Hey guys! You are so close to being finished, just a couple of weeks to go until summer break! As always, if you have any questions or need study tips, please do not hesitate to reach out to me at Megan_Hudson2@baylor.edu!

In-person group tutoring sessions will take place **every Wednesday from 6:45 to 7:45 pm in Sid Rich Rm. 75**! In these sessions I will provide practice problems and be available for specific questions. To reserve a spot, go to [https://baylor.edu/tutoring](https://baylor.edu/tutoring). I hope to see you there!

**Key Words:** Alpha Carbon, Aldol, Claisen, Enamine, Crossed Reaction

**TOPIC OF THE WEEK:** ALPHA CARBON CHEMISTRY: ENOLS AND ENOLATES

What is an alpha carbon? The alpha carbon is proximal to the carbonyl group carbon

Enols are created with acid or base catalyzed tautomerization. Enolates are more reactive due to the charge on the oxygen. The strong base used to create an enolate can be EtO or LDA.

**Alpha Carbon Reactions:**

- Alpha-Halogenation of Enols and Enolates
Acidic Conditions

Basic Conditions

- Alpha-Bromination of Carboxylic Acids

Aldol Reactions

- Aldol Addition

- Retro-Aldol Reaction

- Aldol Condensation
Crossed Aldol Reaction

Intramolecular Aldol

- Claisen Condensation

Crossed Claisen

1. Crossed Claisen condensation occurs if one ester has no alpha protons and cannot form an enolate

2. Crossed Claisen condensation occurs and can be directed to irreversibly form an ester enolate using LDA and another ester
Intramolecular Claisen (The Dieckmann Cyclization)

- Kinetic vs Thermodynamic Alkylation

- Malonic Ester Synthesis

- Acetoacetic Ester Synthesis

- Michael Reaction
1. Grignards favor 1,2-addition

\[ \text{Grignard + alkene} \rightarrow \text{alkyl halide} \rightarrow \text{hydrolysis} \]

2. Gilmans favor 1,4-addition

\[ \text{Gilmans + alkene} \rightarrow \text{alkyl halide} \rightarrow \text{hydrolysis} \]

- Stork Enamine Synthesis
  1. Formation of Enamine
  2. Michael Addition
  3. Hydrolysis

THINGS YOU MAY STRUGGLE WITH:
1. REVIEW THESE MECHANISMS! I highly recommend doing problems 22.85 and 22.86. Be able to draw the entire mechanism FROM MEMORY to ensure you know what types of reagents to use and the products formed. Take advantage of the review of reactions at the back of the chapter and the SkillBuilder review, this is a GREAT RESOURCE for quick review!

2. Be comfortable with synthesis and retrosynthesis! It’s a tough topic to tackle but it is a big part of Organic Chemistry II. Review Section 22.7 of Synthesis Strategies and practice with problems 22.54, 22.55, 22.56, and 22.87.

PRACTICE PROBLEMS:
1. Propose a possible mechanism
2. Use retrosynthesis to propose a mechanism to create cinnamaldehyde; Hint: identify what cinnamaldehyde is and then think of what mechanisms you know are used to create it
ANSWERS TO PRACTICE PROBLEMS:

1. \[ \text{Reverse Intramolecular Aldol} \]

\[ \text{Intramolecular Aldol Condensation} \]

2. Mode via Aldol condensation.

Double bond formed from loss of carbonyl and 2 H's.