resonance contributors

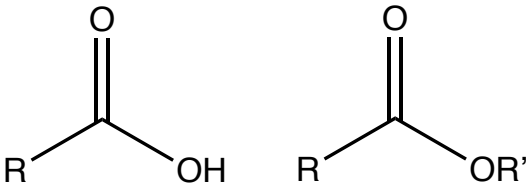
how good a leaving group?



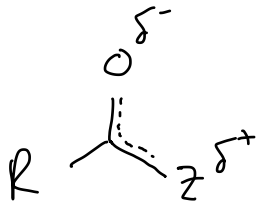
weakest bond
least π character

most reactive

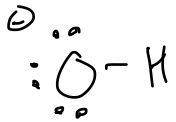
Cl^- weakest base
best LG

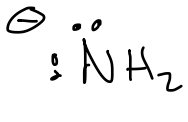


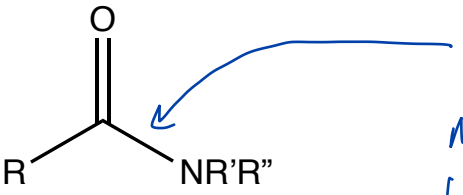
R' ≠ H



$^{\ominus}O-H$ $^{\ominus}O-R$



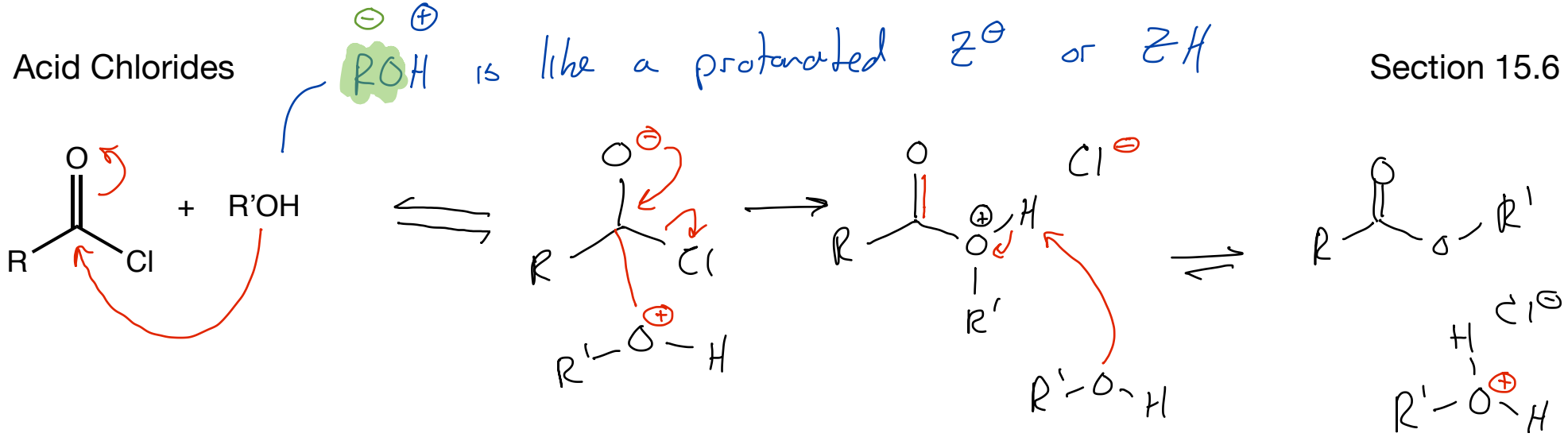


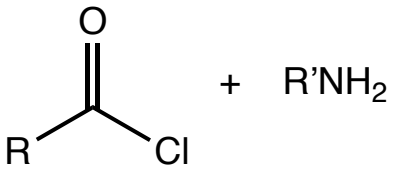


strongest bond
most π character least reactive
because N is better able to support a ⊕ charge

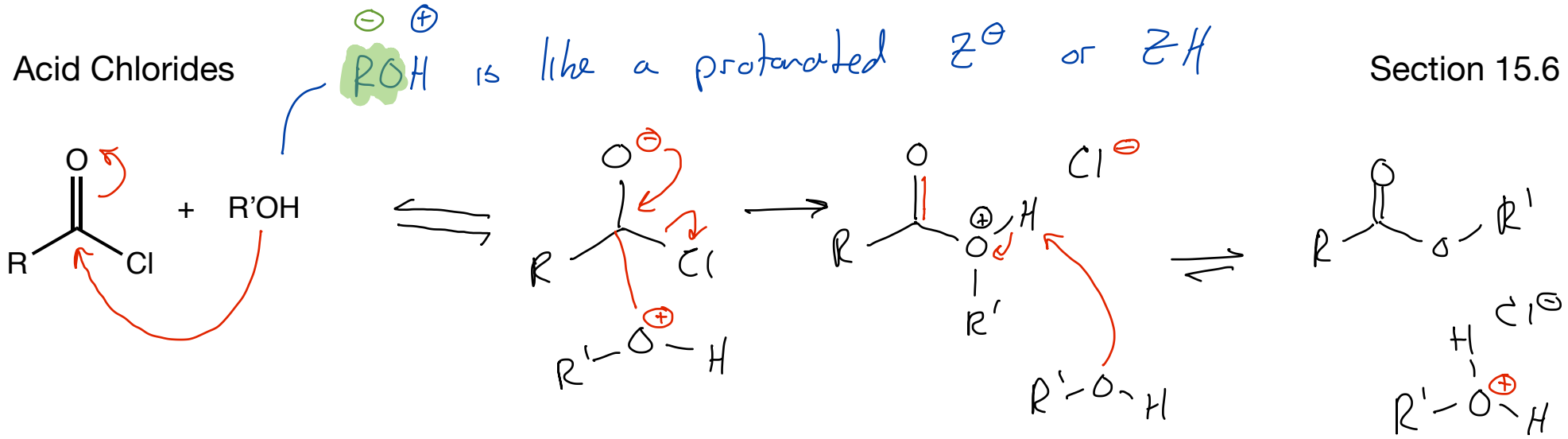
$^{\ominus}NR_IR_{II}$

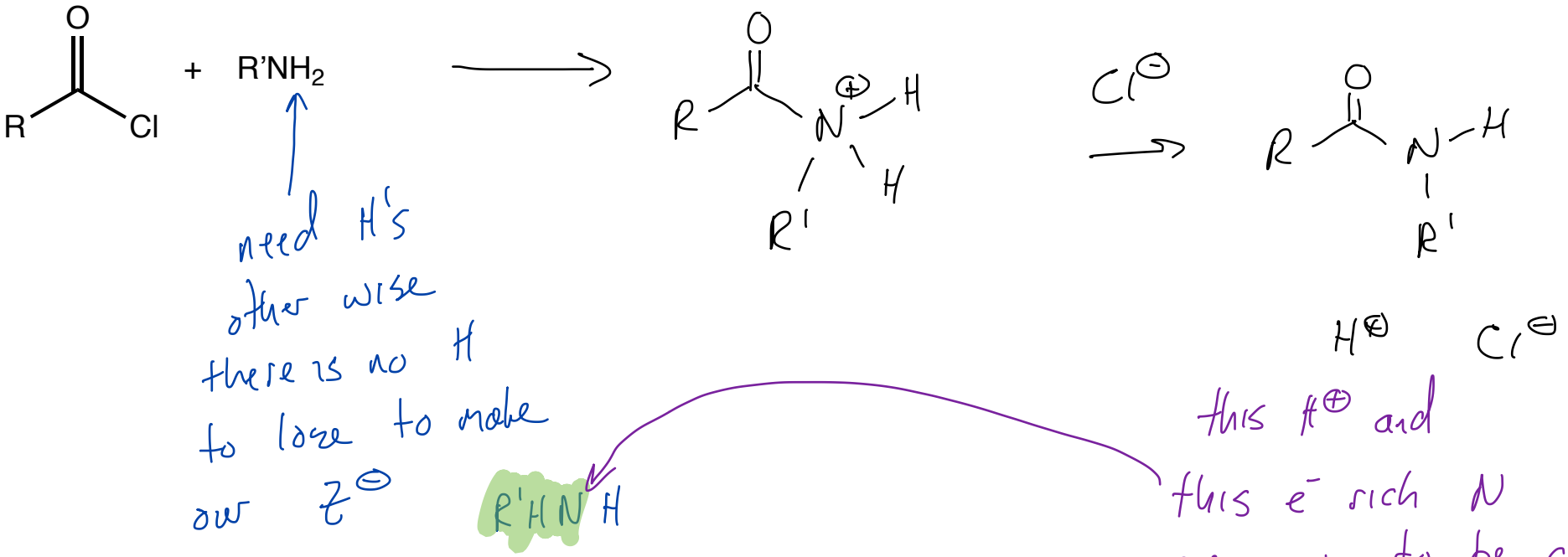
strongest base
worst leaving group





H-Cl was not able to do S_N2 chemistry (associative) with alcohols + $Cl^{\ominus}$, similarly won't be nucleophilic enough to make the reaction go backwards


ROH is like a protonated Z⊖ or ZH
+ R'OH
Cl⊖


+ R'NH2
need H's otherwise there is no H to lose to make our Z⊖
R'HN H
H⊕ Cl⊖
this H⊕ and this e⁻ rich N are going to be a problem