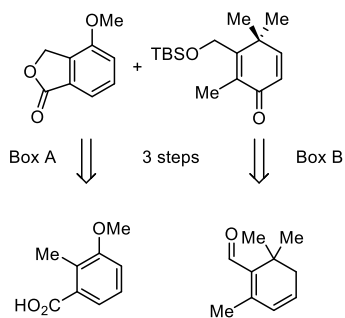
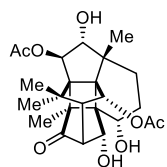
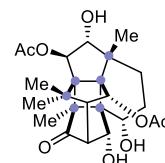
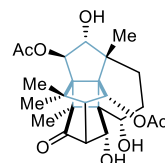
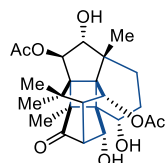
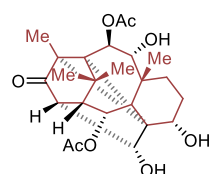
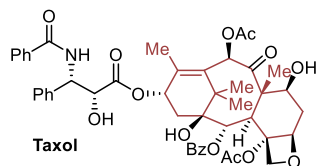


Total synthesis of the complex taxane diterpene **canataxpropellane**

F. Schneider, K. Samarin, S. Zanella, T. Gaich,
Science **2020**, 367, 676-681

- Taxane diterpene family
- Anticancer activity (Taxol)
- 3 additional C-C bonds
- 2 Propellanes: [4.4.2], [3.3.2]
- 6 contiguous quaternary carbons

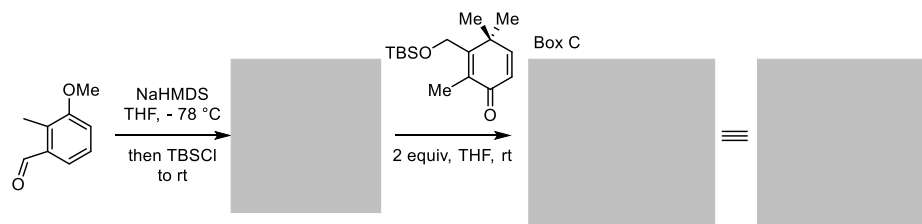


Box A

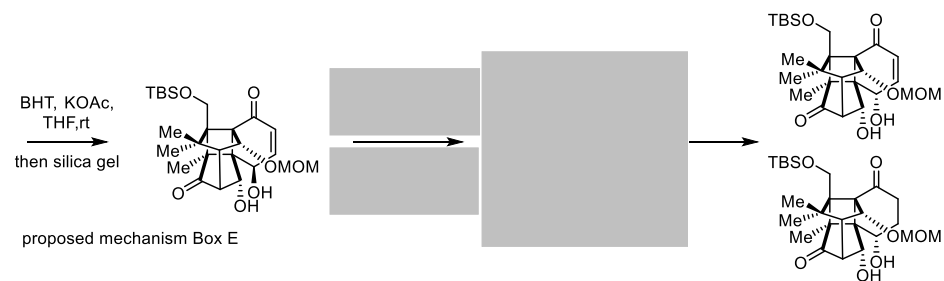
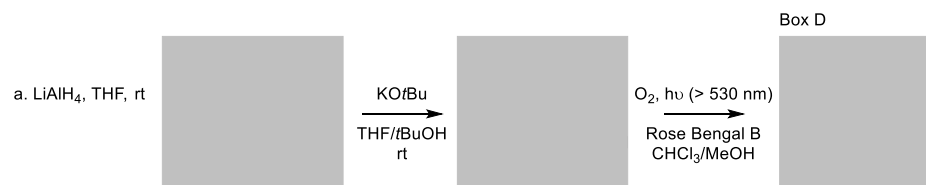


Box B





[4.4.2]-Propellane



proposed mechanism Box E

Box C

Box D

Box E

a. PhCH(OMe)_2 , PTSA,
 CH_3CN , rt
b. *L*-selectride
THF, -78 °C

a. KHDMS, Comin's reagent,
THF, -78 °C
b. CO, $\text{Pd(PPh}_3)_4$, Et_3N
MeOH, DMF, rt

a. Mg, MeOH, rt
b. KHDMS, 18-crown-6
MeI, THF, -78 °C

LiAlH_4 , THF, 0 °C
then TBAF, THF, rt

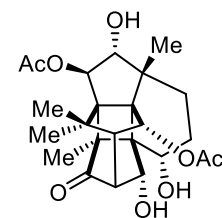
a. $(\text{COCl})_2$, DMSO,
 Et_3N , -78 to 0 °C
b. TiCl_4 , Zn,
Py, THF, rt

L-selectride

Comin's reagent

a. Ac_2O , DMAP,
Py, DCM, rt
b. BrB(catechol) ,
DCM, 0 °C

a. K_2CO_3 , MeOH, 0 °C
b. Ac_2O , DMAP, Py, DCM, rt
c. H_2 , Pd/C, MeOH, rt



Canataxpropellane

[3.3.2]-Propellane

Enantioselective synthesis



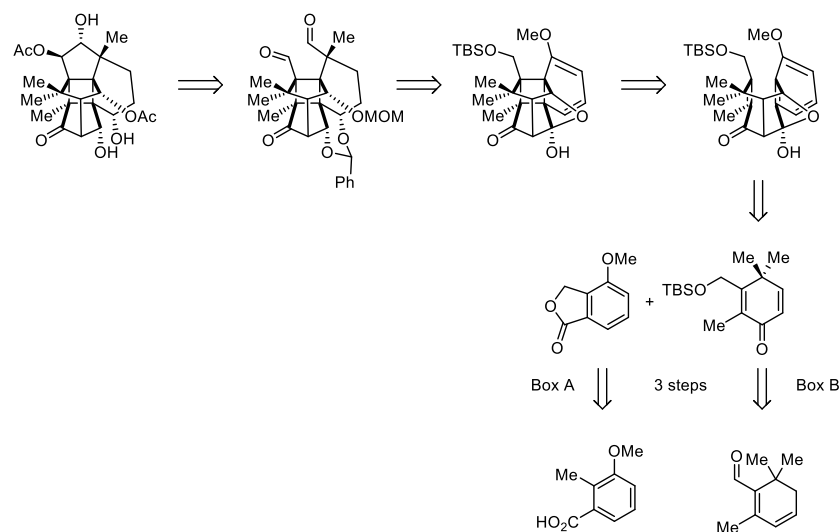
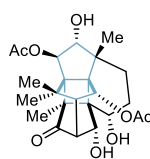
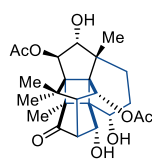
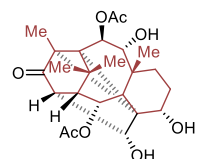
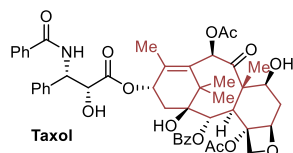
Solution

Total synthesis of the complex taxane diterpene **canataxpropellane**

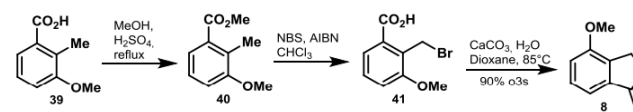
F. Schneider, K. Samarin, S. Zanella, T. Gaich,

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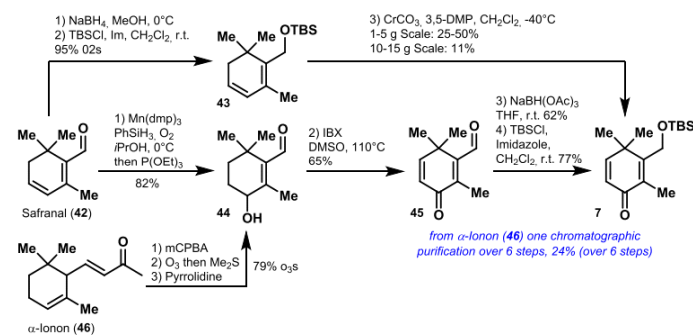
- **Taxane** diterpene family
- Anticancer activity (Taxol)
- 3 additional C-C bonds
- 2 Propellanes: [4.4.2], [3.3.2]
- 6 contiguous quaternary carbons

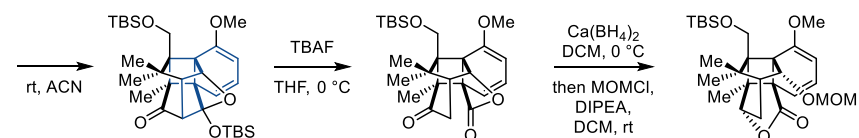
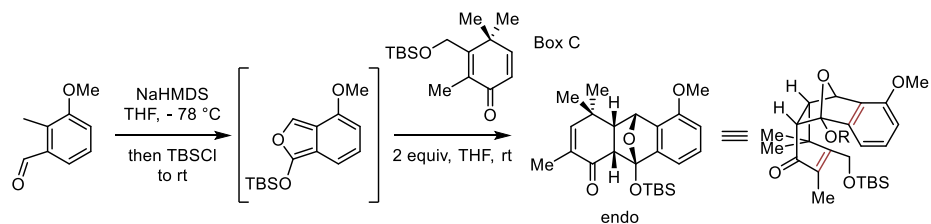


Box A

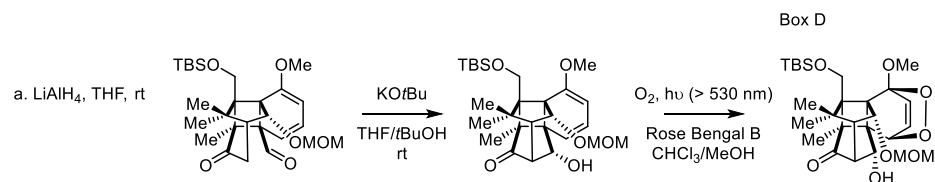


Box B

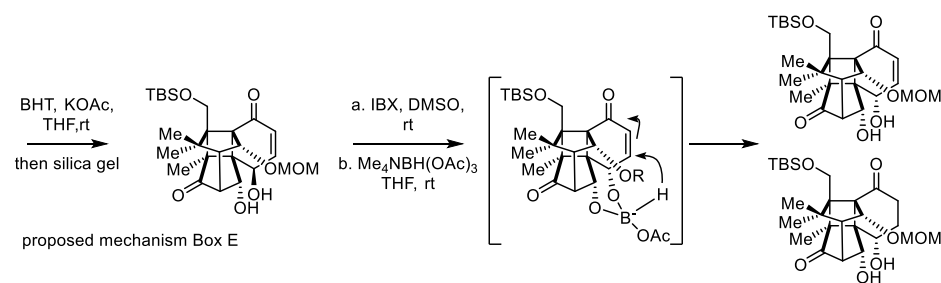




[4.4.2]-Propellane

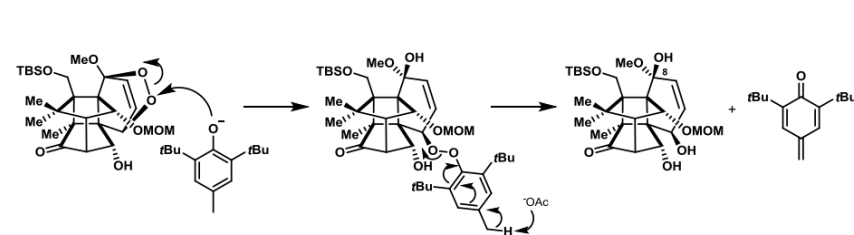


Box D

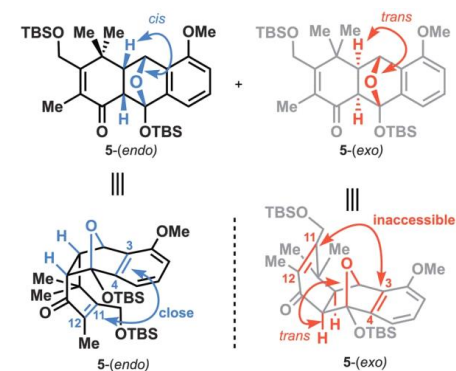


proposed mechanism Box E

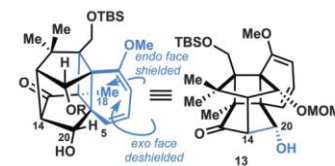
Box E

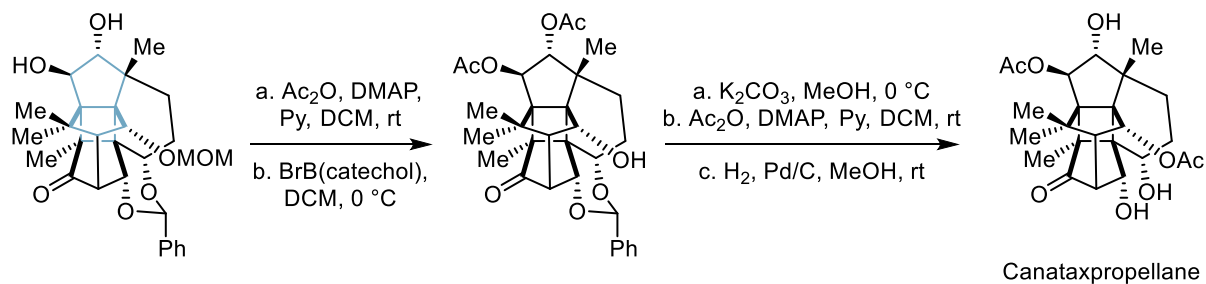
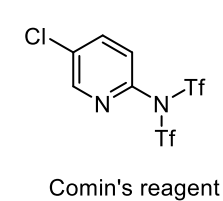
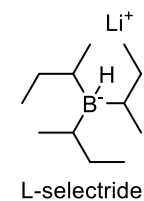
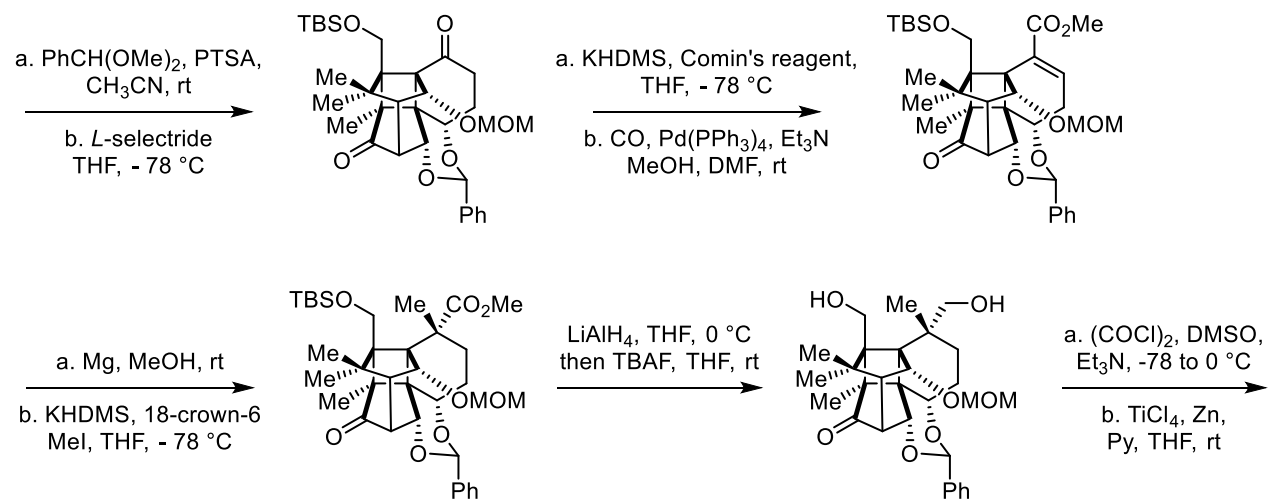


Box C



Box D





[3.3.2]-Propellane

Enantioselective synthesis

