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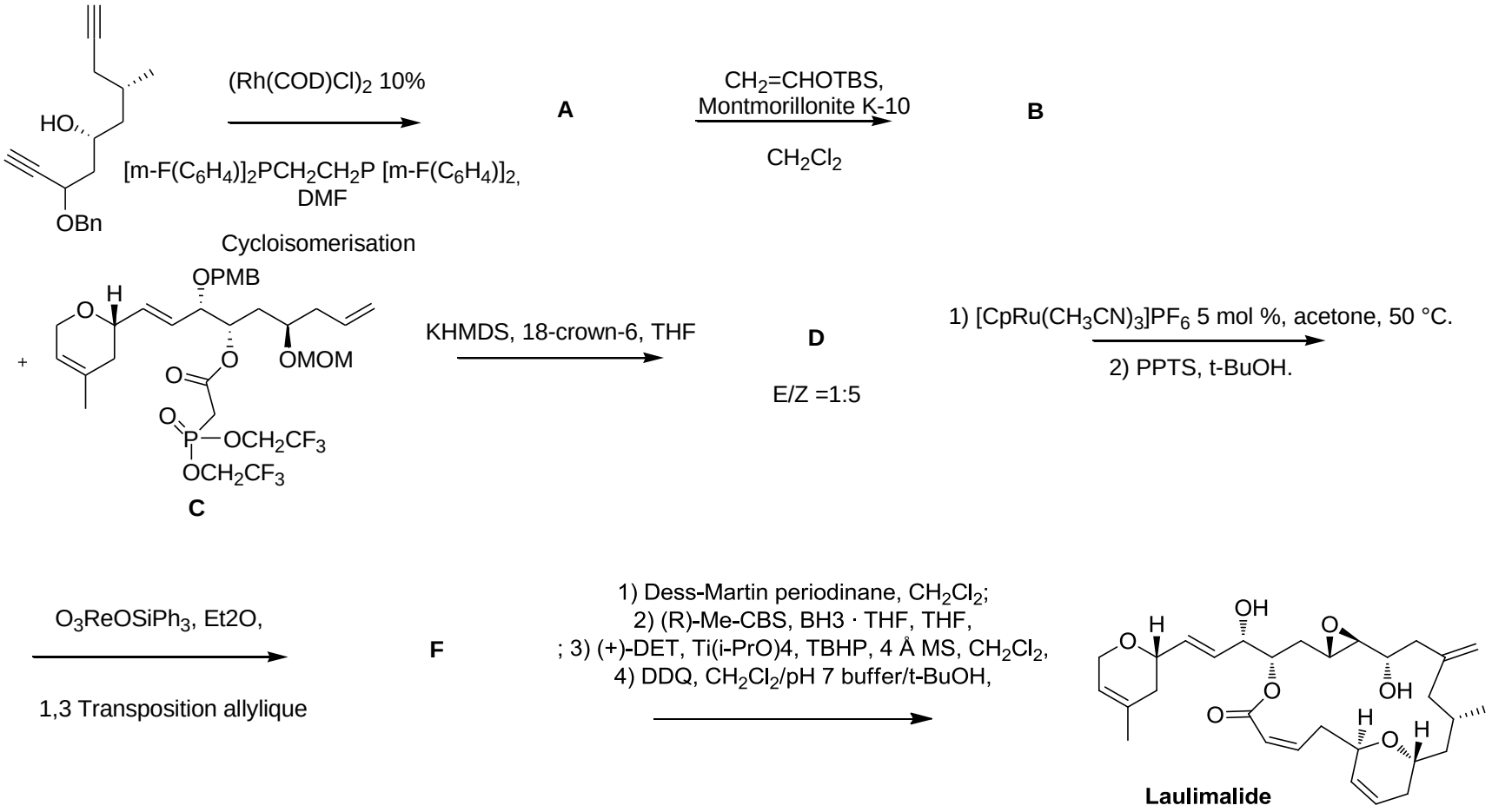
Doctorant D3-1

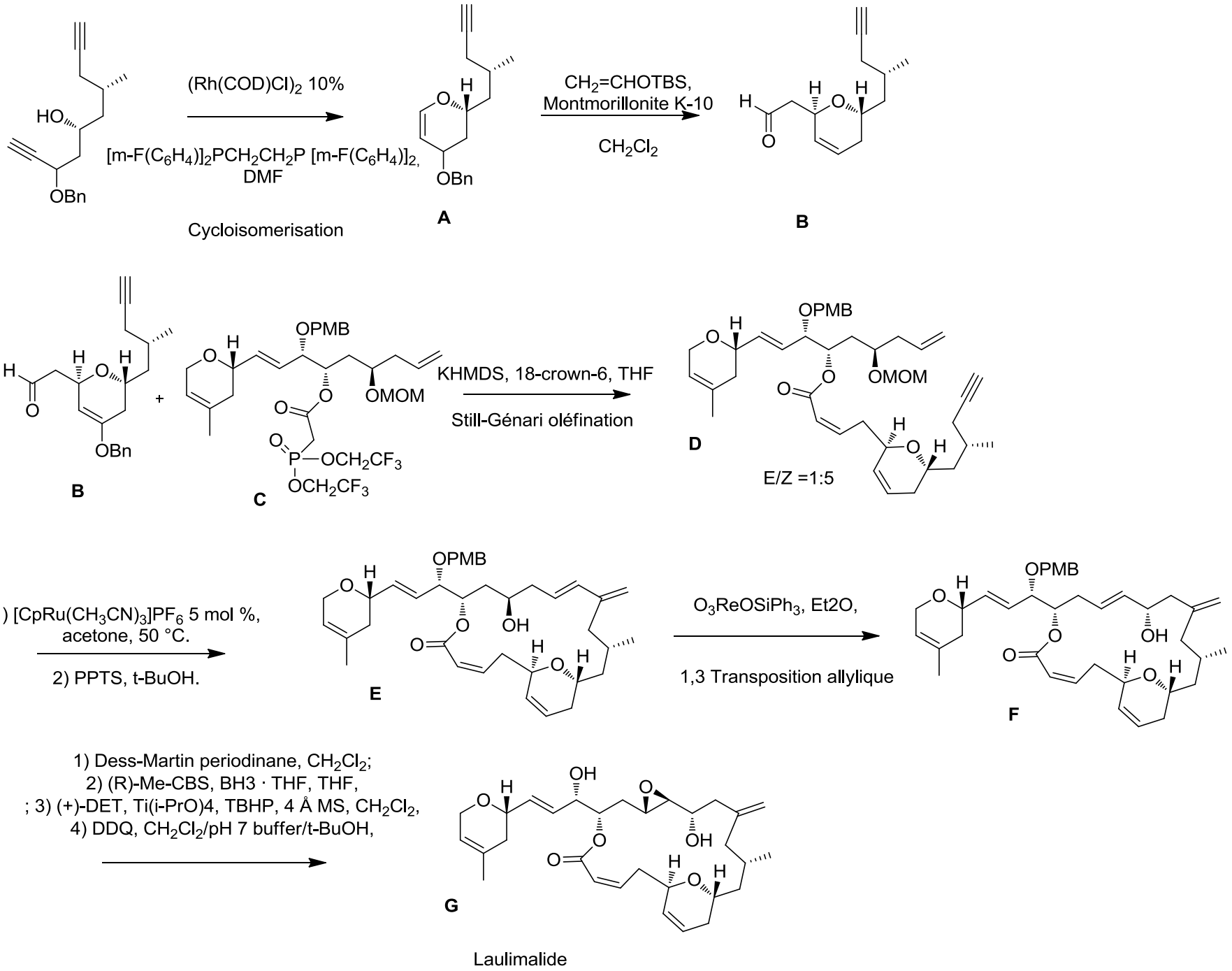
Synthesis of Laulimalide

Laulimalide is a structurally unique 20-membered marine macrolide displaying microtubule stabilizing activity similar to that of paclitaxel and the epothilones.

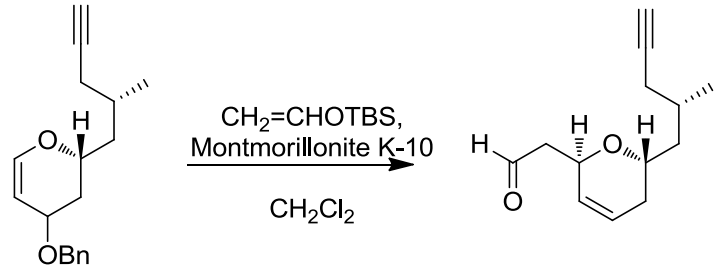
1) Find out the structure of compounds A, B, D, E and F
2) What is the name of the reaction used to obtain B
3) Find the mechanism to obtain A ,B and F



B. M. Trost, D. Amans, W. M. Seganish and C. K. Chung, *J. Am. Chem. Soc.*, 2009, **131**, 17087-17089.

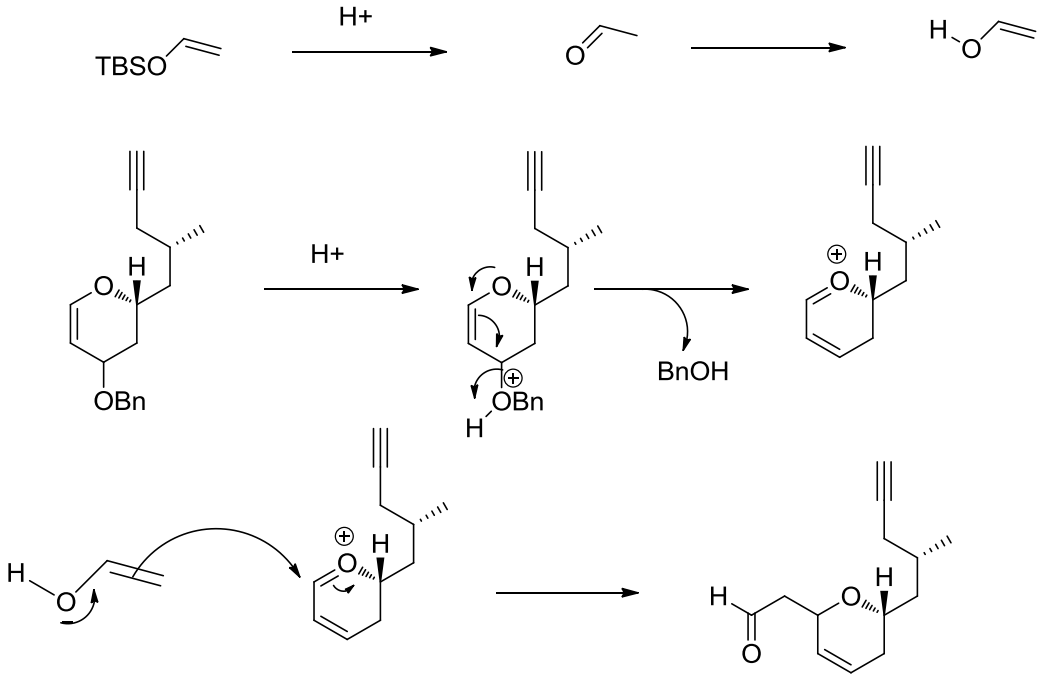

(Rh(COD)Cl)2 10%
[m-F(C6H4)]2PCH2CH2P [m-F(C6H4)]2,
DMF
Cycloisomerisation
A
CH2=CHOTBS,
Montmorillonite K-10
CH2Cl2
B
KHMDS, 18-crown-6, THF
Still-Génari oléfination
C
D
E/Z =1:5
1) [CpRu(CH3CN)3]PF6 5 mol %,
acetone, 50 °C.
2) PPTS, t-BuOH.
E
O3ReOSiPh3, Et2O,
1,3 Transposition allylique
F
1) Dess-Martin periodinane, CH2Cl2;
2) (R)-Me-CBS, BH3 · THF, THF,
; 3) (+)-DET, Ti(i-PrO)4, TBHP, 4 Å MS, CH2Cl2,
4) DDQ, CH2Cl2/pH 7 buffer/t-BuOH,
G
Laulimalide

What is the name of the reaction used to obtain B ?

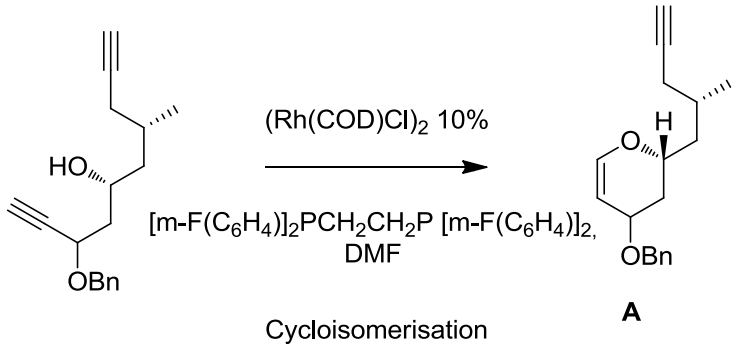


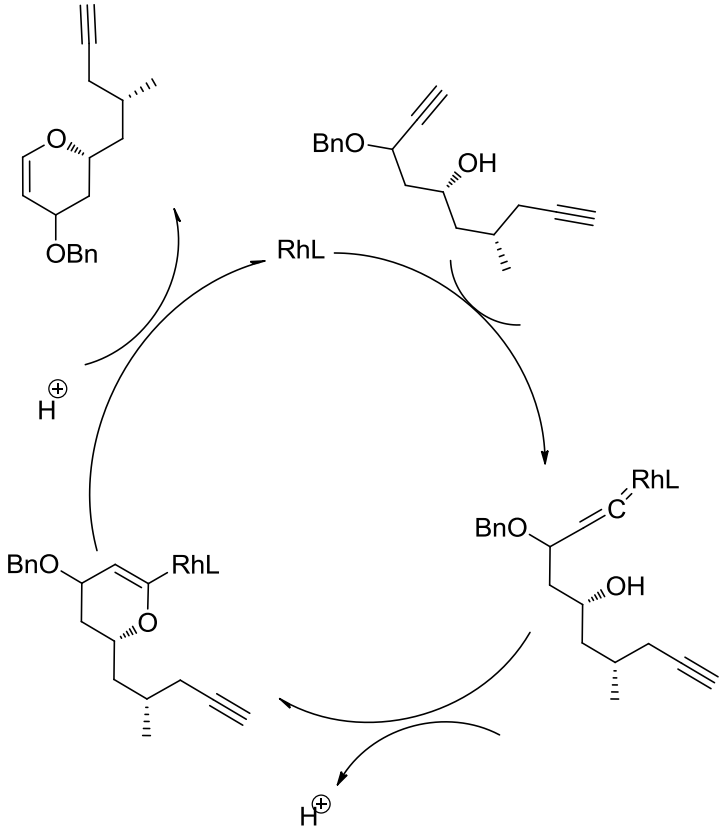
A B

Ferrier rearrangement



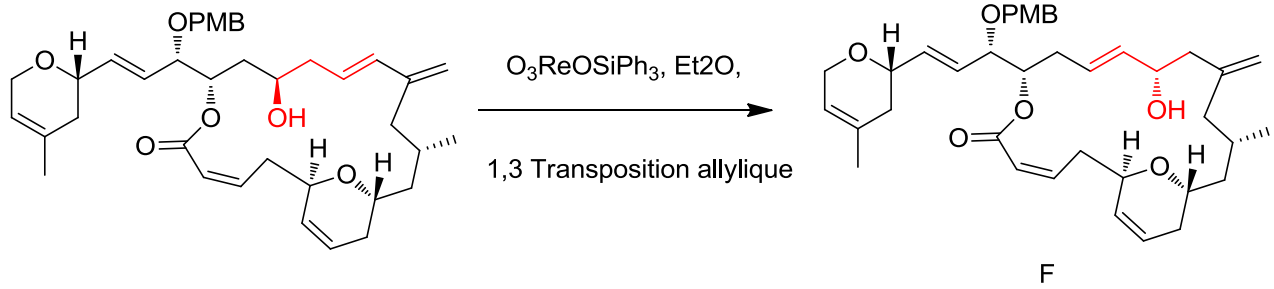
Find the mechanism to obtain A



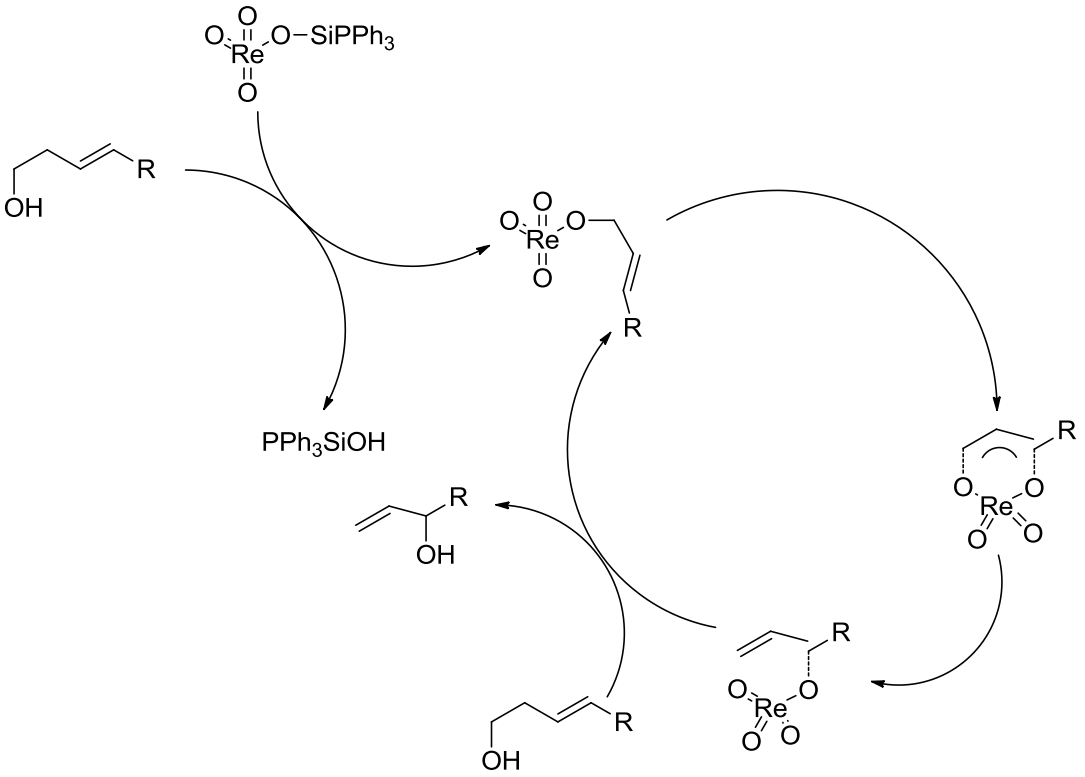


JACS, 2003, 7483.

Find the mechanism to obtain A ,B and F



F



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