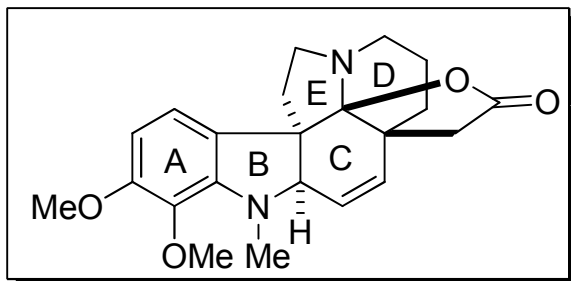


The slide features a decorative arrangement of six circles. Three circles are solid light purple, and three are hollow with a light purple outline. They are arranged in two rows of three. The top row circles are positioned behind the title text. The bottom row circles are positioned below the title, with the middle one containing the author and date information.

Dipolar Cycloadditions in Alkaloid Synthesis

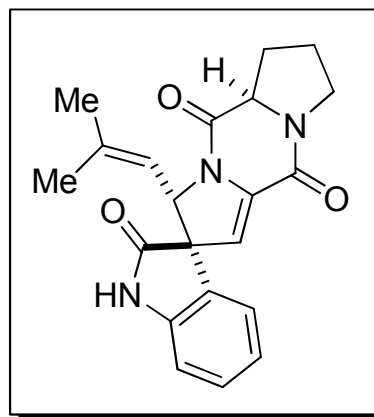
Mariam Shamszad
Literature Group Meeting
February 25, 2009

Selected Alkaloids



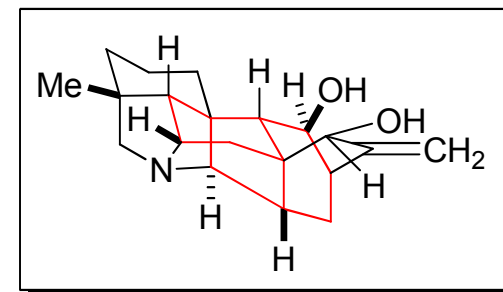
Aspidophytine

- Insecticidal properties
- Padwa and coworkers use cyclization/dipolarcycloaddition cascade to access pentacyclic core



(-)-Spirotryprostatin B

- Inhibits cell growth of various leukemia cell lines
- Williams and coworkers use dipolarcycloaddition to access the spirooxindole core

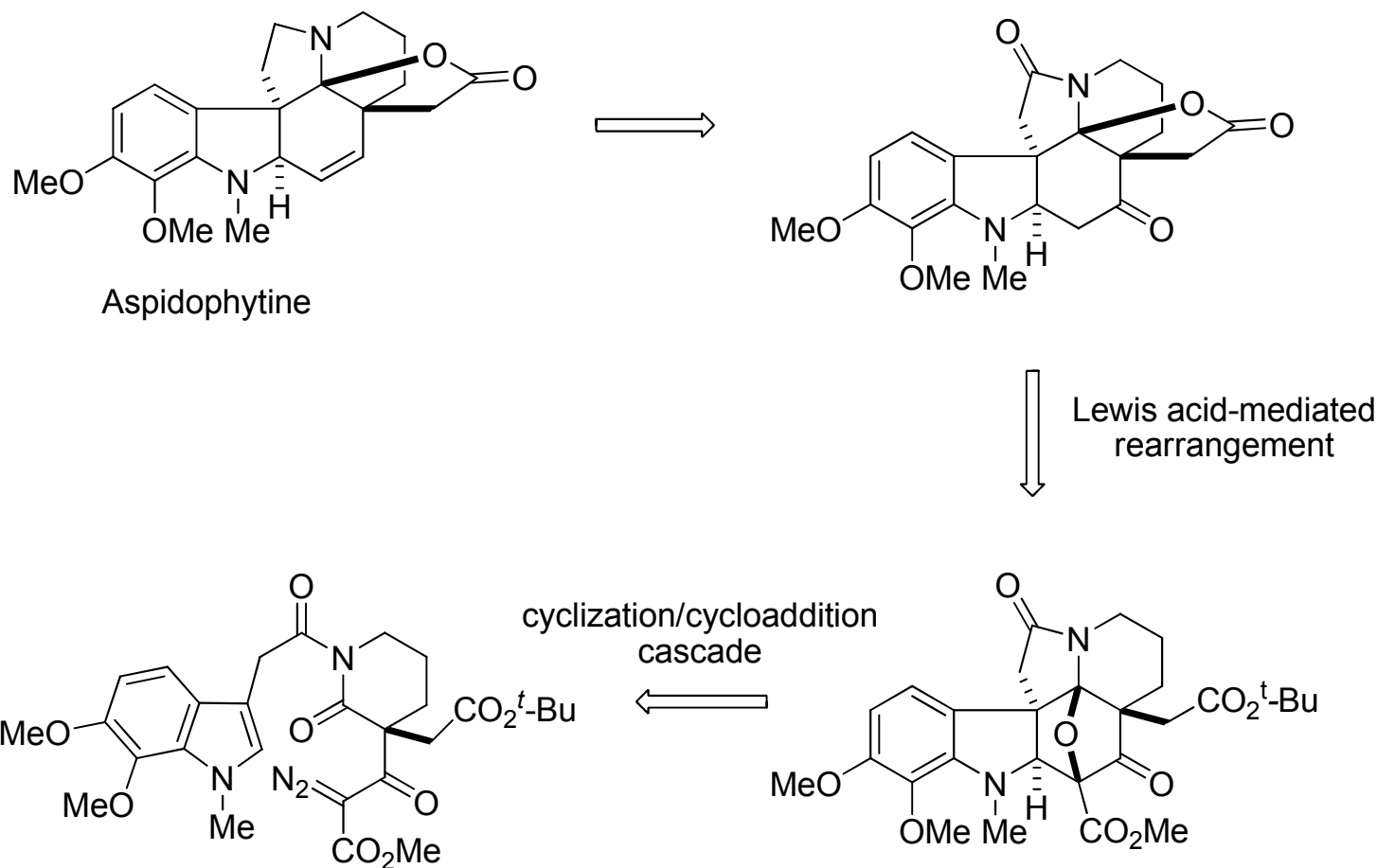


Kobusine

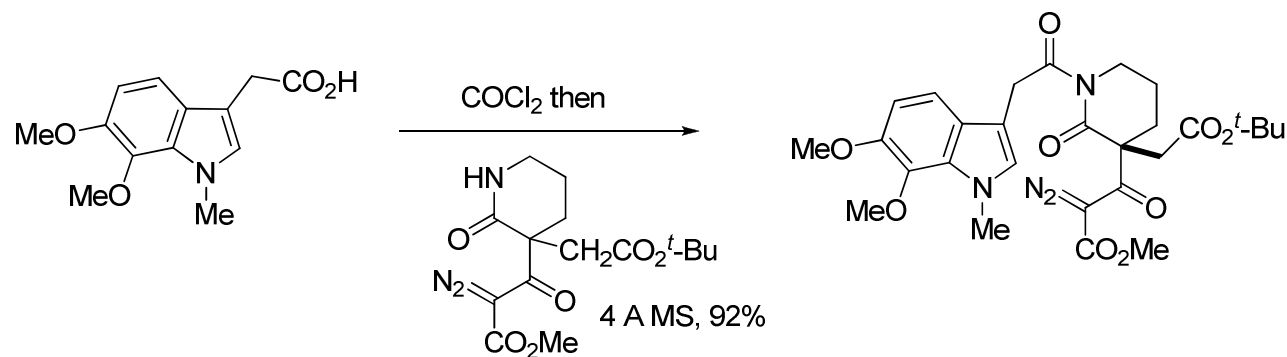
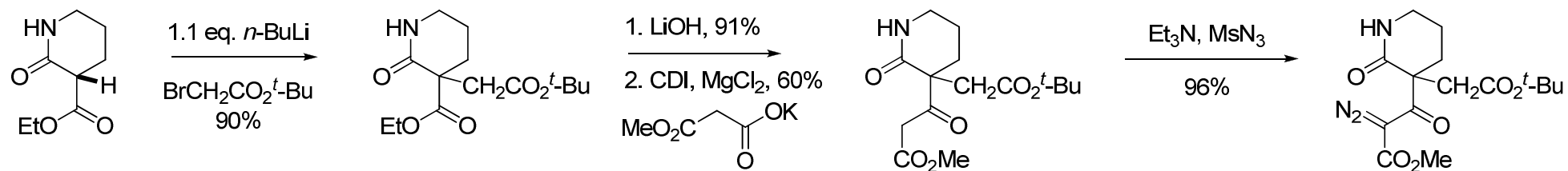
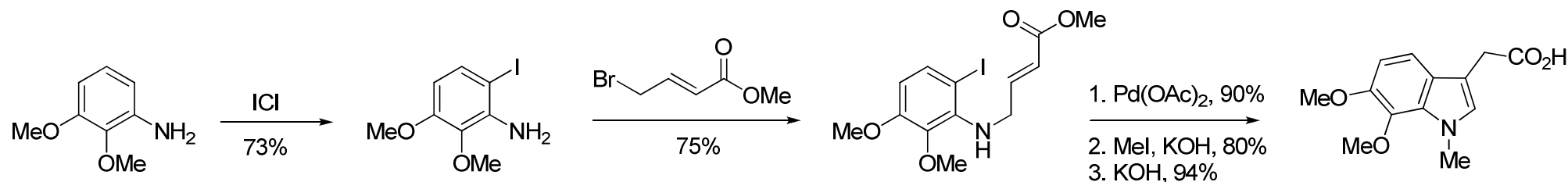
- Exhibits potent vasodilating activity in vivo
- Partial synthesis achieved by Gin and coworkers utilizing dipolarcycloaddition to access hetisine skeleton

(±)-Aspidophytine: Retrosynthesis (Padwa)

Showcases their Rh (II) cyclization/dipolarcycloaddition cascade methodology

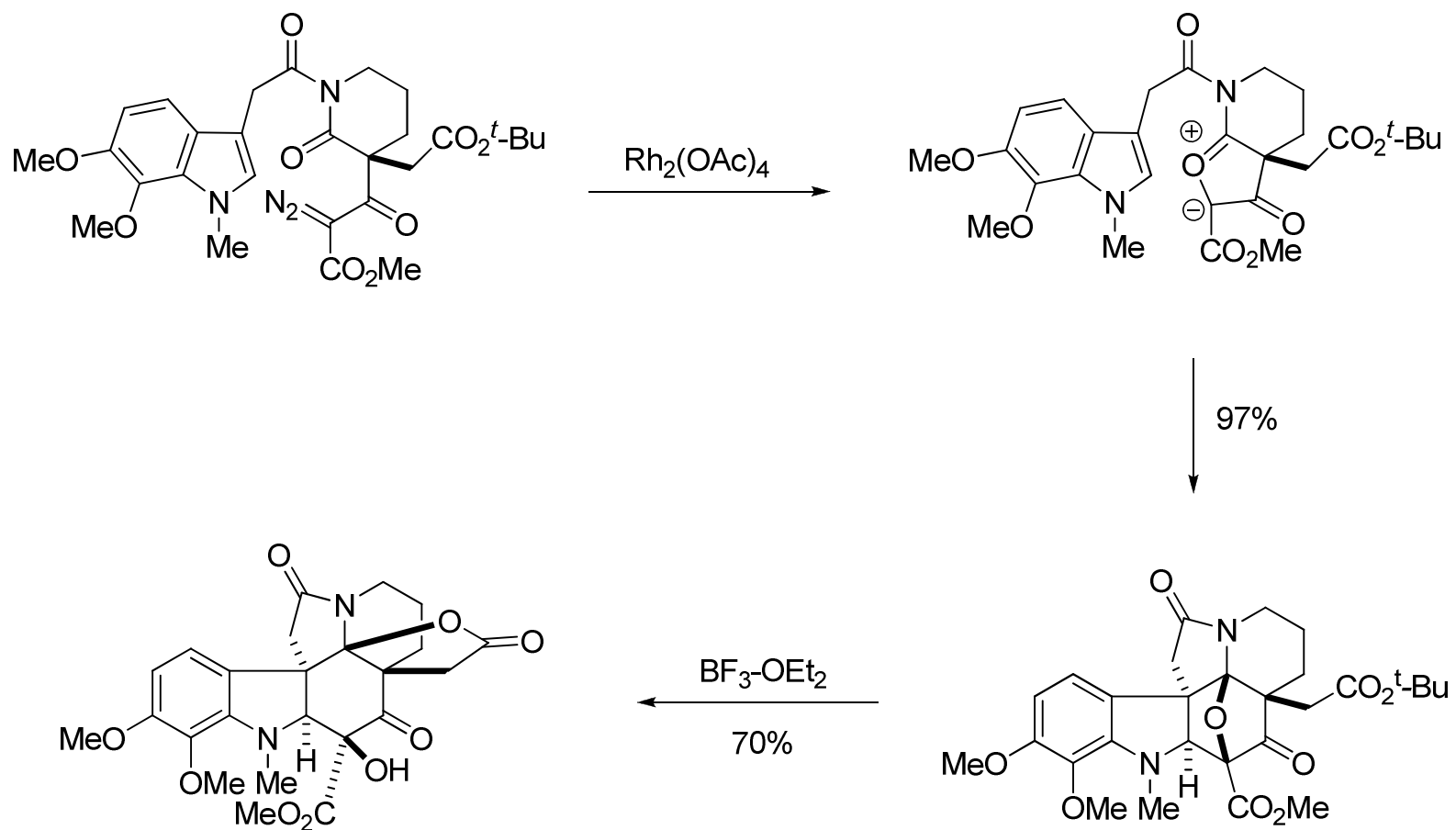


(±)-Aspidophytine - Padwa

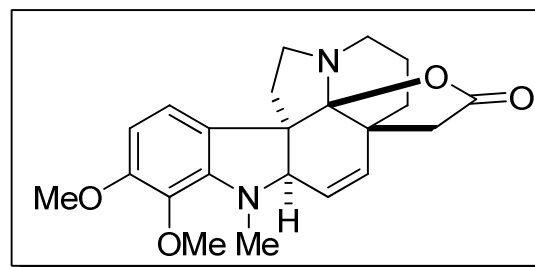
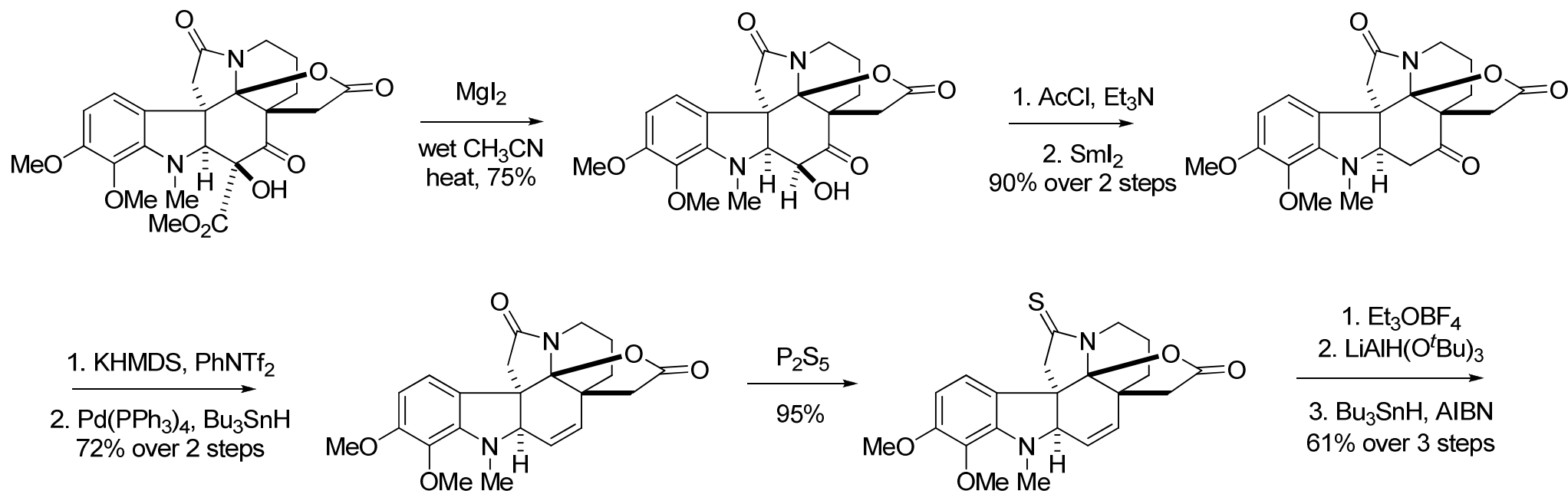


(±)-Aspidophytine - Padwa

Rh(II) Cyclization/Cycloaddition Cascade

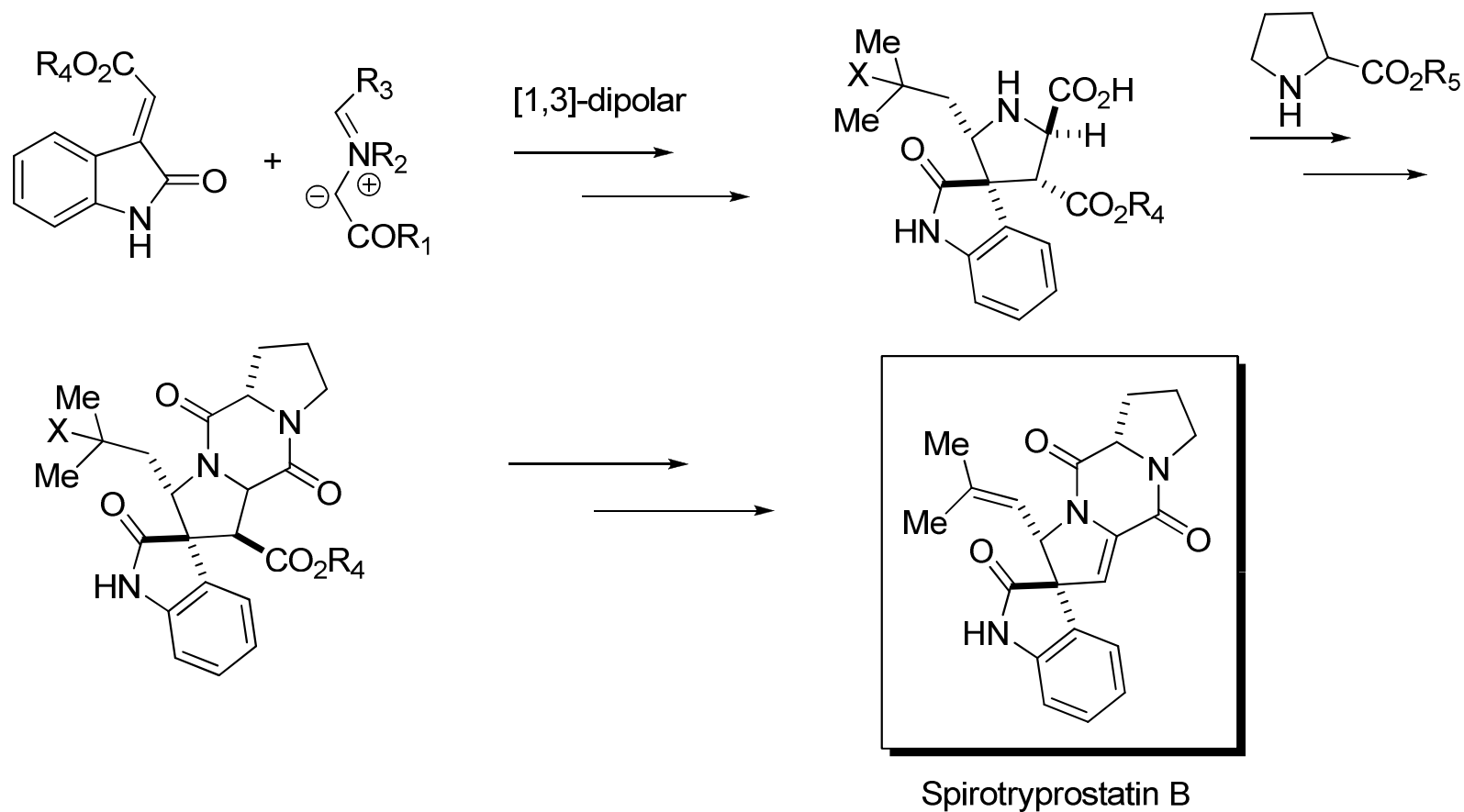


(±)-Aspidophytine - Padwa

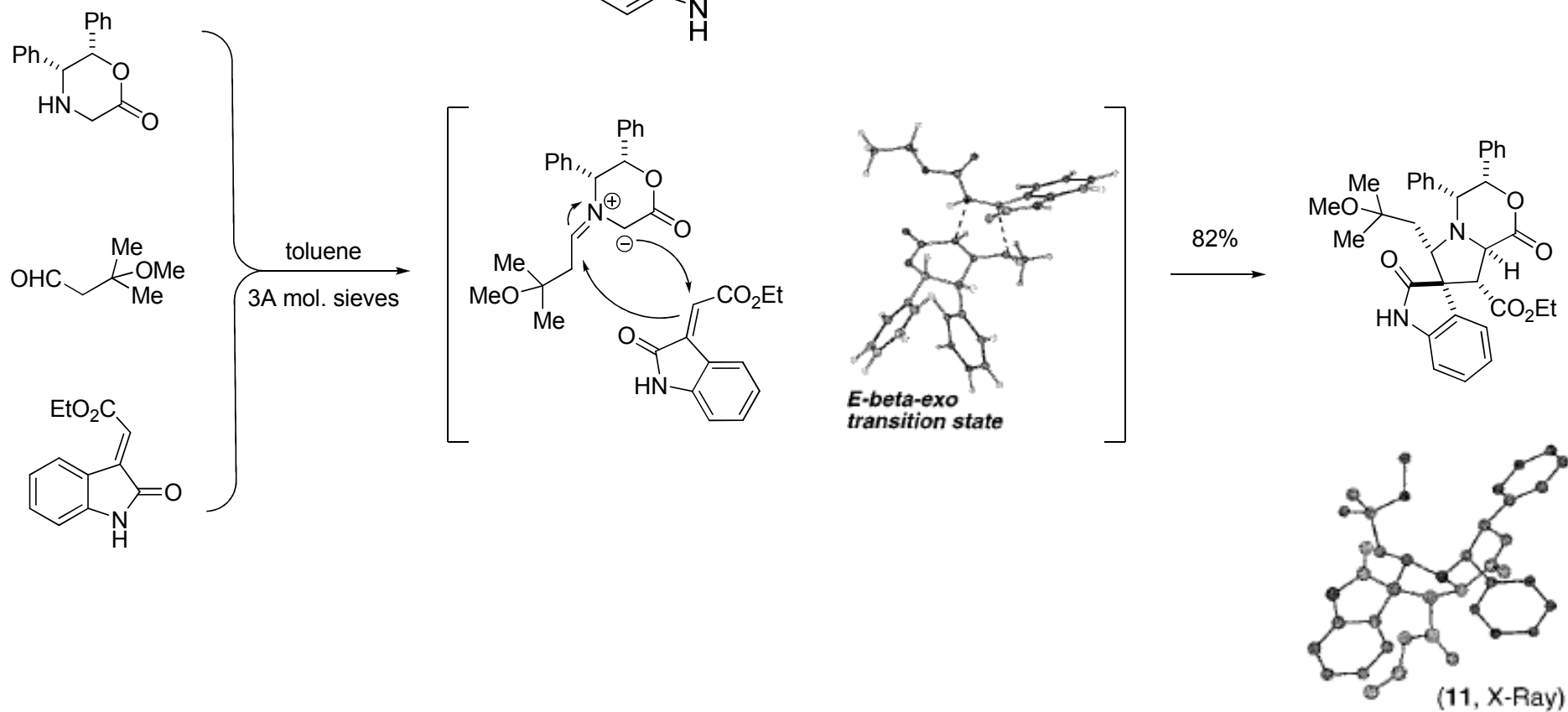
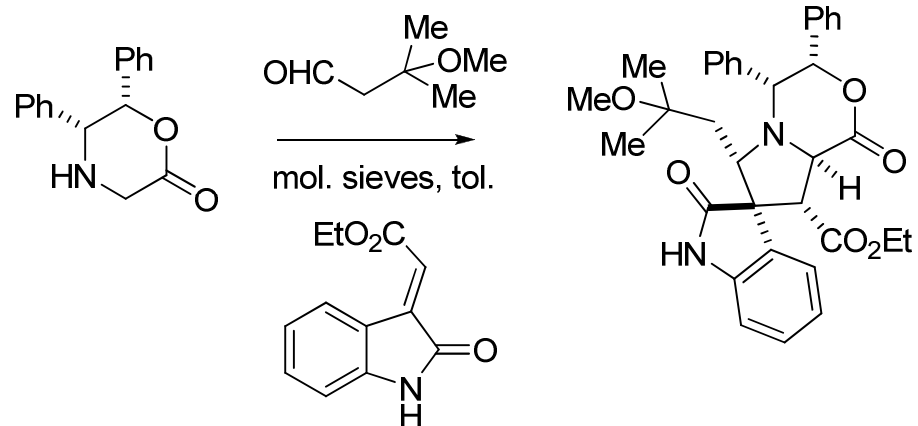


Aspidophytine

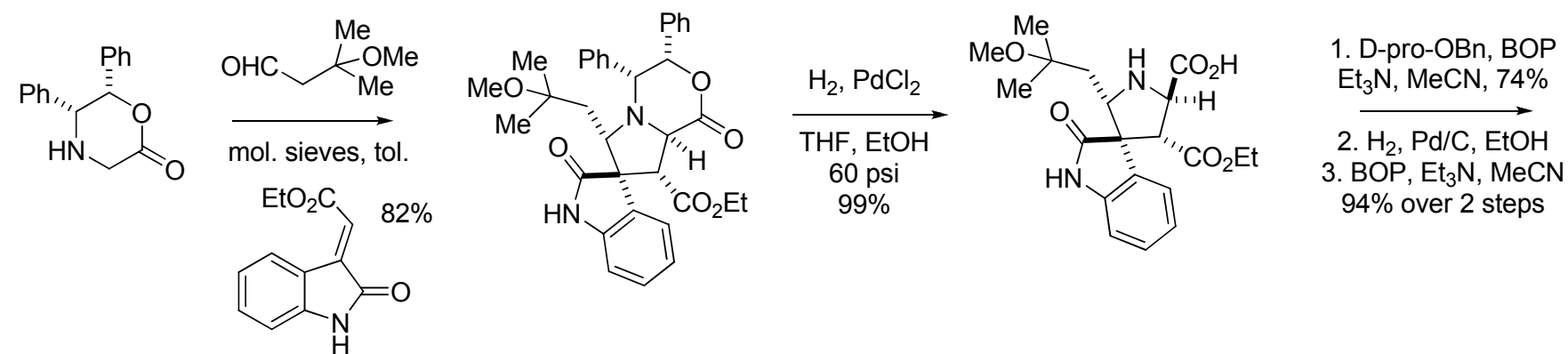
(-)-Spirotryprostatin B - Williams



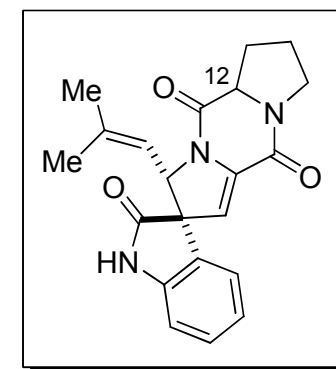
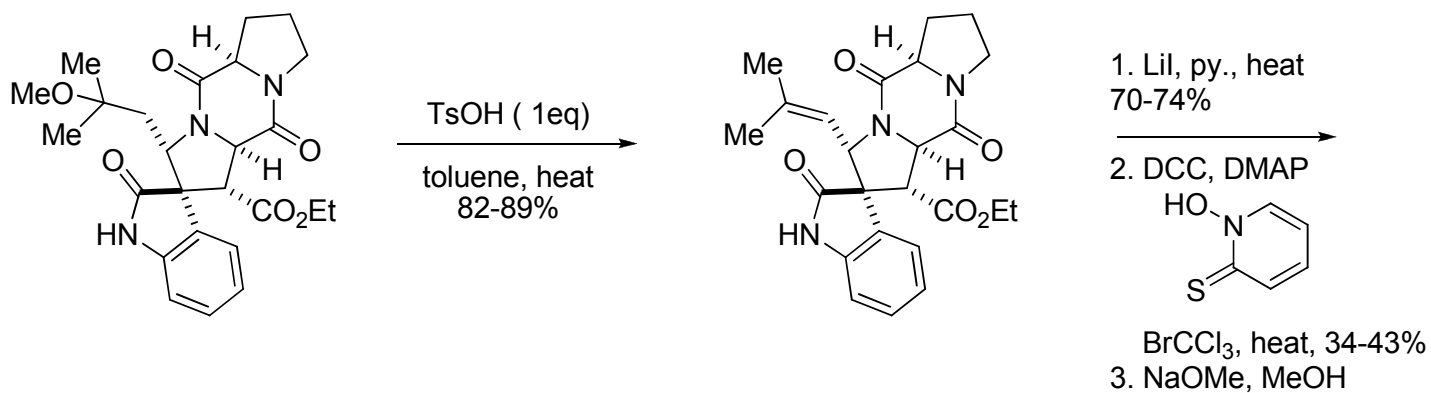
(-)-Spirotryprostatin B - Williams



(-)-Spirotryprostatin B - Williams

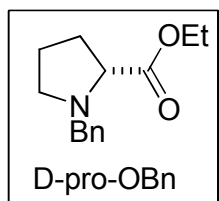


1. D-pro-OBn, BOP, Et₃N, MeCN, 74%
2. H₂, Pd/C, EtOH
3. BOP, Et₃N, MeCN, 94% over 2 steps

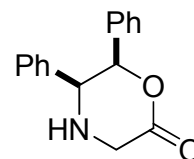


(-)-spirotryprostatin B

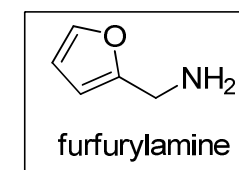
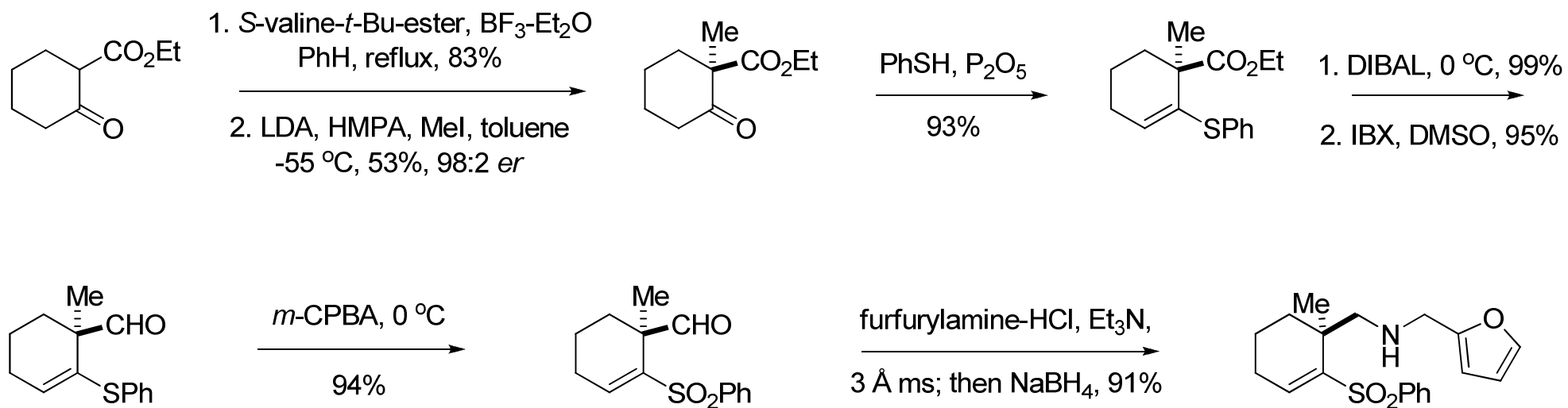
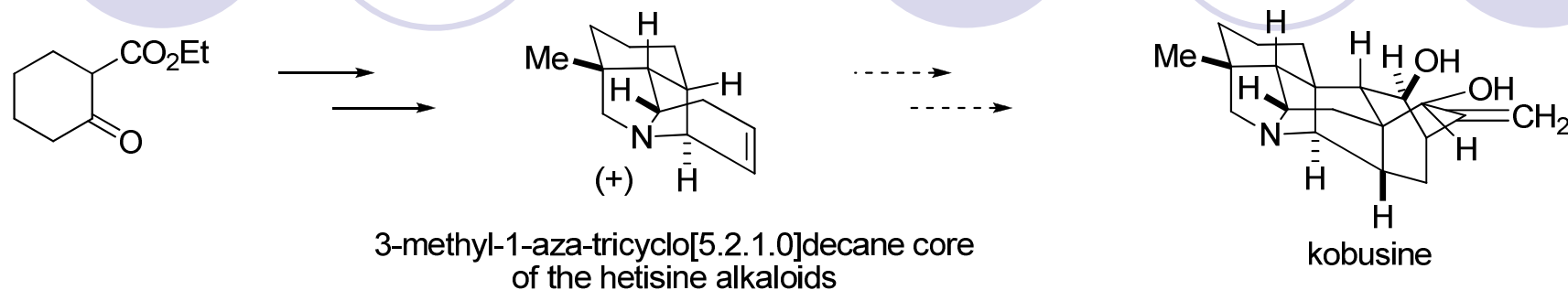
2:1 (-)-spirotryprostatin B: 12-*epi*-spirotryprostatin B



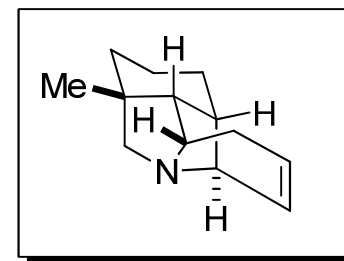
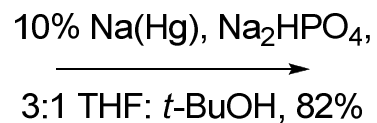
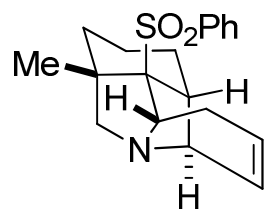
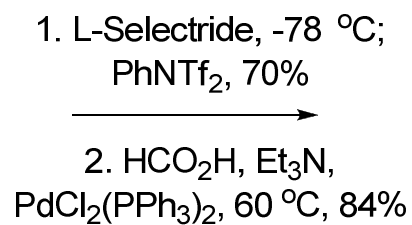
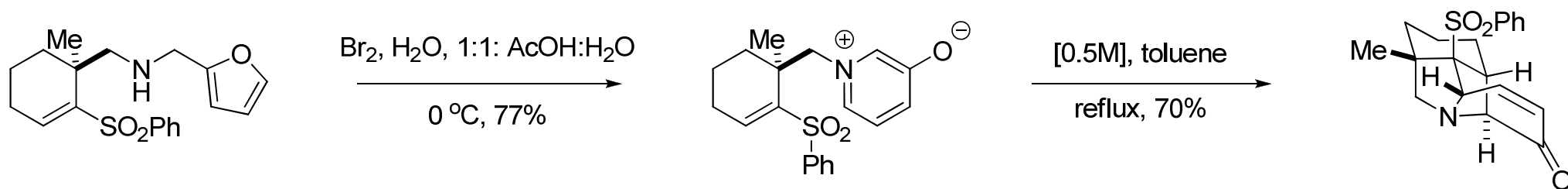
(+)-spirotryprostatin B accessible from



Hetisine Skeleton: Kobusine (Gin)



Hetisine Skeleton: Kobusine (Gin)



hetisine core