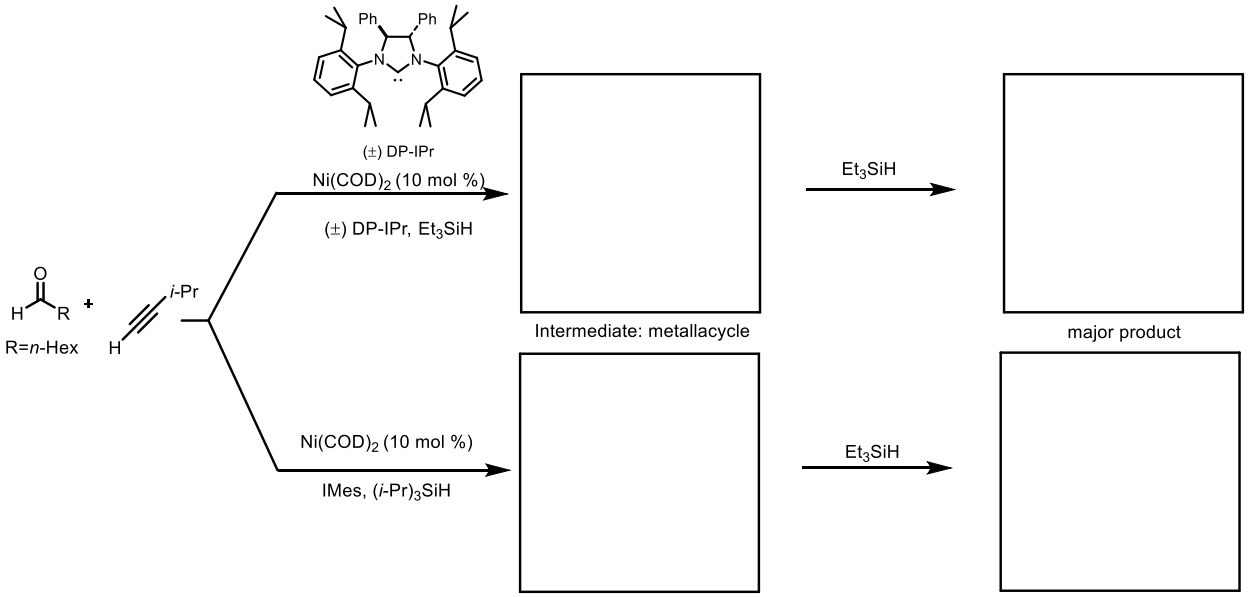
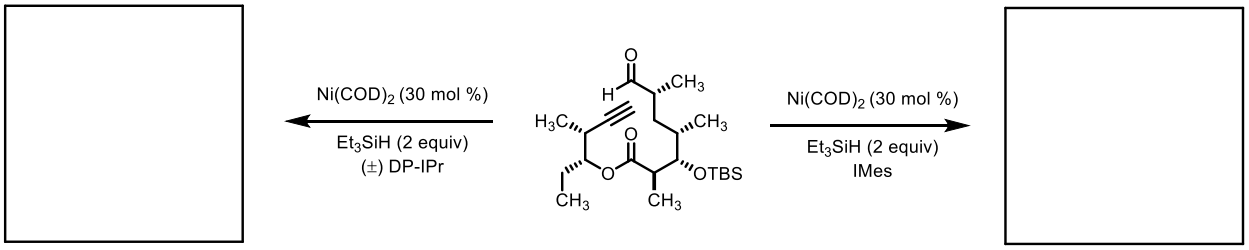
Engle Lab - Short Problem Set (03.29.2018)

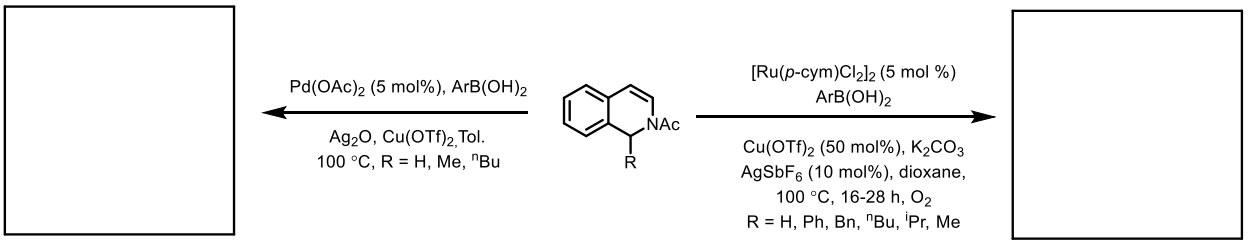
1. Ligand controlled regioselectivity & regiodivergence. (*J. Am. Chem. Soc.*, **2010**, *132*, 6304-6305, *Acc. Chem. Res.*, **2015**, *48*, 1736-1745).
    a. Predict the cyclic intermediate and the major product for the following reactions.



    b. Draw the structure of IMes ligand.
    c. Propose a synthesis pathway for (±) DP-IPr ligand.
    d. Based on your answer to part a, predict the major products under the following conditions.



2. Metal controlled site-selectivity. (*Chem. comm.*, **2014**, *50*, 7322-7325, *Org. Lett.*, **2017**, *19*, 262-265)
    a. Predict the major product.



    b. (Bonus: For each reaction in 2a, draw the intermediate that undergoes reductive elimination during the catalytic cycle).