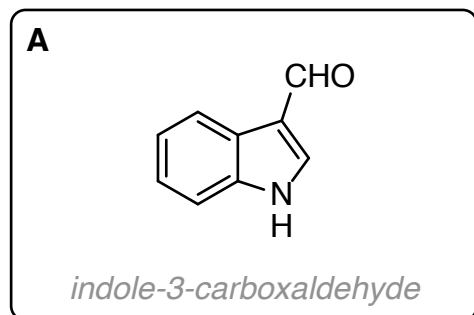
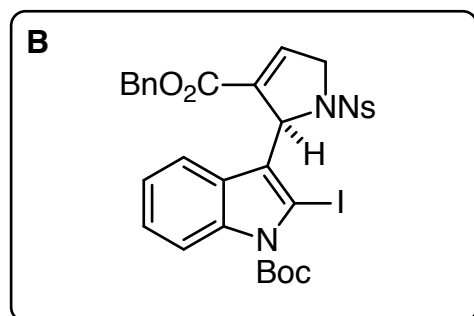


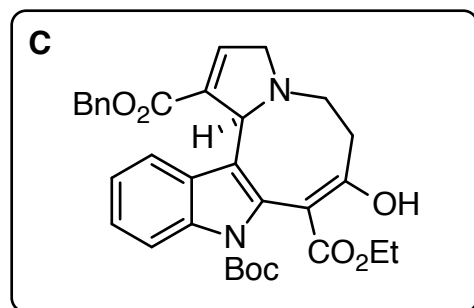
Catalytic Asymmetric Total Synthesis of (-)-Actinophyllic Acid
 L. Cai, K. Zhang, and O. Kwon* - *J. Am. Chem. Soc.* **2016**, *138*, 3298–3301.



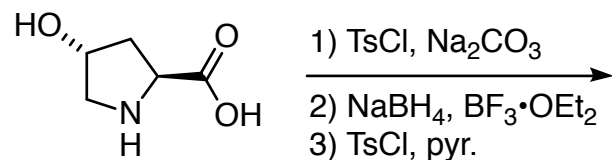
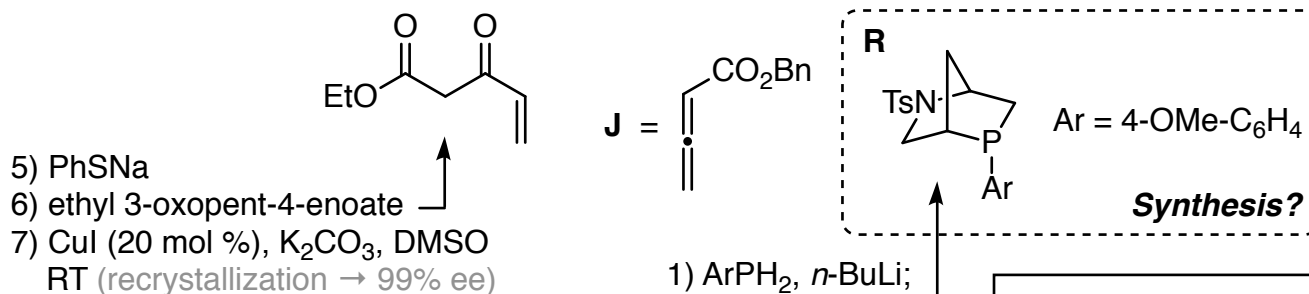
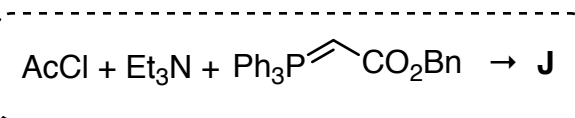
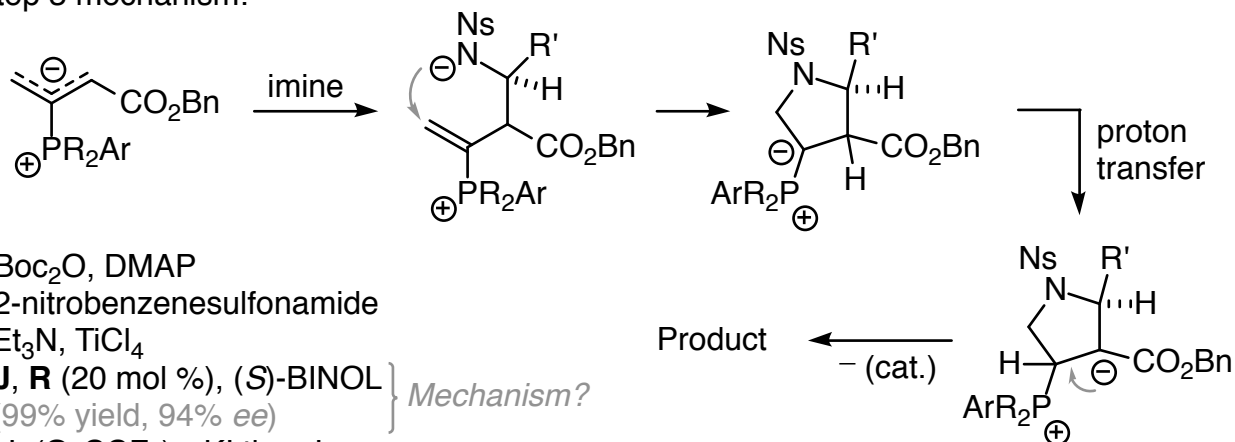
1-4



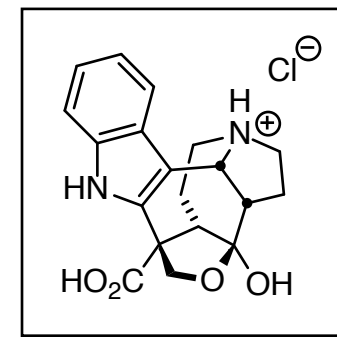
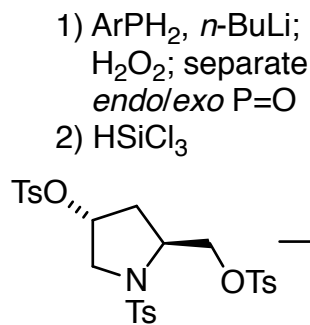
5-7



• Step 3 mechanism:

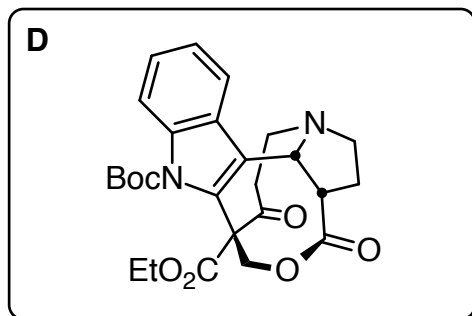


4-hydroxy-L-proline



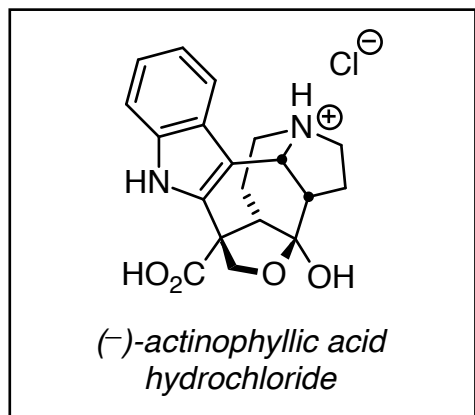
8-10

- 8) Pd/C, MeOH, 180 psi H₂
- 9) chloriodomethane, K₂CO₃
- 10) NaI (40 equiv.), K₂CO₃
DMF, 75 °C (35–48%)



11-14

- 11) SmI₂, *t*-BuOH (10 equiv.)
THF (95%) *Reaction Name?* (*Pinacol coupling*)
- 12) thiophosgene, DMAP
- 13) *n*-Bu₃SnH, AIBN, 90 °C
- 14) aq. 4M HCl, μw, 100 °C



Step 11 Note

< 10 equiv. of *t*-BuOH → significant byproduct:

