

Organic Division

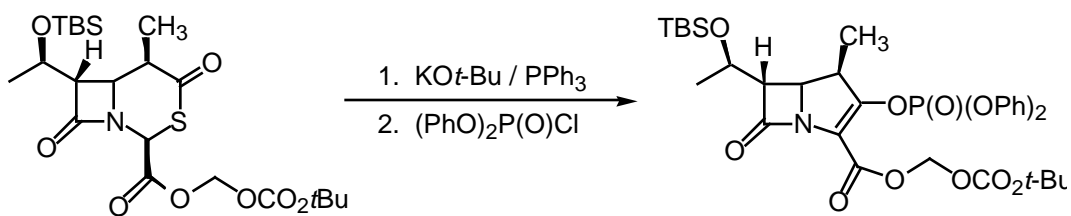
October Cumulative Examination

October 18, 1997

Mechanisms

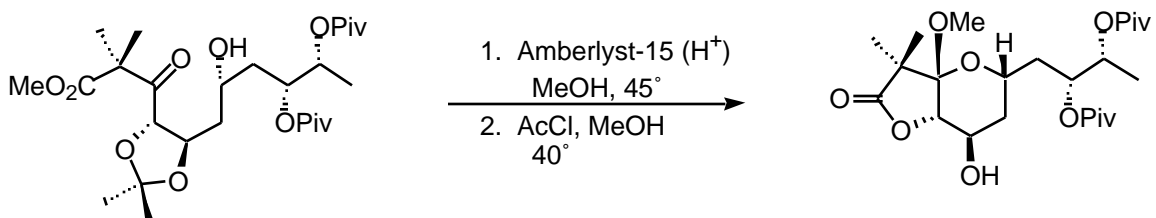
For each of the following transformations provide a reasonable mechanism. **Please be neat and concise.** Clearly indicate all intermediates and discuss the observed stereochemistry when appropriate. Each question is worth 16 points.

1.



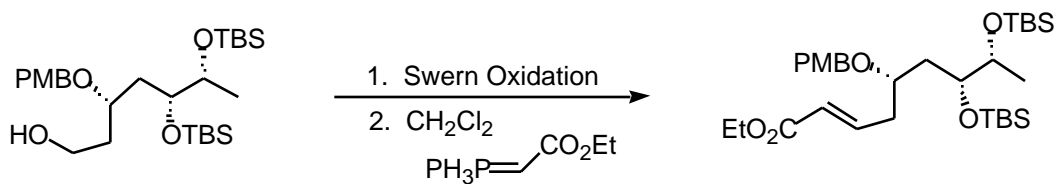
Sakurai, O. *et. al. J. Org. Chem.* **1996**, *61*, 7889.

2.



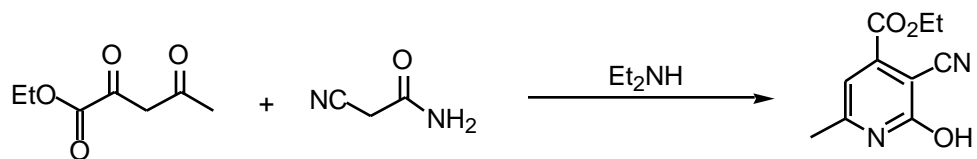
Hale, K.J. *et. al. Tetrahedron Lett.* **1995**, 36, 1359

3.



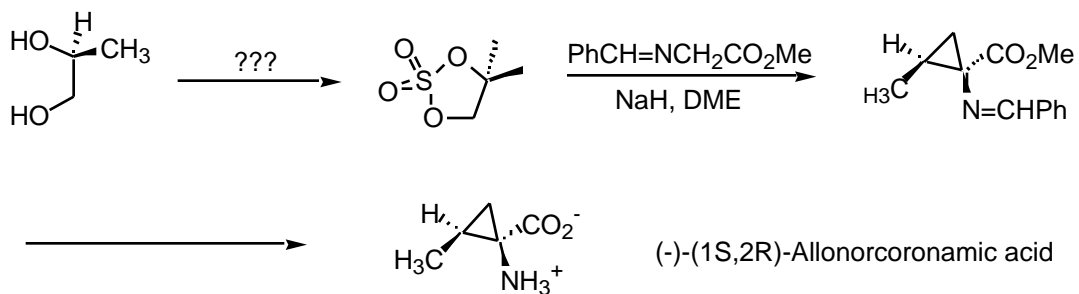
Hale, K.J. *et. al. Tetrahedron Lett.* **1995**, 36, 1359

4.



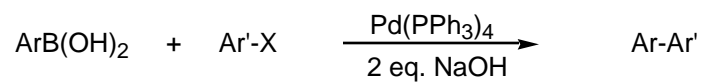
Pieper, P.A. *et. al. J. Am. Chem. Soc.* **1997**, *119*, 1809.

5. Suggest how you would do the first step (???) of this problem and provide the mechanism for the subsequent steps.



Tetrahedron Asymm. **1996**, *7*, 283.

6. At a recent seminar Professor Soderquist presented various new aspects of the Suzuki Cross-Coupling Reaction of Organoboranes. With the knowledge you gained during his presentation discuss the most likely mechanism for the synthesis of biaryls shown below. Remember this is a catalytic cycle.



Miyaura, N.; Suzuki, A. *Chem. Rev.* **1995**, 95, 2457.