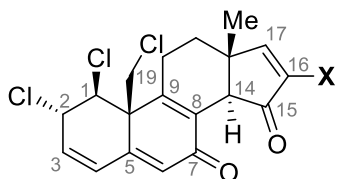
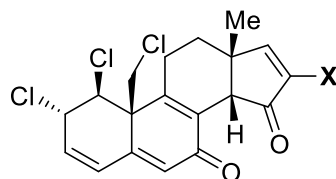


**Clionastatins A and B** (J. Gui *et al.*, *JACS*, 2021)



X = H, Clionastatin A  
X = Cl, Clionastatin B

(originally proposed structures)

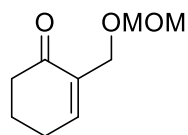


X = H, Clionastatin A  
X = Cl, Clionastatin B

(revised structures)

Chlorinated steroid drugs are an important class of synthetic steroids with various therapeutic uses. Example: Nasonex (retail price = \$376 million in 2018) is prescribed as treatment of nasal allergy and nasal polyps.

Clionastatins A and B are the first polychlorinated steroids found in nature (isolated in 2004 from the burrowing sponge *Cliona nigricans*) and they exhibit potent cytotoxicity against tumor cell lines.

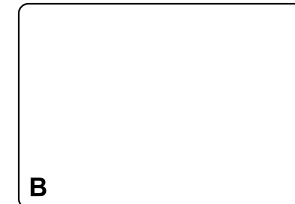


(*R*)-Me-CBS  
**Structure?**

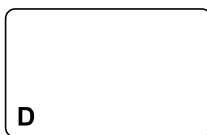
BH<sub>3</sub>Me<sub>2</sub>S  
then Ac<sub>2</sub>O



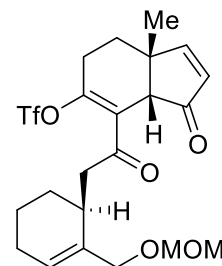
KHMDS, TMSCl  
**Name?**



*t*BuOCOCi, NMM  
Ph<sub>2</sub>Te<sub>2</sub>, DIBAL-H

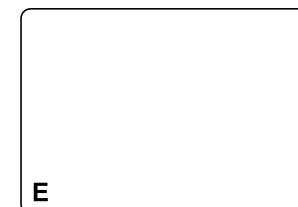


2 Steps

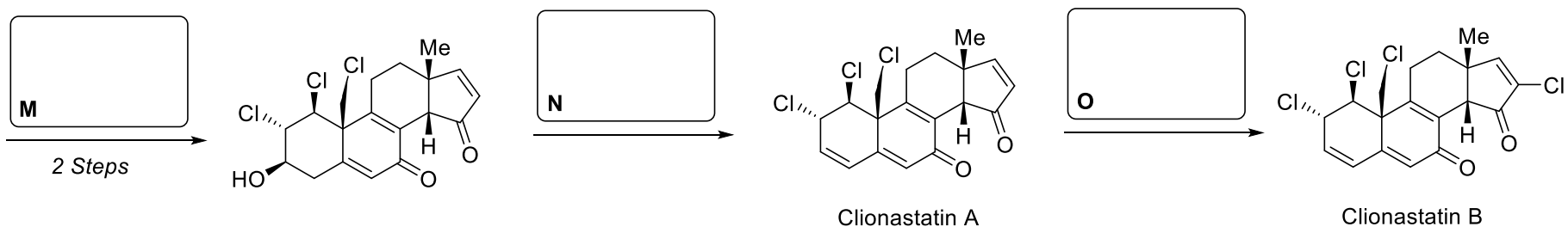
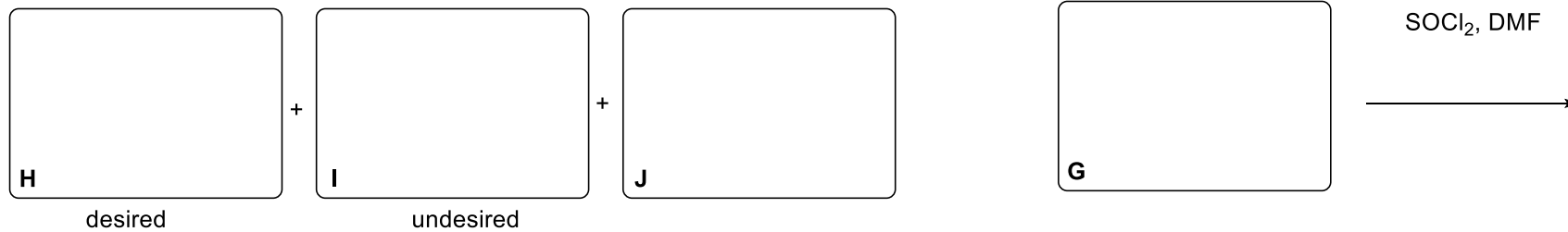
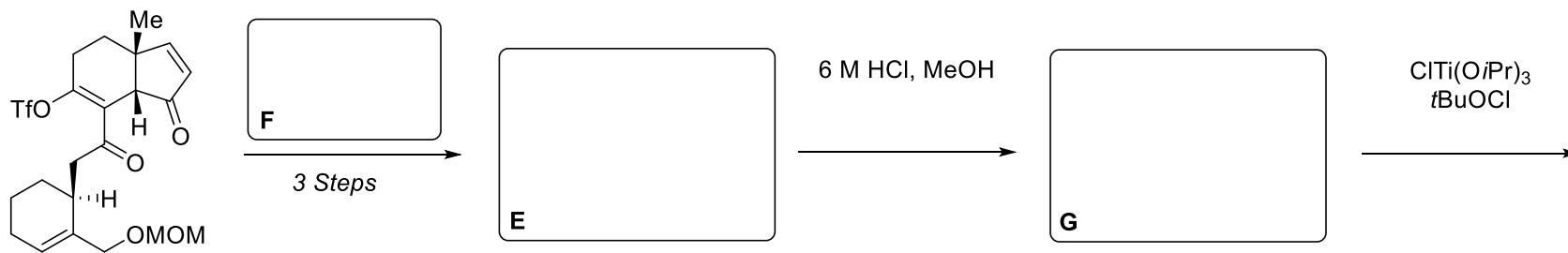


Pd(OAc)<sub>2</sub>, dppp  
Et<sub>3</sub>N, DMF

**Name?**



not formed



**Solution**

