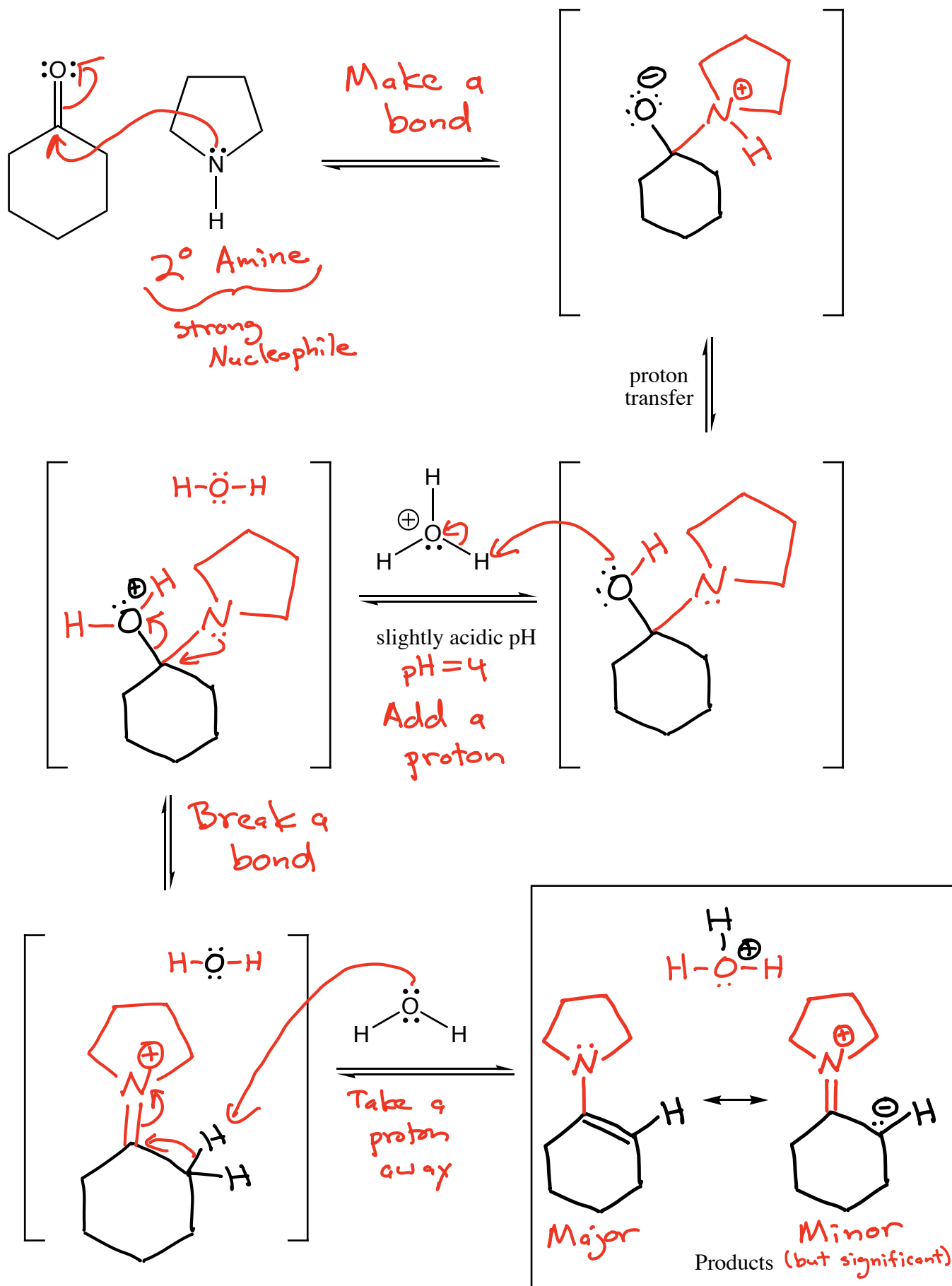
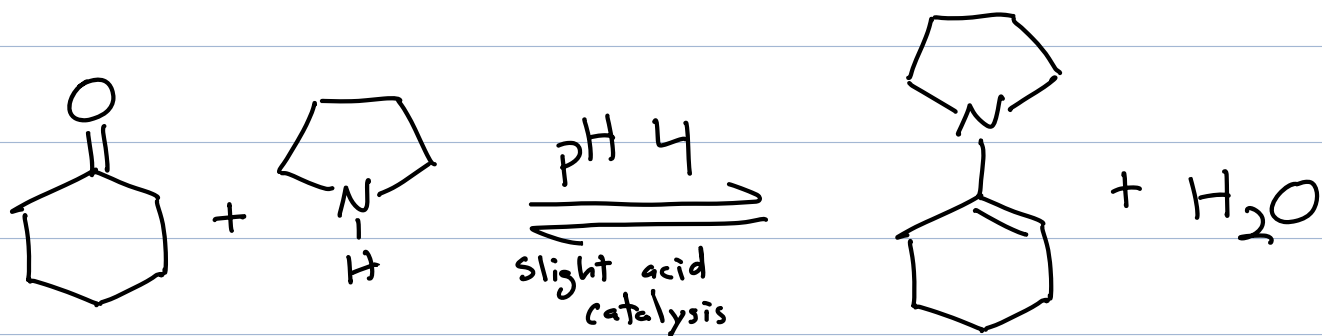




Enamines

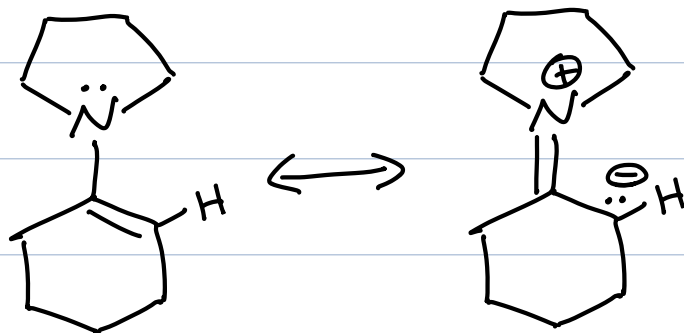
# Enamine Formation





Enamine

This process is reversible  $\rightarrow$  adding  $\text{H}_2\text{O}$  drives it to the left (ketone) and taking  $\text{H}_2\text{O}$  away drives it to the right (enamine)



Major Contributor

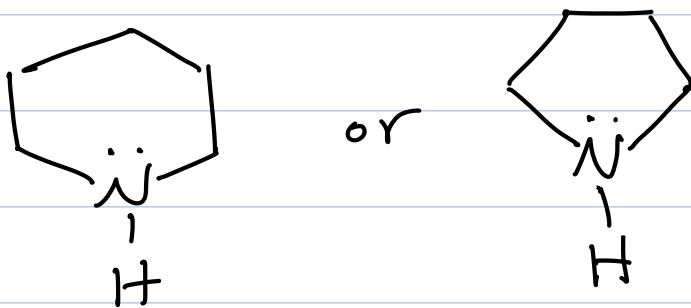
Minor Contributor (but still significant)

A "smaller" (i.e. less reactive) version of an enolate  $\Rightarrow \alpha \text{ C}$  is a nucleophile!!

Note the relatively mild conditions used to make the enamine  $\rightarrow$  pH 4, no harsh acid or base required.

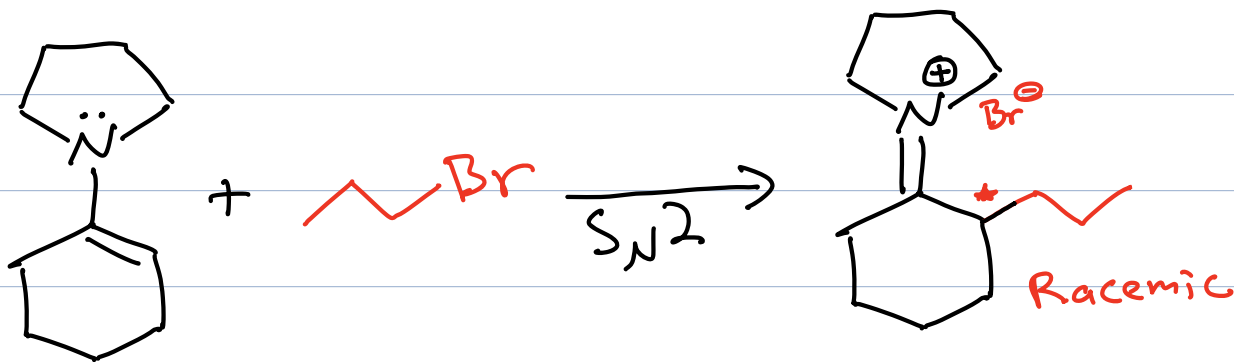
It takes strong base to make an enolate!

For this class we will only use the following two secondary amines to make an enamine:

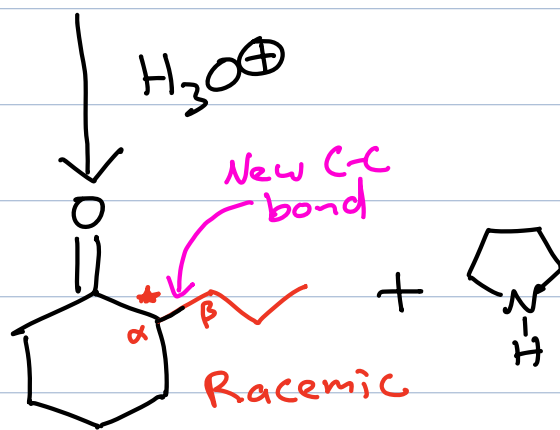


# Reactions of enamines

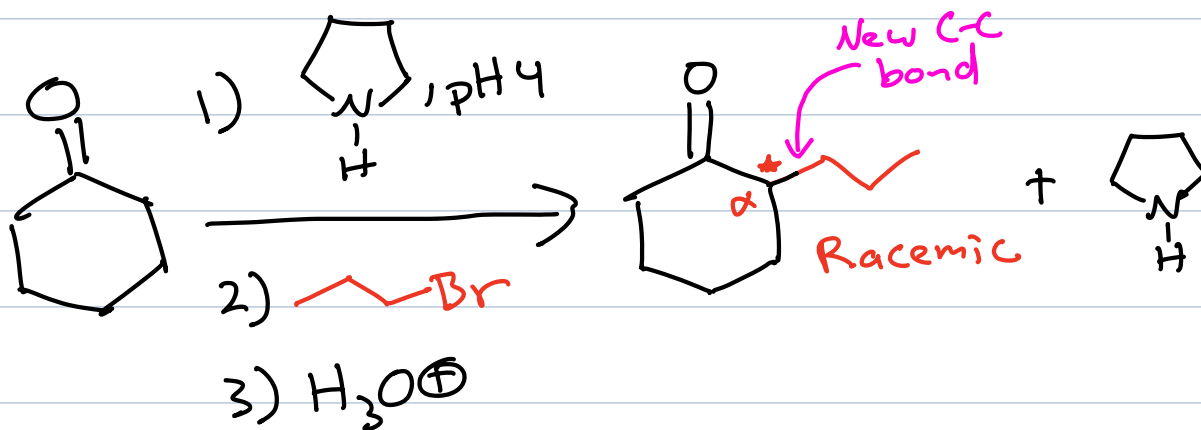
## 1) Primary haloalkanes ( $S_N2$ )



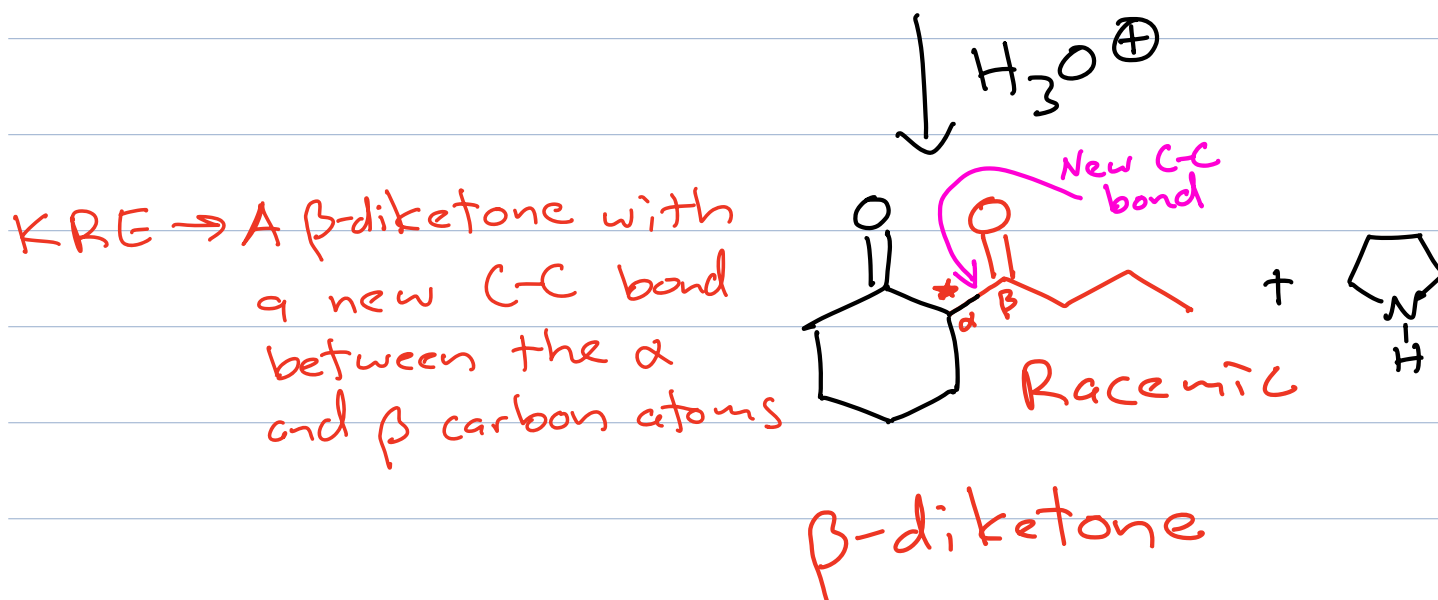
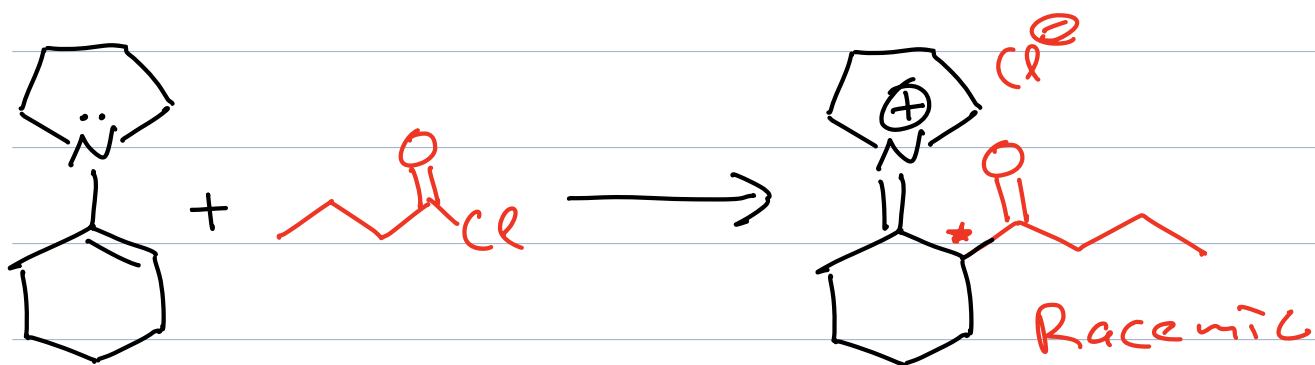
KRE  $\rightarrow$  A ketone with a new C-C bond between the  $\alpha$  and  $\beta$  carbon atoms



## Overall Reaction



## 2) Acid chlorides $\Rightarrow$ $\beta$ -diketones



## Overall Reaction

