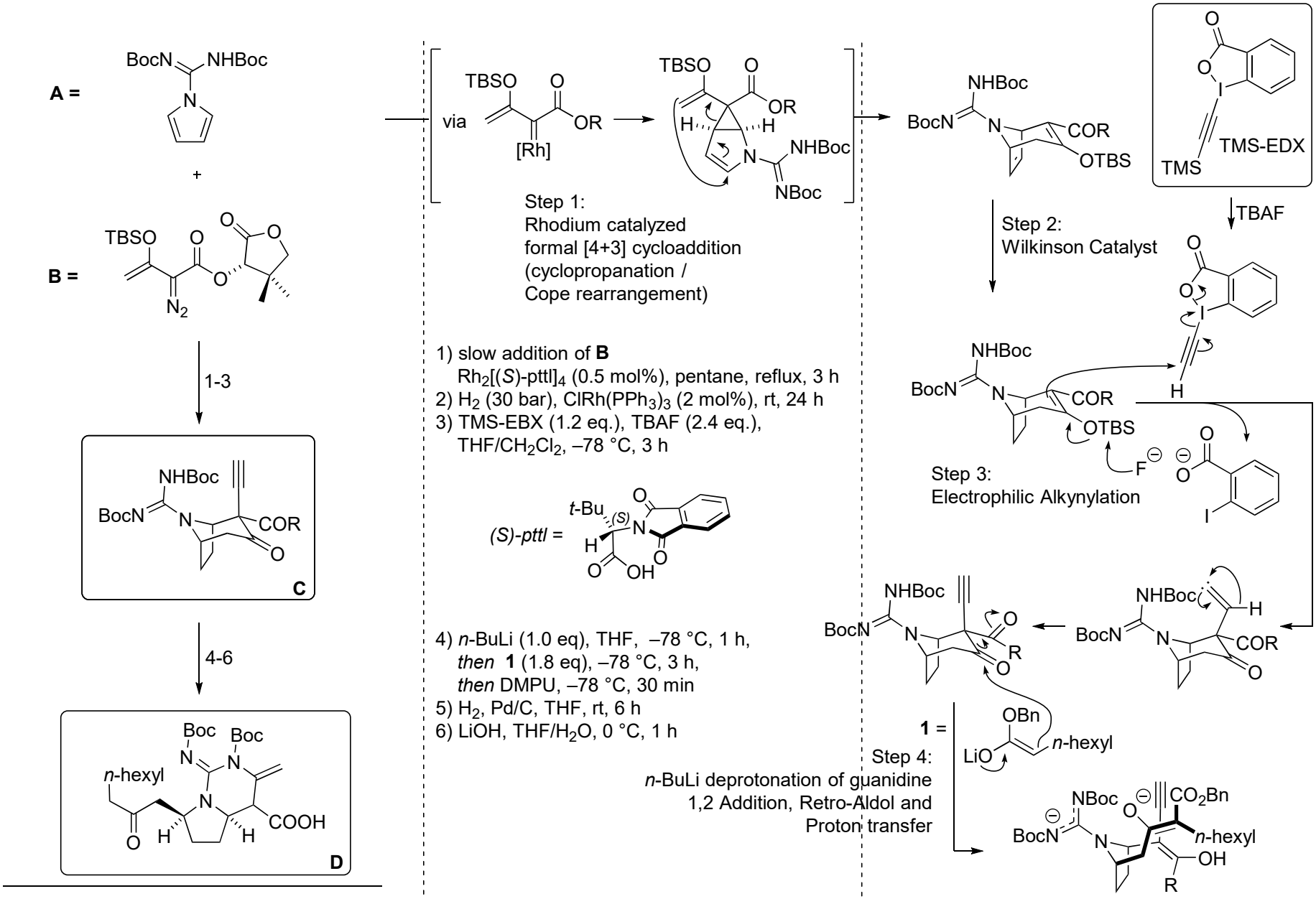
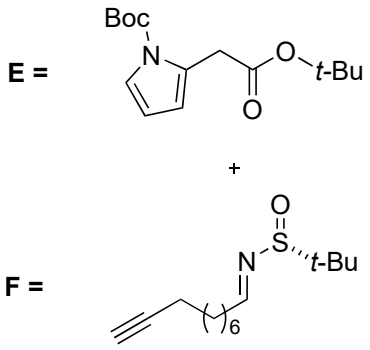
A concise synthesis of (+)-batzelladine B from simple pyrrole-based starting materials

Parr, B.T.; Economou, C.; Herzon, S. *Nature* **2015**, *525*, 507-510.





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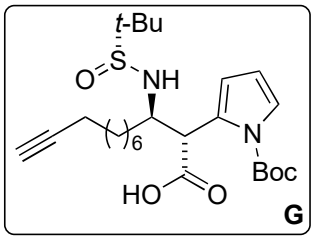
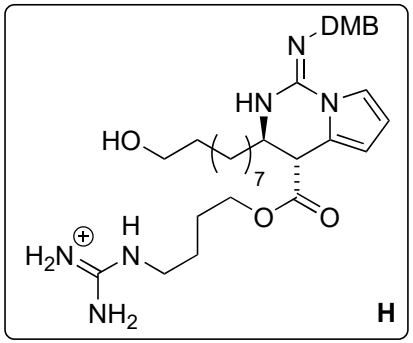


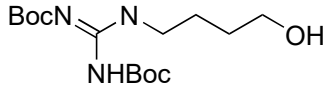
10-13



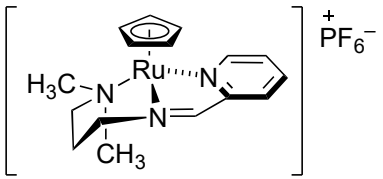
7) LDA, $Ti(Oi\text{-}Pr)_3Cl$, THF, –78 °C, 2 h
8) HCl, MeOH/dioxane, 0 °C, 2 h
9) $(ClSnBu_2)_2O$, $PhCH_3$, 100 °C, 2 h

10) EtOTf, 2,4,6-tri-tert-butylpyrimidine, CH_2Cl_2, rt, 43 h
11) $DMBNH_3$, EtOH, 70 °C, 5 days
12) TMSOTf, 2,6-lutidine, CH_2Cl_2, rt, 40 h *then* EDC•HCl, **2,** 2 h
13) **3** (15 mol%), HCO_2H (4 eq.), *p*-TSA (1 eq), NMP/H_2O, rt, 72 h

2 =



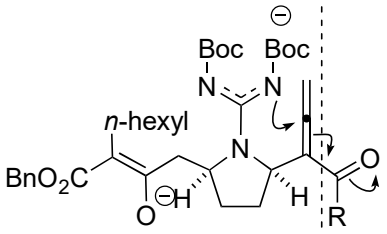
3 =

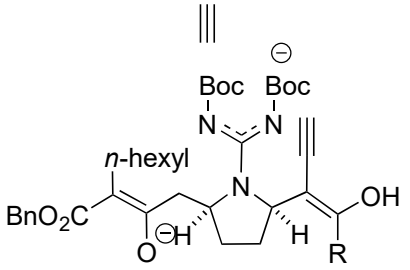


Step 13: Anti-Markovnikov Reductive Hydration of terminal alkyne

D

Michael addition

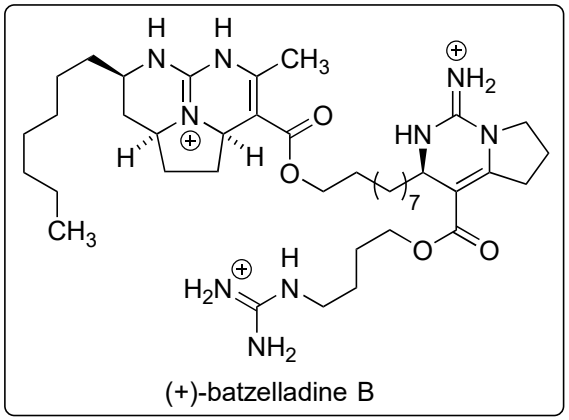




D + **H**

14, 15

14) EDC•HCl, DMAP, CH_2Cl_2, rt, 14 h
15) TFA, Pd/C, 0 °C to rt, 1 h
then H_2, rt, 15 h



(+)-batzelladine B