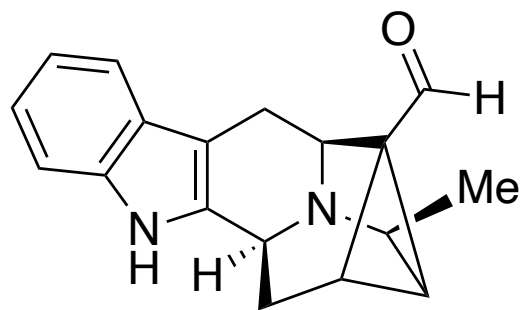


Total Synthesis of (–)-Rauvomine B

Aquilina, J. M.; Banerjee, A.; Morais, G. N.; Chen, S.; Smith, M. W.;
J. Am. Chem. Soc. 2024, XXXX, XXX, XXX-XXX

- Rauvomines are indole alkaloids found in the *Rauvolfia vomitoria* tree
- Rauvomine B contains a unique 6/5/6/6/3/5-hexacyclic ring system
- 1 of only 5 out of >3000 known monoterpene indole alkaloids to contain a cyclopropane
- Exhibits anti-inflammatory properties



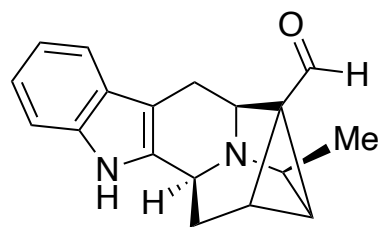
(–)-rauvomine B



Rauvolfia vomitoria

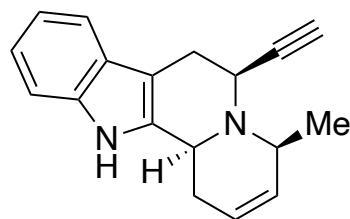
Skylar Diamandis
Liu Group Meeting
July 30, 2024

Retrosynthesis

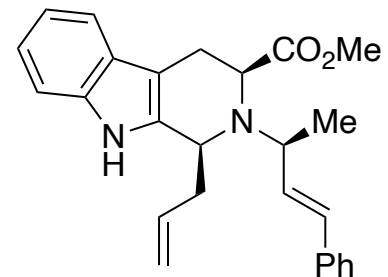


(-)-rauvomine B

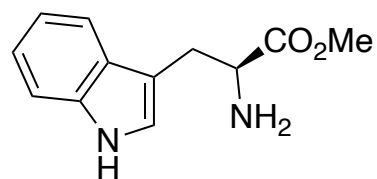
triazole formation
cyclopropanation



ring-closing
metathesis
alkynylation

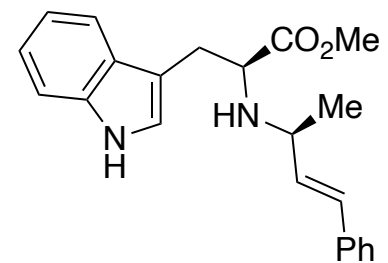


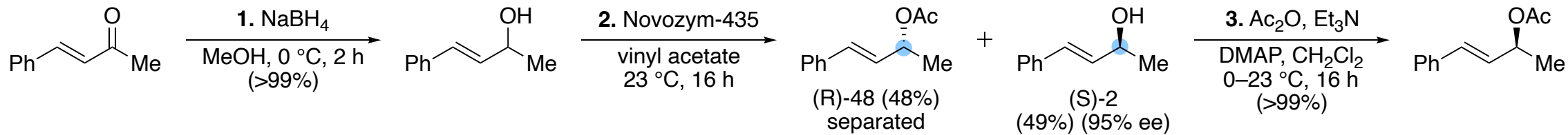
cis-selective
Pictet-Spengler



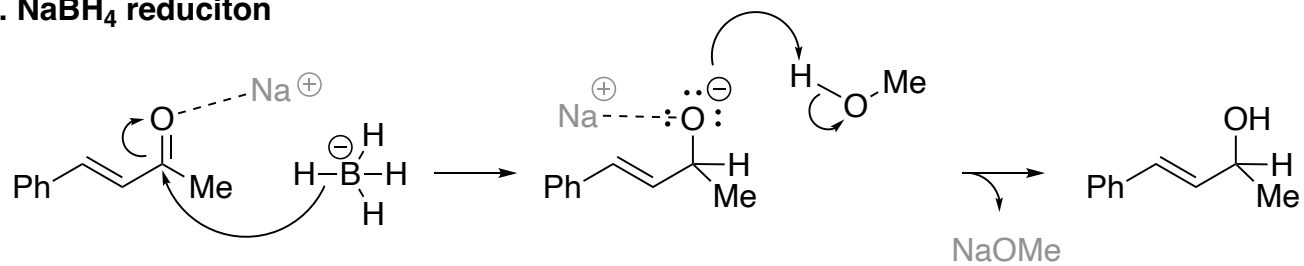
***L*-tryptophan Me ester**

1° amine
crotylation

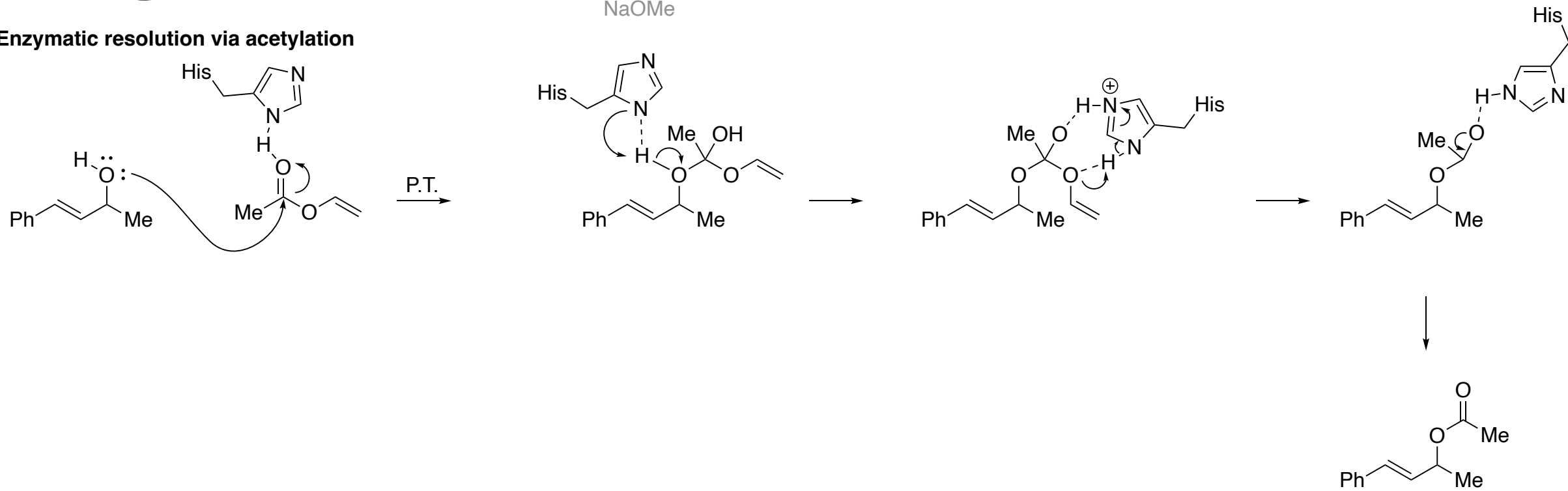


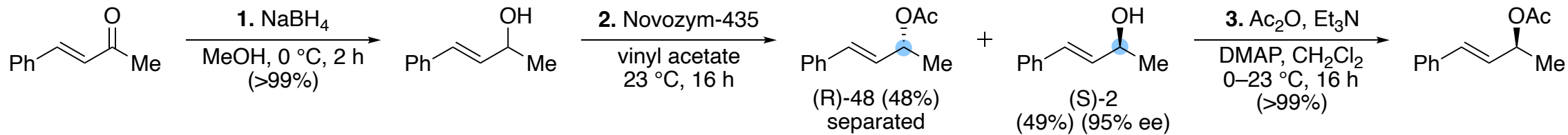


1. NaBH₄ reduction

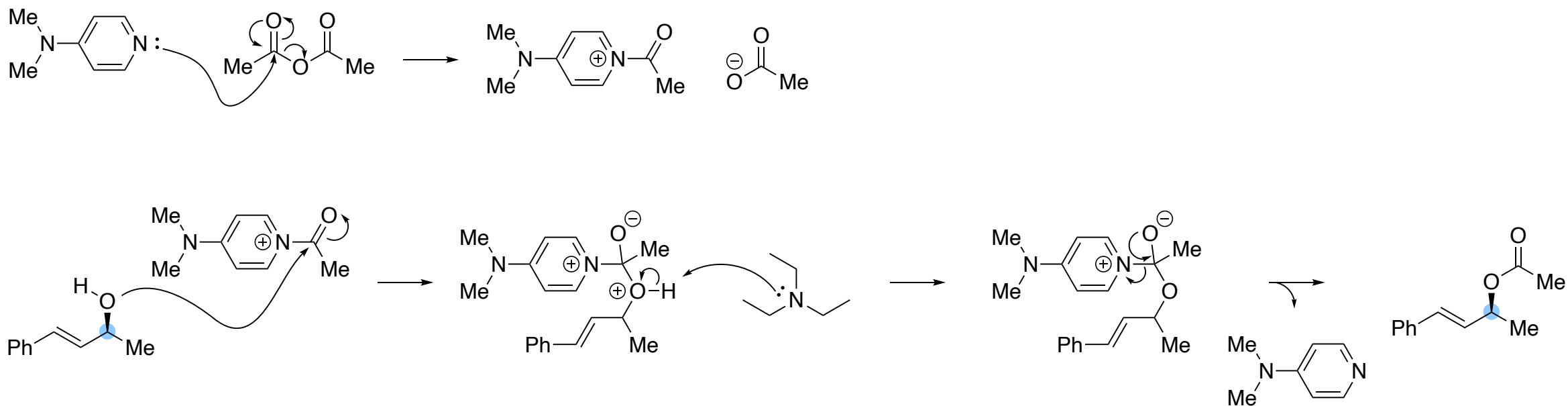


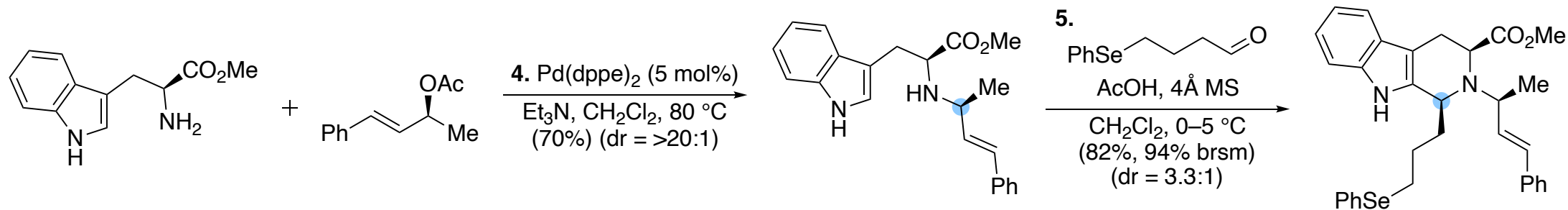
2. Enzymatic resolution via acetylation



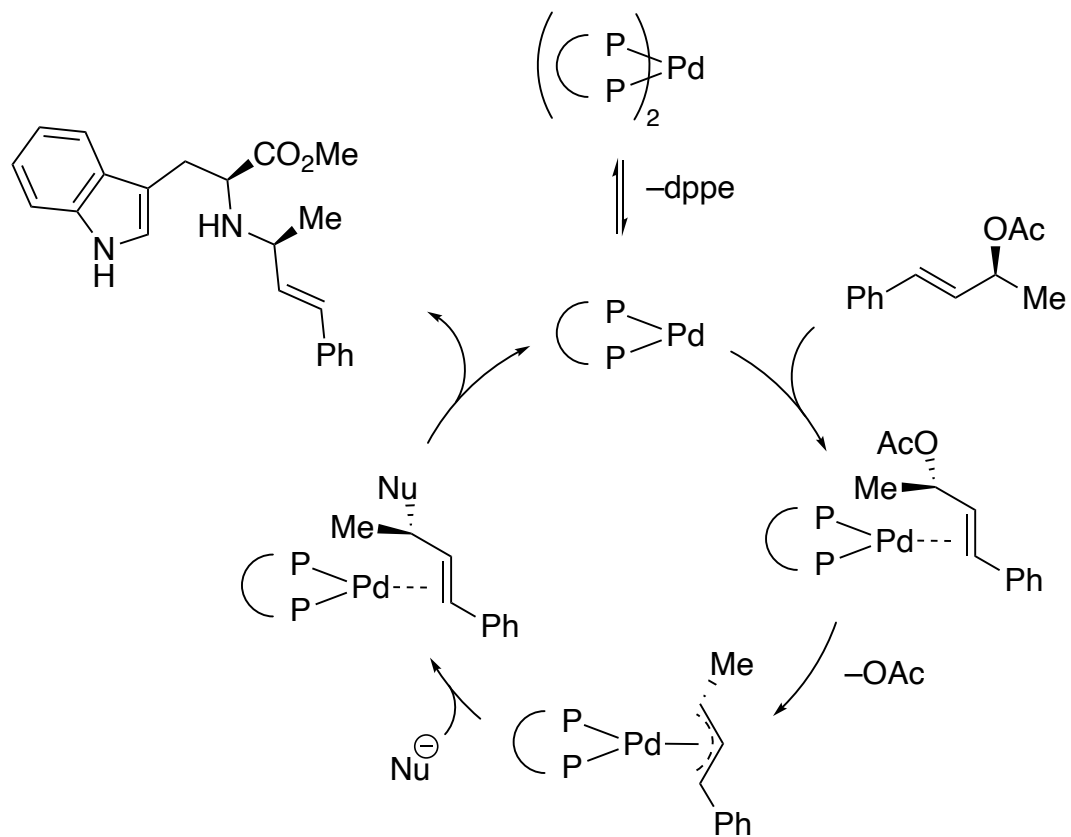


3. Acetylation catalyzed by DMAP

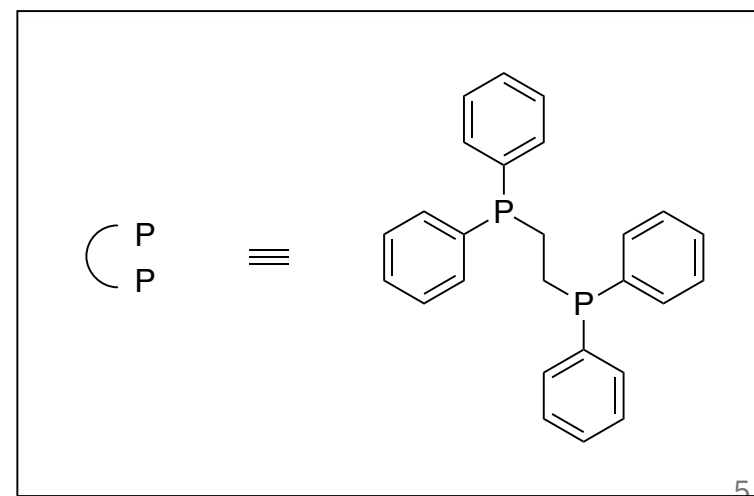
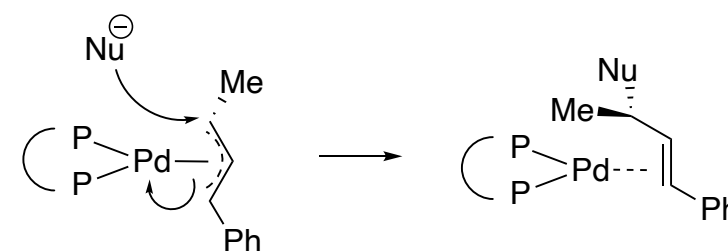


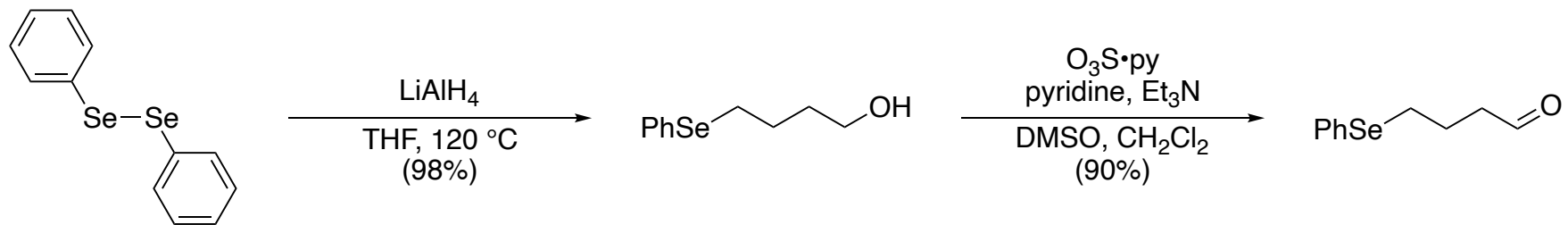


4. Tsuji-Trost Allylation

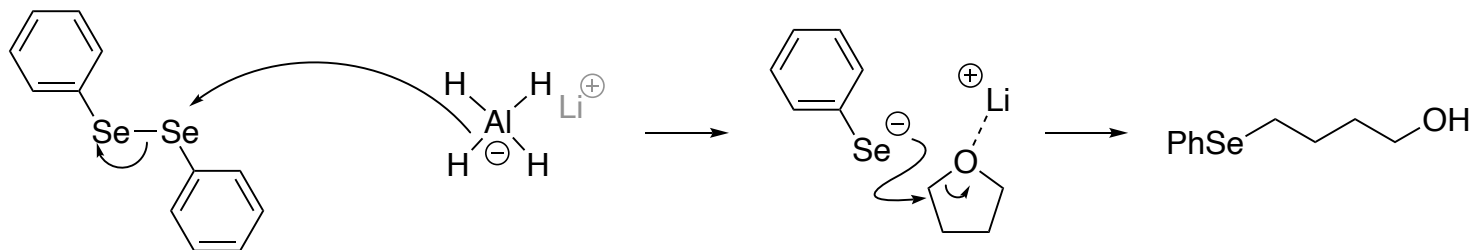


Nucleophilic attack (soft nucleophile)

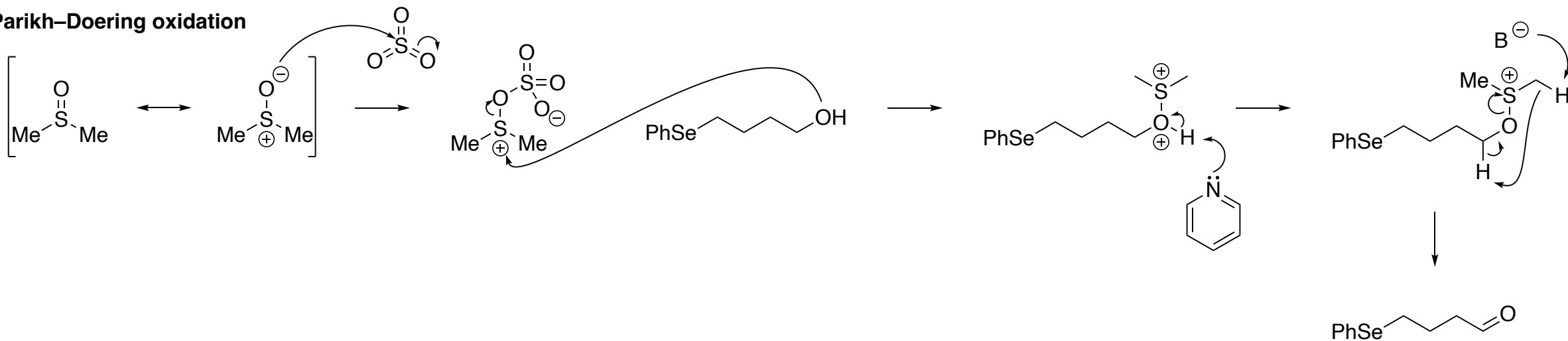


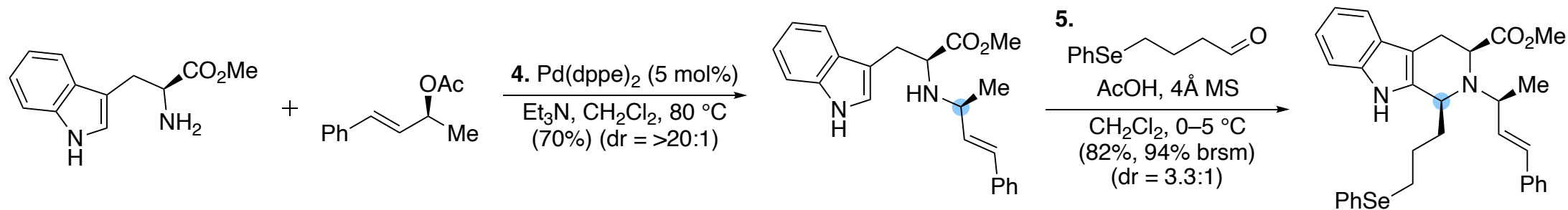


Nucleophilic ring opening of THF

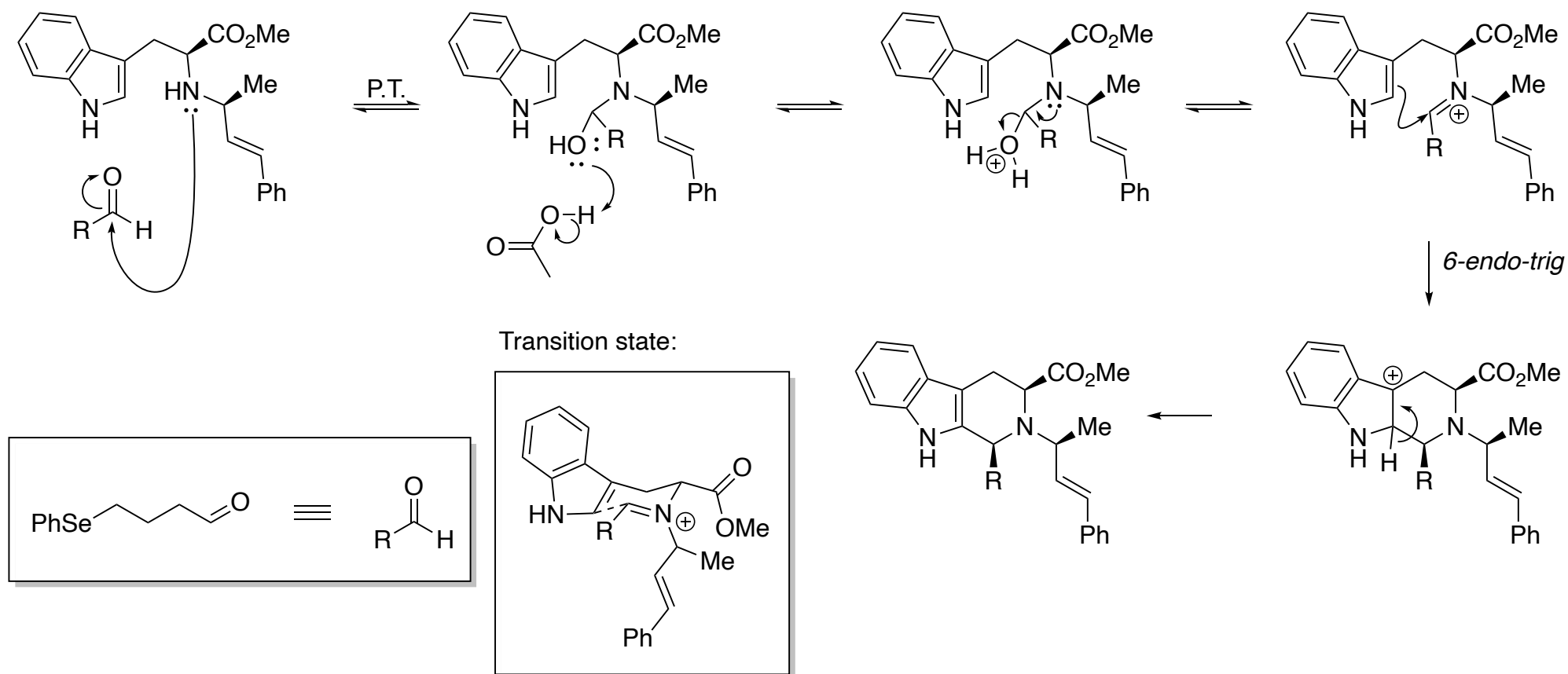


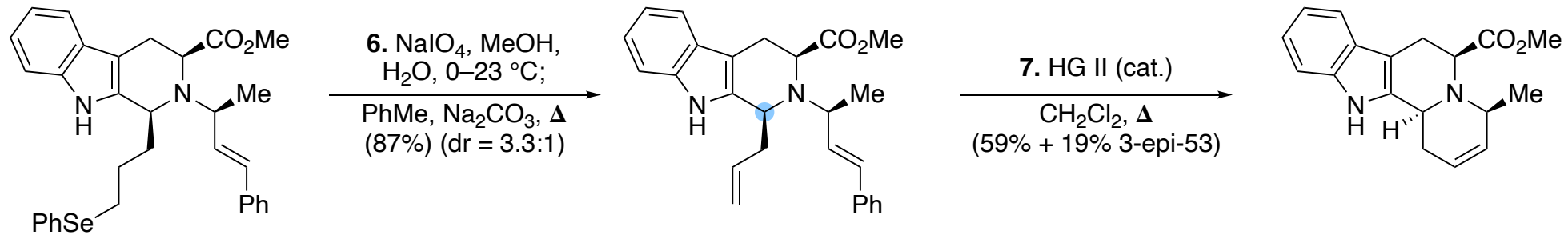
Parikh–Doering oxidation



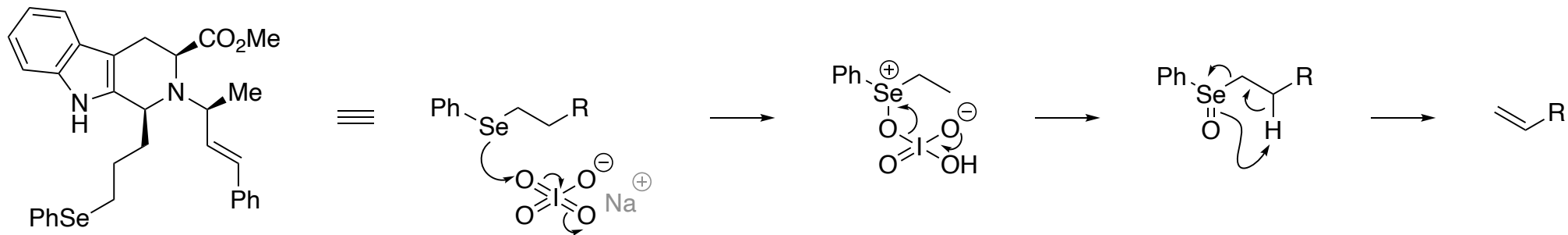


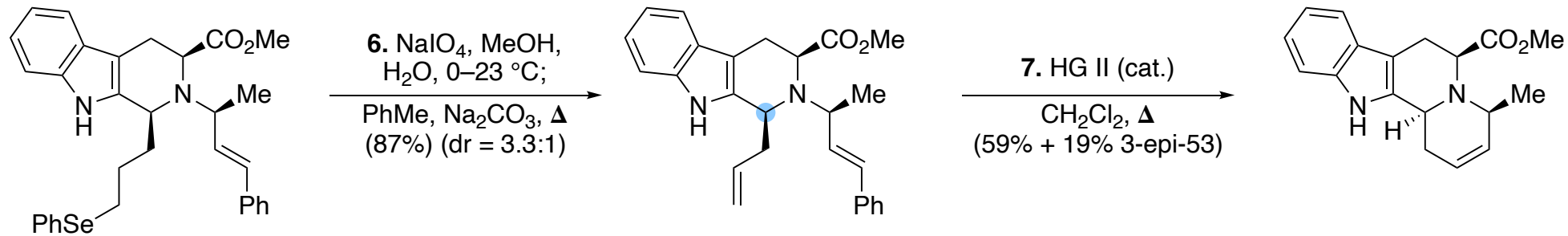
5. Pictet–Spengler reaction



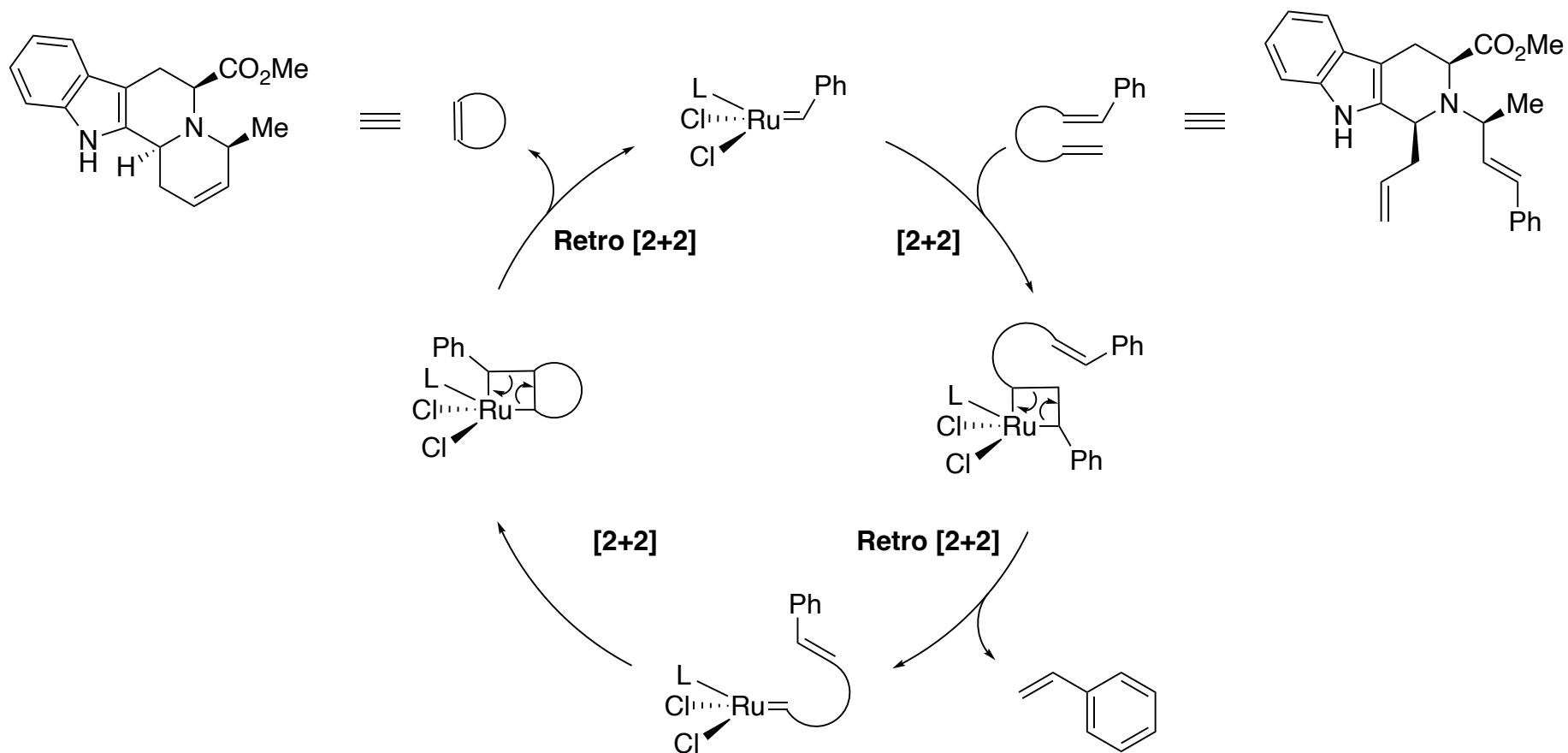
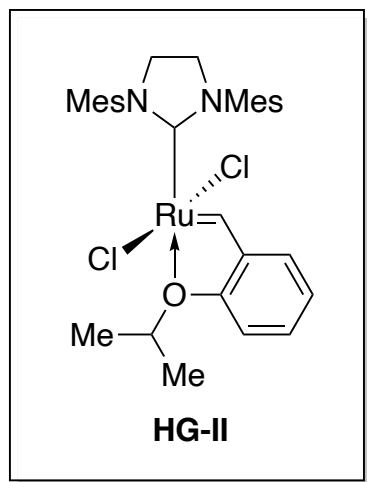


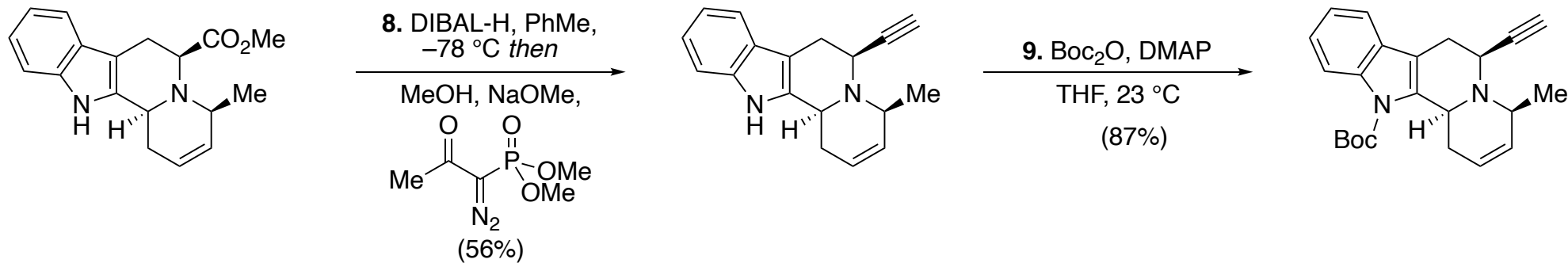
6. Oxidative phenylselenide elimination



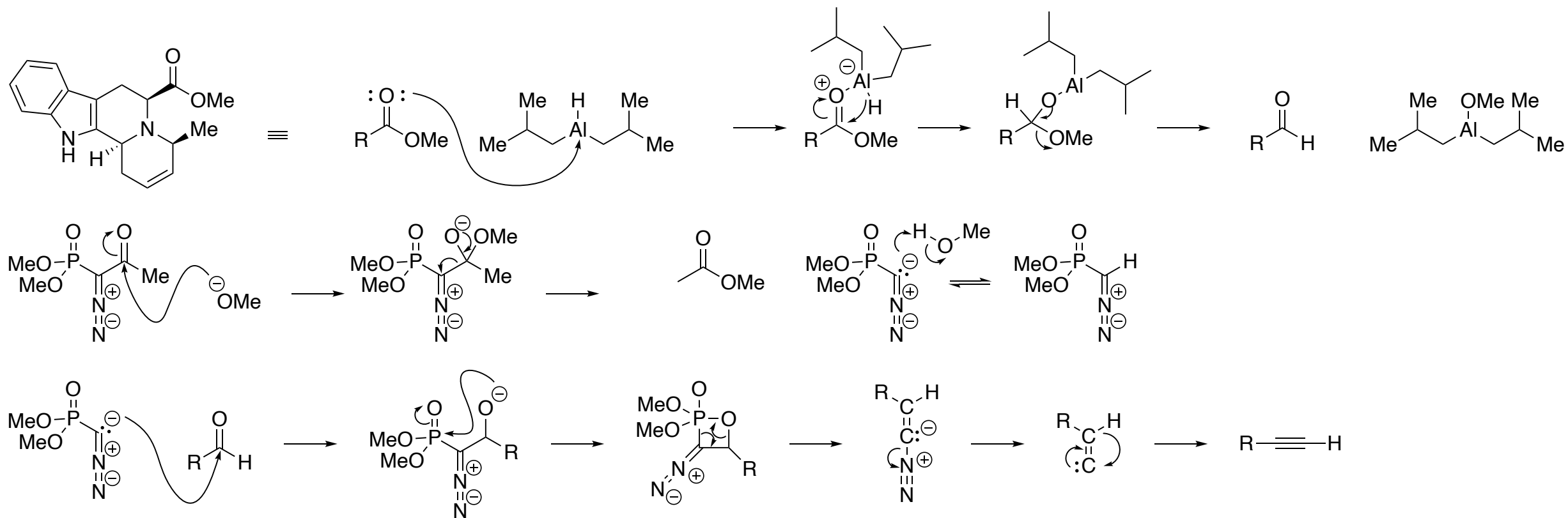


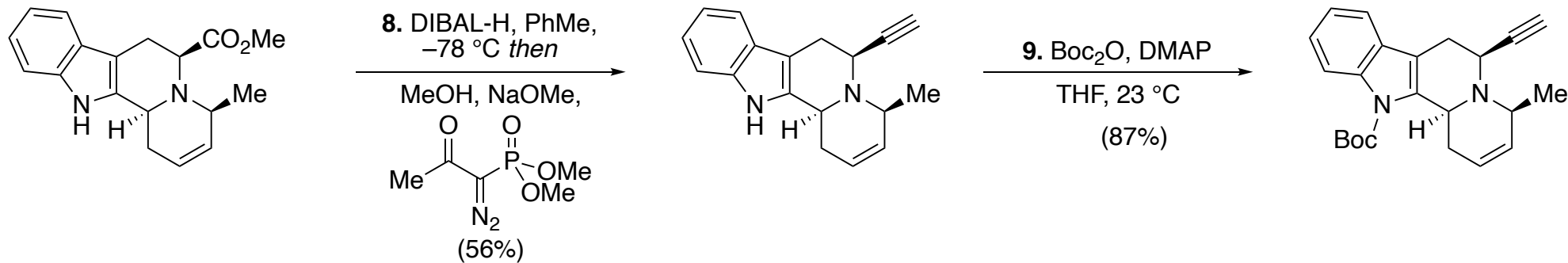
7. Ring closing metathesis



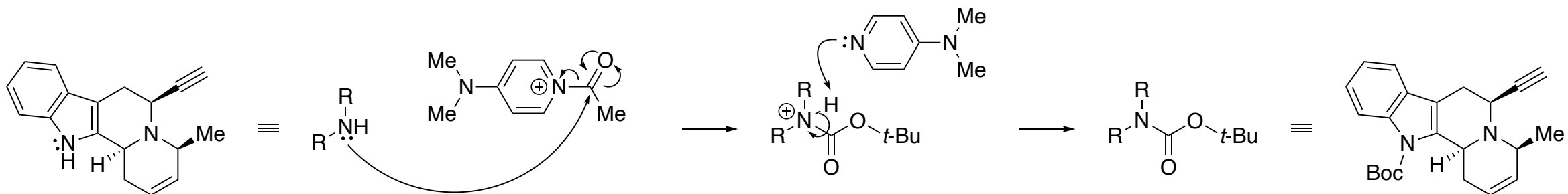
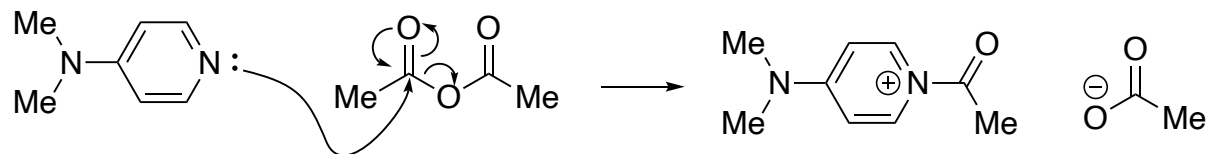


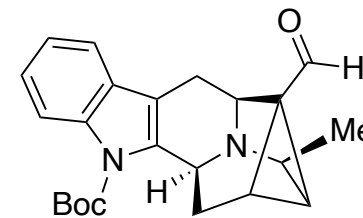
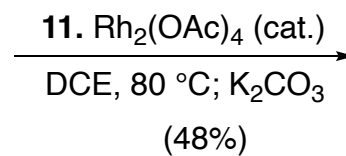
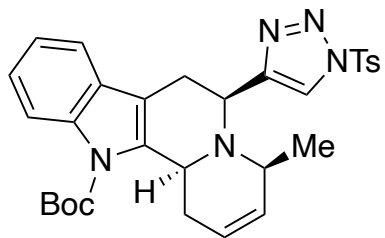
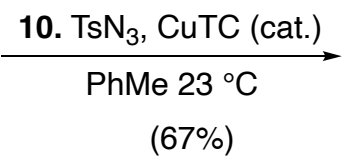
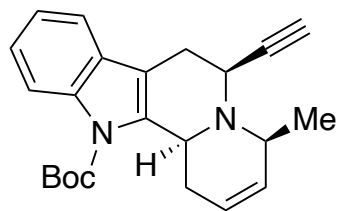
8. Ester reduction then Seyfirth–Gilbert homologation with the Ohira–Bestmann reagent





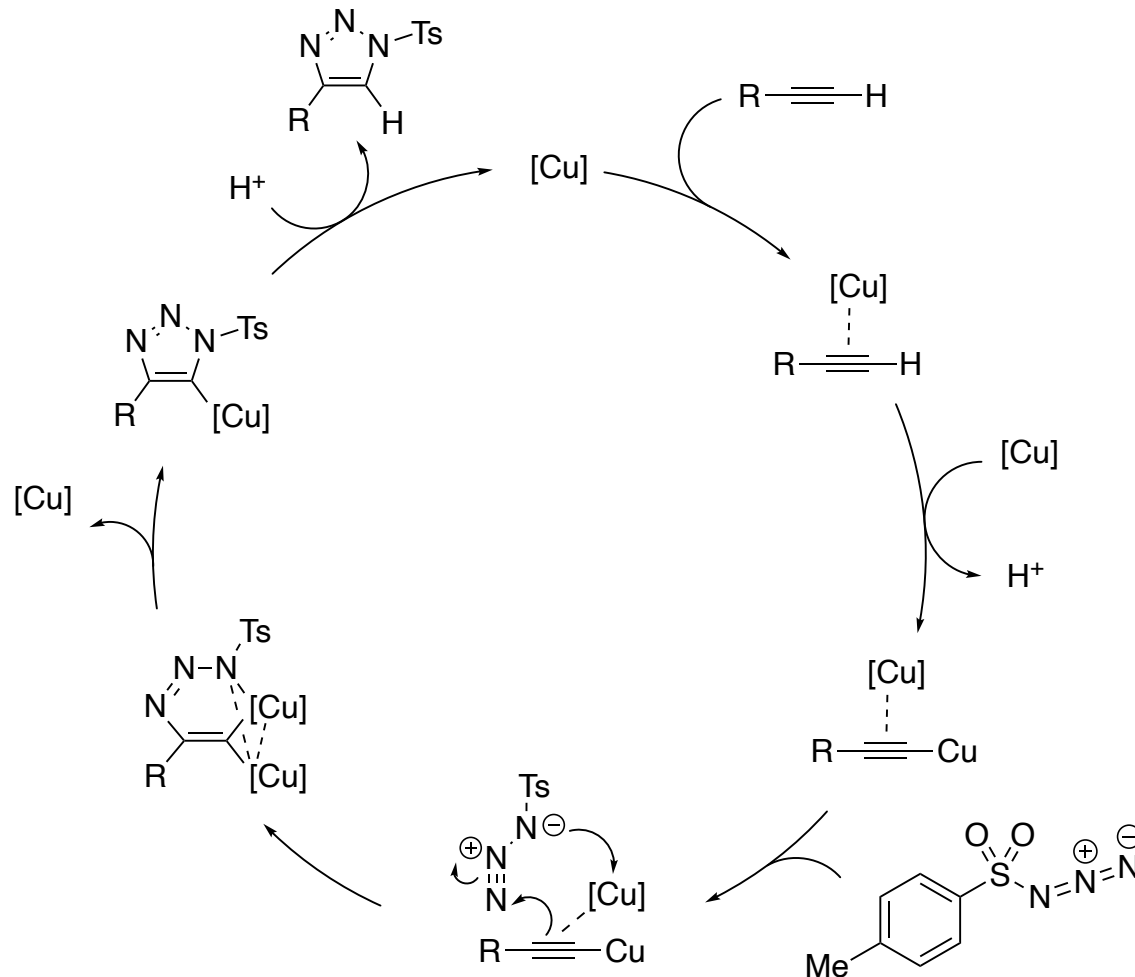
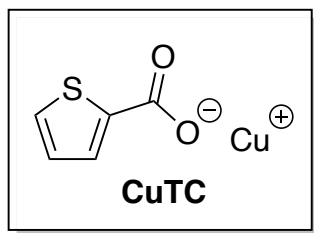
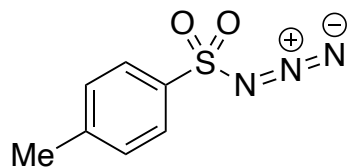
9. Boc protection

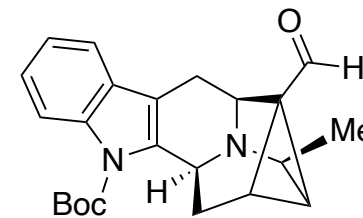
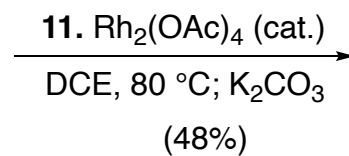
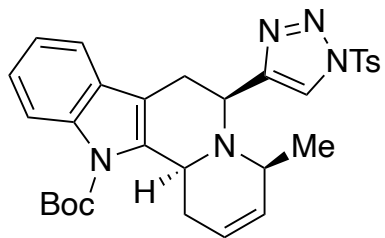
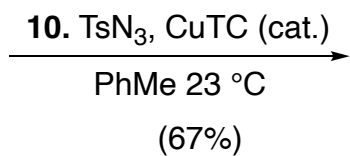
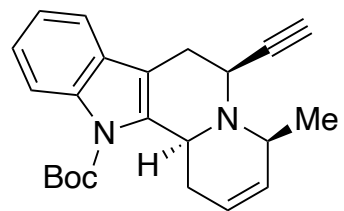




(39%, one-pot)
(vs. 32%, 2 steps)

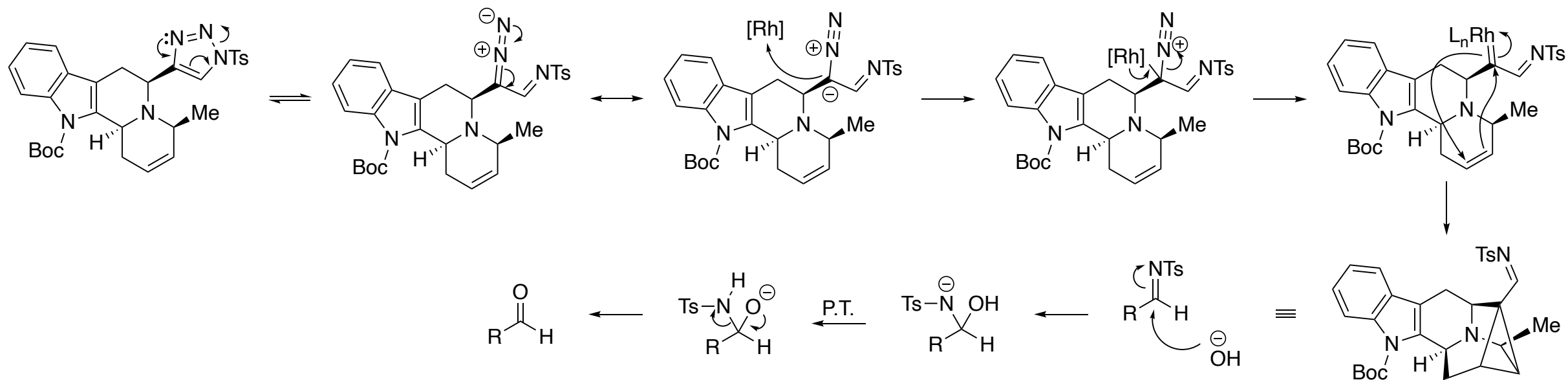
10. CuTC catalyzed triazole formation

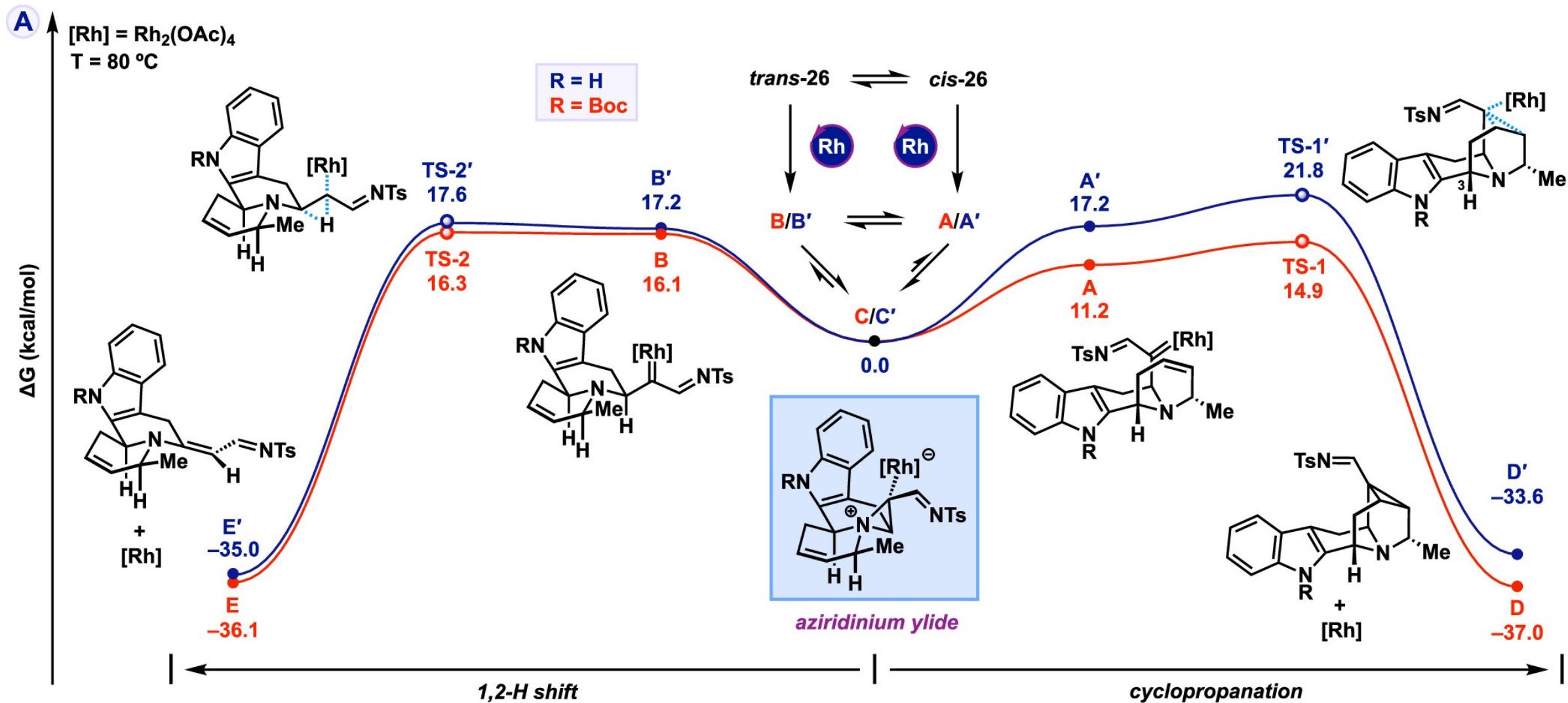
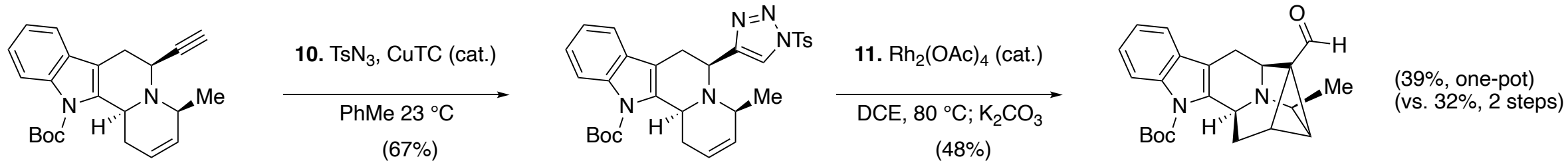


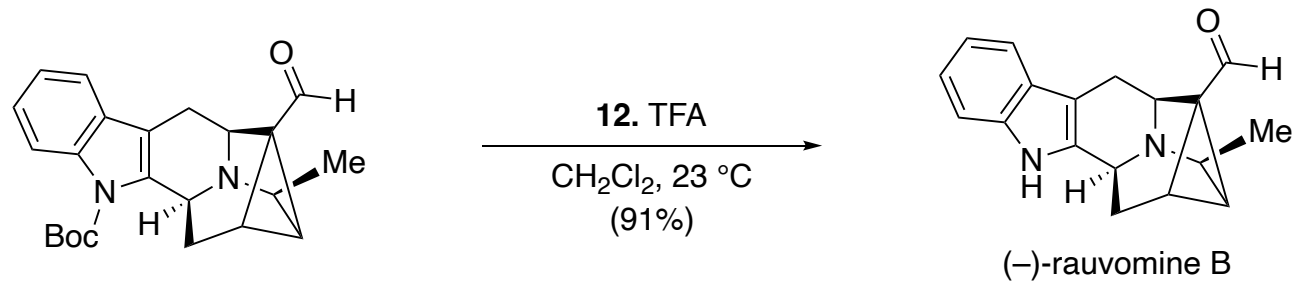


(39%, one-pot)
(vs. 32%, 2 steps)

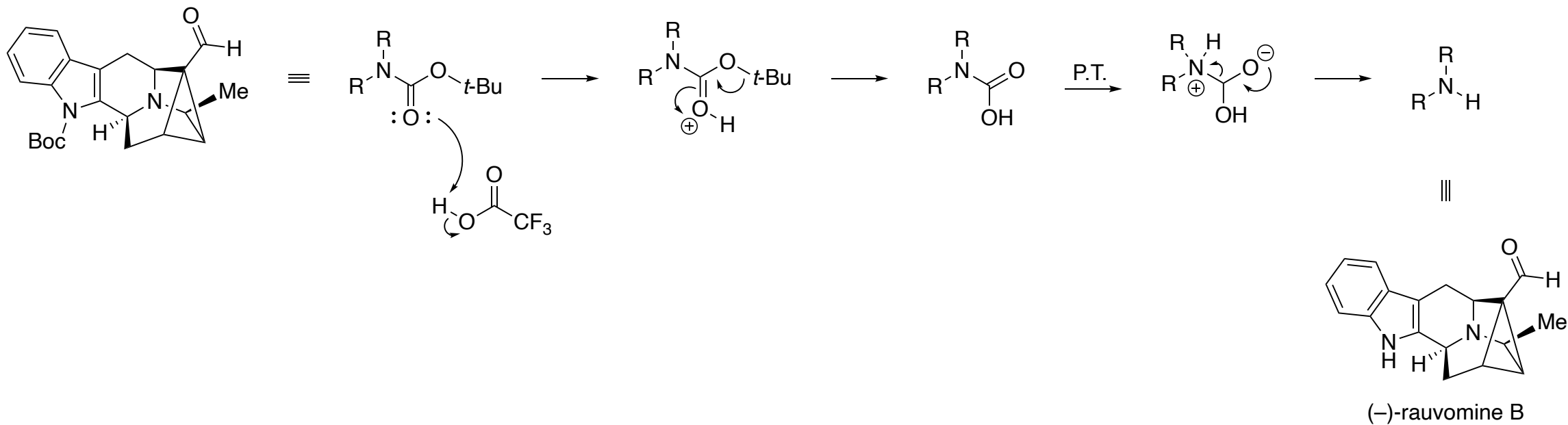
11. Cyclopropanation and hydrolysis







12. Boc deprotection



11 steps
2.4% overall yield