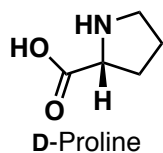


## Total Synthesis Cyclopiamine B

E. V. Mercado-Marin, P. Garcia-Reynaga, S. Romminger, E. F. Pimenta, D. K. Romney, M. W. Lodewyk, D. E. Williams, R. J. Andersen, S. J. Miller, D. J. Tantillo, R. G. S. Berlinck, R. Sarpong, *Nature* **2014**, *509*, 318–324.



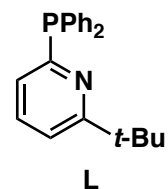
1–7



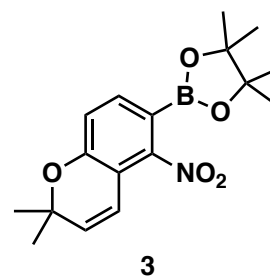
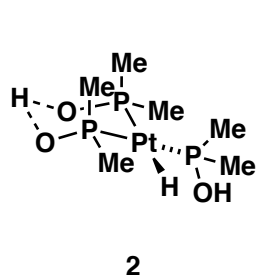
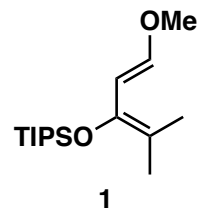
8–13



- 1)  $\text{Boc}_2\text{O}$ ,  $\text{NaHCO}_3$
- 2)  $\text{BF}_3 \cdot \text{THF}$
- 3)  $(\text{COCl})_2$ ,  $\text{DMSO}$ ,  $i\text{-Pr}_2\text{NEt}$
- 4)  $\text{N}_2\text{CHPO}(\text{OMe})_2$ ,  $\text{K}_2\text{CO}_3$
- 5)  $\text{HCl}$
- 6) 2-cyanoacetylchloride,  $\text{NEt}_3$
- 7)  $[\text{Ru}(\text{Cp})(\text{MeCN})\text{L}_2]\text{PF}_6$ ,  $\text{H}_2\text{O}$ ,  $70^\circ\text{C}$



- 8) **1**,  $\text{SnCl}_4$
- 9)  $\text{I}_2$ ,  $\text{py}$ ,  $\text{DMAP}$
- 10) **2**,  $\text{EtOH}$ ,  $\text{H}_2\text{O}$
- 11)  $\text{PIFA}$ ,  $\text{MeOH}$
- 12) **3**,  $\text{dppfPdCl}_2$ ,  $\text{K}_3\text{PO}_4$
- 13)  $\text{Zn}$ ,  $\text{NH}_4\text{Cl}$ ,  $\text{HCO}_2\text{NH}_4$ ,  $p\text{-TsOH}$



Step 4: Please name the reaction. How would you prepare this reagent?

Step 7: Hint: Two reactions take place.

Step 10: What is the name of the catalyst? What is the mechanism?

