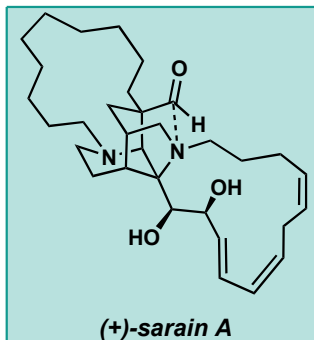


SOTW: (+)-sarain A



- Complex alkaloid isolated in 1986 from *Reniera sarai*, a marine sponge
- Reported to have cytotoxic, antibacterial, and insecticidal, antioxidant properties
- Key synthetic challenges include:
 - Five contiguous stereocenters, including quaternary center
 - A highly decorated diazatricycloundecane core
 - Two macrocycles
 - Skipped triene
 - Aldehyde-tertiary amine interaction
- Many synthetic campaigns
- First and only total synthesis reported in 46 steps by the Overman Group in 2006.

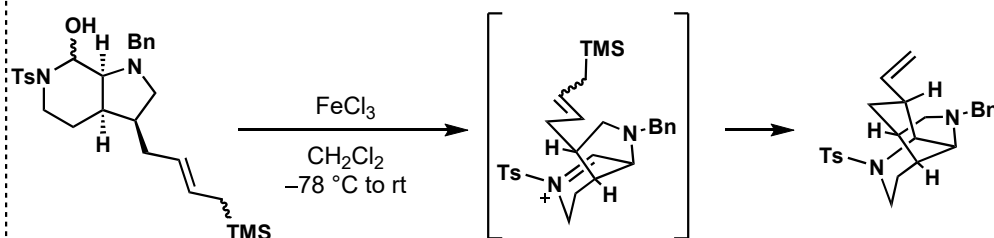


Reniera sarai

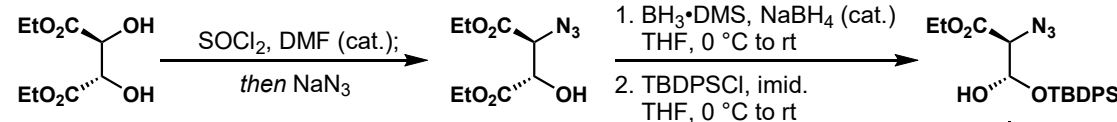
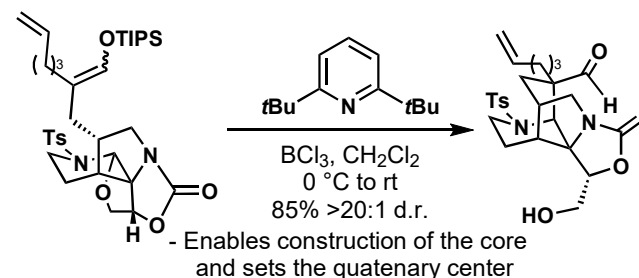
Location of *Reniera sarai*:
The Bay of Naples

Key Transformation:

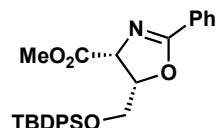
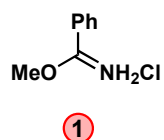
Sulfonyliminium Ion Cyclization: Weinreb, S. M. *J. Org. Chem.* **1993**, 58, 4945-4951.



Overman's System--Unprecedented cyclization via enoxysilane:



diethyl D-tartrate



1. H₂, Pd/C EtOH, rt
2. **1**, CH₂Cl₂, rt

Key references:

Total synthesis:

- Overman, L. E. *J. Am. Chem. Soc.*, **2007**, 129, 11987-12202.

Isolation:

- Cimino, G. *Pure Appl. Chem.* **1986**, 58, 375-386.

Proposed biosynthesis:

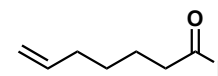
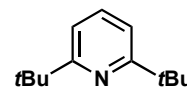
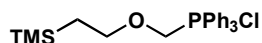
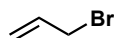
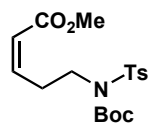
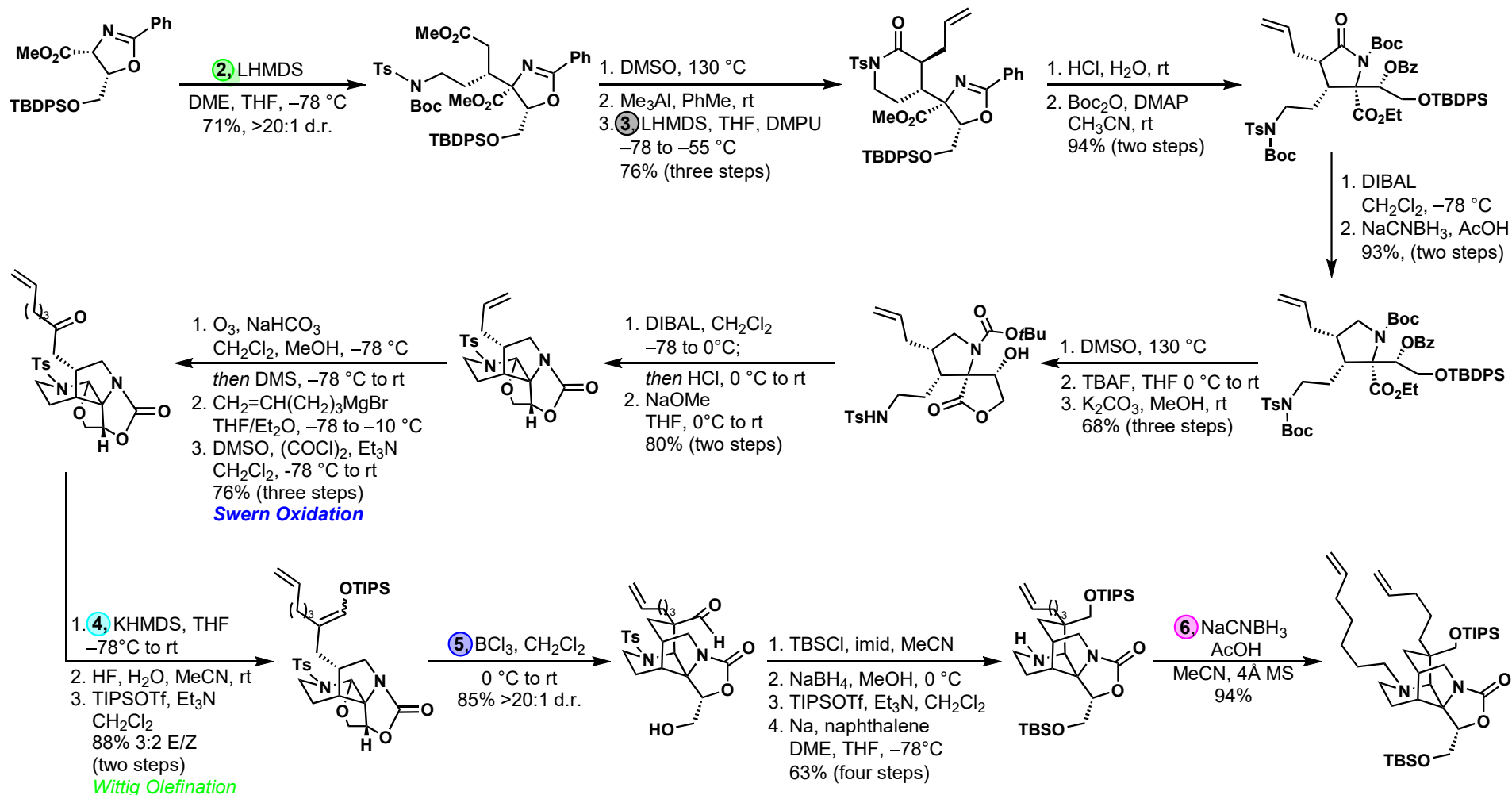
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- Mancini, I. *Eur. J. Org. Chem.* **2011**, 3761-3767.
- Botana, L. M. *Neuro. Res.* **2017**, 32, 368-380.

For other approaches to Sarain A see:

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