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Total Synthesis of Gymnocin-A
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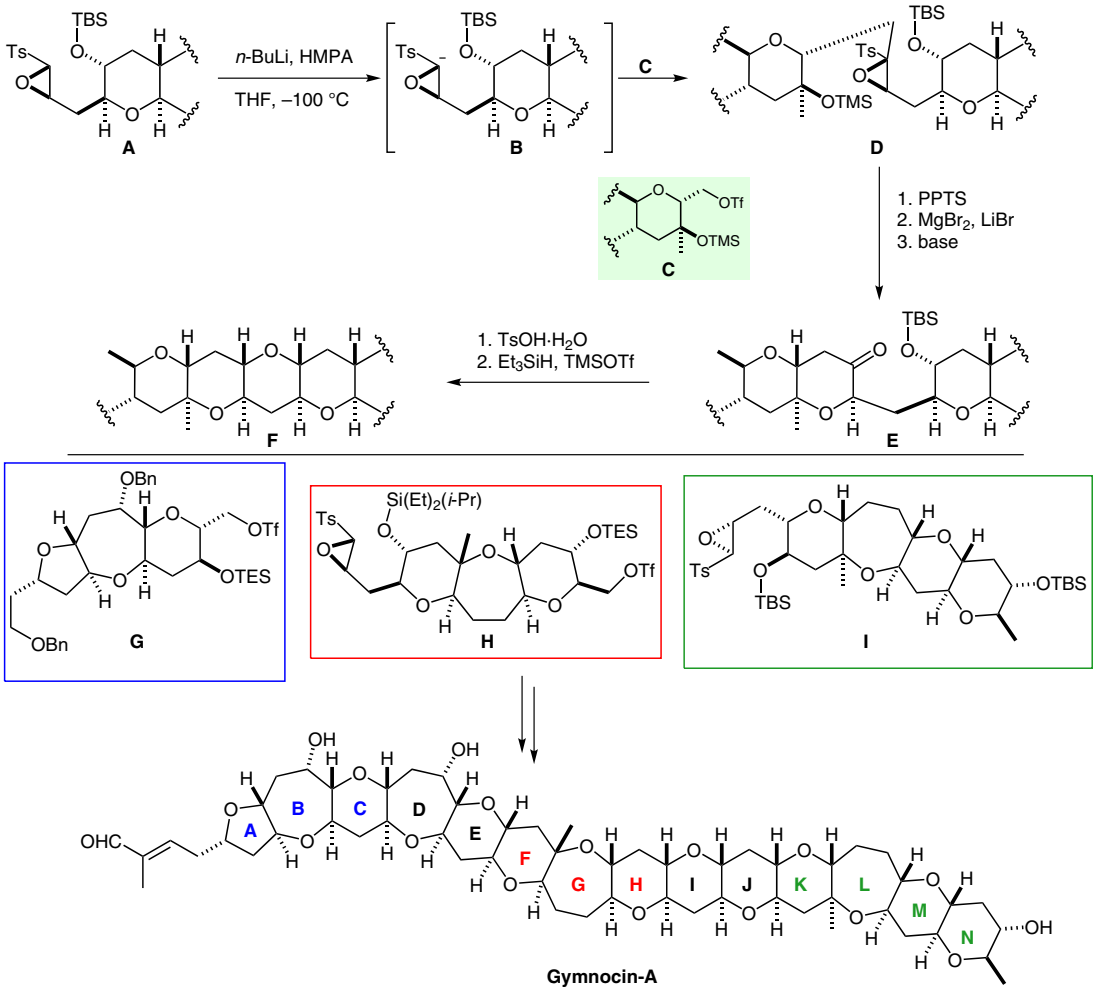
Synthesis of Gymnocin-A



Significance: Gymnocin-A, a polycyclic ether isolated from *Karenia mikimotoi* in 2002, exhibits strong cytoxicity (IC_{50} = 1.3 µg/mL) against mouse leukemia cells. Structurally, this natural product is characterized by 14 consecutive ether rings. Thus far, only one total synthesis has been reported (C. Tsukano, M. Sasaki *J. Am. Chem. Soc.* **2003**, *125*, 14294). Herein, Mori and coworkers present a strategically different approach, relying on the union of the three fragments **G**, **H**, and **I** by an oxiranyl anion coupling.

Comment: The presented synthesis is centered around a multi-step coupling protocol uniting two fragments and concomitantly forming two new cyclic ethers in between. Thereby, a tosyl epoxide of type **A** was deprotonated and reacted with triflate **C**, generating **D**. Acid-mediated TMS deprotection, epoxide opening, and ether formation then yielded ketone **E**. The second ether ring was ultimately formed by acid-mediated hemiacetalization and reduction with Et_3SiH.

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Category
Synthesis of Natural Products and Potential Drugs

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