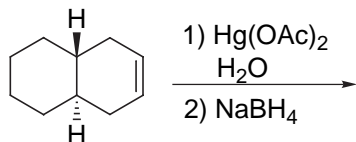
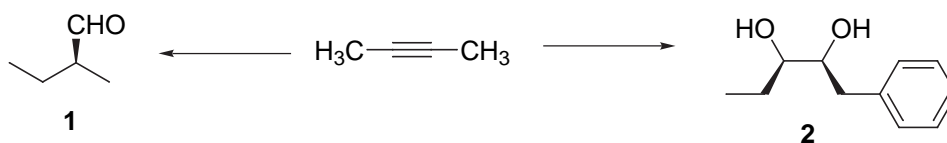


Chem 334, Professor Fox  
 Problem Set #2 Use additional paper  
 Due Wednesday February 26, 2003

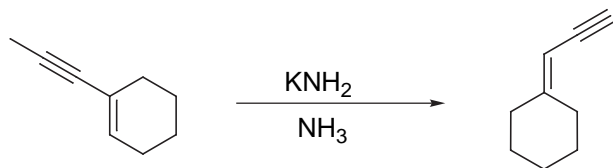
1. Predict the product, and explain the stereochemical outcome



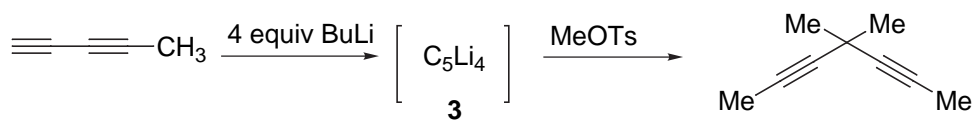
2. Provide multistep syntheses of **1** and **2**, using 2-butyne and any other starting materials



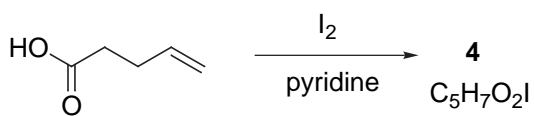
3. Provide a mechanism



4. Provide a mechanism, and propose a structure for intermediate **3**



5. Provide a structure and a mechanism for the formation of **4**



spectral data for **4**

$^1\text{H}$ NMR	$^{13}\text{C}$ NMR
4.10 (m, 1H)	176.5 (s)
3.39 (m, 2H)	78.6 (d)
2.60-2.05 (m, 4H)	29.0 (t)
	28.2 (t)
	8.0 (t)

IR:  $1770\text{ cm}^{-1}$