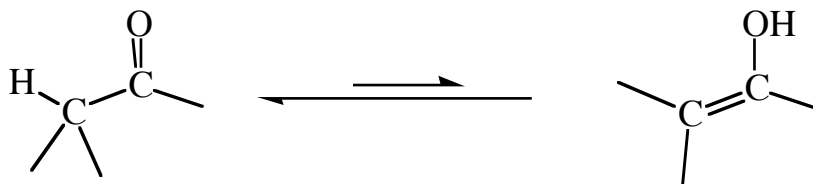


Lecture outline

**Ch 20 — Rxns a to α carbonyl group —
enols and enolates, aldol and Claisen condensations**

Carbonyl compounds exist in equilibrium with enol tautomers —

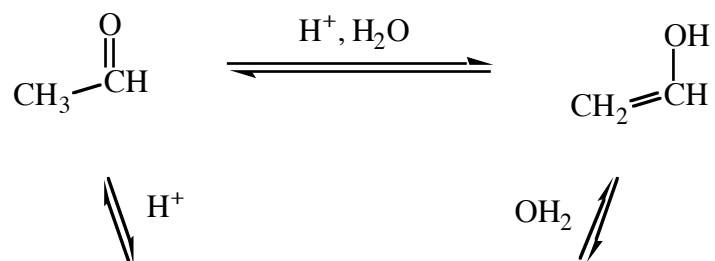


<i>Compound</i>	<i>enol</i>	<i>amount of enol at equilibrium</i>
		$6 \times 10^{-5} \%$
		$6 \times 10^{-7} \%$
		$1.4 \times 10^{-2} \%$
		9.1 %
		80 %

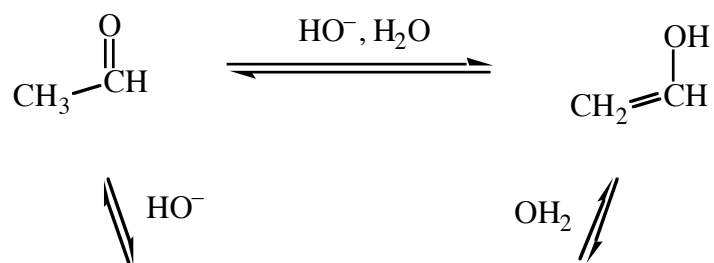
Draw the enol tautomer of each compound above and explain the variation in the position of the equilibria, reflected in the enol %s. Think about the relative stabilities of the carbonyl compound and enol and how this varies from case to case. Why is enolization so favorable for the β -dicarbonyl compound?

Enolization mechanisms (review, eh?) Fill in the details.

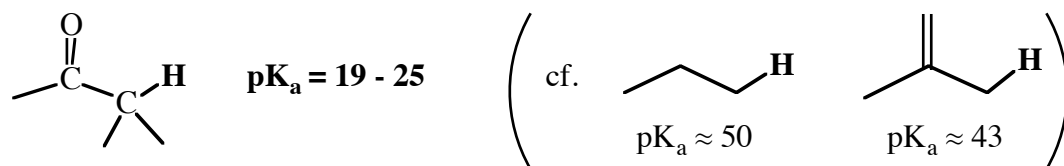
a. Acid-catalyzed



b. Base-catalyzed



Resonance stabilization makes Hs α to a carbonyl group moderately acidic



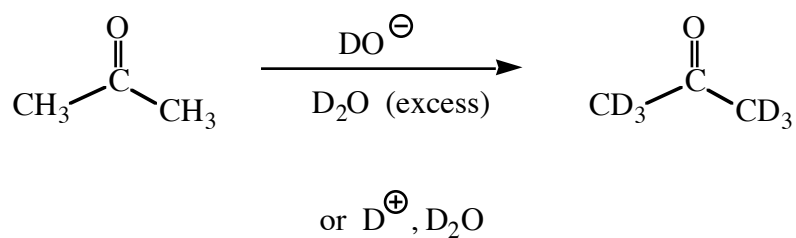
What bases can quantitatively deprotonate a ketone?

... and which ones can deprotonate a ketone to a small extent?

What bases can quantitatively deprotonate a β -dicarbonyl compound?

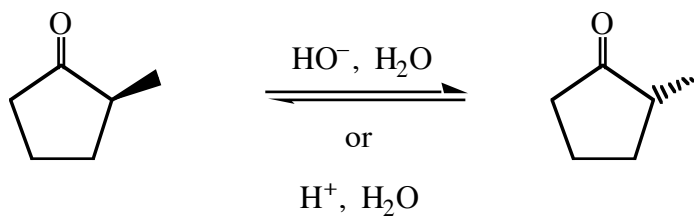
Reactions of enols and enolate ions

1. H-D exchange



write the mechanisms

2. Stereoisomerization



write the mechanisms