



BHARATHIDASAN UNIVERSITY

Tiruchirappalli-620024

Tamil Nadu, India

Programme: M.Sc. Chemistry

**Course title: Retrosynthesis, Natural Products and
Biomolecules**

Course Code: CHE641CC

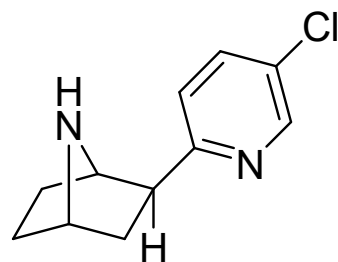
UNIT-IV

Natural Products Chemistry-Part C: Alkaloids

Dr. K. Srinivasan

Professor, School of Chemistry

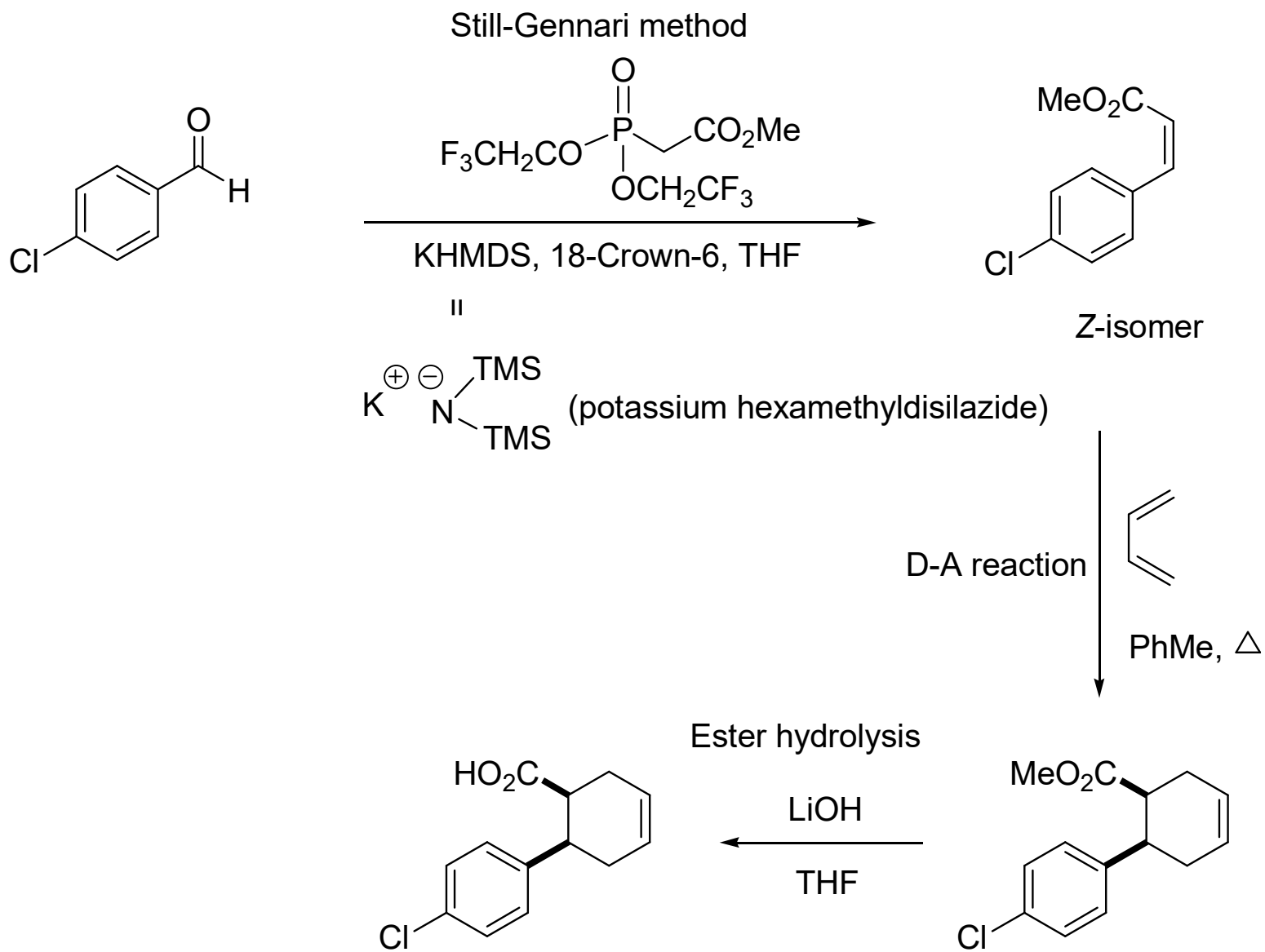
Total Synthesis of Epibatidine

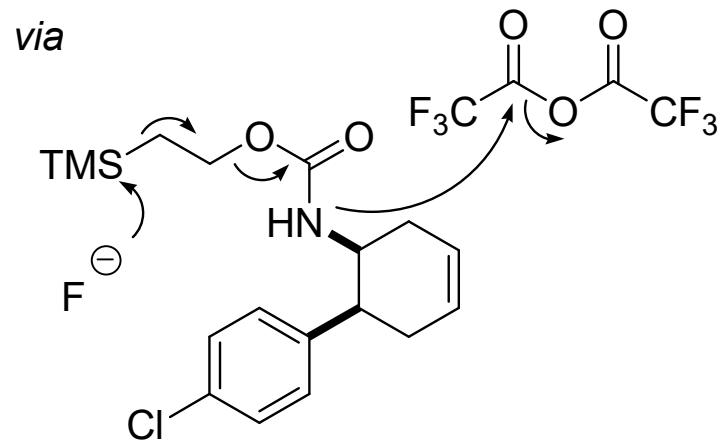
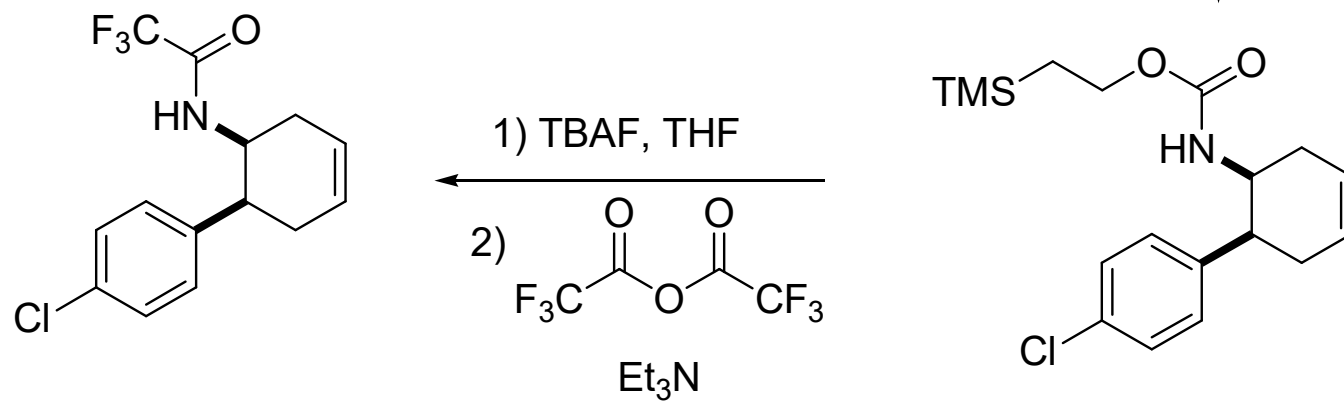
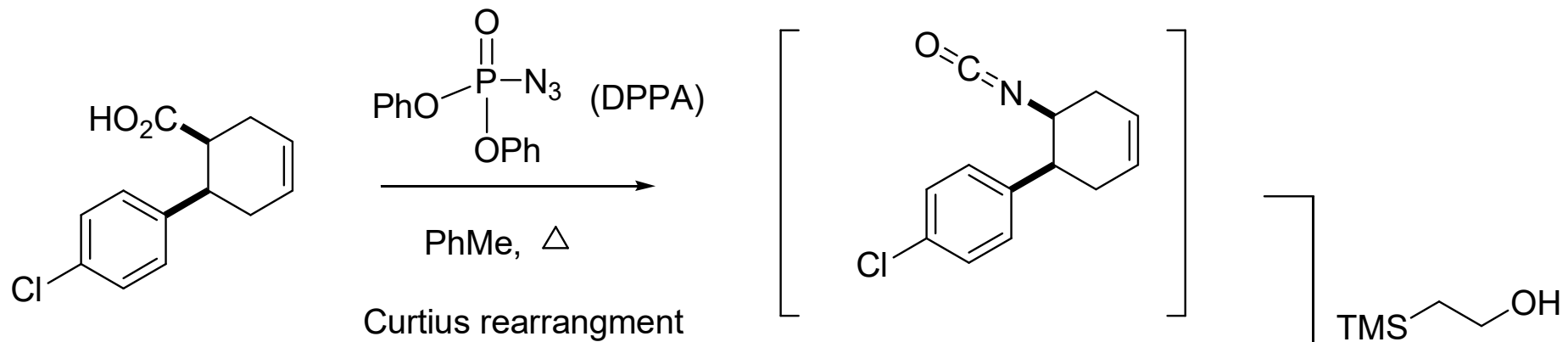


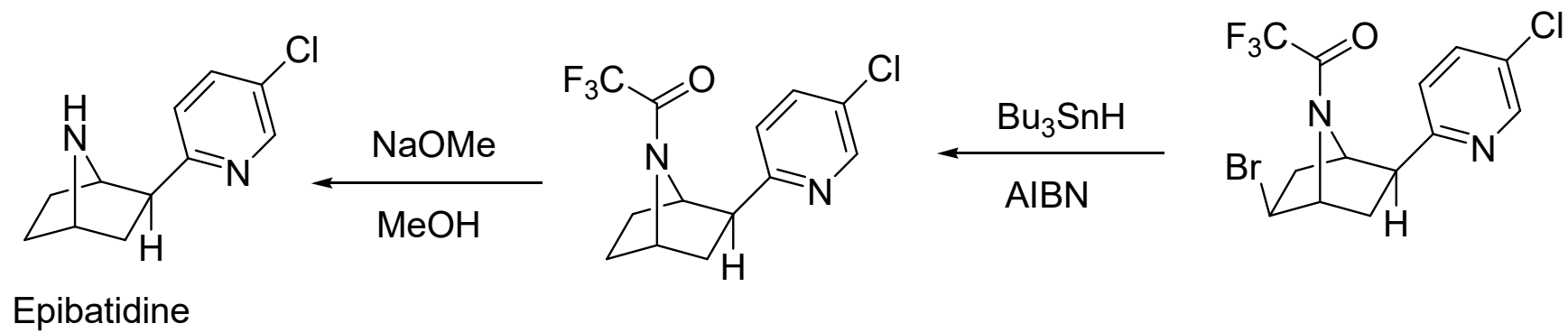
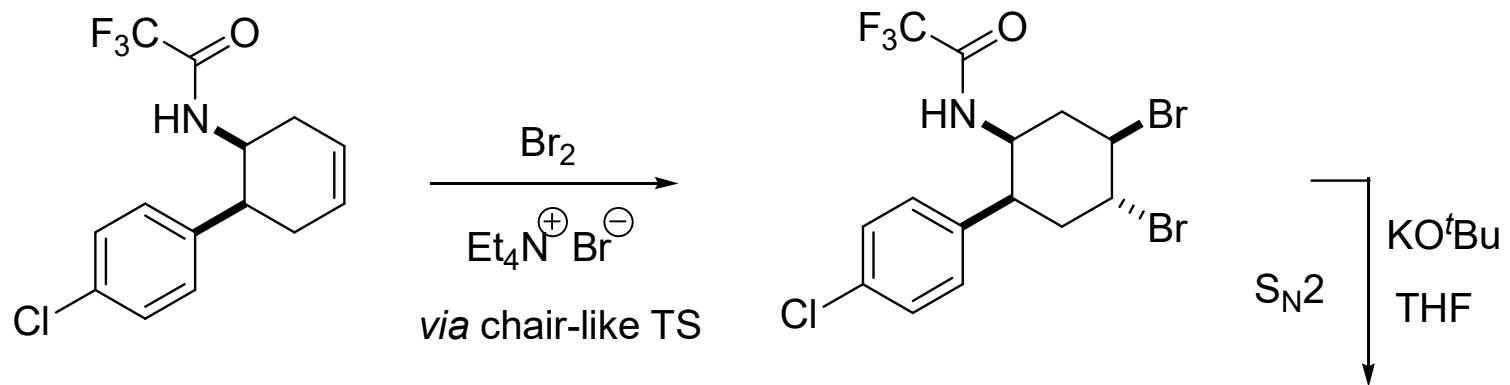
Epibatidine



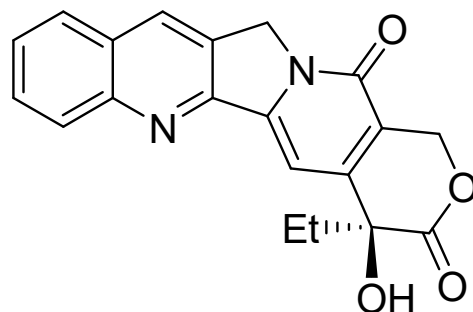
- Isolated from the skin of *Epipedobates tricolor* (a South-American frog).
- 200-500 times more powerful analgesic than morphine.
- A total synthesis was reported by E J Corey in JOC (1993, 58, 5600).







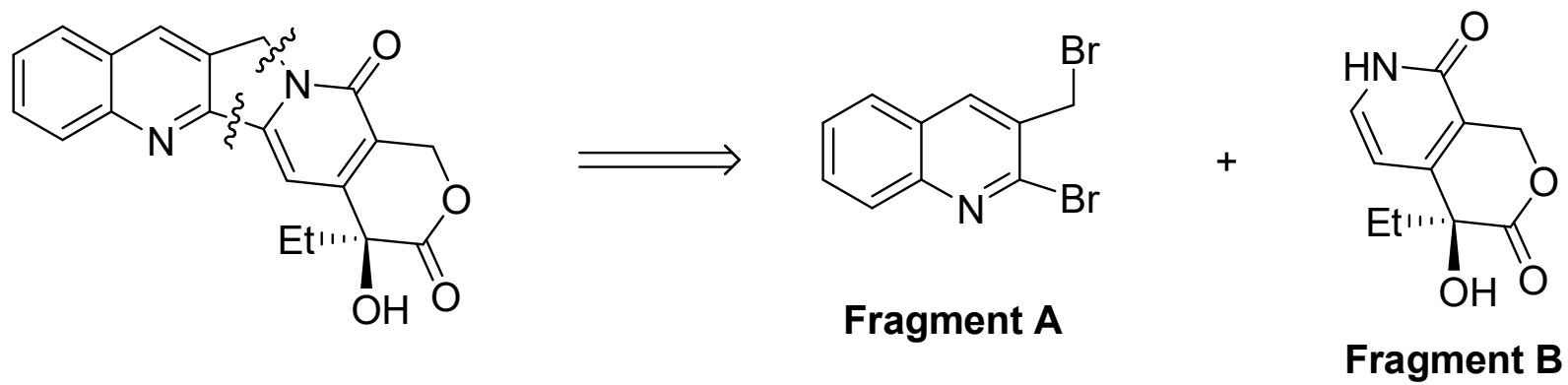
Asymmetric Total Synthesis of (*S*)-Camptothecin



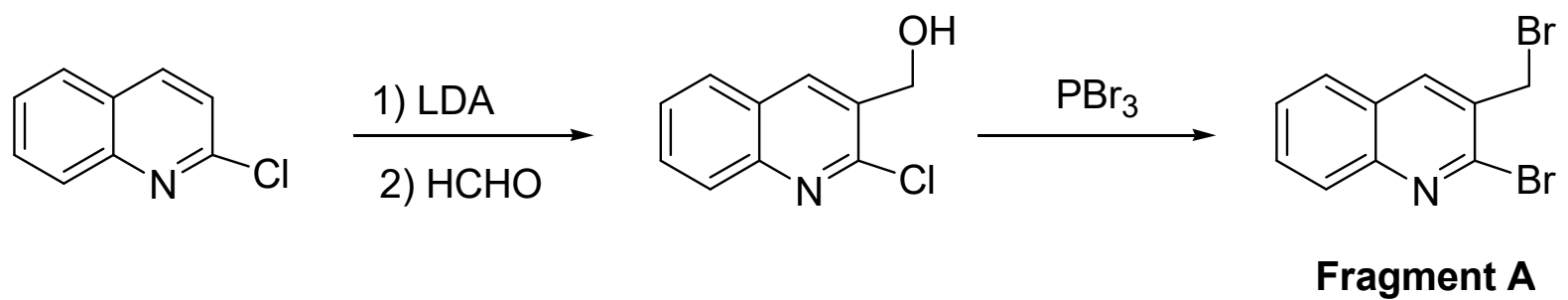
Camptothecin

- Anticancer alkaloid
- Isolated from *Camptotheca acuminata*
- This total synthesis was reported by D. L. Comins in JACS (1992, 114, 10971)

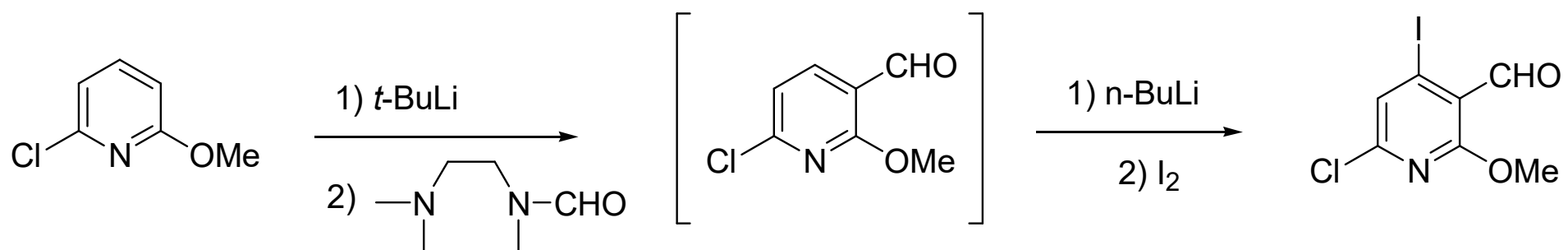
Retro:

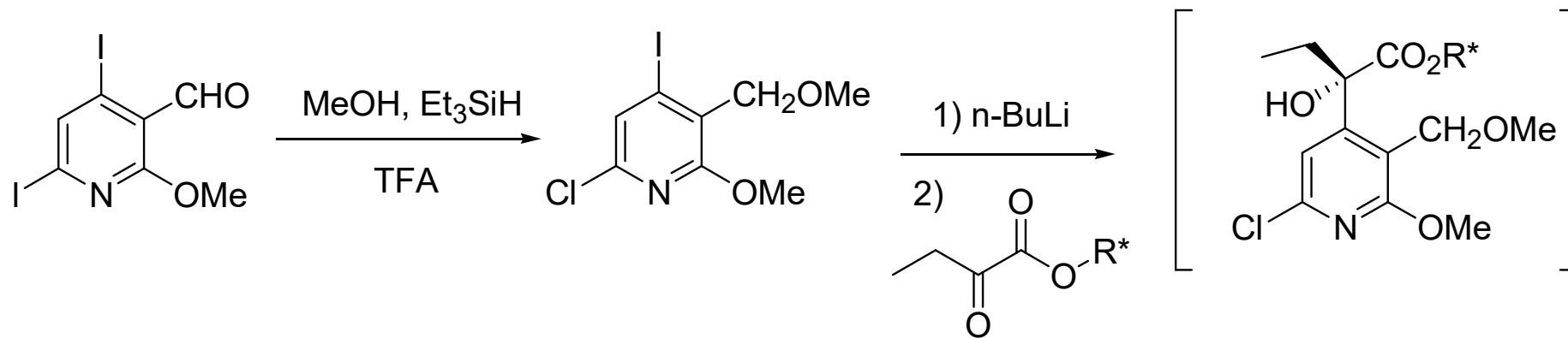


Synthesis of fragment A

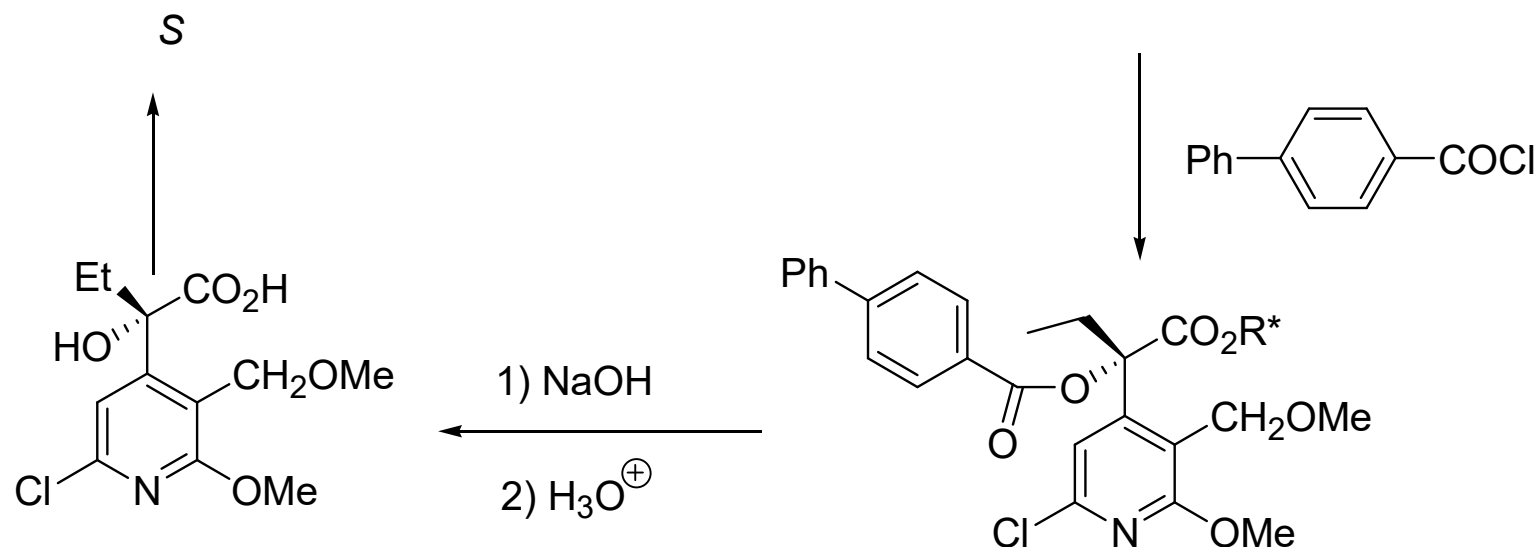


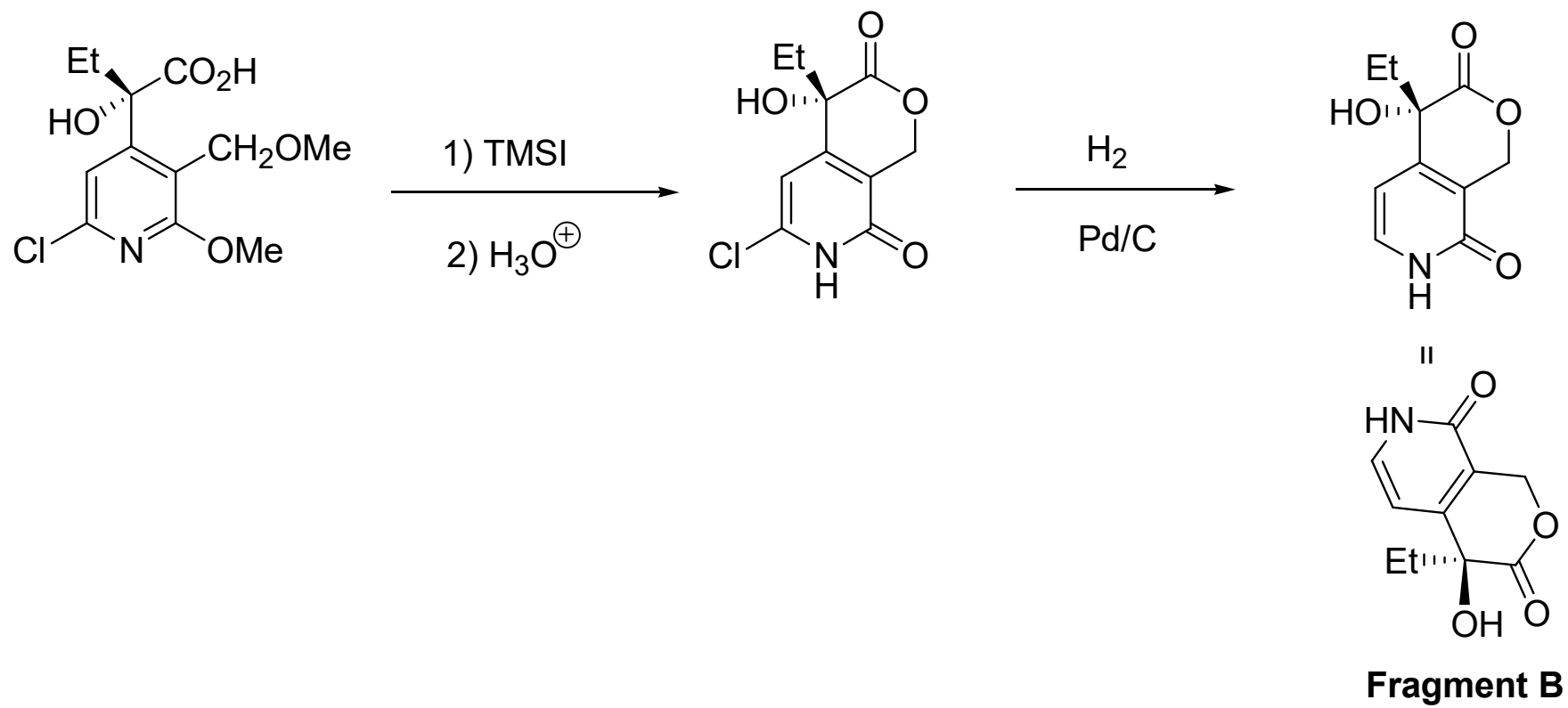
Synthesis of fragment B



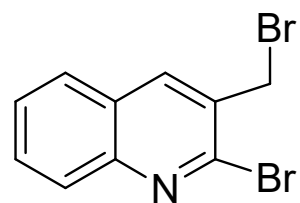


$\text{R}^* = (-)\text{-8-phenylmenthyl (a chiral auxilliary)}$

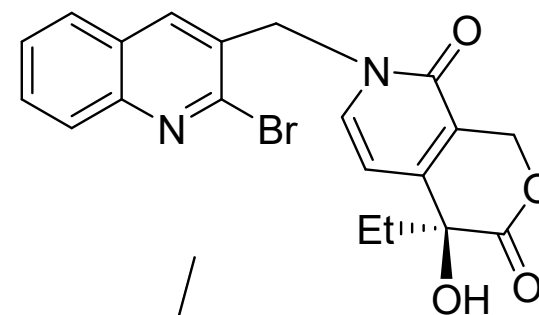
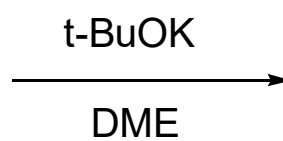
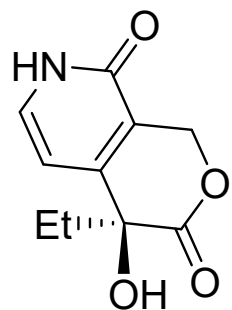




Combination of the two fragments:



+



Heck reaction

Pd(OAc)₂
KOAc
DMF

