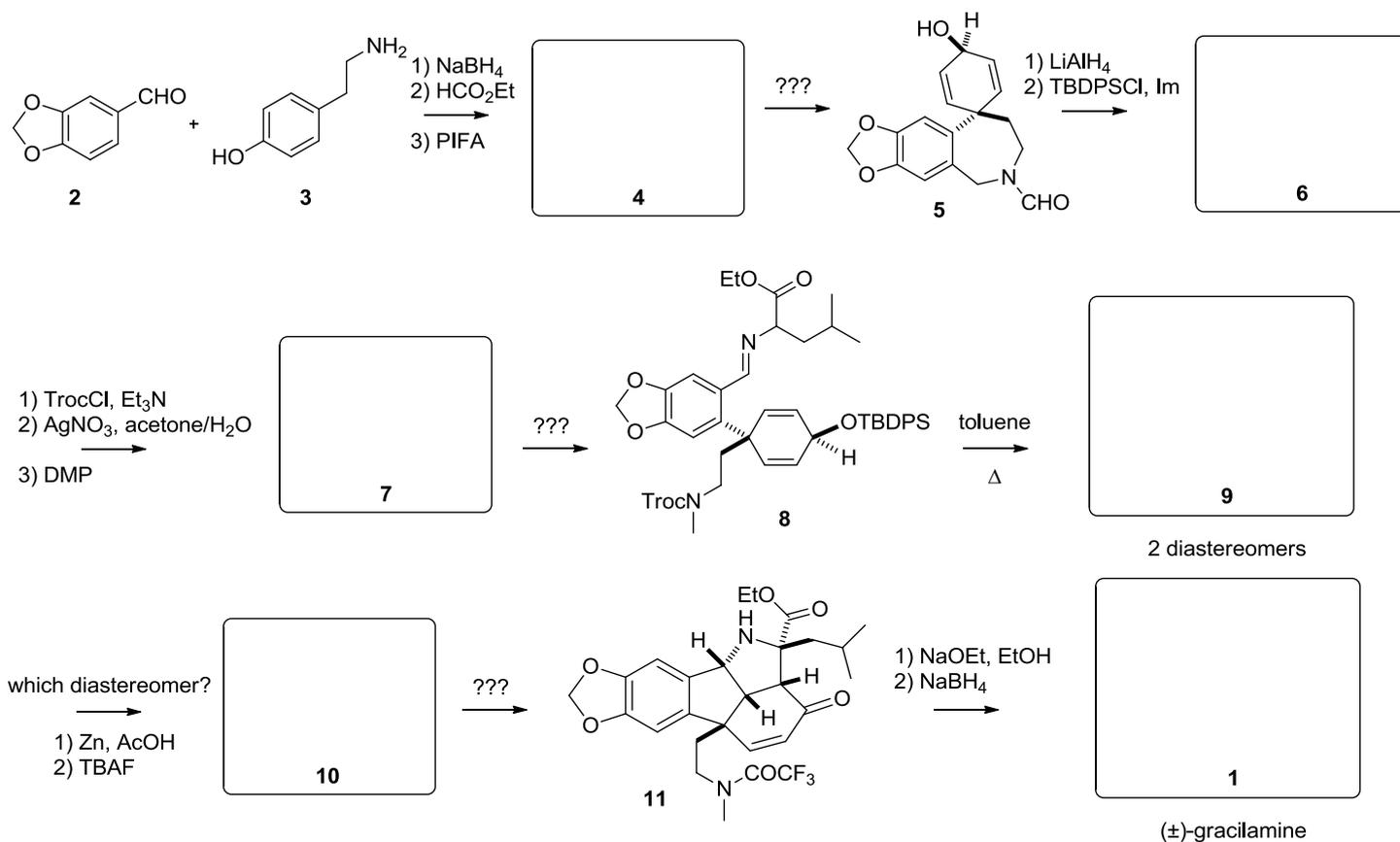


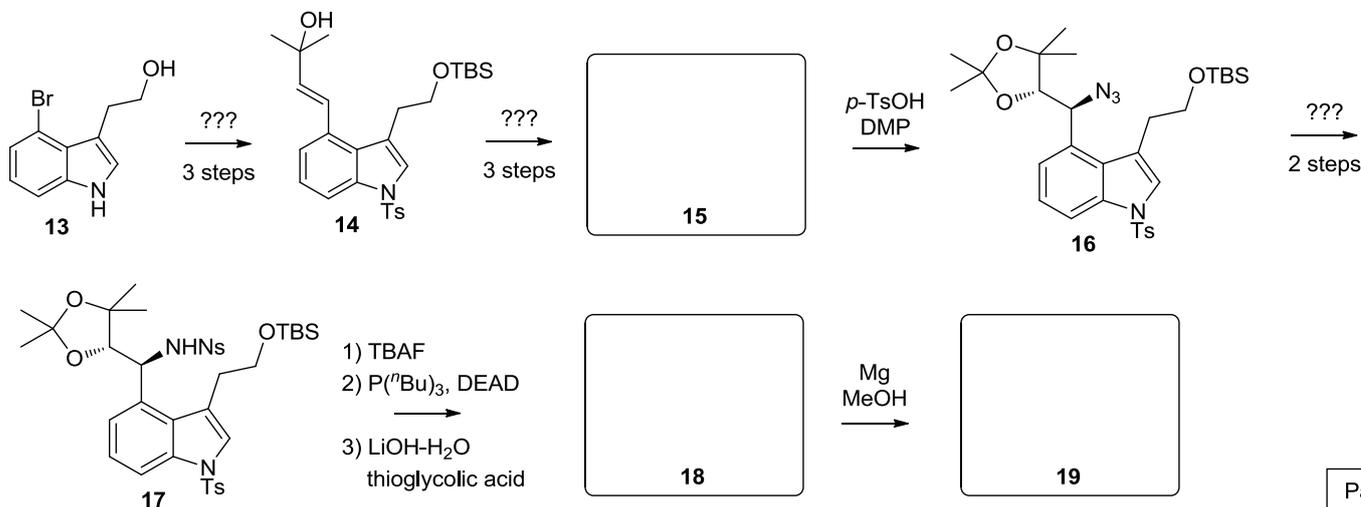
# Total Synthesis of (±)-Gracilamine and communesin A

Jimmy Sejberg, November 2012

In 2005, gracilamine (**1**), a structurally novel pentacyclic dinitrogenous alkaloid was isolated from an Amaryllidaceae species, *Galanthus gracilis*, collected from a Turkish mountain. Because of the limited amount of gracilamine available from natural sources, its biological activities have not yet been evaluated.



The polycyclic, tryptamine-derived indole alkaloid communesins A (**12**) was first isolated in 1993 from a marine fungus of the *Penicillium* genus. The spectroscopically established structure includes two contiguous quaternary centers, two fused bicyclic aminals, and an epoxide. Communesins A demonstrated potent inhibition of murine lymphocytic leukemia tumor cell (P-388) proliferation in preliminary studies, with an ED<sub>50</sub> value (50% effective doses) of 3.5 mg/mL. In 2011 Ma and Zuo achieved the first total synthesis of communesin A in 2% overall yield with a longest linear sequence of 24 linear steps from 4-bromotryptophol.



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