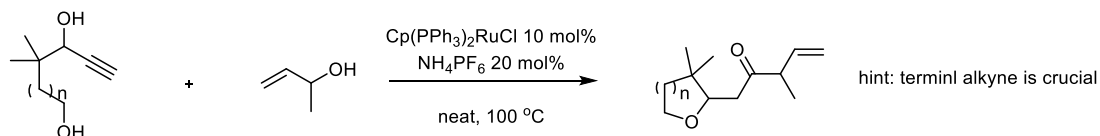


EAA Group Problem

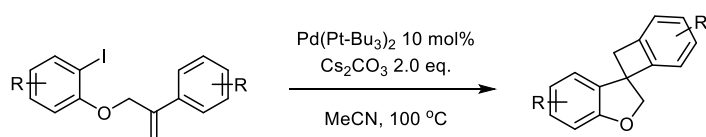
02 May 2017

1. Suggest a mechanism for the following transformations.

a)



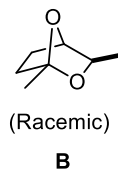
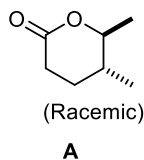
b)



2. You are a new PhD student to the group and about to start a new project. Your supervisor is not very happy with the price of the following starting materials **A** and **B**. Suggest a route to synthesize them which:

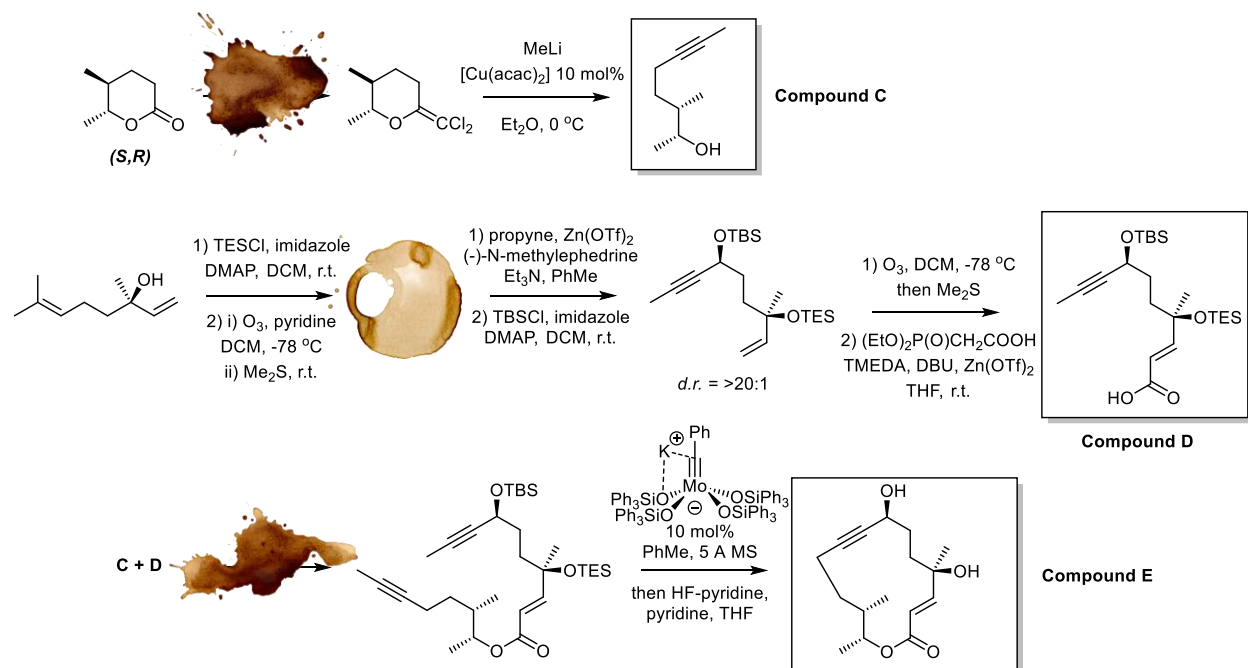
a) is as short as possible to save your time;

b) with all the starting materials containing **FIVE** or less carbon atoms;



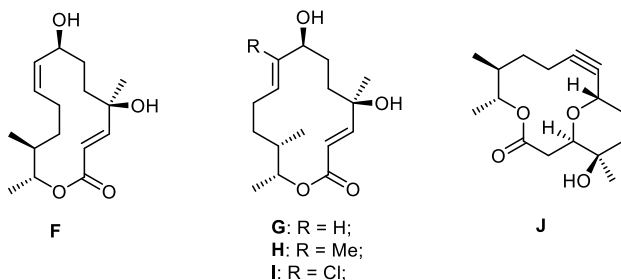
3. After mini meeting, your supervisor is satisfied with your synthetic plan and decide to let you make some natural products with starting material **A**. Your first synthetic target is compound **E**, which is derived from fragments **C** and **D** as planned below. When reading the schemes while having coffee with the group, Dimitri poured his drink onto you by accident and covered part of your draft with coffee stain. Please fill in the missing structures or reagents from your knowledge. Propose mechanism for key steps.

*Printing another copy is **NOT** an option.



4. Congratulations! Now having compound **E** in hand, you are thinking about modify it into a bunch of natural products that have been reported before. Here are some potential candidates:

a) what conditions would you use to convert **E** into target compounds?



b) after few months' worth of hard work, you manage to make natural product **J** and confirmed its structure by NMR. However, you are told that the X-ray machine is broken and will take a long time to get fixed. Is there any other way you can assign the absolute stereochemistry of **J**?