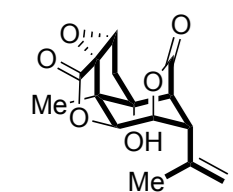


Synthesis of (-)-picrotoxinin from (R)-carvone - exploration of C-C bond construction

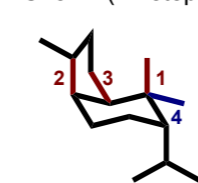
— C-C bond forming — C-C bond breaking



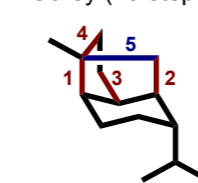
Main reference from R. Shenvi: *J. Am. Chem. Soc.* **2020**, *142*, 26, 11376-11381
 Corey: *J. Am. Chem. Soc.* **1979**, *101*, 5841-5843
 Trost: *J. Am. Chem. Soc.* **1999**, *121*, 6183-6192
 Yamada: *J. Am. Chem. Soc.* **1984**, *106*, 4547-4552
 Yosikoshi: *J. Am. Chem. Soc.* **1989**, *111*, 3728-3734

- Isolated by Pierre François Guillaume Boullay in 1812
- Found in the fruit of *Anamirta cocculus*
- Highly toxic: LD₅₀ = 3.0 mg/kg
- GABA antagonist in synapses
- Inhibits opening of Cl⁻ ion channels

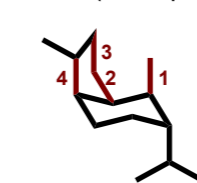
Shenvi (11 steps)



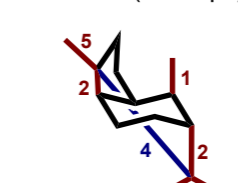
Corey (19 steps)



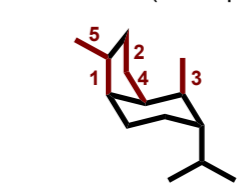
Trost (24 steps)



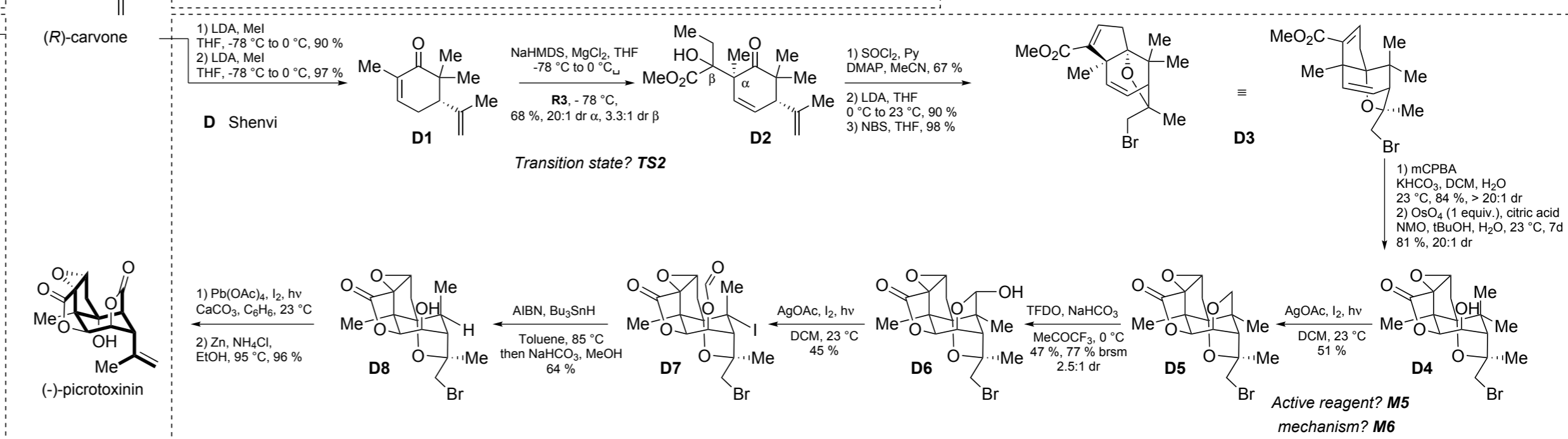
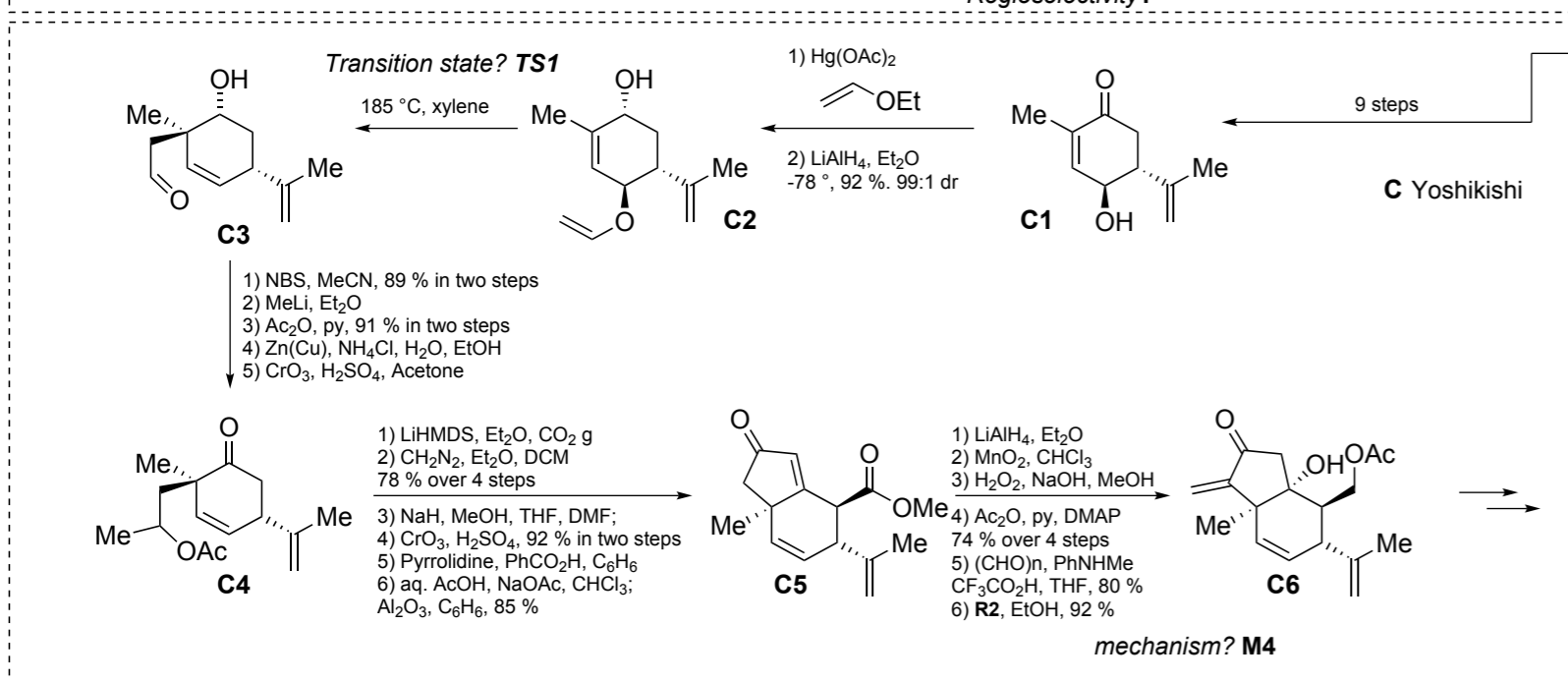
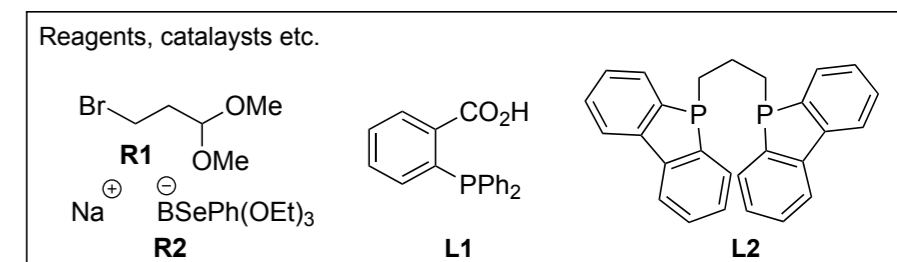
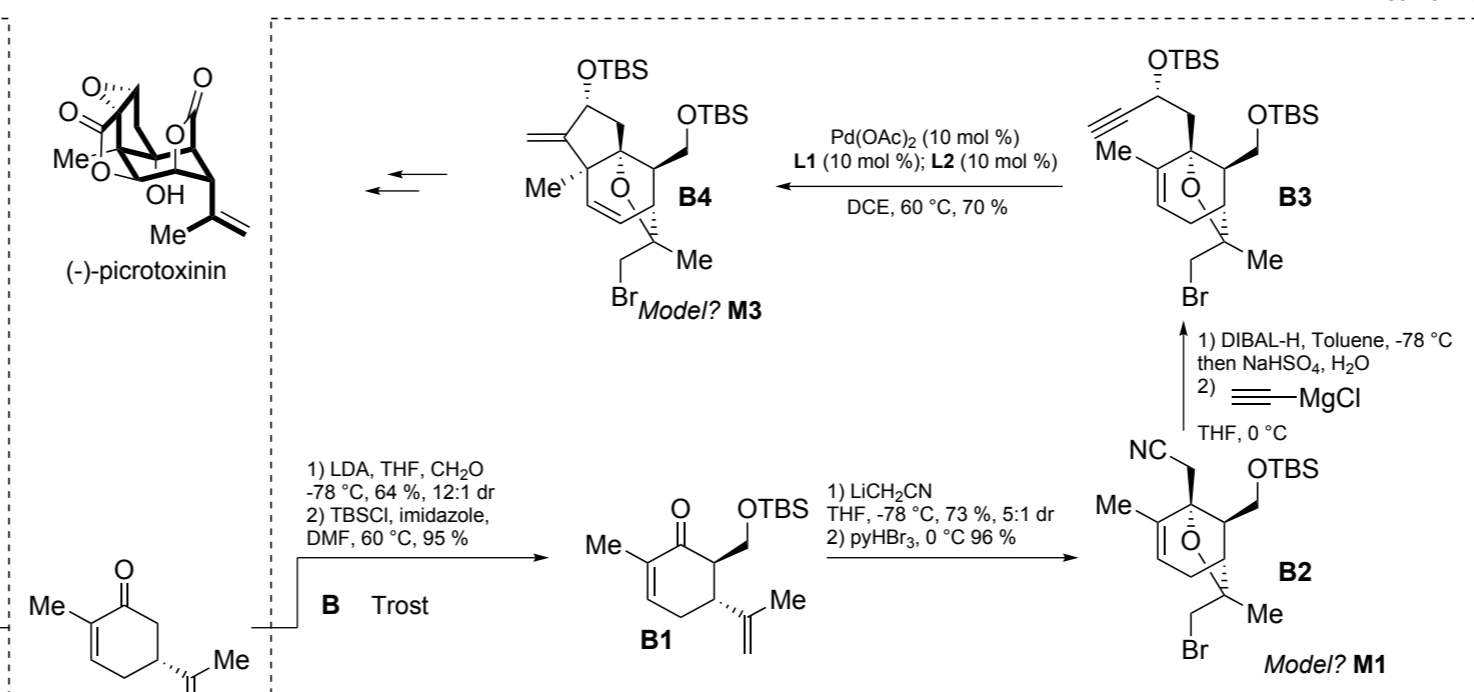
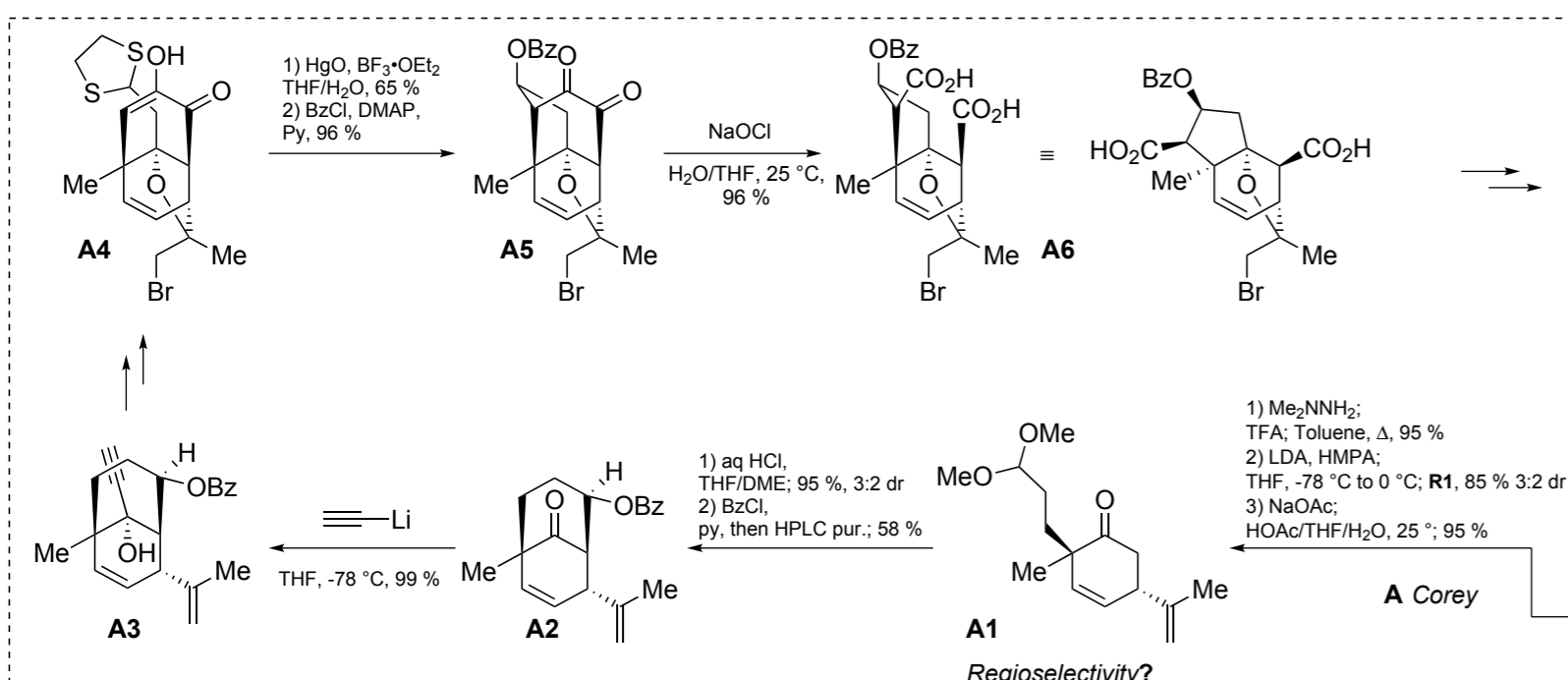
Yamada (36 steps)



Yosikoshi (40 steps)



not from carvone



Transition states, mechanisms etc.

