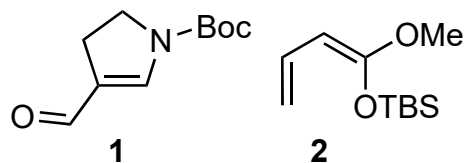


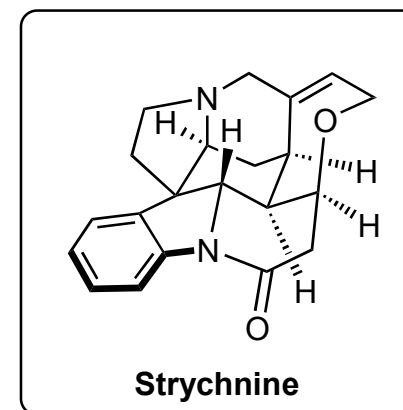
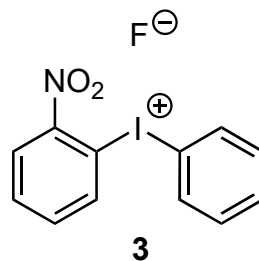
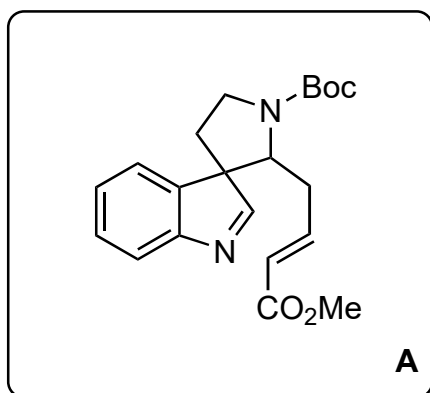
Total Synthesis of Strychnine

G. S. Lee, G. Namkoong, J. Park, D. Y.-K. Chen, Chem. - Eur. J. **2017**, 23, 16189–16193.



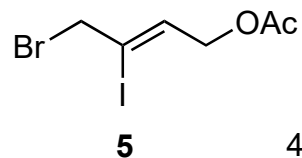
- 1) **1**, **2**, Zn(OTf)₂, CH₂Cl₂, 23 °C
2) **3**, THF/MeCN, – 78 °C to 23 °C
3) TiCl₃ in HCl (excess), NH₄OAc in acetone, 23 °C

- 1) *Hint: Think outside the box, main product unbranched*
Name 3 known dienes
2) Please provide a mechanism. Who discovered this chemistry?
3) *Hint: Most stable oxidation state of Ti?*
multiple transformations





- 4) DBU, toluene, 23 °C
- 5) TFA, 23 °C
- 6) **5**, *i*Pr₂NEt, MeCN
- 7) Pd(OAc)₂, PPh₃, NEt₃, 70 °C
- 8) DIBAL-H (6.0 equiv), CH₂Cl₂, -78 °C
then AcOH, NaBH₃CN (5.0 equiv)
- 9) DIBAL-H (4.6 equiv), CH₂Cl₂, -78 °C
- 10) Malonic acid, Ac₂O, NaOAc, AcOH, 110 °C



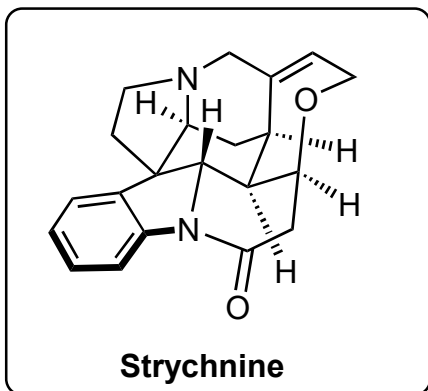
4) Structure of DBU?

7) What is the reactive palladium species? How is it generated?
Name alternatives

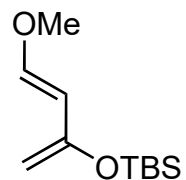
8) *Hint: Methyl ester lives*

9) *Hint: Mind the reaction temperature*

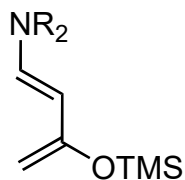
10) Structure of Malonic acid



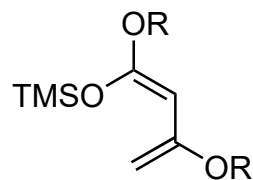
1) Danishefsky Diene



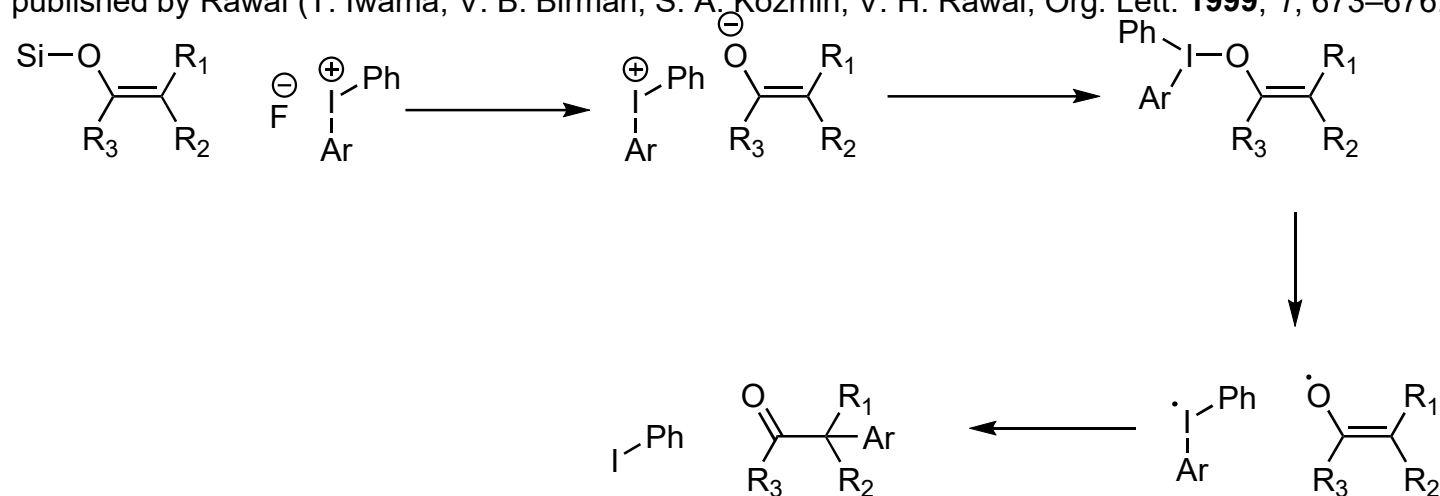
Rawals Diene



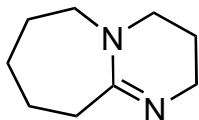
Brassard Diene



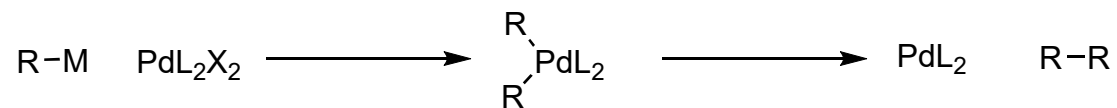
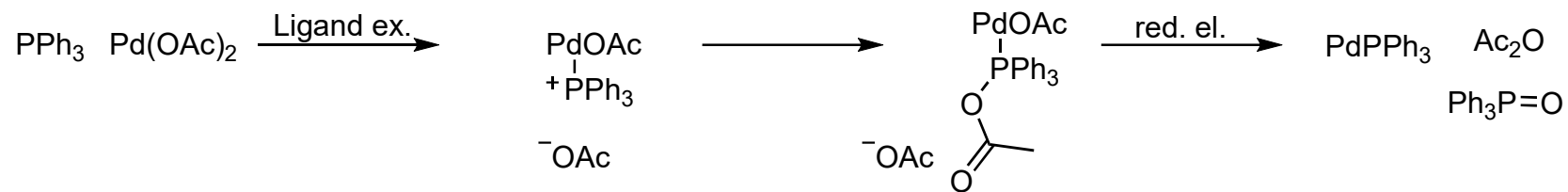
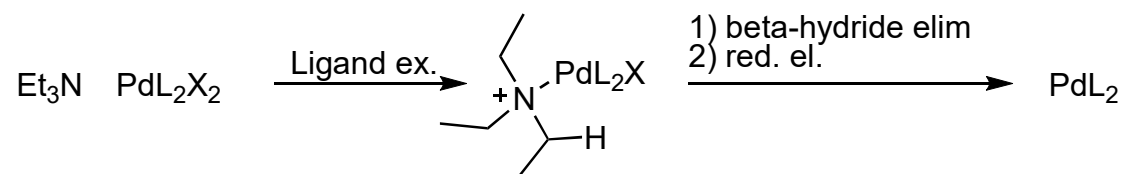
2) Developed by Koser (K. Chen, G. F. Koser, J. Org. Chem. **1991**, 56, 5764–5767.), reaction sequence for the formation of Indols published by Rawal (T. Iwama, V. B. Birman, S. A. Kozmin, V. H. Rawal, Org. Lett. **1999**, 1, 673–676.)



4) Structure and Name of DBU? 1,8-Diazabicyclo[5.4.0]undec-7-ene



7) *In situ* generation of Pd(0)



10) Structure of Malonic acid

