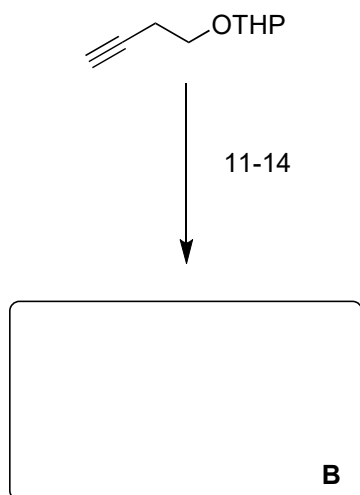
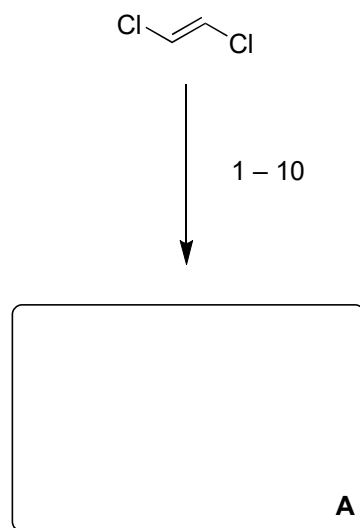


Total Synthesis of Isoxeniolide A
Leo Betschart, Karl-Heinz Altmann*
Angew. Chem. Int. Ed. 2024, 63, e202315423.

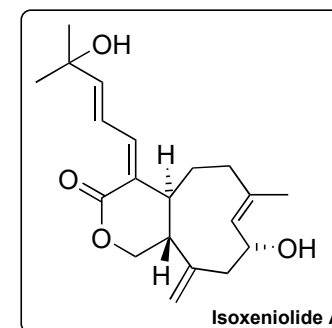


- 1) Malein anhydride, uv
- 2) Zn, Ac₂O
- 3) LiAlH₄
- 4) Ac₂O, pyridine
- 5) Pseudomonas fluorescens lipase, buffer pH 7, then 1 M NaOH
- 6) TBDPSCI, imidazole
- 7) K₂CO₃, MeOH
- 8) acryloyl chloride, DIPEA, DMAP (cat.), -78 °C
- 9) Grubbs I, ethylene
- 10) Piers-Grubbs II

- 11) (PhMe₂Si)₂Cu(CN)Li₂ then MeI
- 12) *p*TsOH, EtOH
- 13) TsCl, DMAP, Et₃N
- 14) NaI, Cu

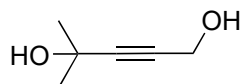
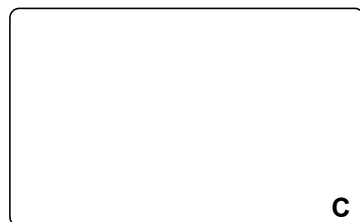
9. Structure of Grubbs I?

10. Structure of Piers-Grubbs II?



A + B

15 – 25

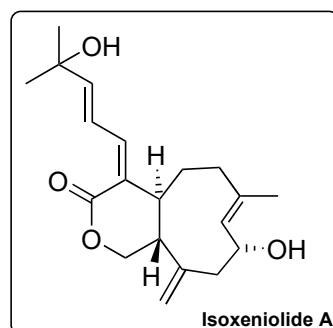


26 – 28



C + D

29 – 31



15) *t*-BuLi, **B**, -78 °C then LiCu(thienyl)CN, -78 °C then **A** -78 °C to -60 °C then 0 °C

16) NIS, Ag₂CO₃, HFIP

17) HF · py

18) PMBO(NH)CCl₃, TMSOTf, -78 °C

19) 9-BBN, -78 °C then MeOH, NaOH then H₂O₂

20) TPAP, NMO, 4 Å MS

21) CrCl₂, NiCl₂

22) TESCl, imidazole

23) DDQ, buffer pH 7

24) TsCl, NEt₃, DMAP

25) NaI, DBU, DME

26) LiAlH₄

27) TESCl, imidazole, DMAP (cat.)

28) (COCl)₂, DMSO, Et₃N, -78°C to rt

29) **C**, LiHMDS, -78 °C then **D**

30) EDCI, CuCl₂ (cat.), PhMe, 80 °C

31) Et₃N · 3HF

19) Hint:
Two reactions happened

20) Name of the reaction?

21) Name of the reaction?

