





Search "moo deng"



@MsMojo

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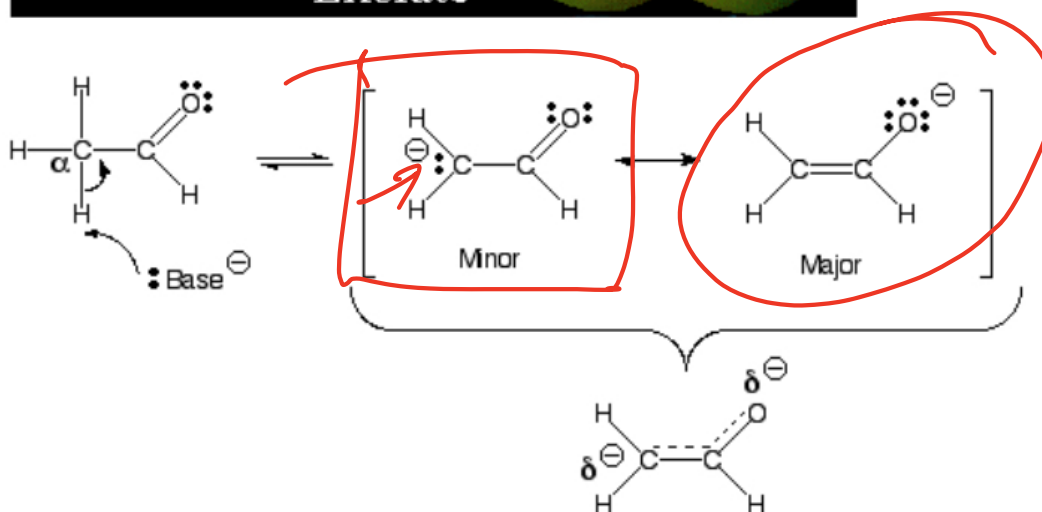
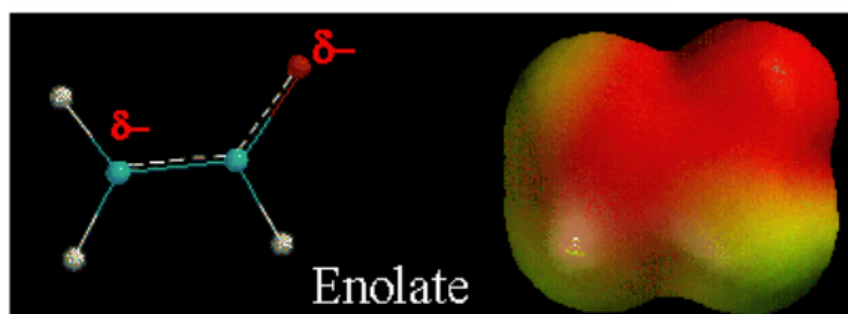


Top 10 Stars Who Adopted Their Animal Co-Stars

Moo Deng Being Absolutely Adorable 🥰

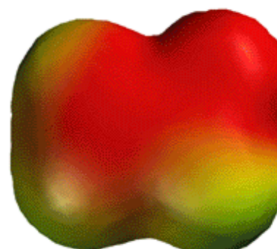
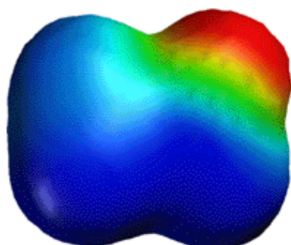
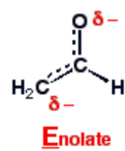
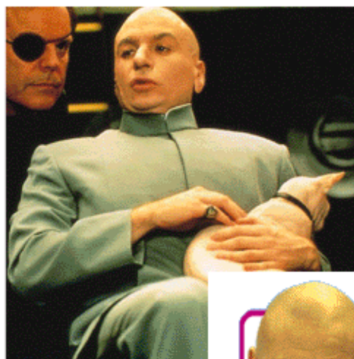
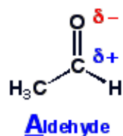


Enolates as nucleophiles



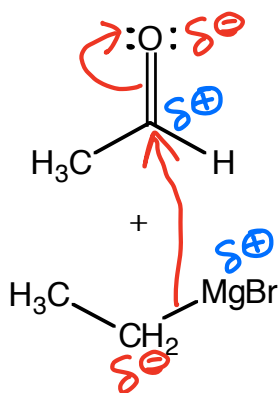
- A) Enolates are resonance stabilized, with a partial negative charge on carbon and oxygen.
- B) Enolates are nucleophiles, so they could react at either the carbon atom or oxygen atom. The partial negative charges give them the **opportunity** to react at either the carbon or oxygen.
- C) Reaction at the carbon atom gives the final product a C=O bond, while reaction at the oxygen atom gives the final product a C=C bond. However, C=O bonds are stronger than C=C bonds, **so the motive is to react at the carbon atom with most electrophiles.**

Once Again, A Movie Ripping Off Chemistry

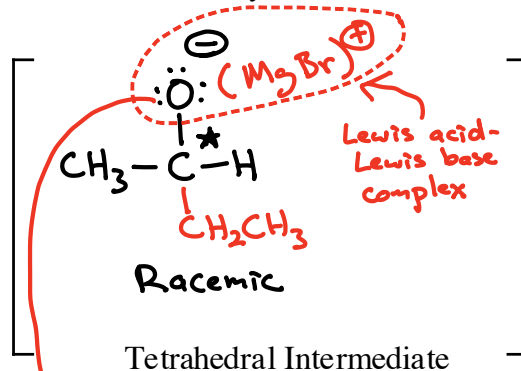




Grignard Reagent Reacting with an Aldehyde or Ketone



Make a bond



Chemist opens the flask

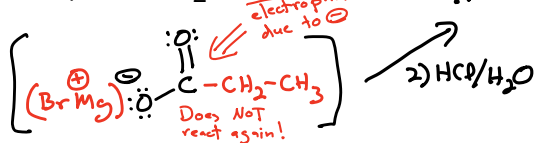
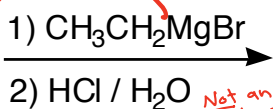
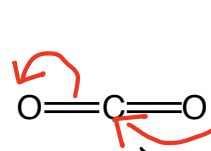
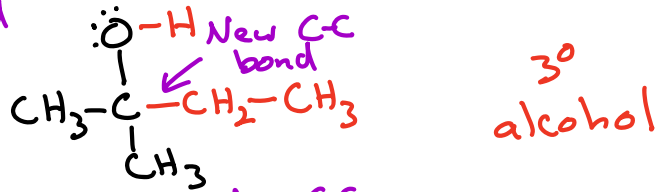
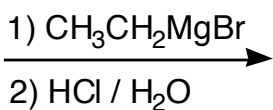
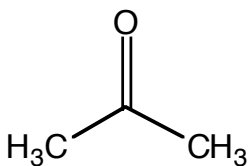
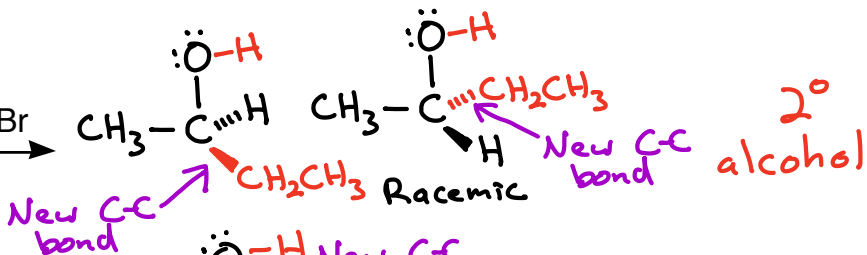
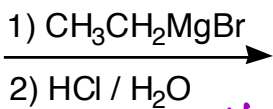
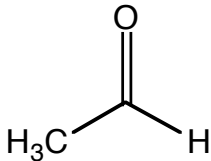
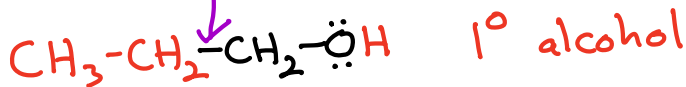
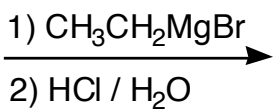
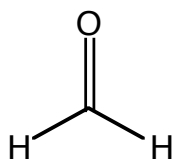
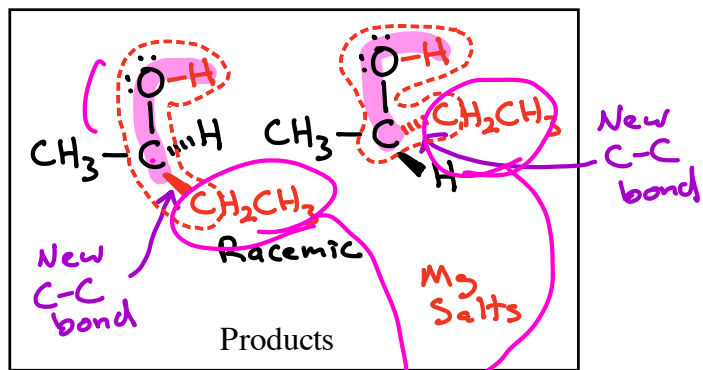


Add a proton

Mechanism A

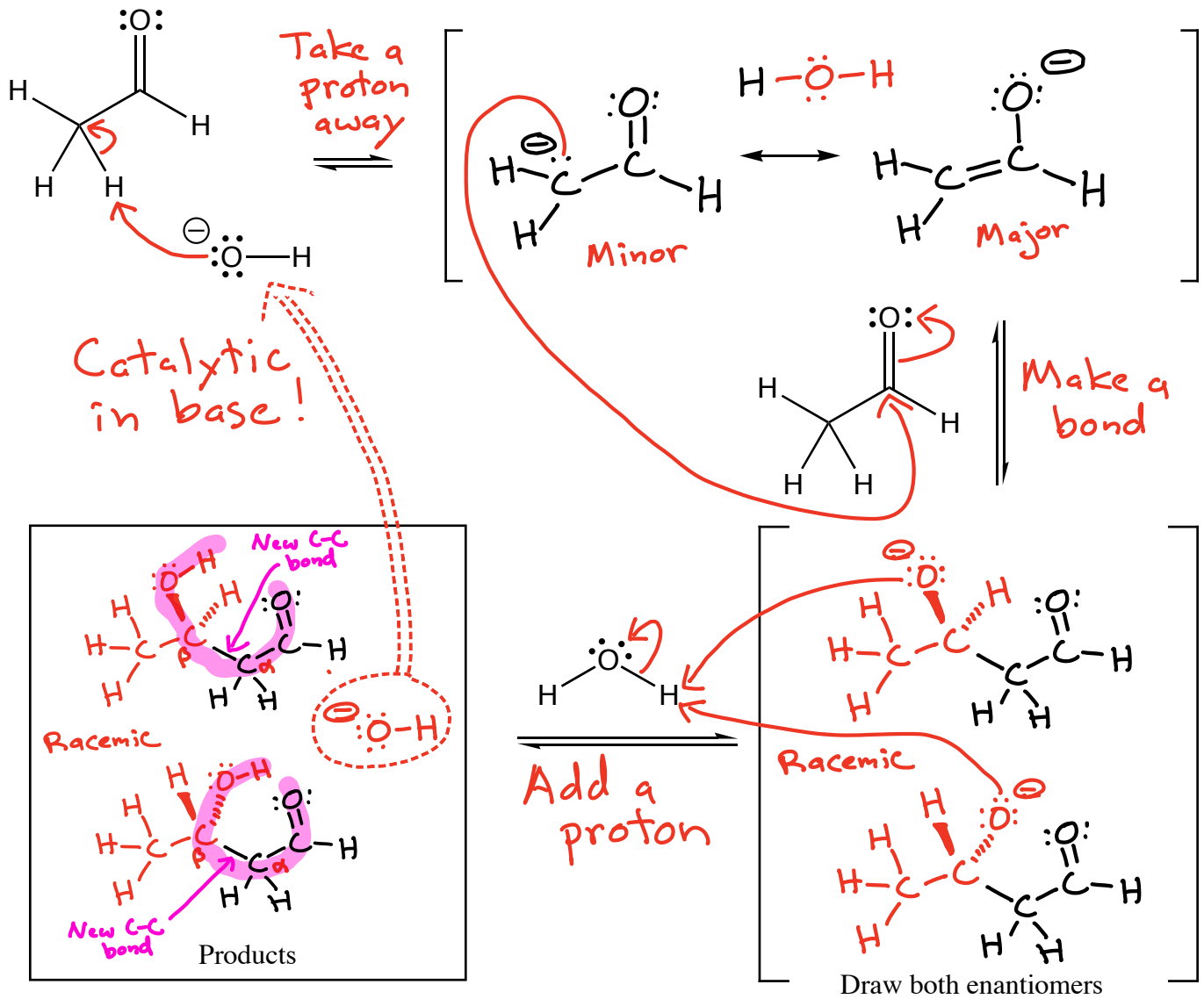
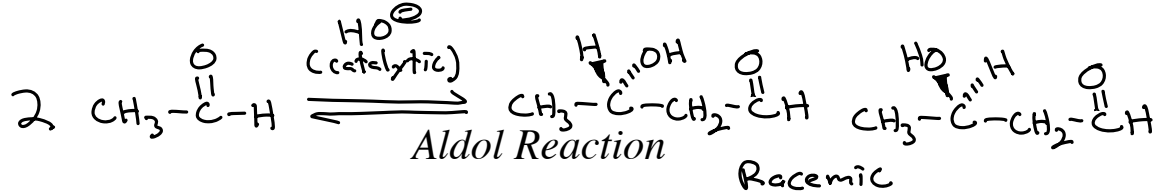
Key Recognition Element (KRE):

-OH group attached the same C atom as a new C-C bond



New C-C bond

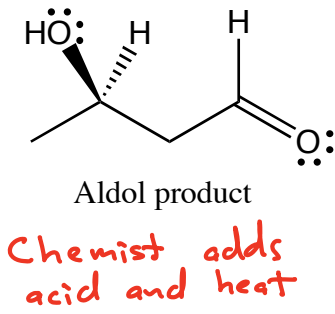
NuCl



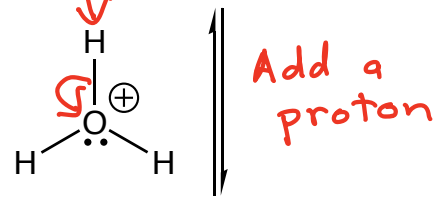
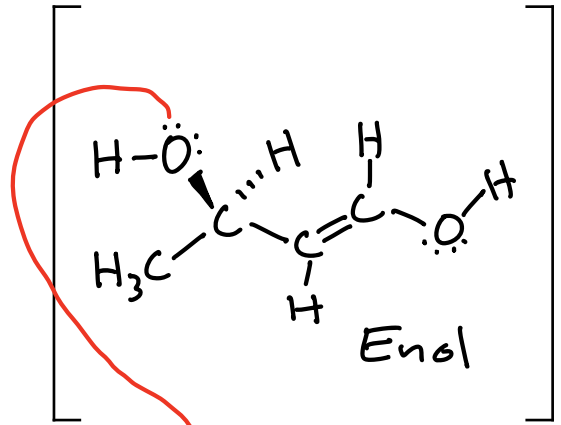
KRE → β-hydroxy aldehyde
 with a new C-C
 bond between the
 aldehyde α and β
 carbons

Mechanism
 A

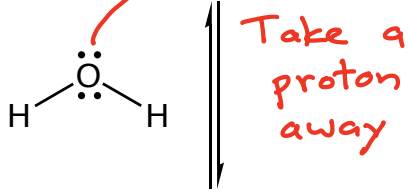
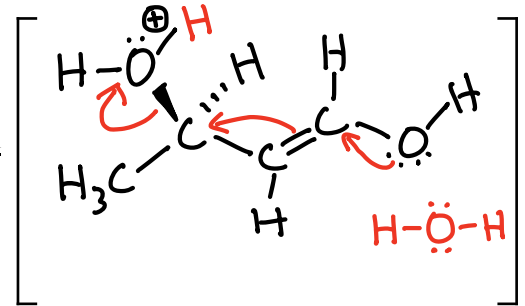
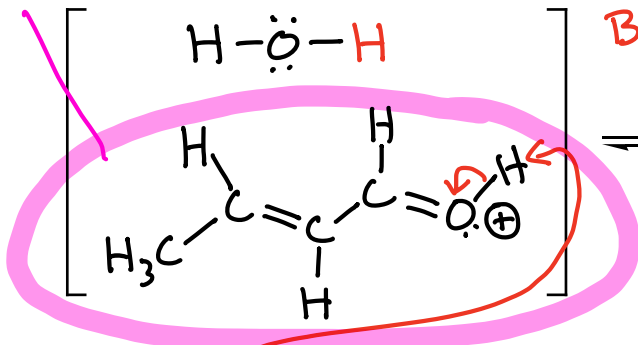
Acid catalyzed dehydration



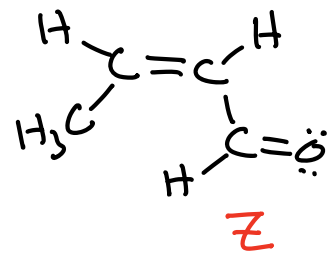
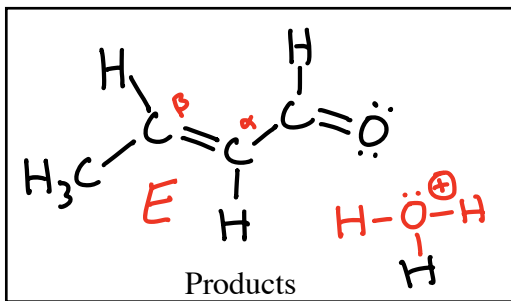
tautomerization



VERY stable cation



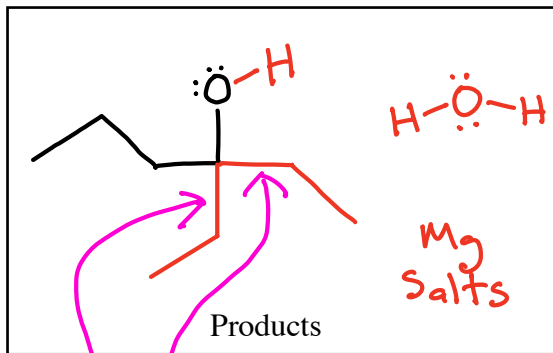
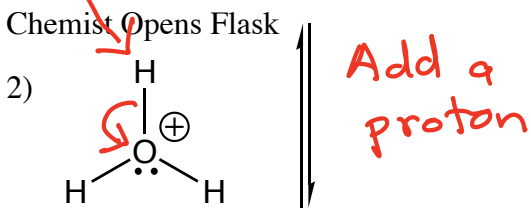
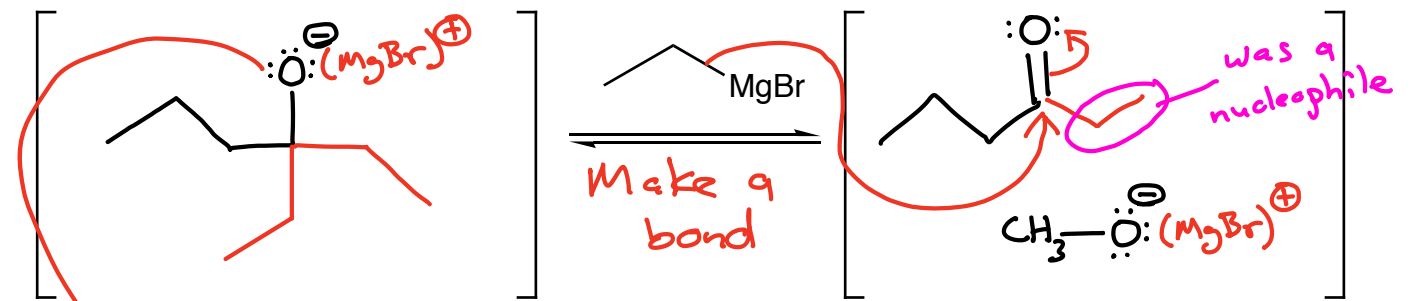
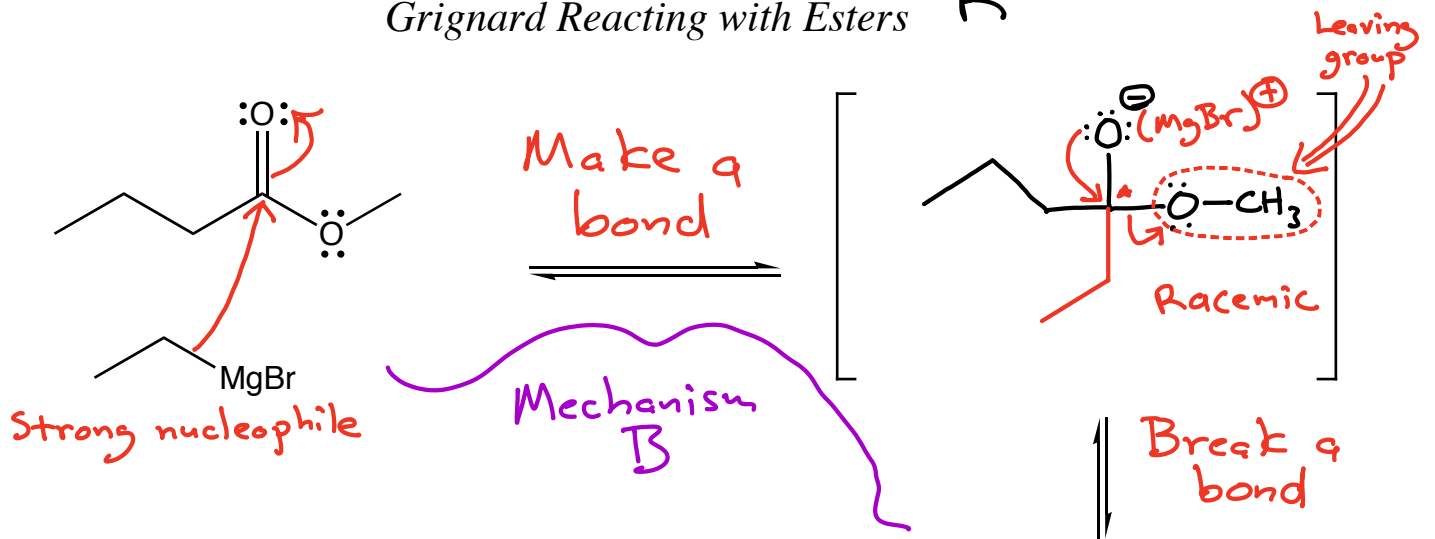
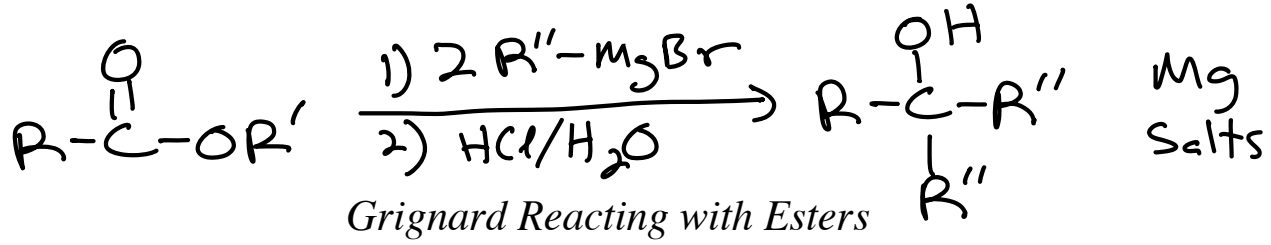
KRE → α,β-unsaturated aldehyde → the C=C is where the new C-C bond is located



Not much of the Z product is formed because it has significantly more steric strain than E

THIS IS UNIQUE TO THIS EXAMPLE
 ↓
 USUALLY BOTH E AND Z ARE FORMED





New C-C bonds

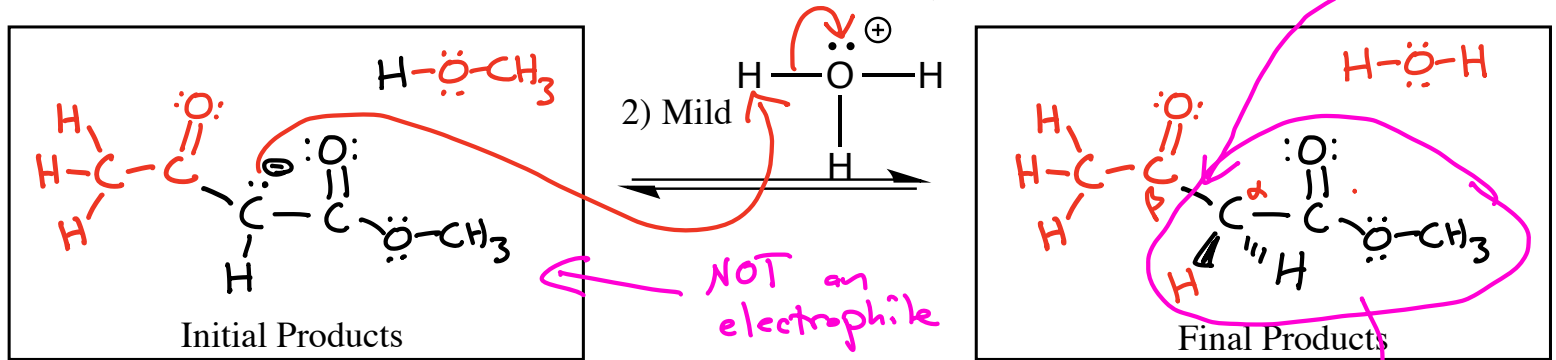
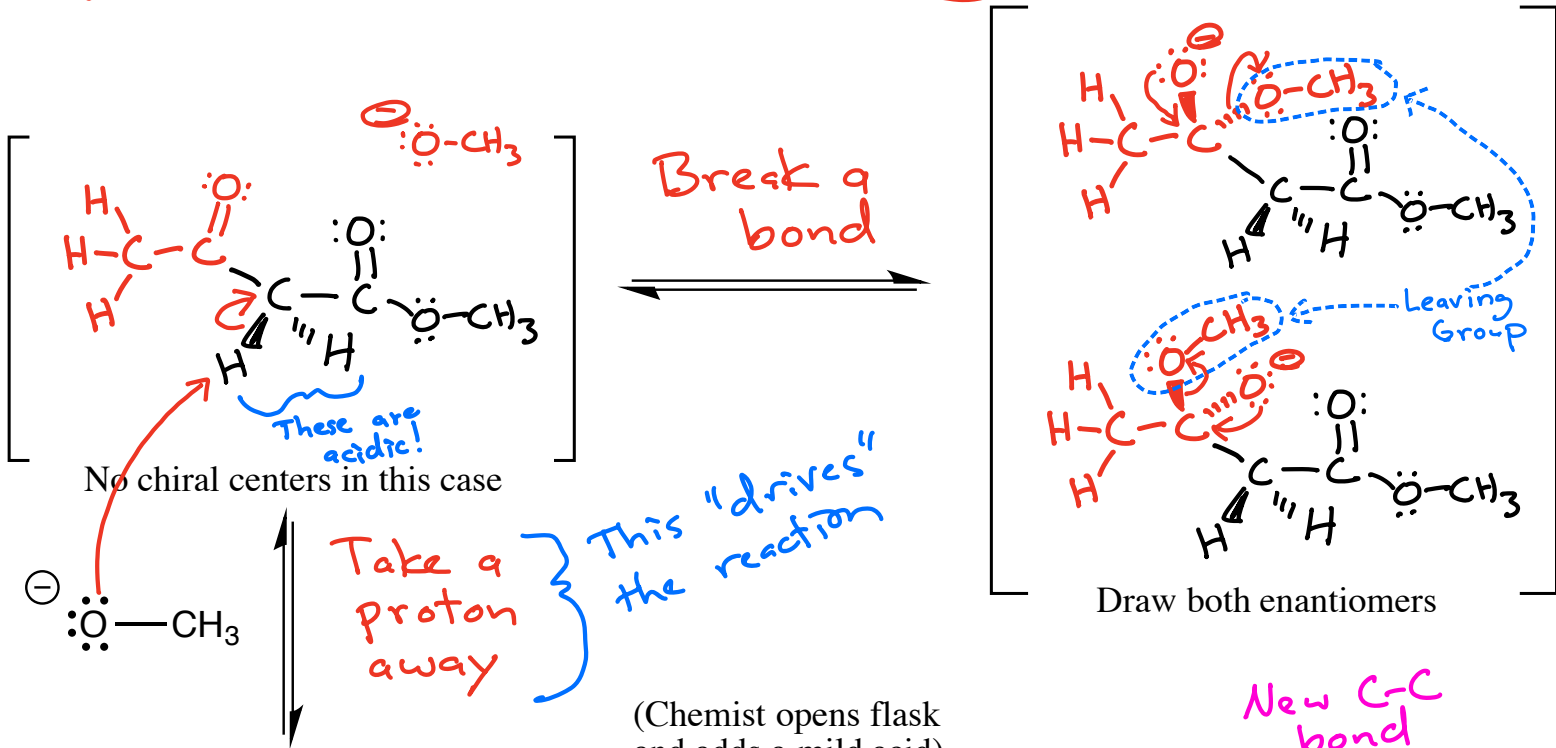
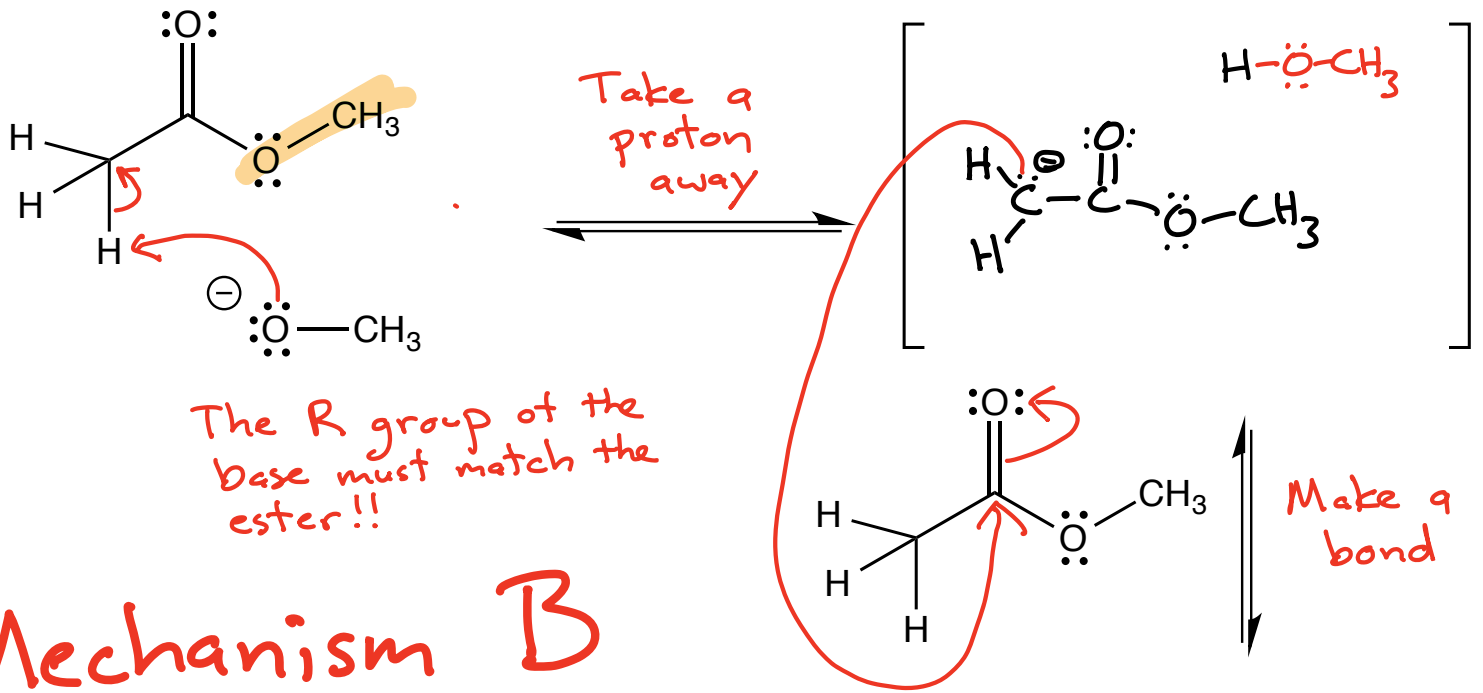
Mechanism A

KRE → An alcohol with 2 identical new groups attached via new C-C bonds

The overall reaction mechanism is Mechanism B followed by Mechanism A

⇒ Same as the next reaction!

Claisen Condensation → "Aldol with Esters"



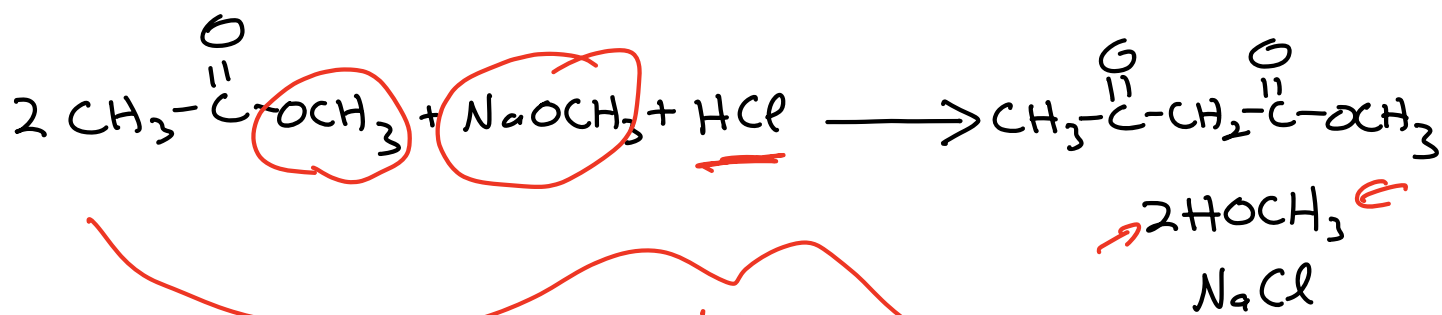
This is a much more stable anion compared to $\ominus\text{OCH}_3$, providing a strong driving force (motive) for the Claisen condensation reaction

KRE \rightarrow A β -keto ester with a new C-C bond between the α and β carbons

Before we add acid \rightarrow the last step drives the reaction because we make a relatively stable anion.

The "R" for the \ominus O-R must be the same "R" as the starting ester!

Balanced Equation for the Overall Process

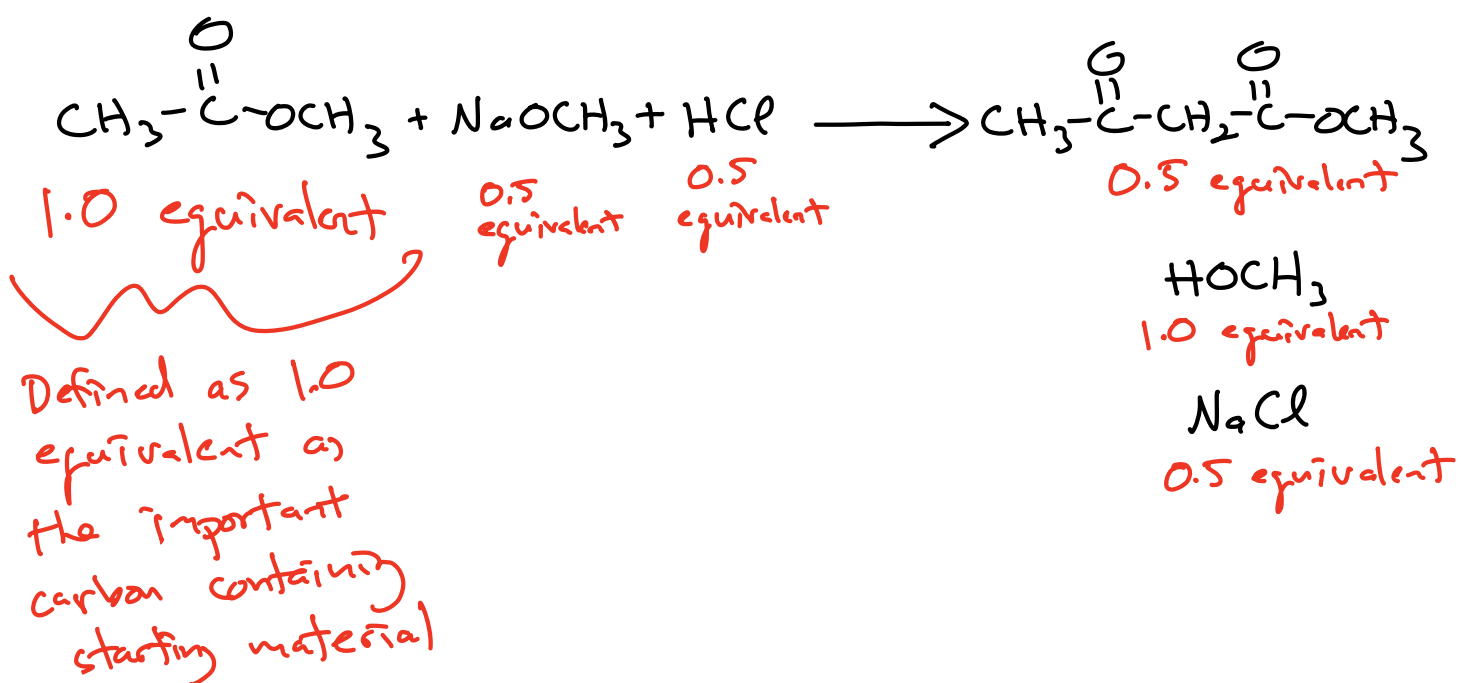


This is the balanced equation that is explained by the mechanism

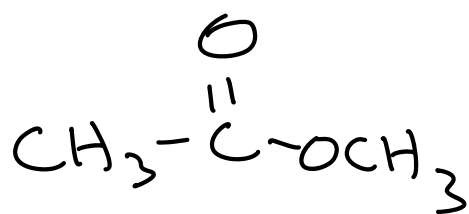
With the balanced equation in hand we can set up a reaction properly in the lab because we know how much of each reactant is needed → For this we use the notation of "equivalents"



Notation that you will see on box problems and synthesis problems

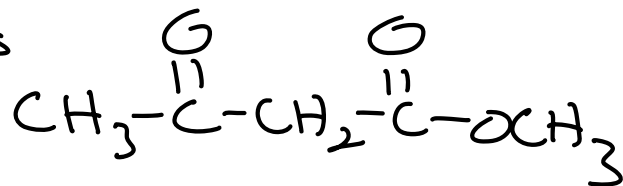
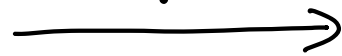


Example of using equivalents



1) NaOCH_3

0.5 equivalents



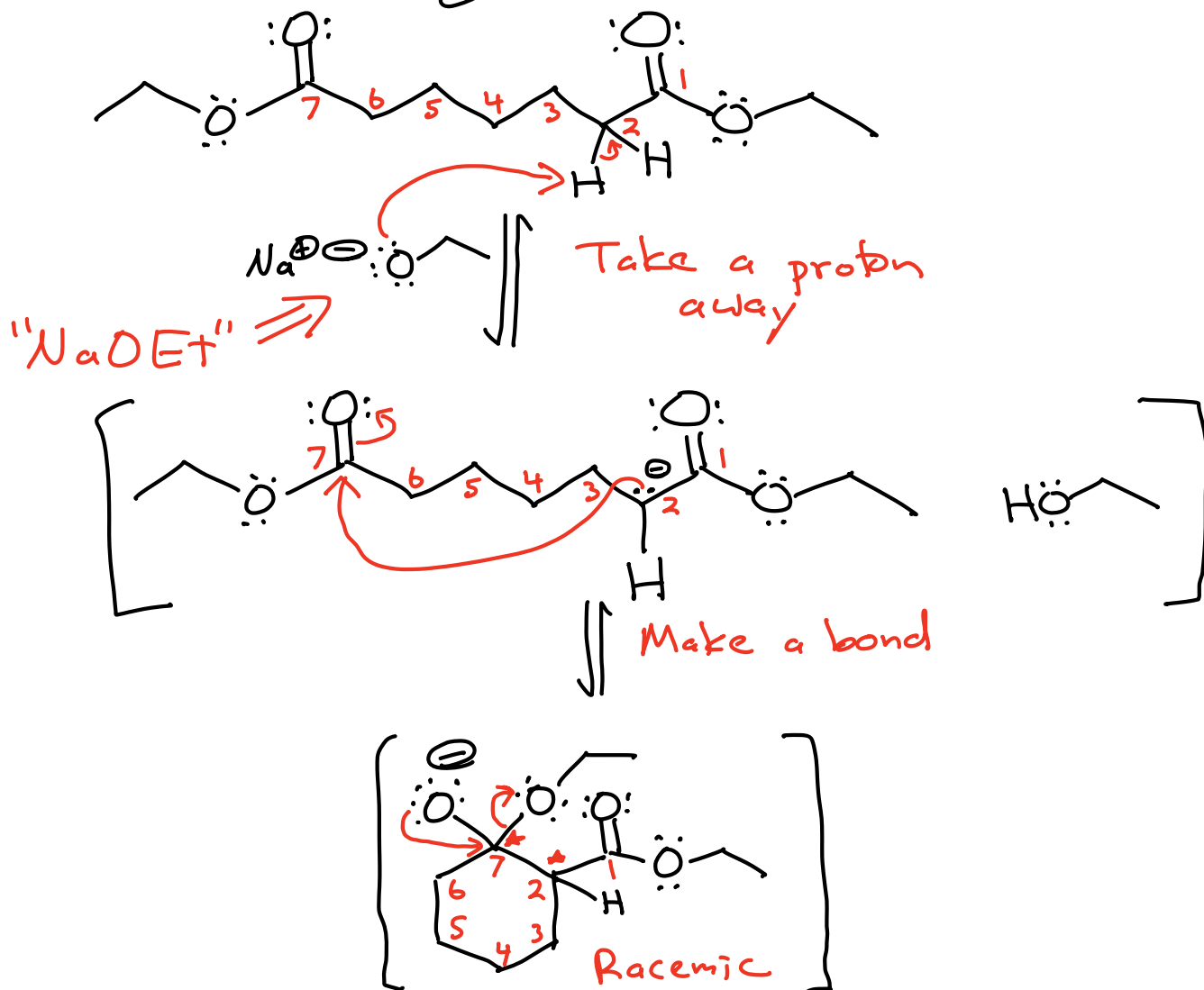
2) $\text{H}_3\text{O}^{\oplus}$

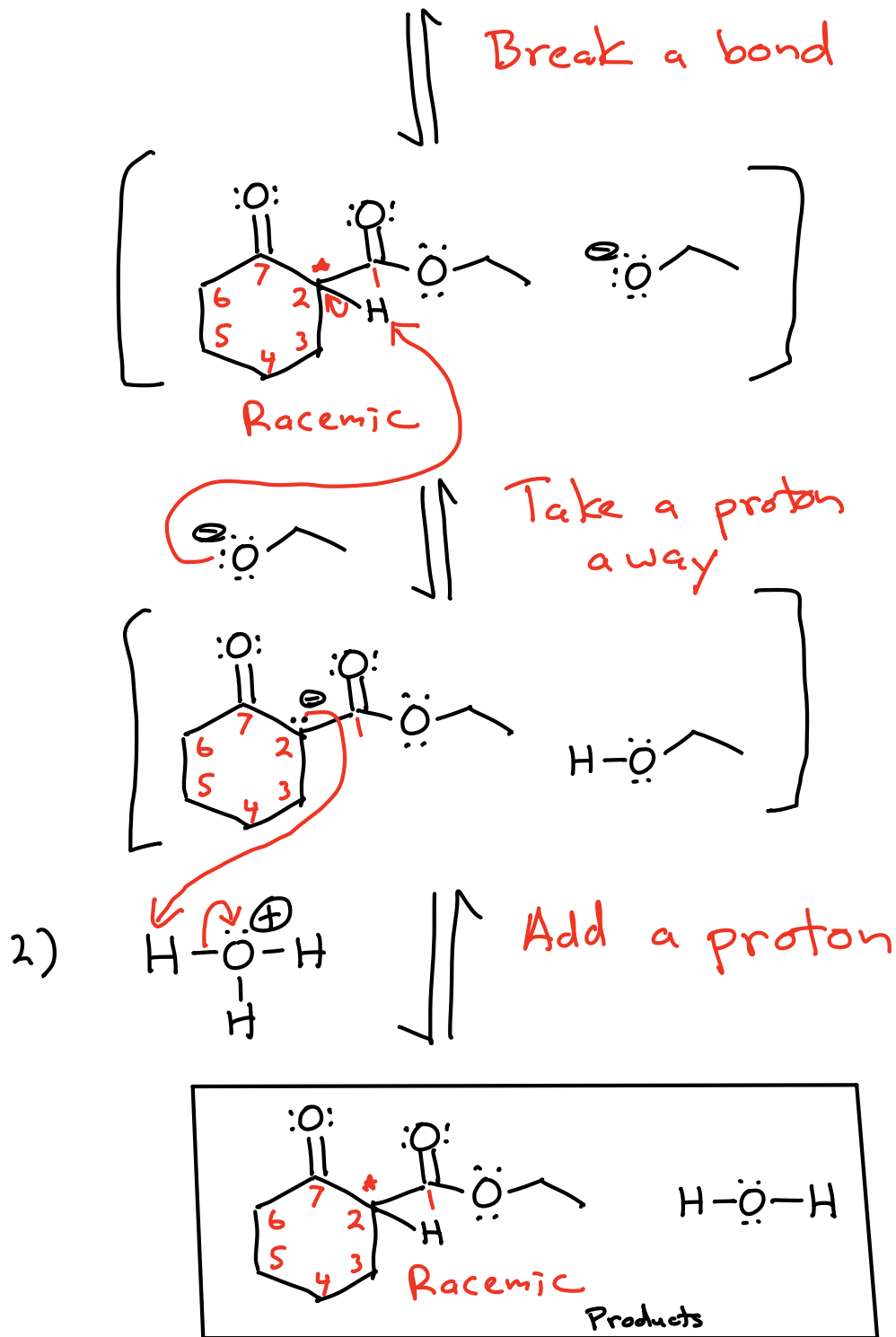
mild

0.5 equivalents
of HCl

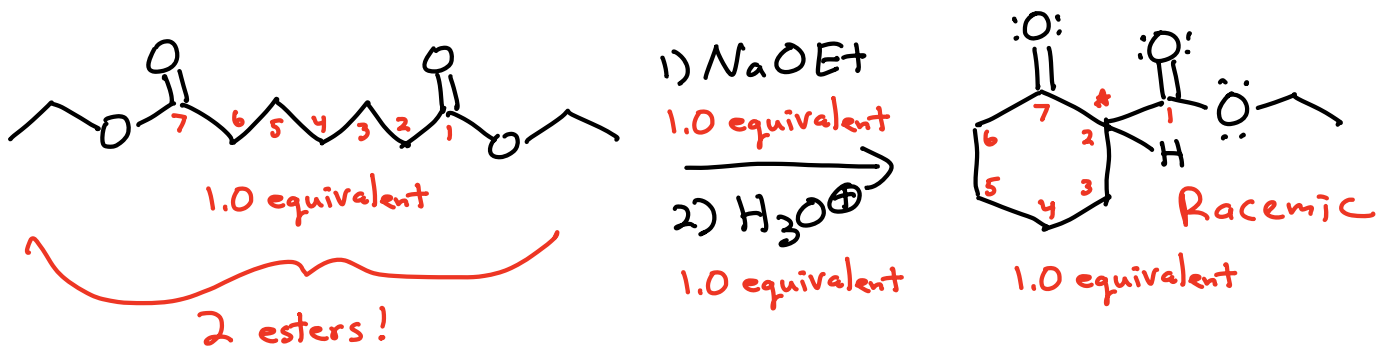


The Dieckmann Condensation →
Using a Claisen to make a 9
ring.

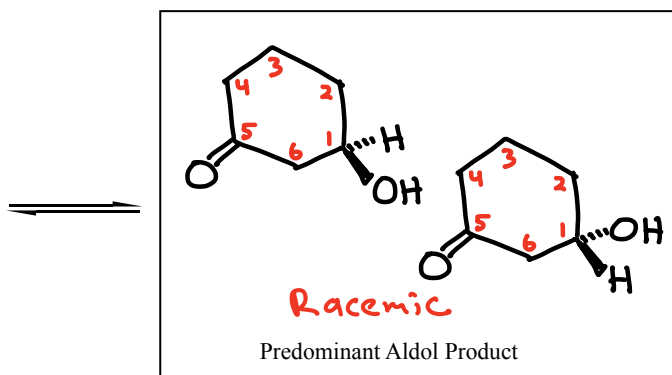
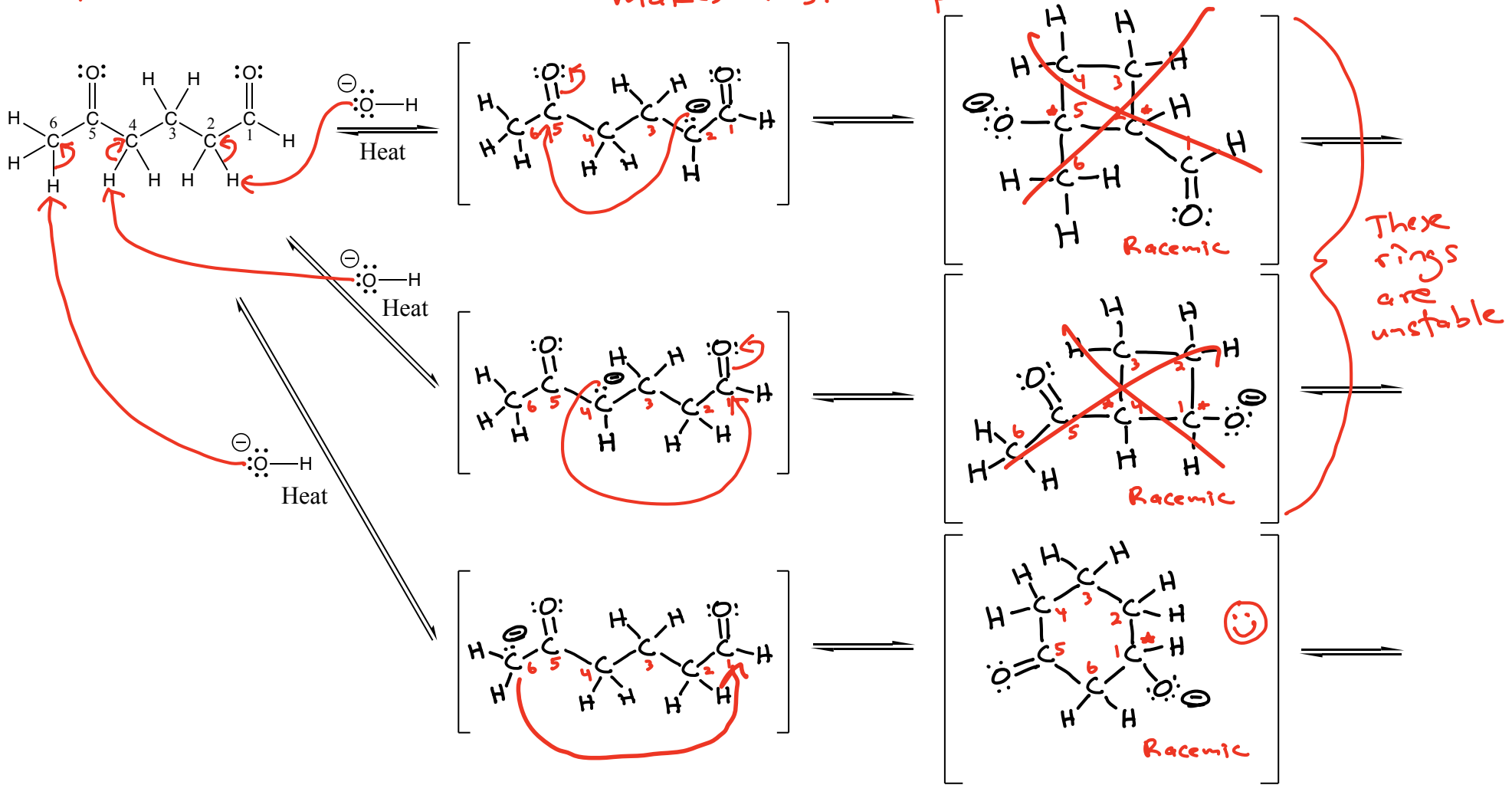




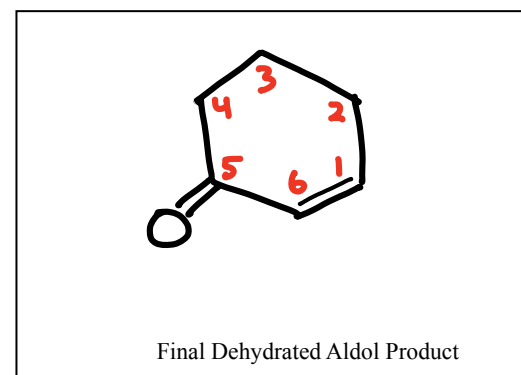
Overall Process

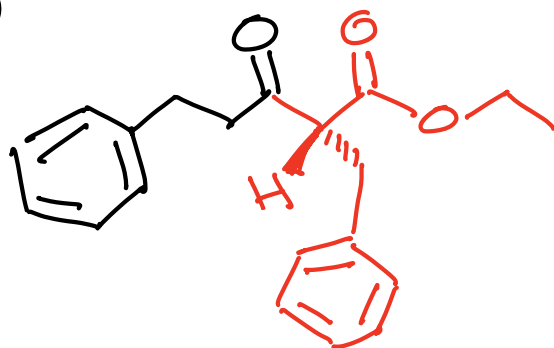
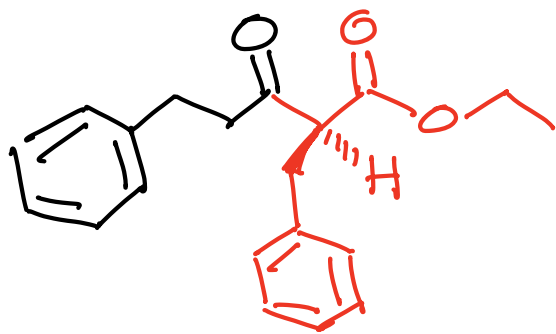
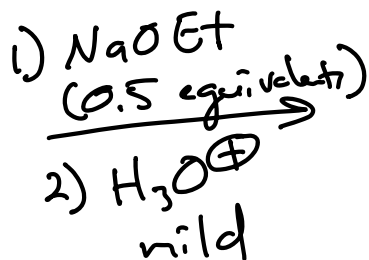
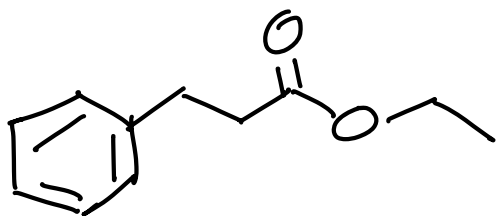
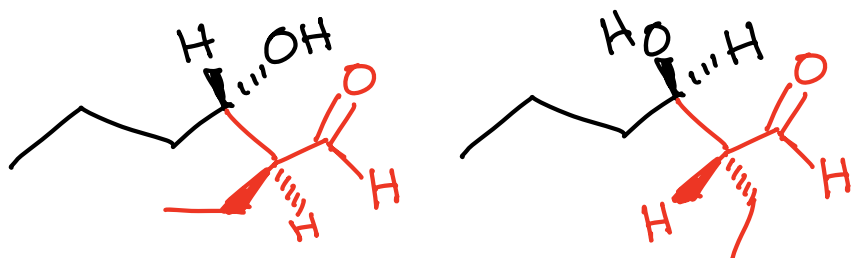
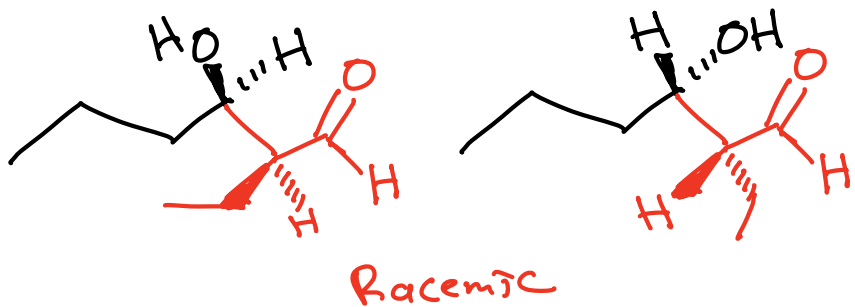
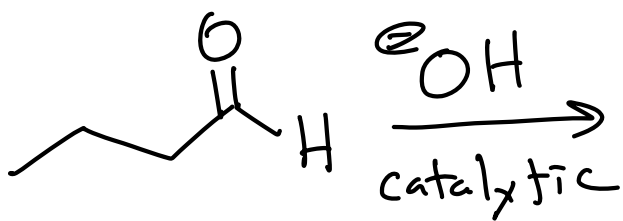


Cyclic Aldol Reaction → 3 different enolates are possible, but only one makes a stable product



Dehydration





Racemic

