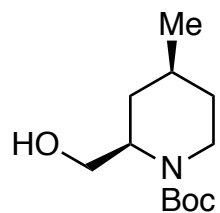
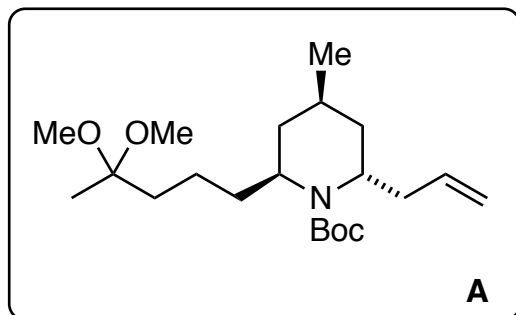


The Enantioselective Total Synthesis of Exochomine

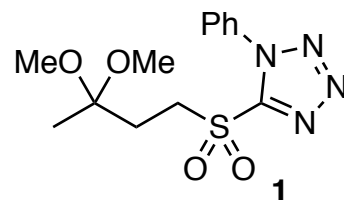
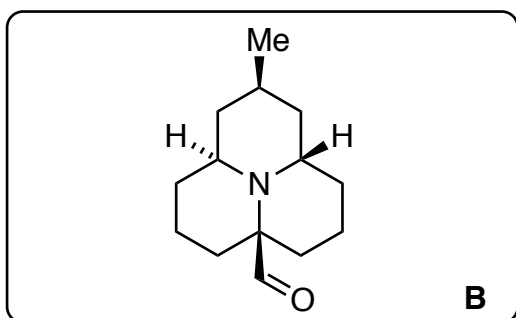
A. X. Gao, T. Hamada, S. A. Snyder
Angew. Chem. Int. Ed. **2016**, *55*, 10301-10306.



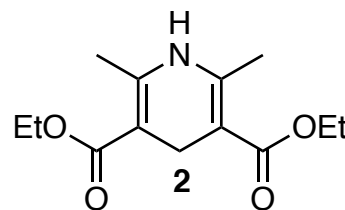
1-5



6-8

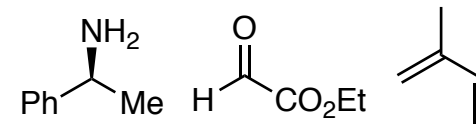


- 1) (COCl)₂, DMSO, DIPEA
- 2) **1**, KHMDS
- 3) H₂, Pt/Al₂O₃
- 4) *s*-BuLi, CuCN · 2LiCl, allylBr
- 5) OsO₄, NaIO₄



- 6) TFA (r.t. then 80 °C) then **2**
- 7) TFA, then KCN
- 8) LiAlH₄, H₂SO₄

1) How could you prepare the starting material from



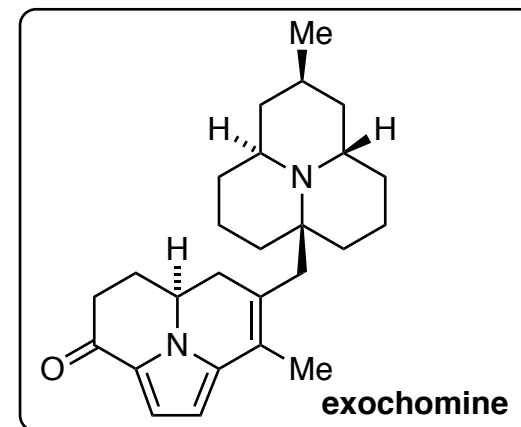
Aza Diels Alder reaction, reductions, Boc protection

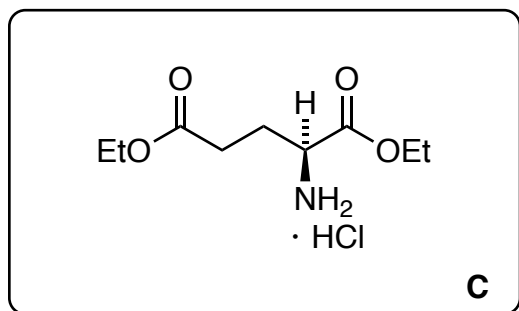
see Bailey *et al. Tet. Asym.* **1991**, 1263.

2) Please provide Name and Mechanism:
Julia Kocienski olefination

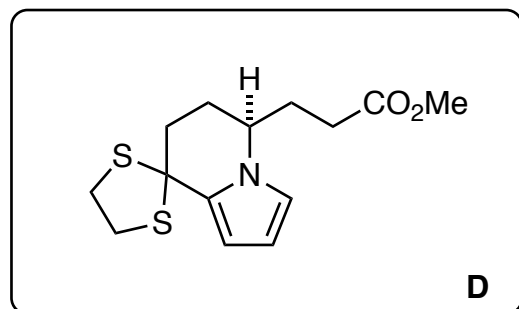
6) what is the Name of **2**? *Hantzsch ester; Hydrogen source for reduction of conjugated iminium ion tricyclic.*

6&7) Name the Reaction: *Strecker Reaction*

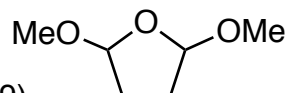
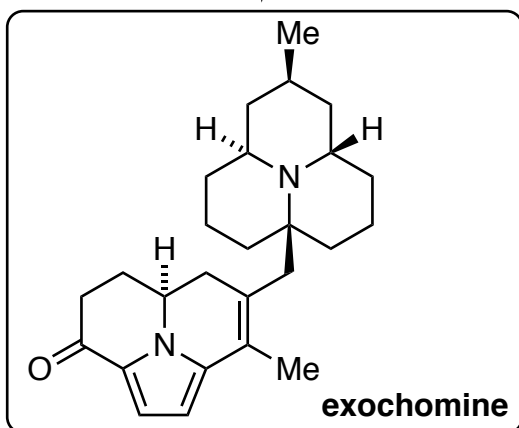




9-14



15-18



- 9)
 10) HBr/ AcOH
 11) Zn(OTf)₂, 1,2-ethanedithiol
 12) DIBAL-H
 13) Ph₃PCHCO₂Me
 14) Cu(OAc)₂ · H₂O, BDP, PMHS

- 15) LDA, **B**, -78 °C, then *p*-TsOH
 16) Mn(dpm)₃, Me(OEt)₂SiH
 17) MeLi, *p*-TsOH
 18) PhI(OAc)₂

9) Name of the Reaction? *Paal Knorr pyrrole synthesis*

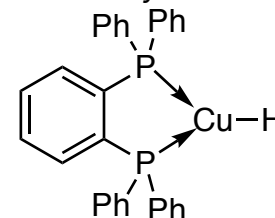
Note: with the non HCl salt of C and under usual reaction conditions (AcOH, AcONa) racemization occurs.

Jefford et al. Helv. Chim. Acta 1995, 78, 1511.

BDP: 1,2-bis(diphenylphosphino) benzene

PMHS: polymethylhydrosiloxane

"hot"-Stryker's reagent

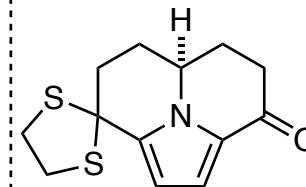


Lipshutz et al.
Org. Lett. **2008**,
 10, 289.

15) three subsequent steps (Names?)
 initially, this sequence was performed in two steps, a) BBr₃ and b) TiCl₄, NEt₃, **B** - what is the intermediate?

Aldol reaction, Friedel Crafts and dehydration

intermediate of initial sequence:



first FC, then Aldol. Intermediate was not stable to reaction conditions, hence Aldol gave poorer yields.