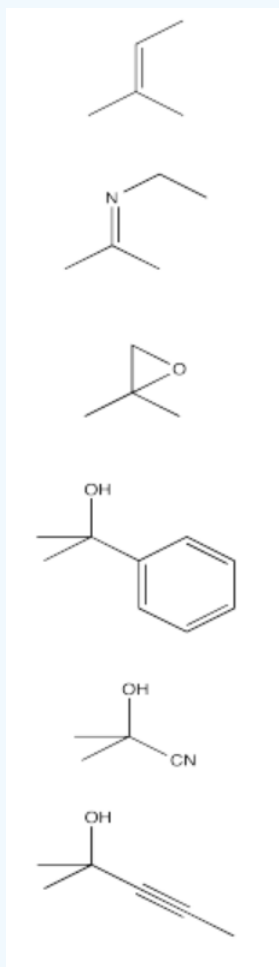
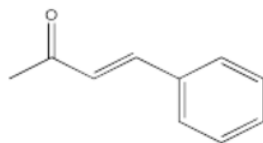
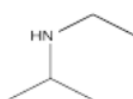
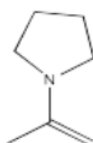
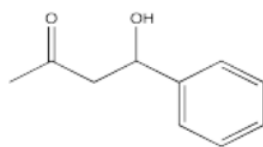


3.18: Additional Problems

Exercise 3.18.1

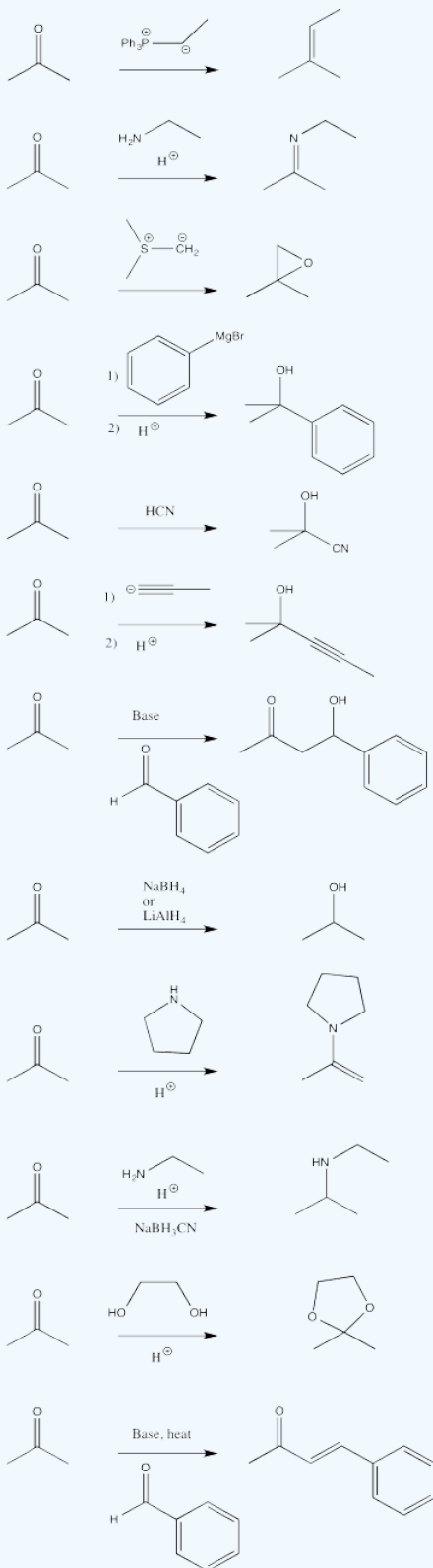
Synthesize the following compounds starting from acetone.





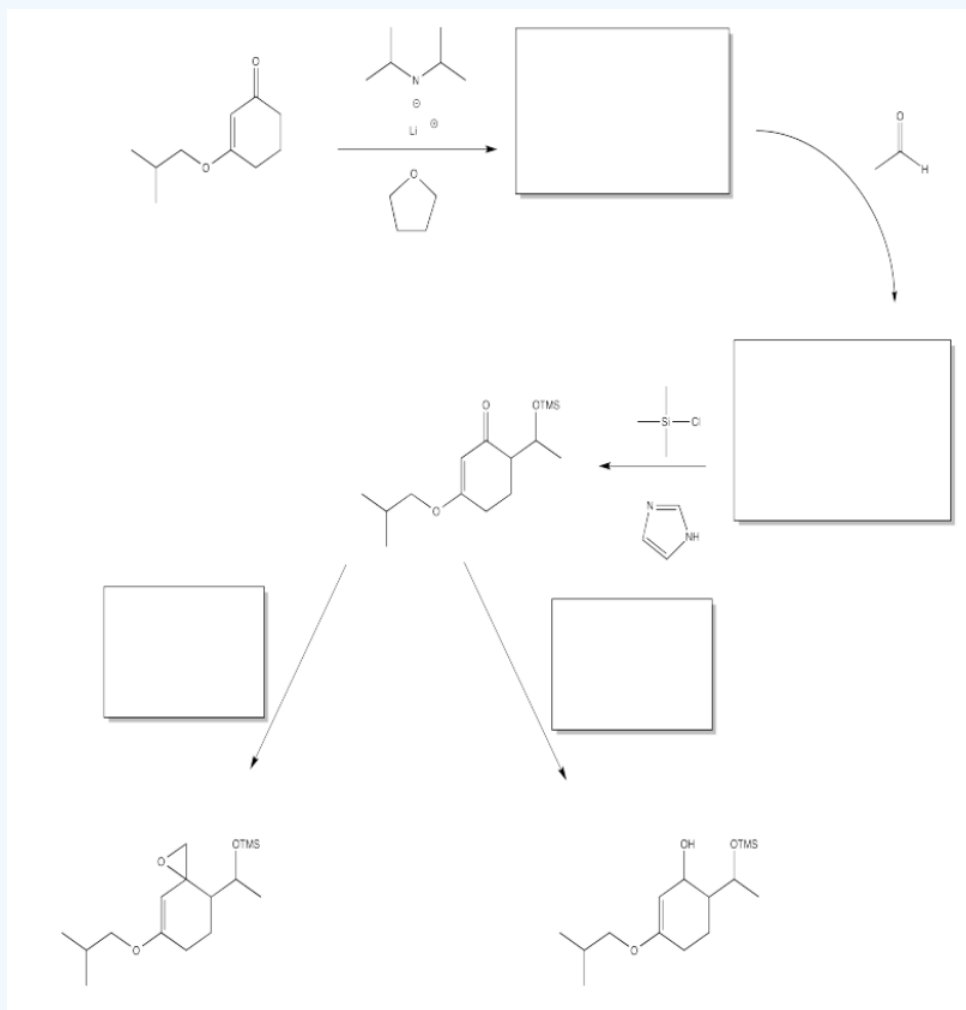
Answer

Synthesize the following starting from acetone.

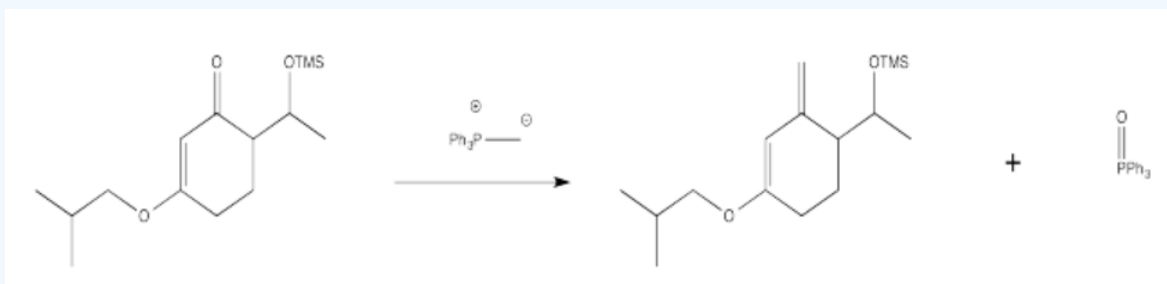


Exercise 3.18.2

Researchers are investigating cyclohexenone derivatives as potential inhibitors for esterases. Below is a scheme for the synthesis of several of these derivatives. Fill in the boxes with the appropriate intermediates or reagents.

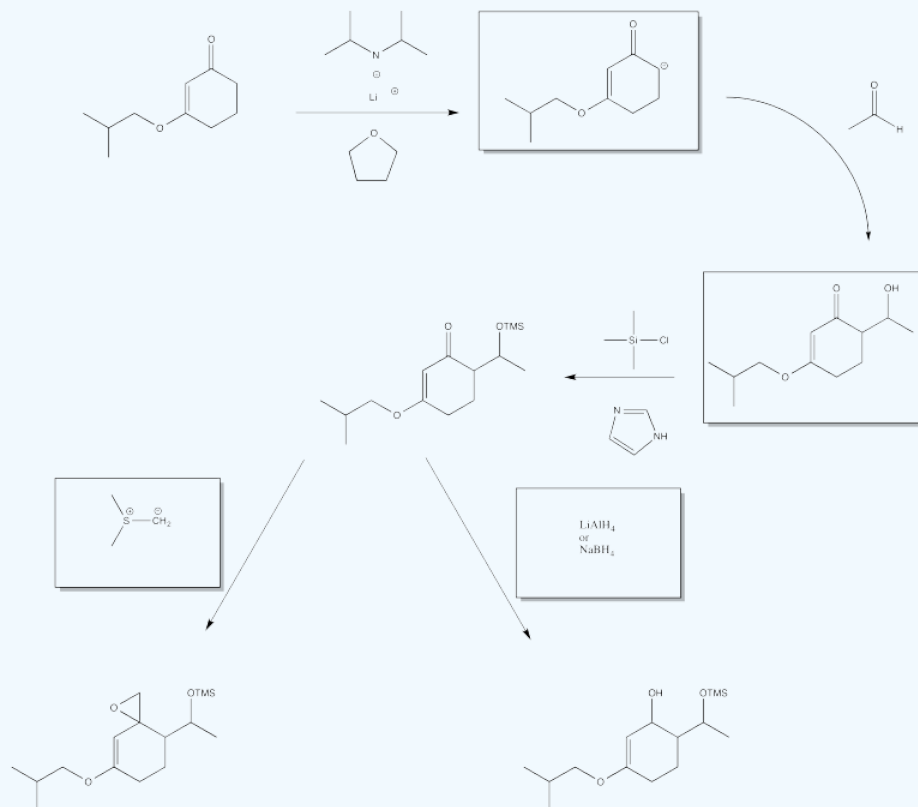


Below is another derivative that they made. Provide a mechanism (make sure to draw arrows) for the following reaction:

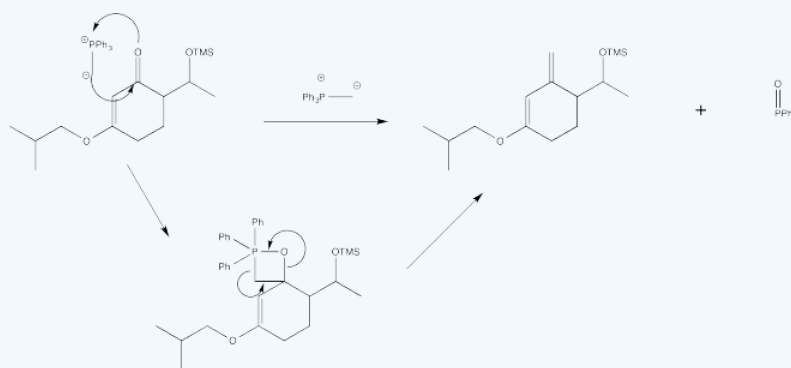


Answer

Researchers are investigating cyclohexenone derivatives as potential inhibitors for esterases. Below is a scheme for the synthesis of several of these derivatives. Fill in the boxes with the appropriate intermediates or reagents.

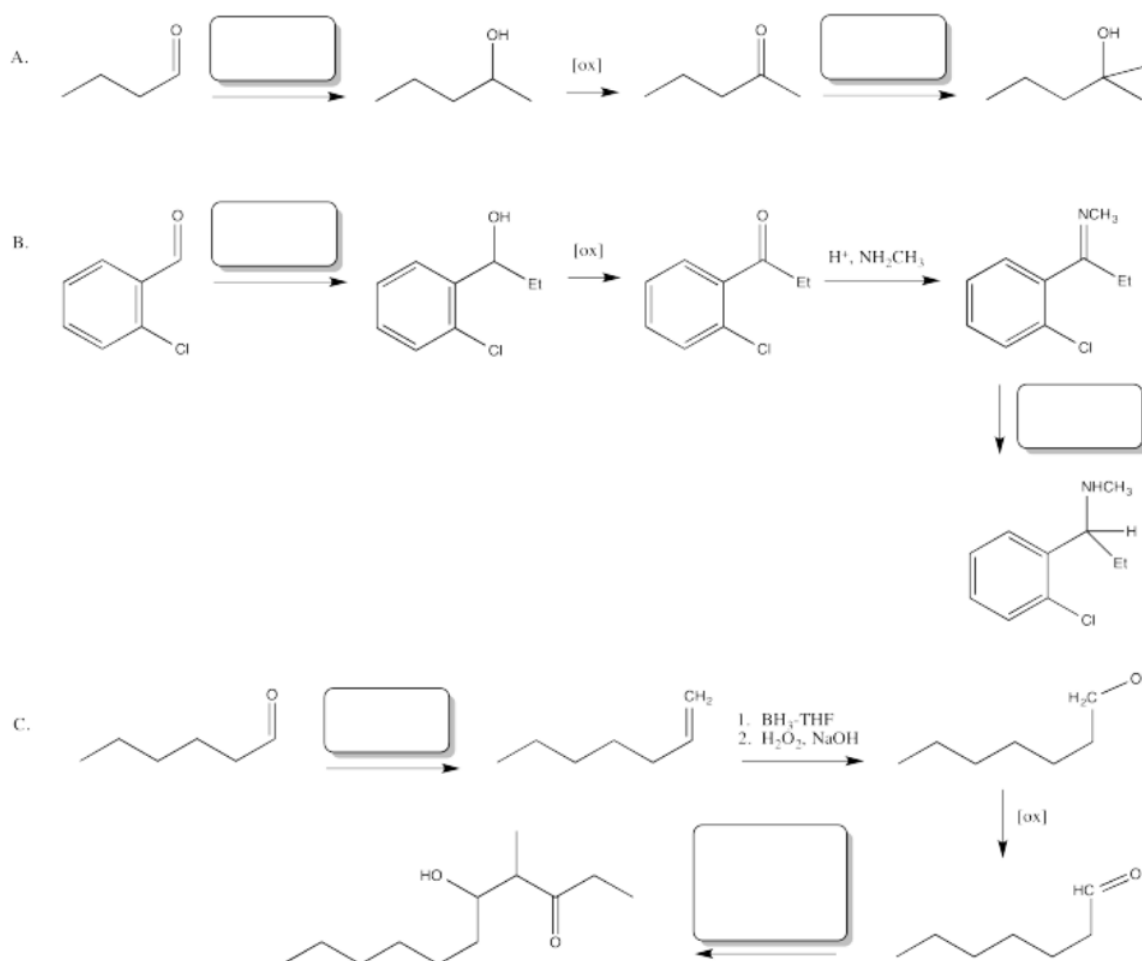


Below is another derivative that they made. Provide a mechanism (make sure to draw arrows) for the following reaction:

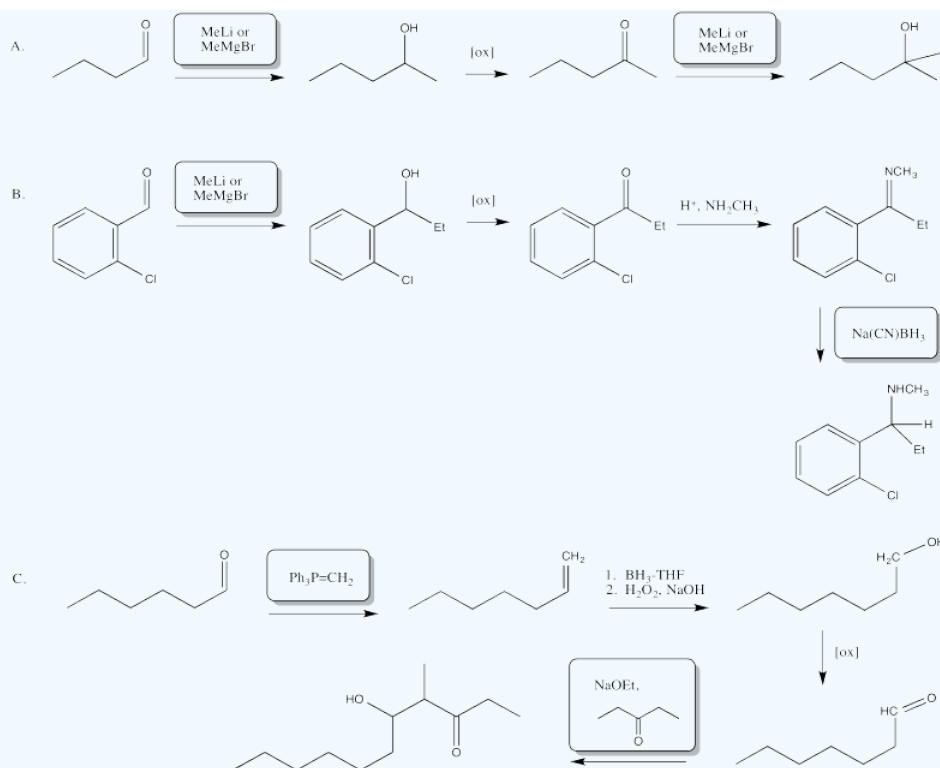


Exercise 3.18.3

Fill in the product or reagent for each of the following transformations. Remember there is always an acidic workup assumed.



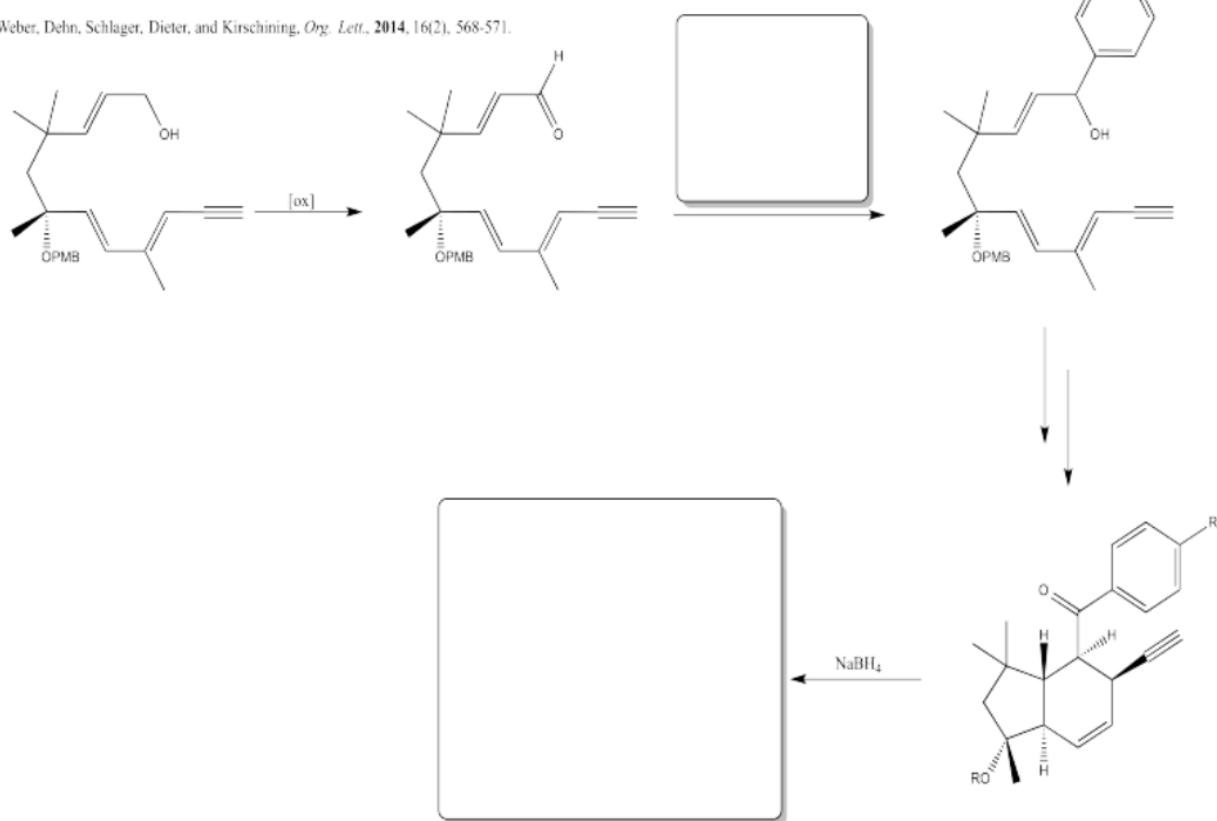
Answer



Exercise 3.18.4

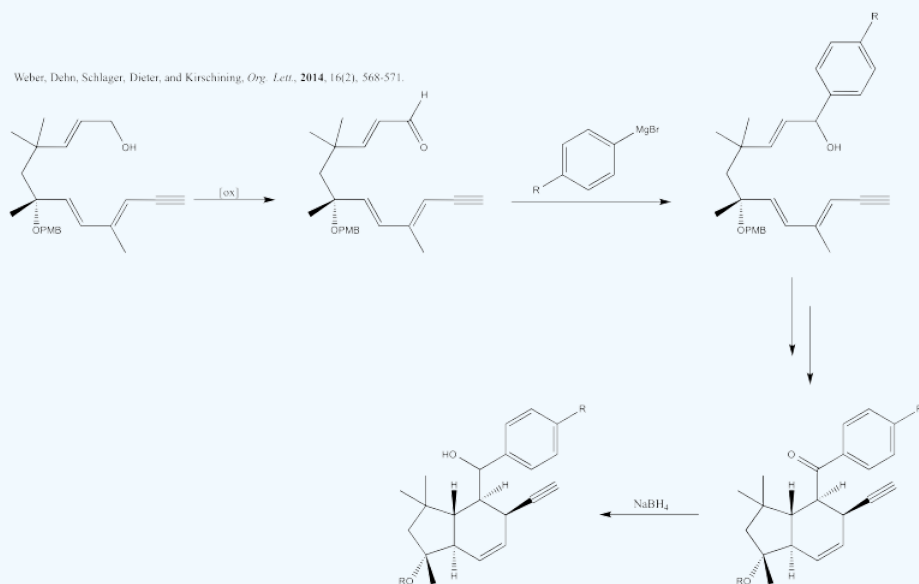
Fill in the blanks in the following synthesis. Includes addition to carbonyls (anionic nucleophiles).

Weber, Dehn, Schlager, Dieter, and Kirschning, *Org. Lett.*, **2014**, 16(2), 568-571.



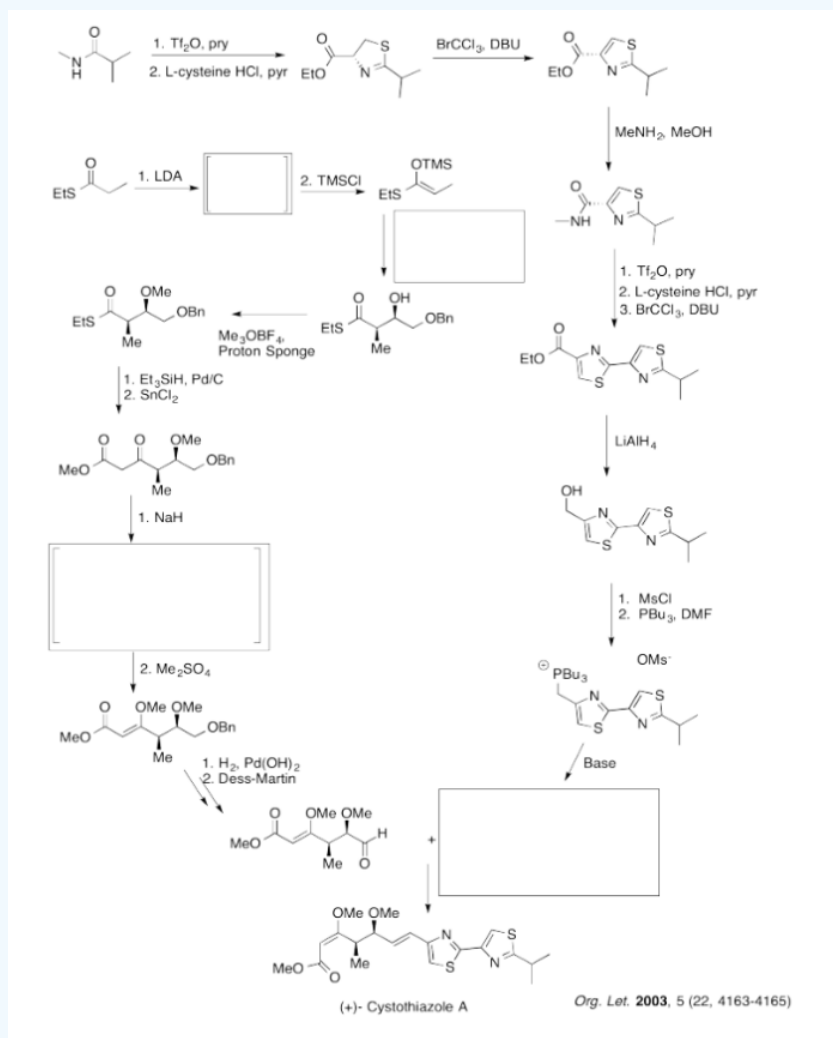
Answer

Weber, Dehn, Schlager, Dieter, and Kirschning, *Org. Lett.*, **2014**, 16(2), 568-571.

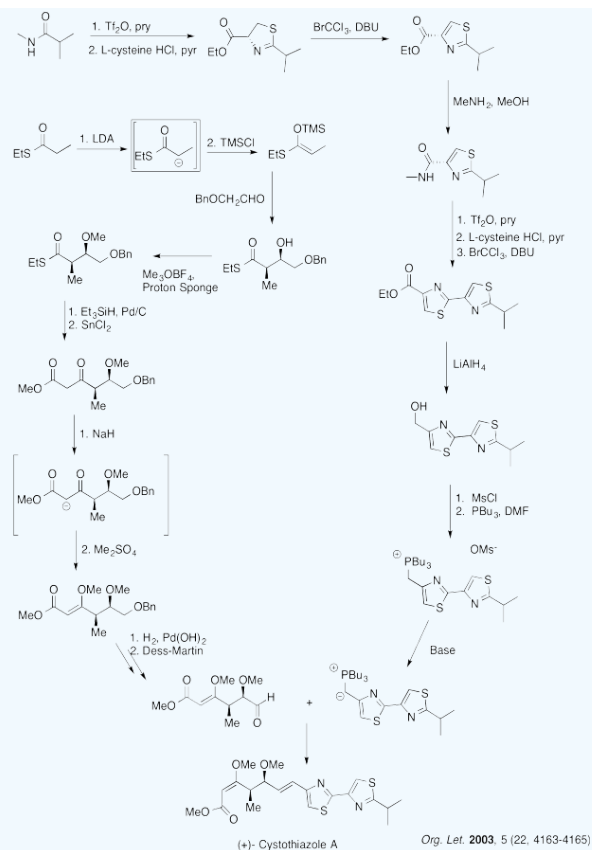
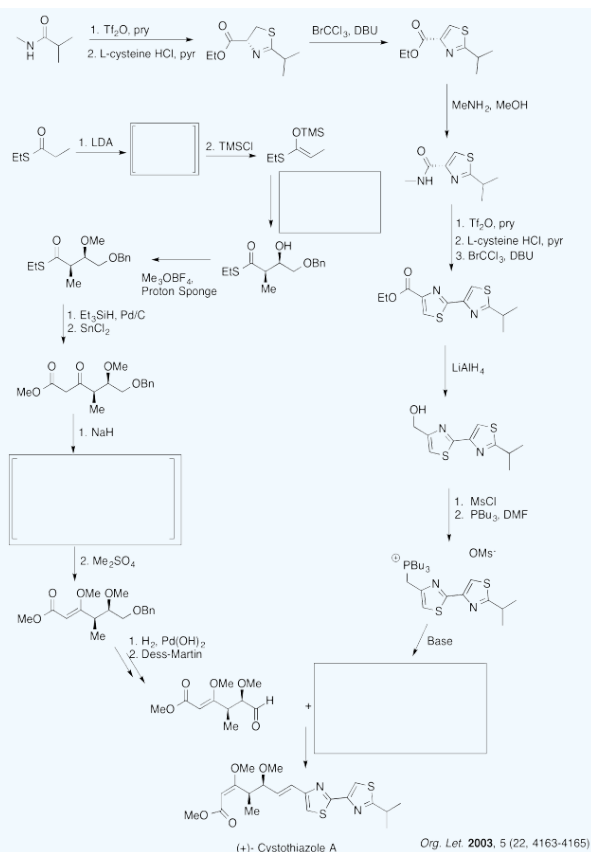


Exercise 3.18.5

Fill in the blanks in the following synthesis. Includes addition of nucleophiles to carbonyls (anionic nucleophiles, enolates, ylides).



Answer

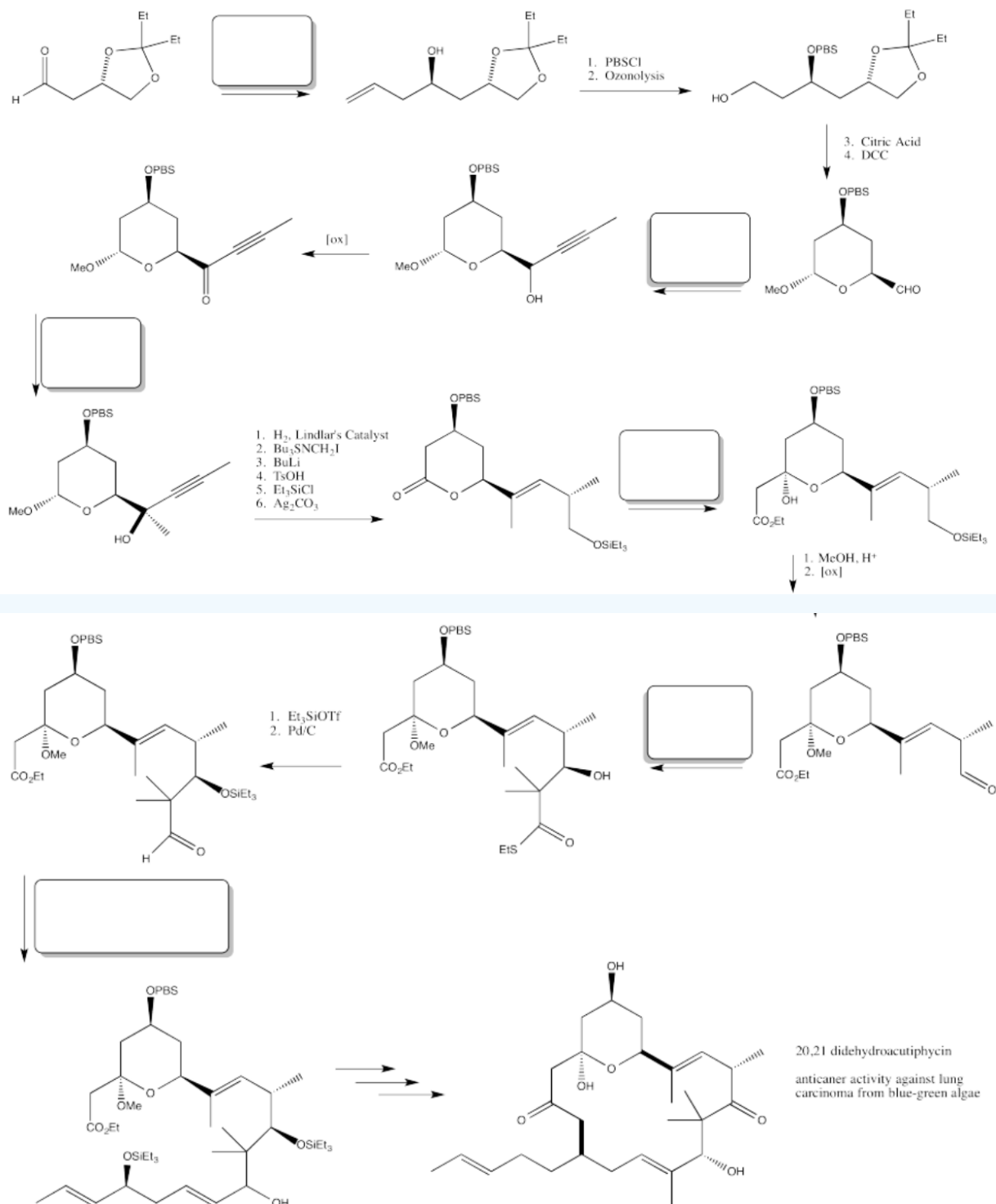


Exercise 3.18.6

Fill in the blanks in the following synthesis. Includes addition of nucleophiles to carbonyls (anionic nucleophiles, enolates).

Acutiphycin

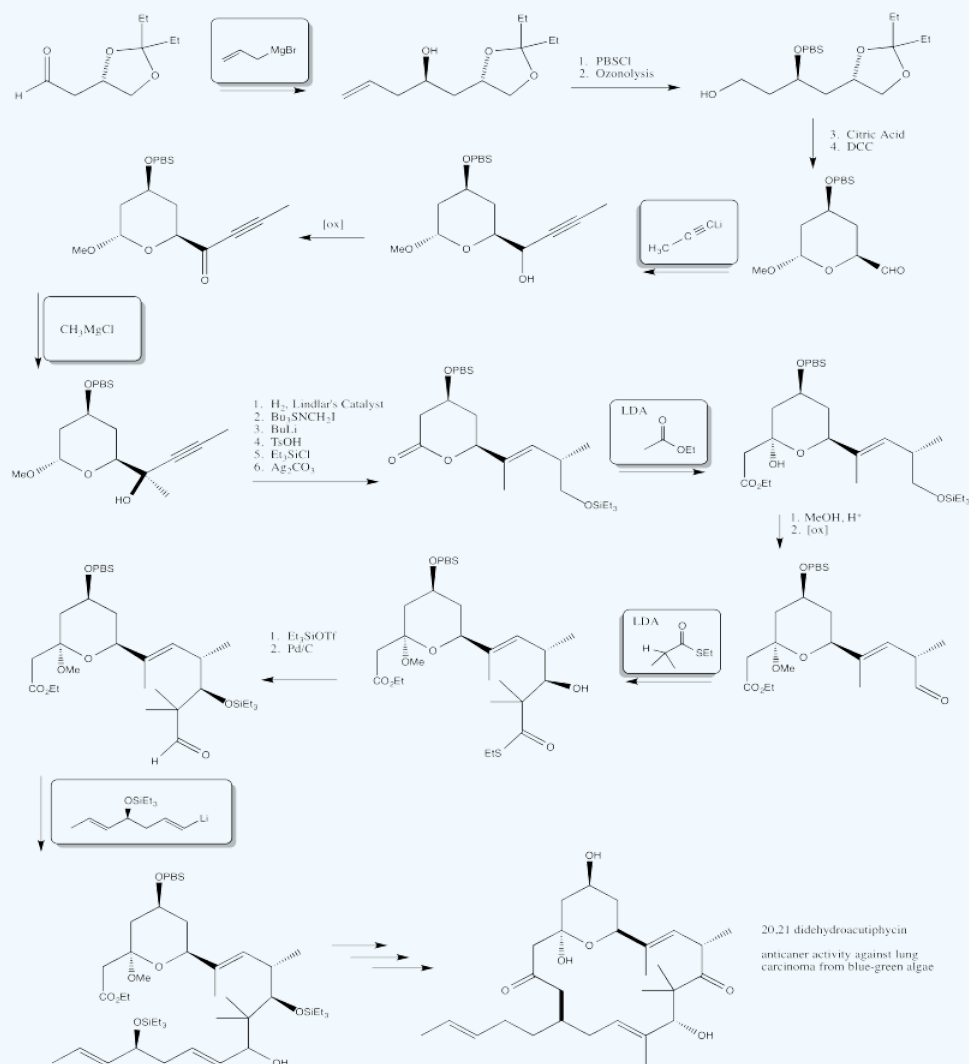
Smith, Chen, Nelsom, Reichert, Salvatore, *J. Am. Chem. Soc.* **1997**, *119*, 10935.



Answer

20,21 didihydroacutiphycin

Smith, Chen, Nelsom, Reichert, Salvatore, *J. Am. Chem. Soc.* **1997**, *119*, 10935.

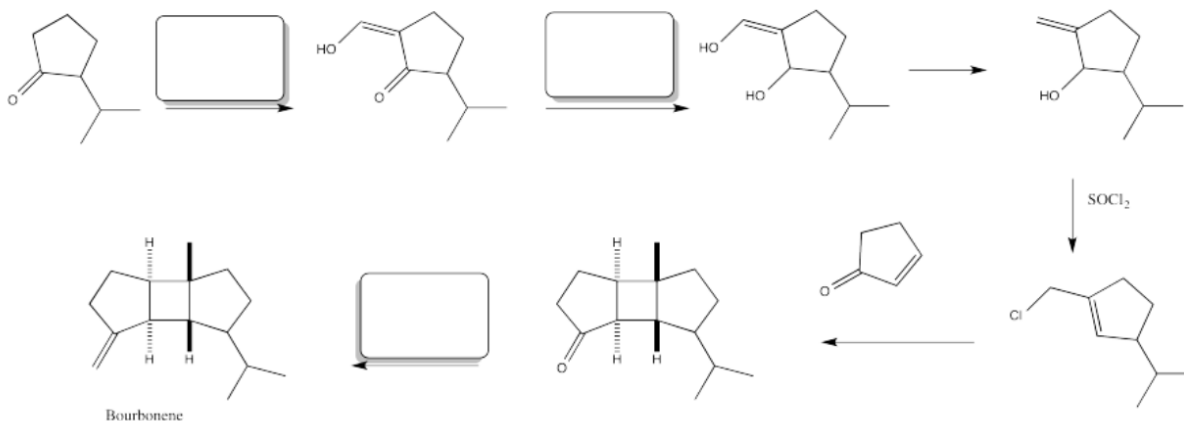


Exercise 3.18.7

Fill in the blanks in the following synthesis. Includes addition of nucleophiles to carbonyls (anionic nucleophiles, enolates, ylides).

Bourbonene

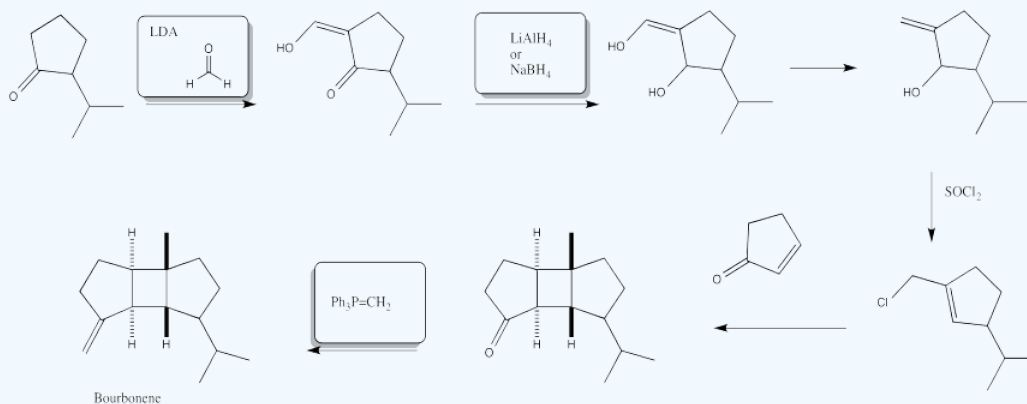
White and Gupta, *J. Am. Chem. Soc.* **1966**, 88, 5364-5365.



Answer

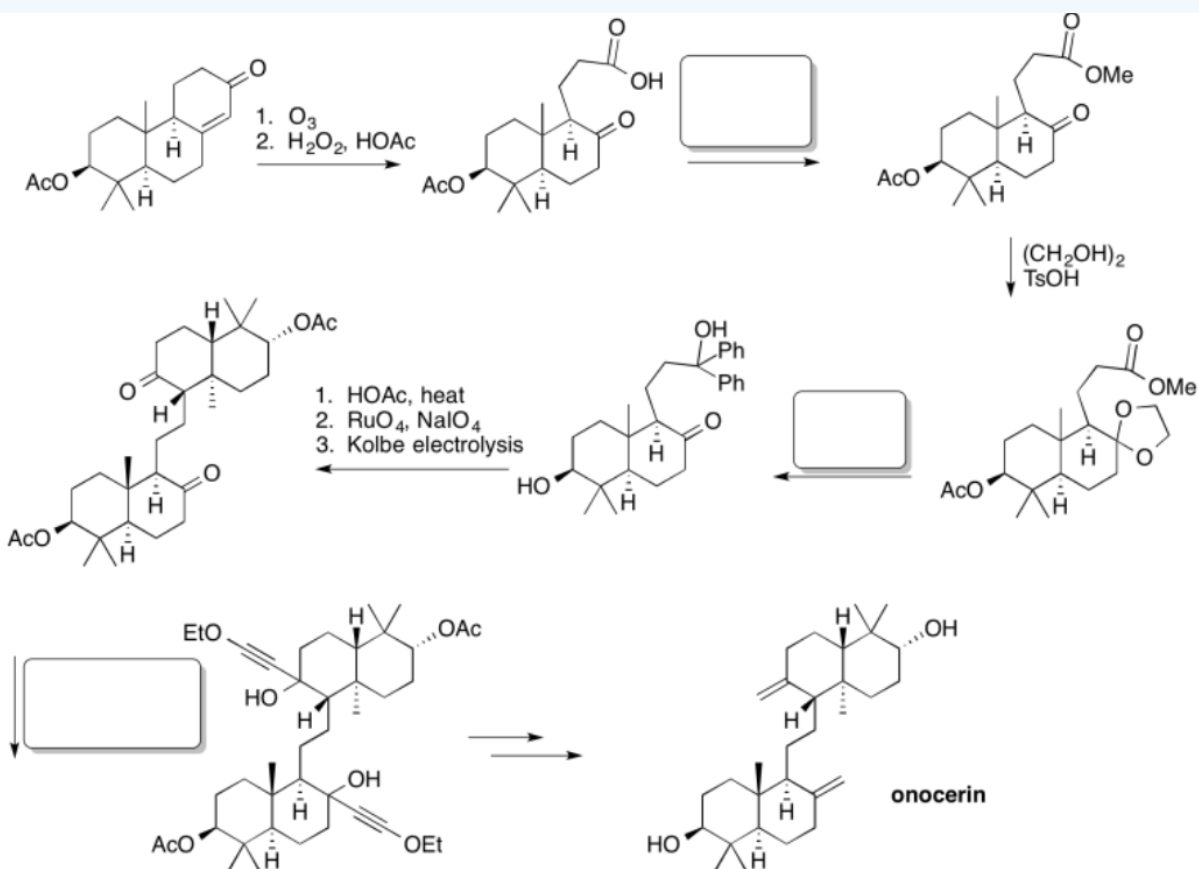
Bourbonene

White and Gupta, *J. Am. Chem. Soc.* **1966**, 88, 5364-5365.



Exercise 3.18.8

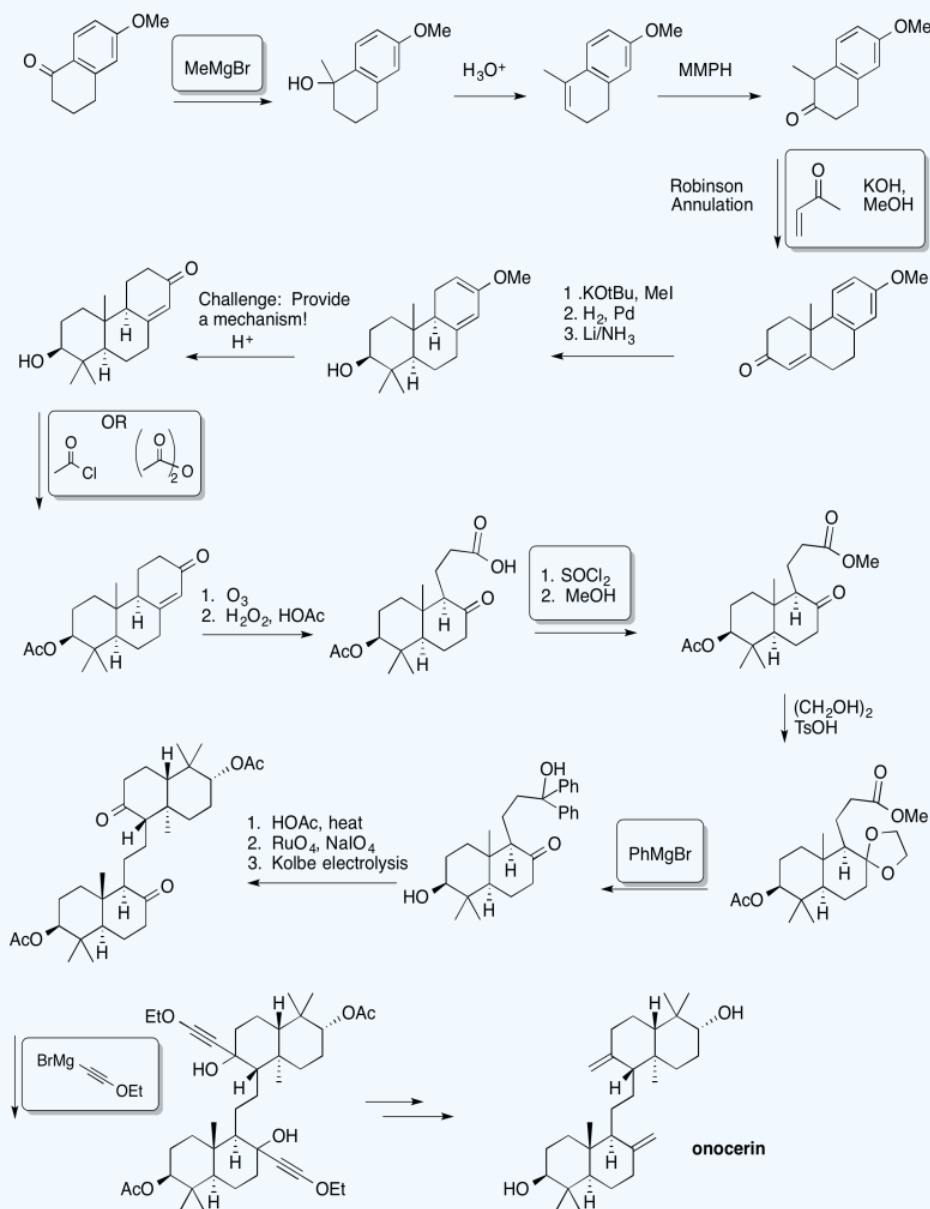
Fill in the blanks in the following synthesis. Includes addition of nucleophiles to carbonyls (anionic nucleophiles, enolates, conjugate additions, carboxyloid substitutions).



<https://chem.libretexts.org/@go/page/198189>

Onocerin

Stork, et. al., *J. Am. Chem. Soc.*, **1963**, *85*, 3419-3425.

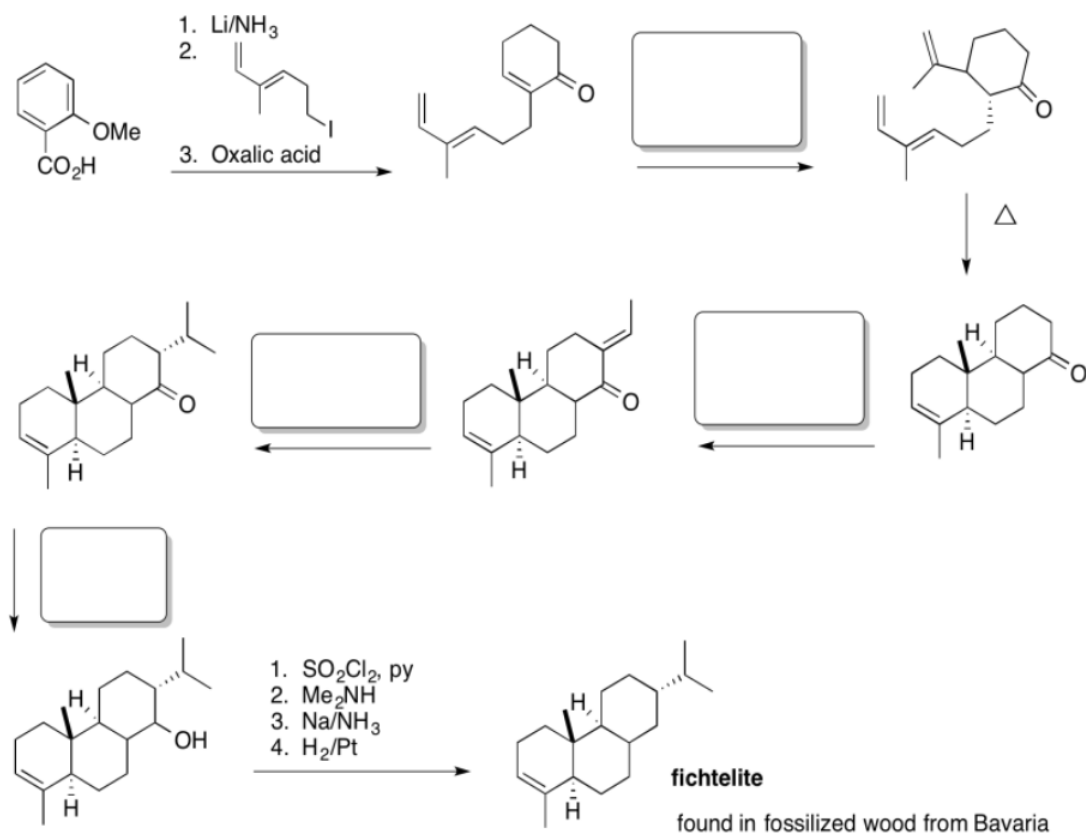


Exercise 3.18.9

Fill in the blanks in the following synthesis. Includes addition of nucleophiles to carbonyls (anionic nucleophiles, enolates, conjugate addition).

Fichtelite

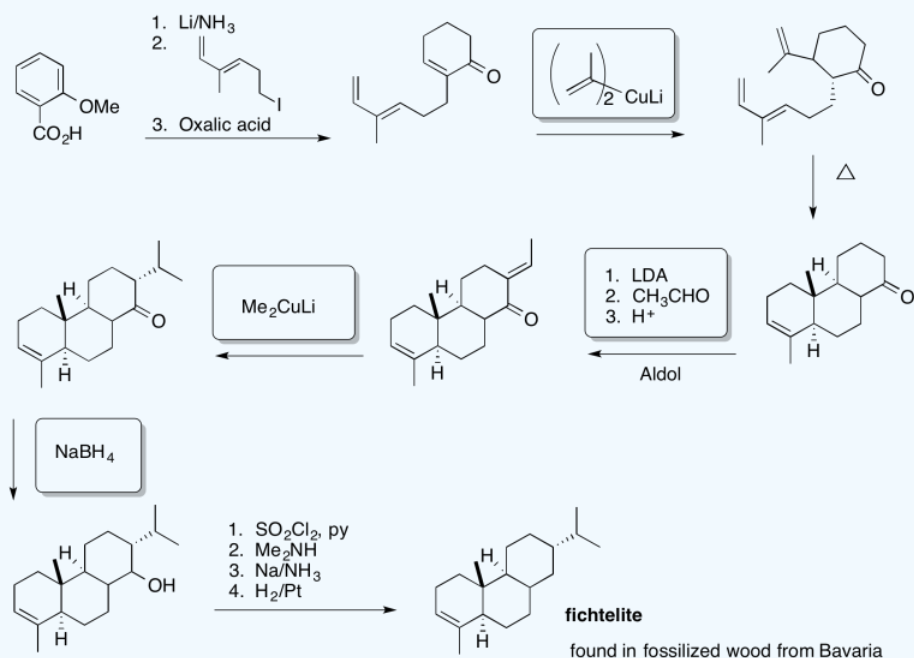
Taber and Saleh, *J. Am. Chem. Soc.*, **1980**, *102*, 5085-5088.



Answer

Fichtelite

Taber and Saleh, *J. Am. Chem. Soc.*, **1980**, *102*, 5085-5088.



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