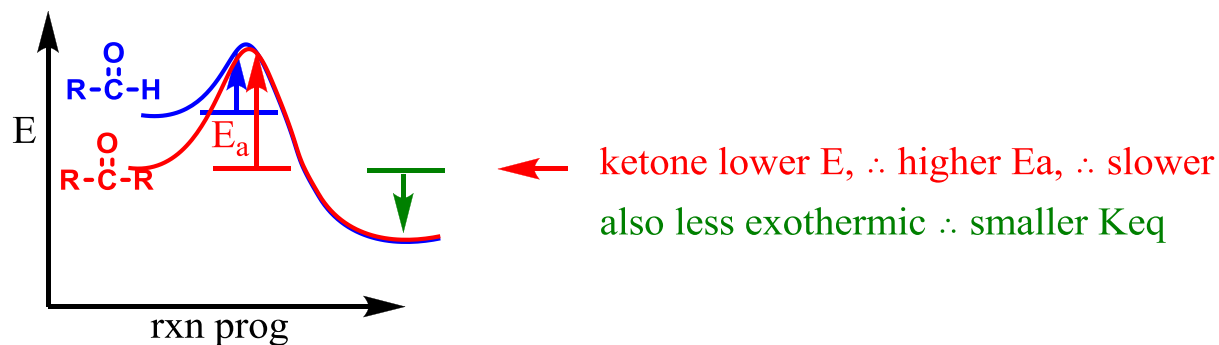
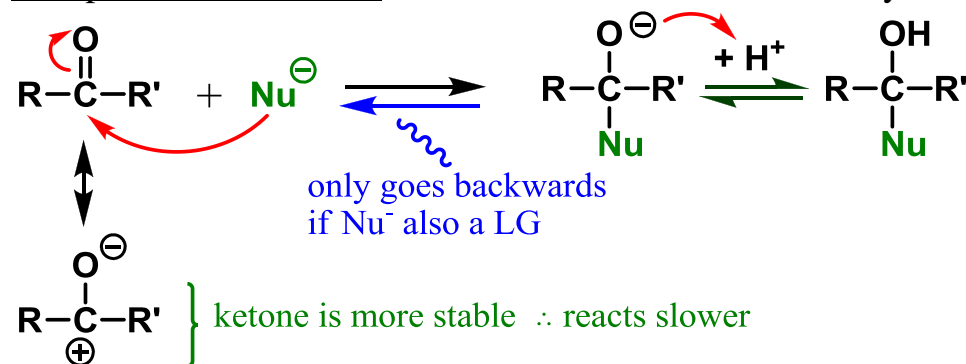
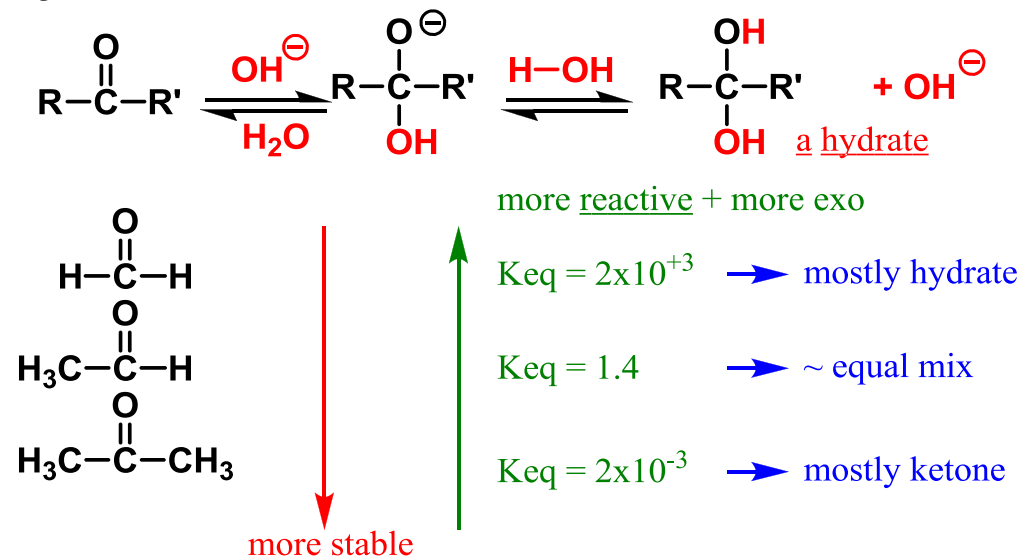


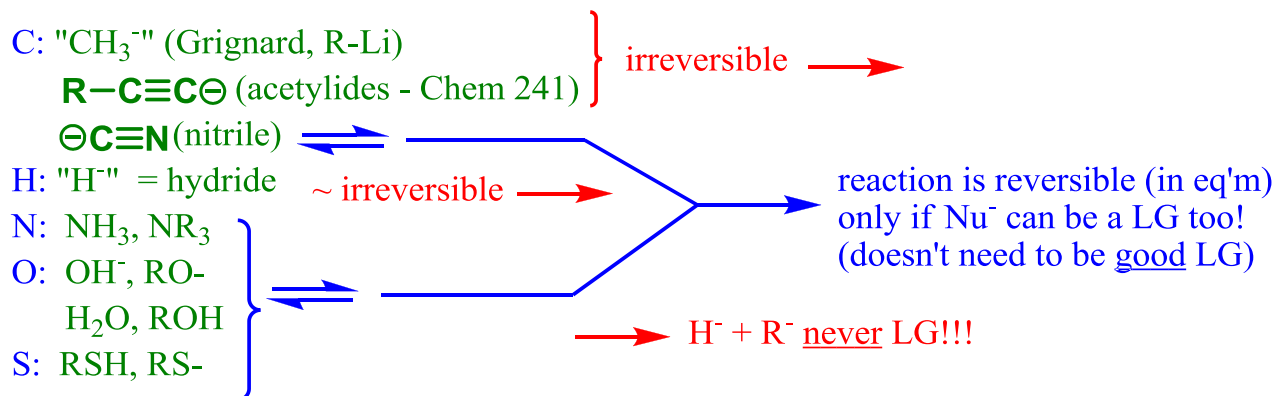
## Overheads: - Outline

## Quiz #5

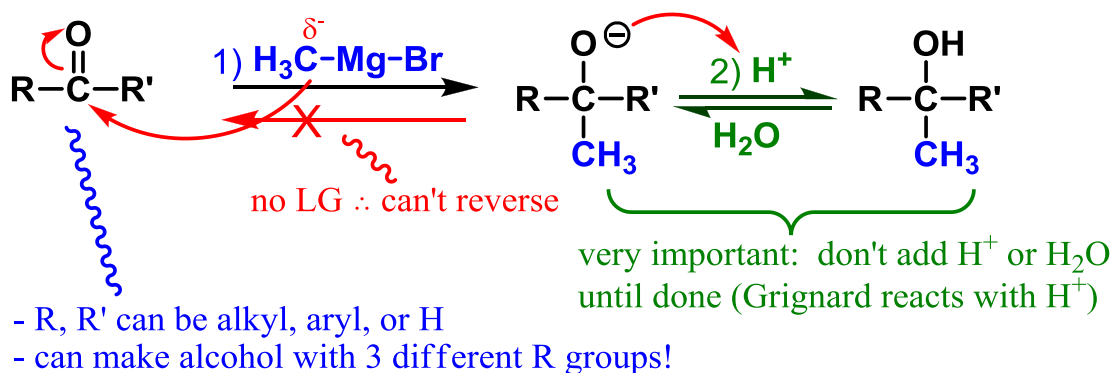
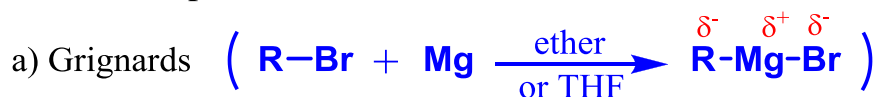
## Recap Before the Storm: Reactions of Ketones and Aldehydes

e.g. Addition of OH<sup>-</sup>

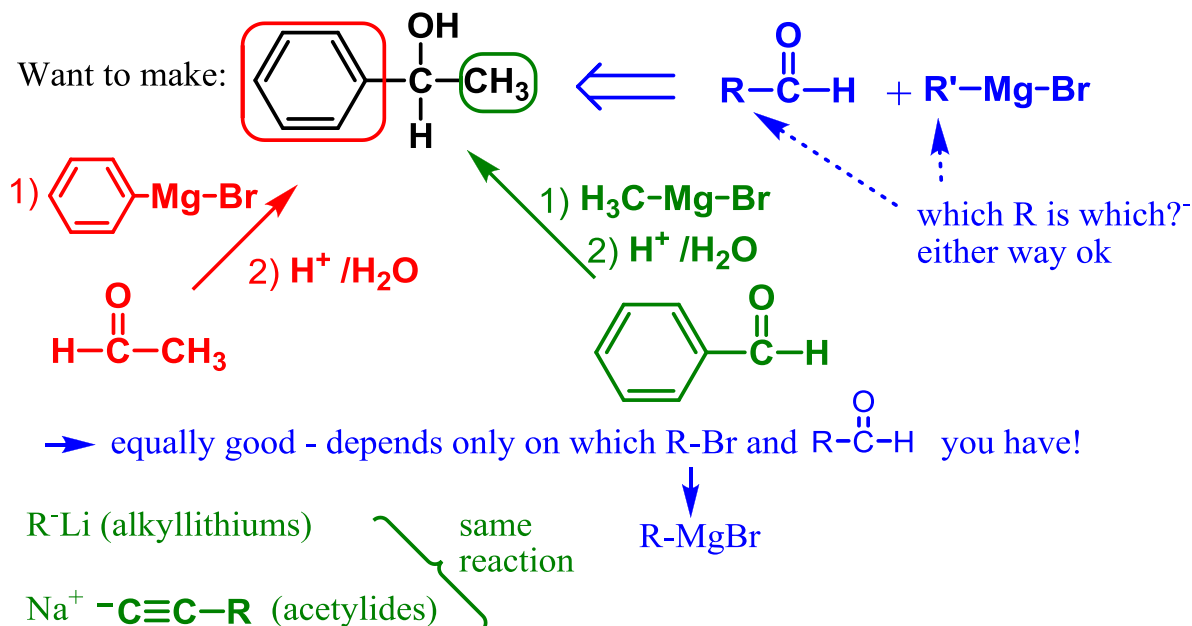
## Types of Nu<sup>-</sup>



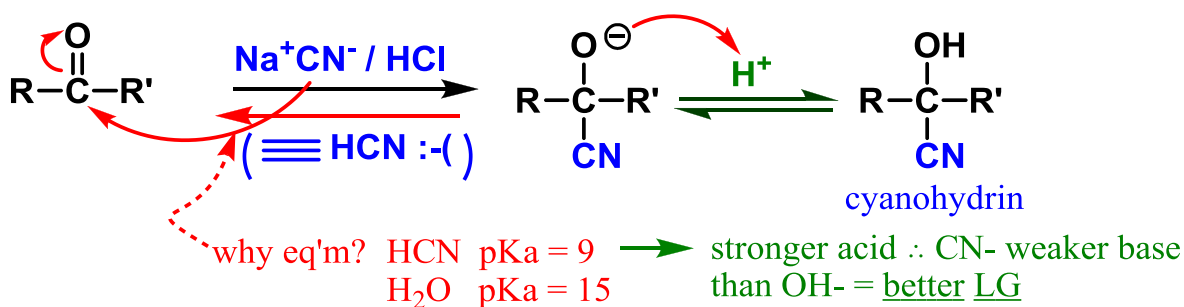
## 1) C Nucleophiles:



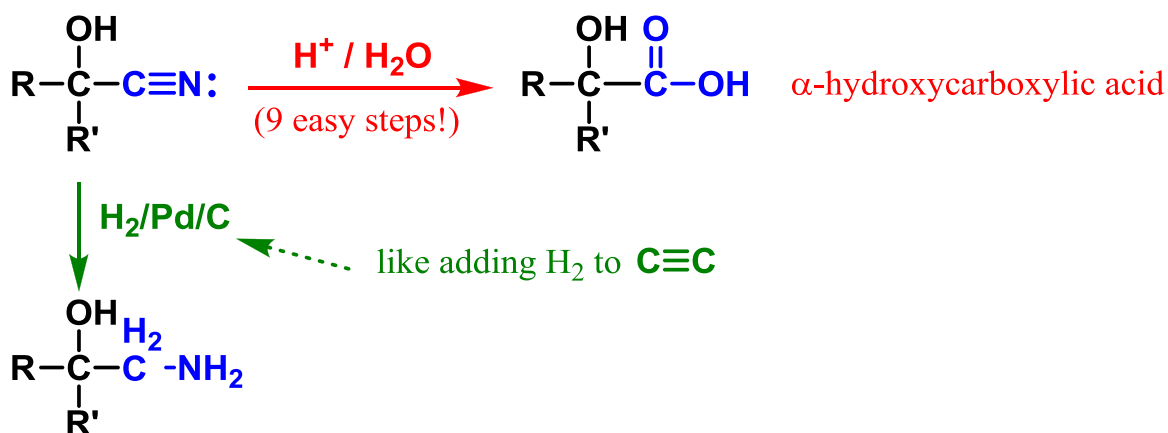
## Strategy for Synthesis



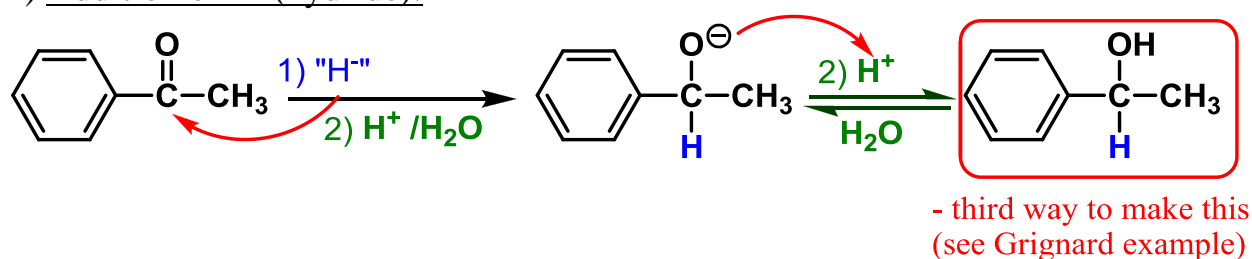
b) Cyanide ( $\ominus\text{C}\equiv\text{N}$ )



Use:



2) Addition of  $\text{H}^-$  (hydride):



Source of  $\text{H}^-$

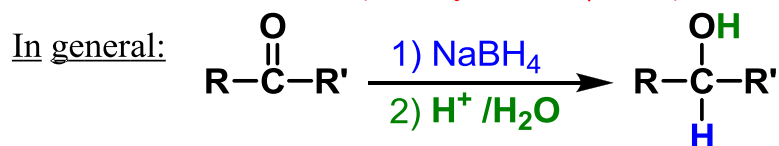
-  $\text{Na}^+\text{H}^-$  does not work

$\rightarrow$  works for base reactions, but not good  $\text{Nu}^-$

Common Hydrides:

$\text{NaBH}_4 \rightleftharpoons \text{Na}^+ \text{BH}_3 \text{H}^-$   $\leftarrow$  safer  $\leftarrow$  can use  $\text{H}_2\text{O}$  or  $\text{ROH}$  as solvent  
 $\text{LiAlH}_4 \rightleftharpoons \text{Li}^+ \text{AlH}_3 \text{H}^-$   $\leftarrow$  stronger (but very flammable - reacts violently with water)

$\rightarrow$  all 4  $\text{H}^-$  can add (so only need  $1/4$  mole)



- many other  $\text{R}_2\text{B-H}$  and  $\text{R}_3\text{Al-H}$  reagents used for slightly different purposes/selectivities