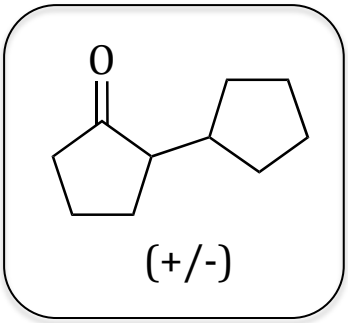
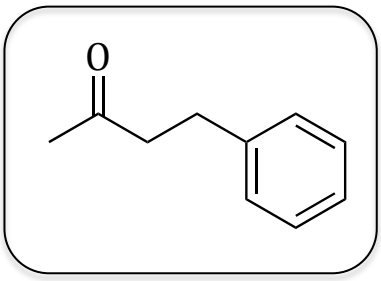
Putting it Together: Synthesis Using Enolates

Provide a multi-step synthesis of the desired product from any organic reagents containing **5 or fewer carbons**.



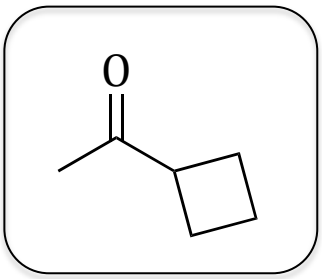
Putting it Together: Synthesis Using Enolates

Provide a multi-step synthesis of the desired product from any organic reagents containing **7 or fewer carbons**.



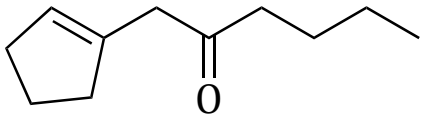
Putting it Together: Synthesis Using Enolates

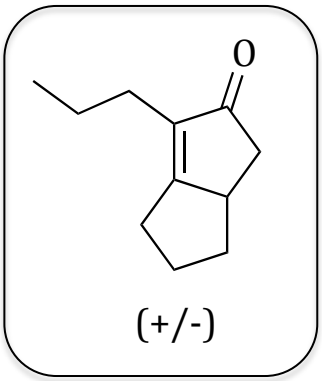
Provide a multi-step synthesis of the desired product from any organic reagents containing **3 or fewer carbons**.



Putting it Together: Synthesis Using Enolates

Provide a multi-step synthesis of the desired product from the indicated starting material; you may use any inorganic reagents you desire.





Lithium Enolates

In our last lecture, we emphasized that enolates are generally present in only *small* concentrations at equilibrium. How might we be able to actually *make* an enolate?

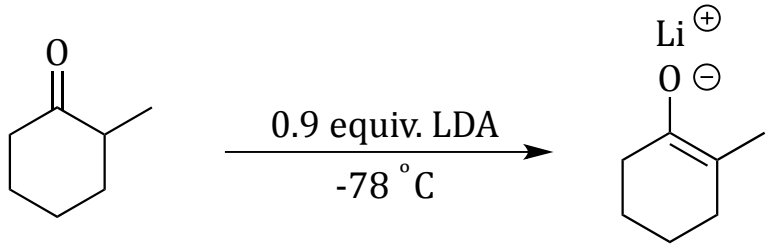
What base can we use to make a *lithium enolate*?

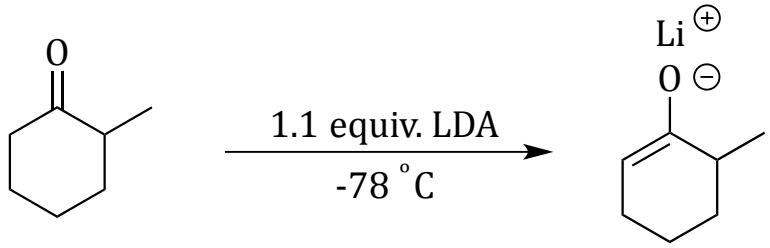
What types of enolates can we form using this technique?

Reading: Section 22.7

Lithium Enolates:
Kinetic vs. Thermodynamic Enolates

Explain why the following two reactions give *different* enolates:

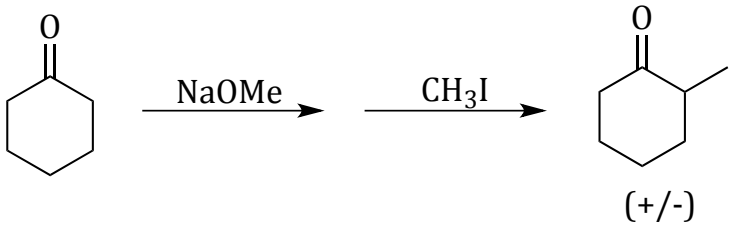




Reading: Section 22.7

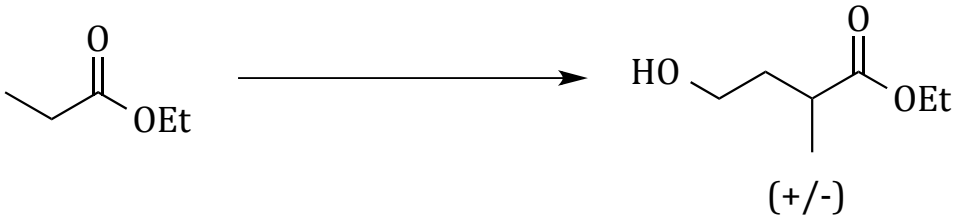
Lithium Enolates:
Alkylation

Last lecture, we said the following transformation couldn't be done *as written*. Why?



Now, can you figure out how to carry out the same transformation (without using a "phantom ester")?

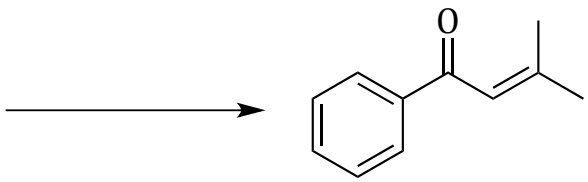
How could you carry out the following synthesis?

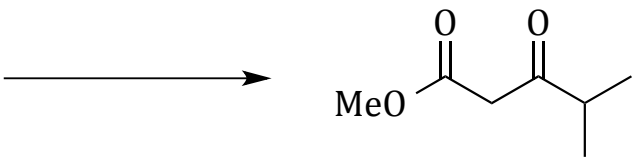


Reading: Section 22.7

Lithium Enolates:
Application to "Crossed" Aldol & Claisen

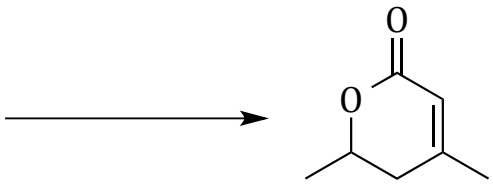
Last lecture, we hinted that "crossed" aldol and Claisen reactions are problematic; now you can do them! How could you synthesize the following products? Why would you have had trouble with these syntheses before?





Zinc Enolates:
The Reformatsky Reaction

The following product presents a peculiar synthetic challenge. Why?



How can we synthesize that product?