Enantioselective Total Synthesis of (+)-Dihydro-β-erythroidine

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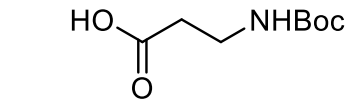


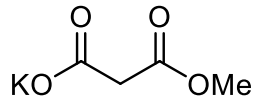
1-3

A

4-10

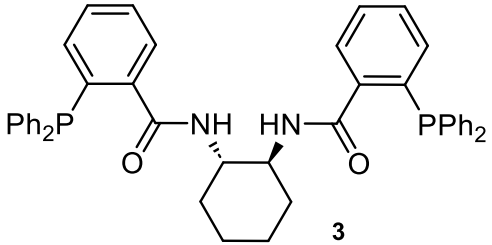
B

1. CDI, *then* **1**, Et_3N, $MgCl_2$
2. TsN_3, Et_3N
3. $Rh_2(OAc)_4$, 90 ºC



1

4. $[PdCl(allyl)]_2$, K_2CO_3, **2**, **3**
5. OsO_4, NMO, *then* $NaIO_4$
6. $CH(OMe)_3$, CSA
7. $MePPh_3Br$, KO*t*Bu
8. **4**, HCl (aq.)
9. Me_3OBF_4, Proton-sponge
10. Grubbs II, 80 °C



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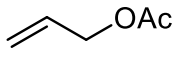

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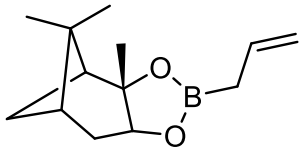

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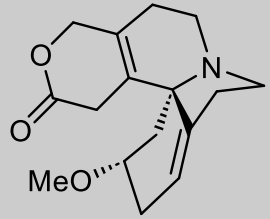
2. Name of reaction?

4. Name of reaction?

5. Name of reaction?

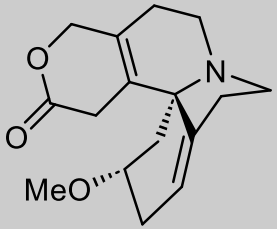
9. Structure of Proton-sponge?

10. Name of reaction?



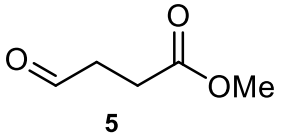
(+)-Dihydro-β-erythroidine

11-17



(+)-Dihydro-β-erythroidine

11. TFA, *then* **5**, $NaBH_3CN$, AcOH
12. KO*t*Bu, 95 °C
13. NaH, Tf_2O
14. DIBAL-H (3 equiv), -78 to 0 °C
15. TBSCl, imidazole
16. **6**, $[PdCl(allyl)]_2$, S-Phos, mesitylene, 110 °C
17. HCl, $MeOH/H_2O$, 85 °C



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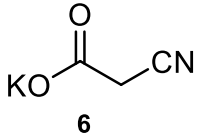

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10. Structure of Grubbs II?

12. Name of reaction?

16. Structure of S-Phos?