

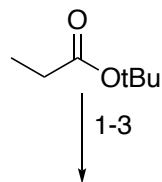
Synthesis Challenge 100

Total Synthesis of the Acetyl CoA Carboxylase Inhibitor Soraphen A:

Asymmetric Tsuji Reduction Enables Successive Olefin Metathesis T. T. Schempp, M. J. Krische, *J. Am. Chem. Soc.*, ASAP: <https://doi.org/10.1021/jacs.1c12063>

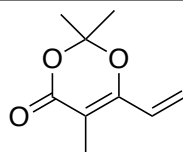
doi.org/10.1021/jacs.1c12063

27.01.2022

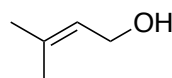


1-3

A

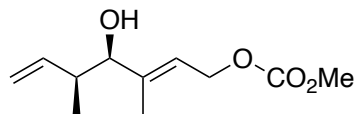


B



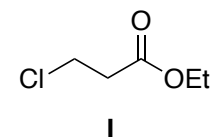
6-8

C



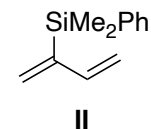
D

- 1) LDA, THF, -78°C , I
- 2) acetone, Ac_2O , H_2SO_4 (conc)
- 3) Et_3N , CH_2Cl_2

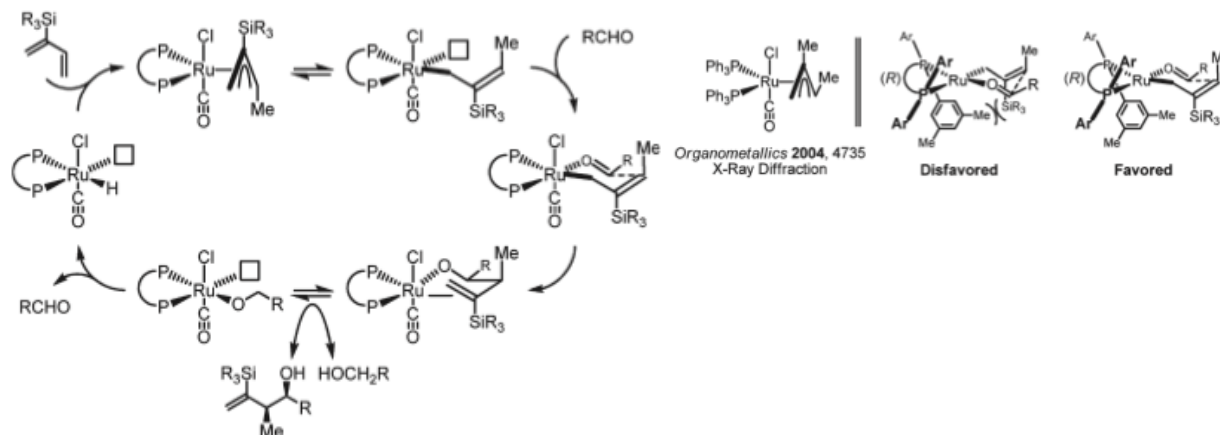


I

- 4) ClCO_2Me , pyridine, CH_2Cl_2
- 5) SeO_2 , $t\text{BuOOH}$, CH_2Cl_2
- 6) $\text{RuHCl}(\text{CO})\text{PPh}_3$ (5mol%), (R)-SEGPHOS (5mol%), 2-PrOH, II, dioxane, then TBAF, DMSO

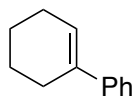
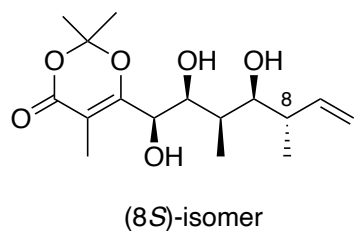


II

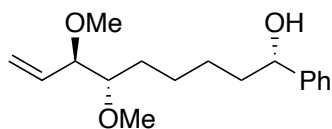


B + D

7-9

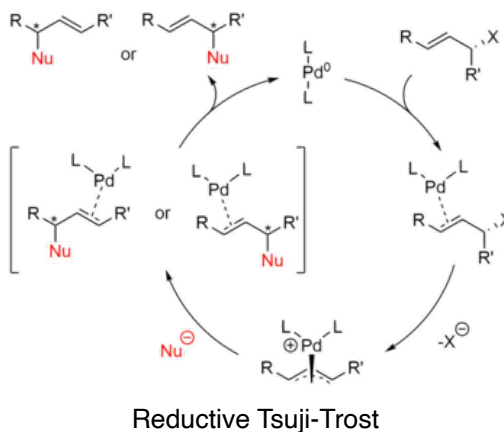


10-13

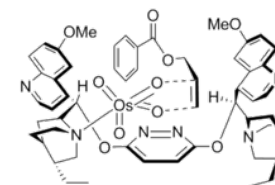
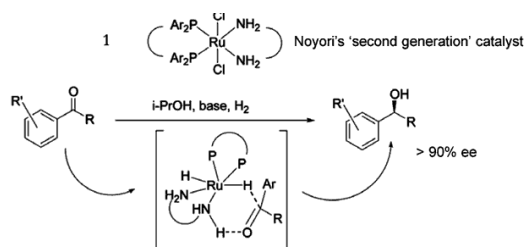


G

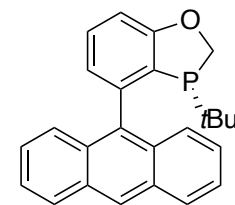
- 7) Hoveyda-Grubbs-II (15mol%), dioxane, 85°C
- 8) $\text{K}_2\text{OsO}_2(\text{OH})_4$ (10mol%), $(\text{DHQ})_2\text{PHAL}$ (20mol%), $\text{K}_3\text{Fe}(\text{CN})_6$, MeSO_2NH_2 , K_2CO_3 , NaHCO_3 , $\text{tBuOH-H}_2\text{O}$ (1:1)
- 9) $\text{Pd}(\text{OAc})_2$ (5mol%), (*R*)-AntPhos (5mol%), $\text{HCO}_2\text{H}:\text{Et}_3\text{N}$ (1:2), MeCN



- 10) O_3 , CH_2Cl_2 , then SMe_2
- 11) (*R*)-Ir-SEGPHOS (5mol%), 2-PrOH, K_3PO_4 , THF, **III**, then MeOH, K_2CO_3
- 12) Ag_2O , MeI, CH_2Cl_2 , 4Å MS (**Irvine-Purdie-Methylation**)
- 13) (*S,S*)-Ru-Cat (5Mol%), HCO_2H , Et_3N , MeCN, 4Å MS



TS Sharpless dihydroxylation (wrong enantiomer)
AD-Mix-alpha



(*R*)-AntPhos

