

# Asymmetric Total Synthesis of (-)- Scabronine G via Intramolecular Double Michael Reaction and Prins Cyclization

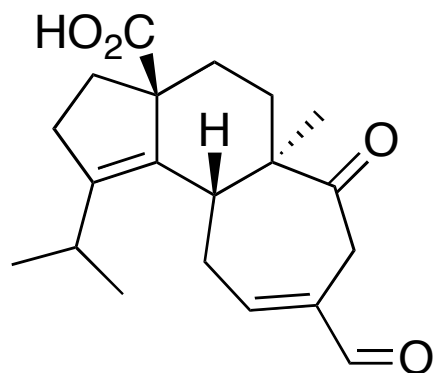
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Nishimura, Yoshiharu Iwabuchi

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Current Literature

Juraj Reháč

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(-)-Scabronine G

## (-)-Scabronine G



<http://www.mushroomexpert.com/sarcodo>

*Sarcodon scabrosus* is a mushroom belonging to the family *Thelephoraceae* and has a strongly bitter *taste*.

It is a widely distributed species in Europe and in North America.

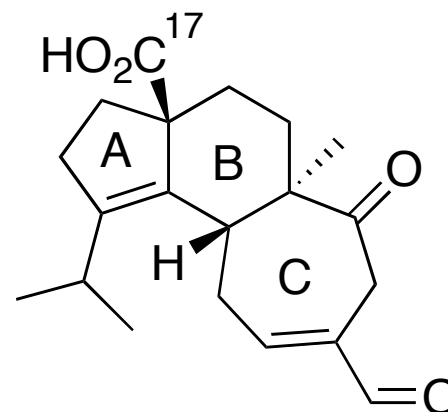
Scabronine G was isolated by Ohta and co-workers in 2001 and is shown to enhance the secretion of neurotrophic factors from 1321N1 human astrocytoma cells.

Scabronine G and their methyl ester are useful drugs to clarify the mechanisms underlying the synthesis and secretion of neurotrophic factors.

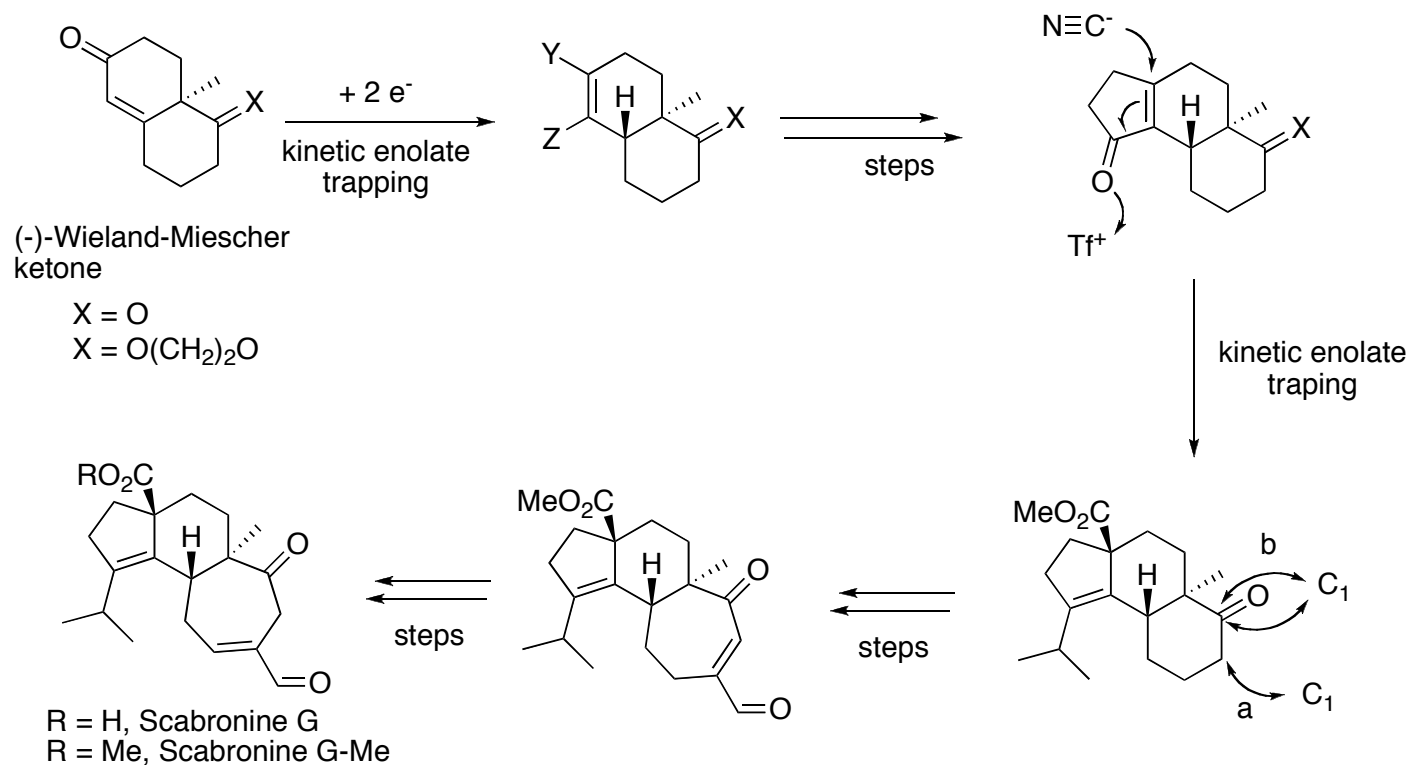
Y. Obara and co-workers *Y. Mol. Pharmacol.* **2001**, 59, 1287.

# (-)-Scabronine G

- Cyathane diterpene natural product
- tricyclic 5-6-7 ring system
- trans- fused 6-7 ring
- angular C-17 carboxyl group

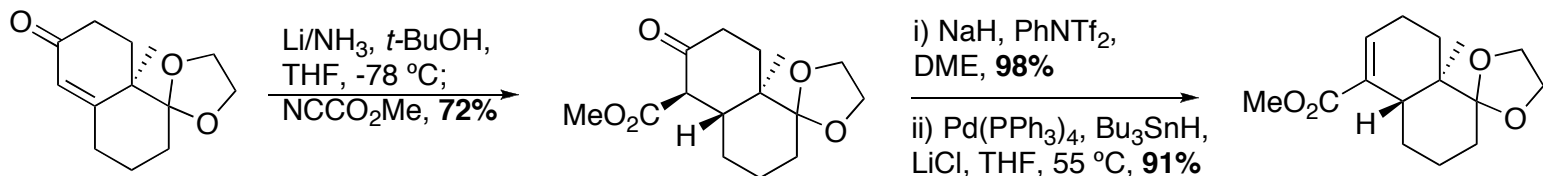


# Previous total synthesis (-)-Scabronine G

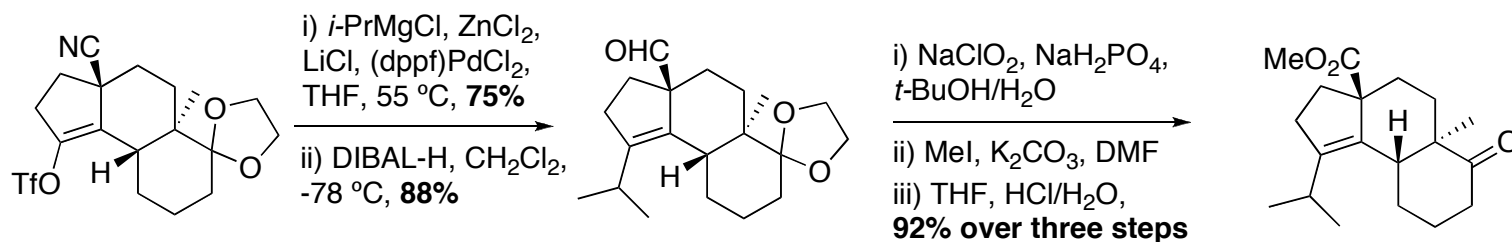
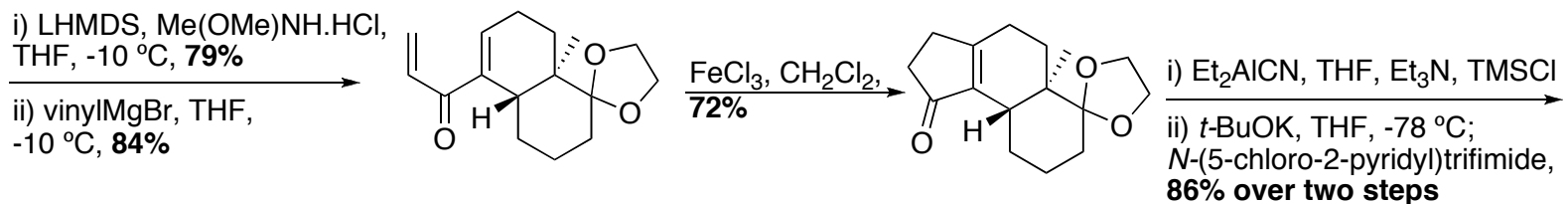


J. Danishefsky and co-workers J. Am. Chem. Soc. **2005**, *127*, 13514

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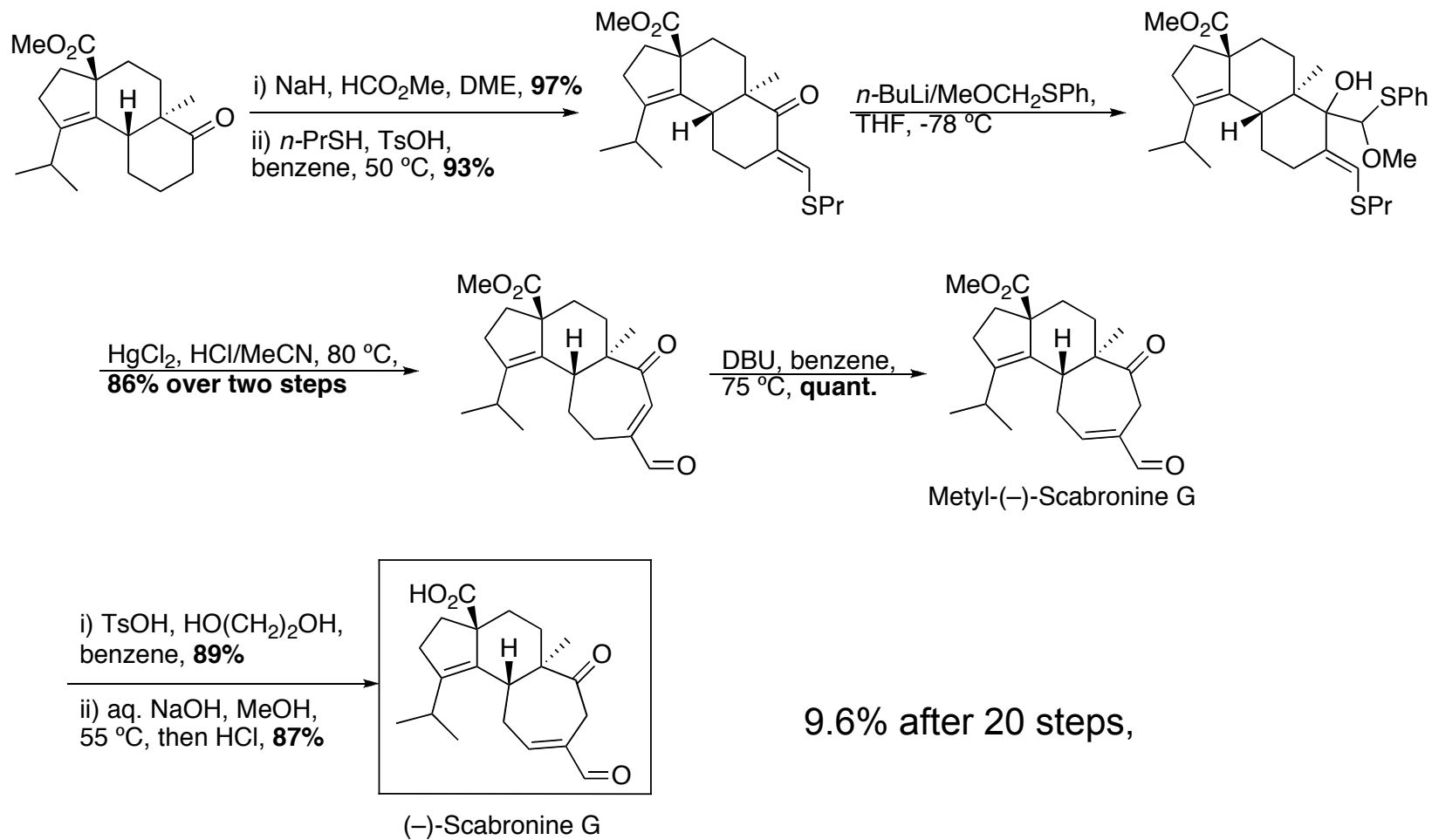


(-)-Wieland-Miescher ketone



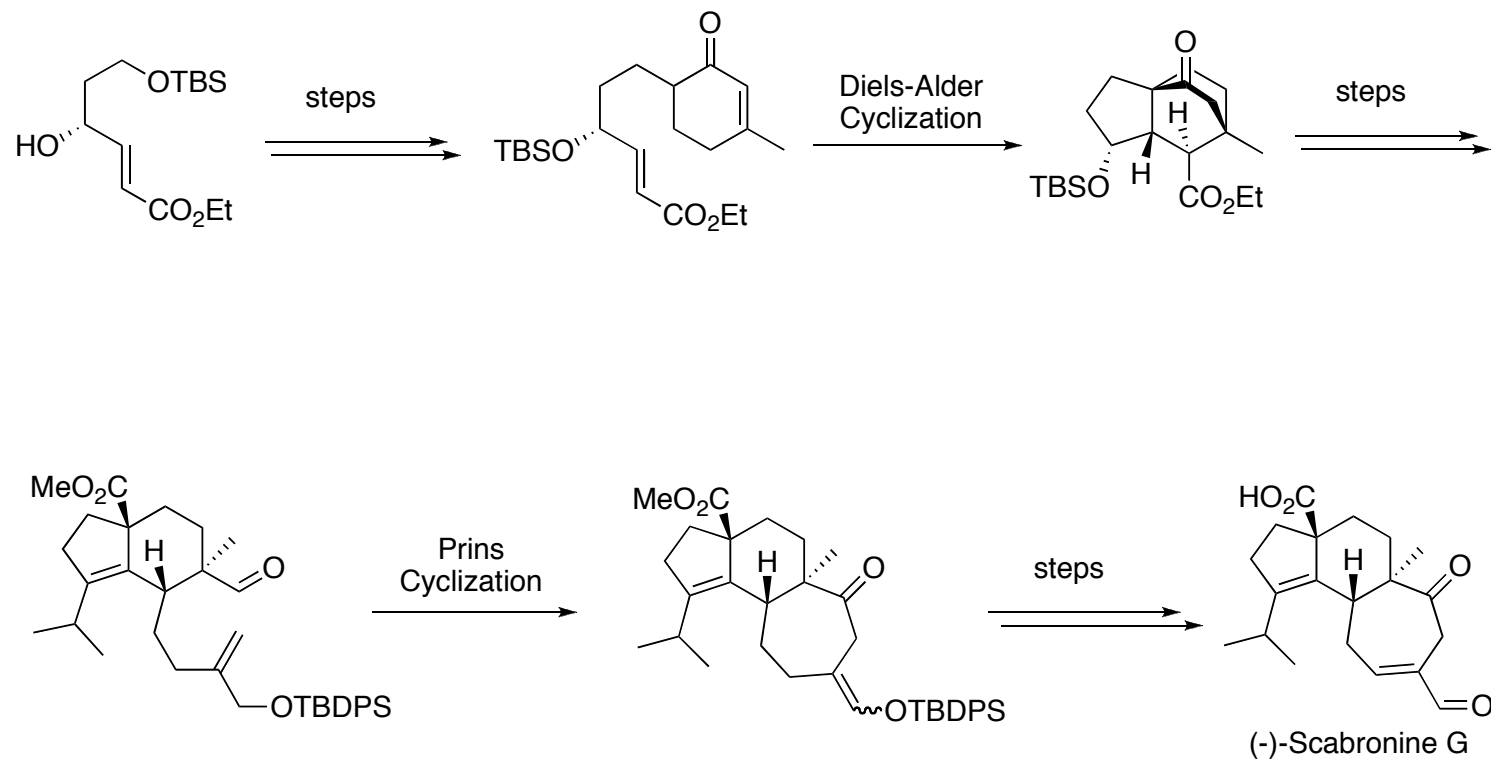
J. Danishefsky and co-workers J. Am. Chem. Soc. **2005**, *127*, 13514

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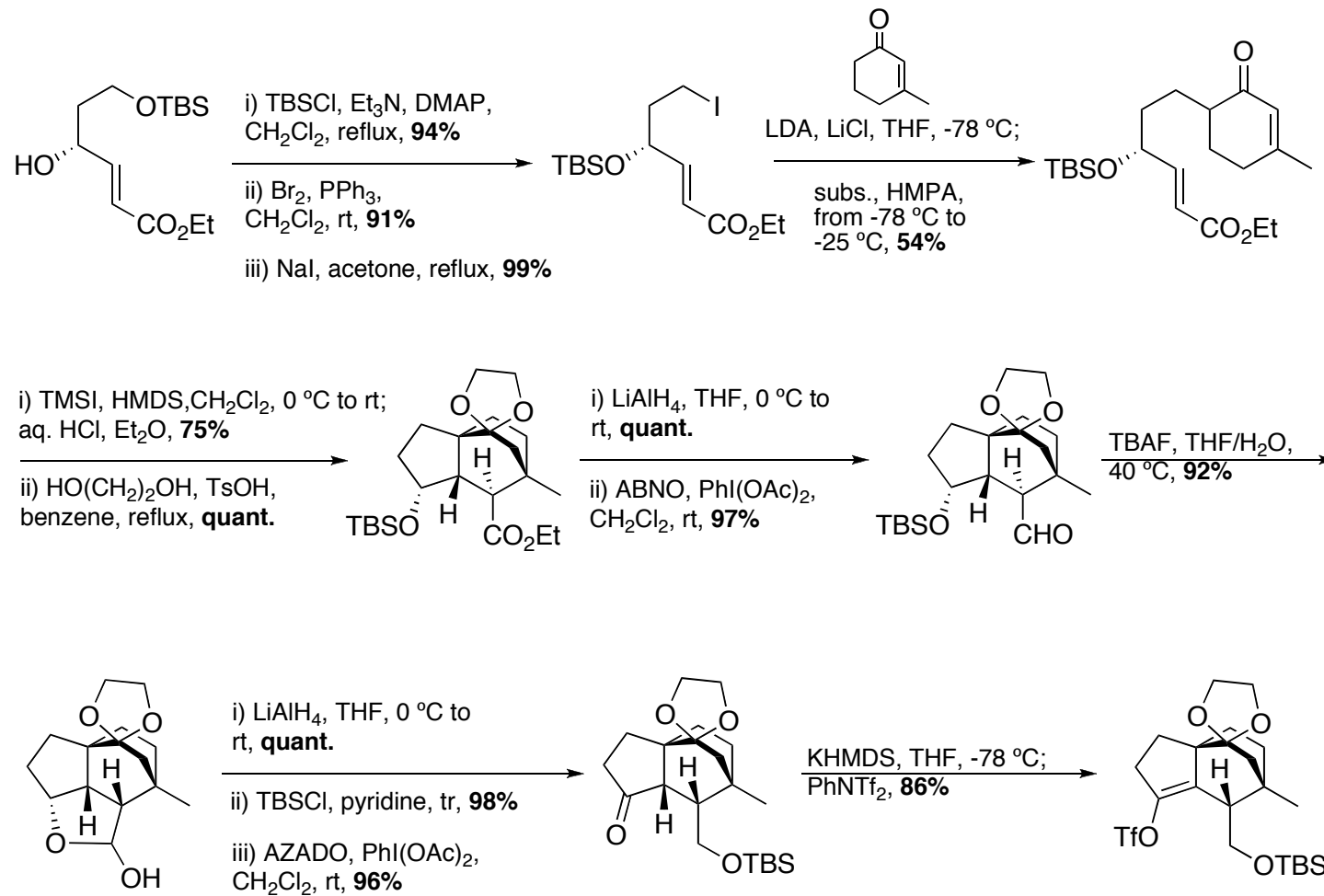
J. Danishefsky and co-workers J. Am. Chem. Soc. **2005**, *127*, 13514

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N. Kanoh and co-workers *Org. Lett.* **2011**, ASAP

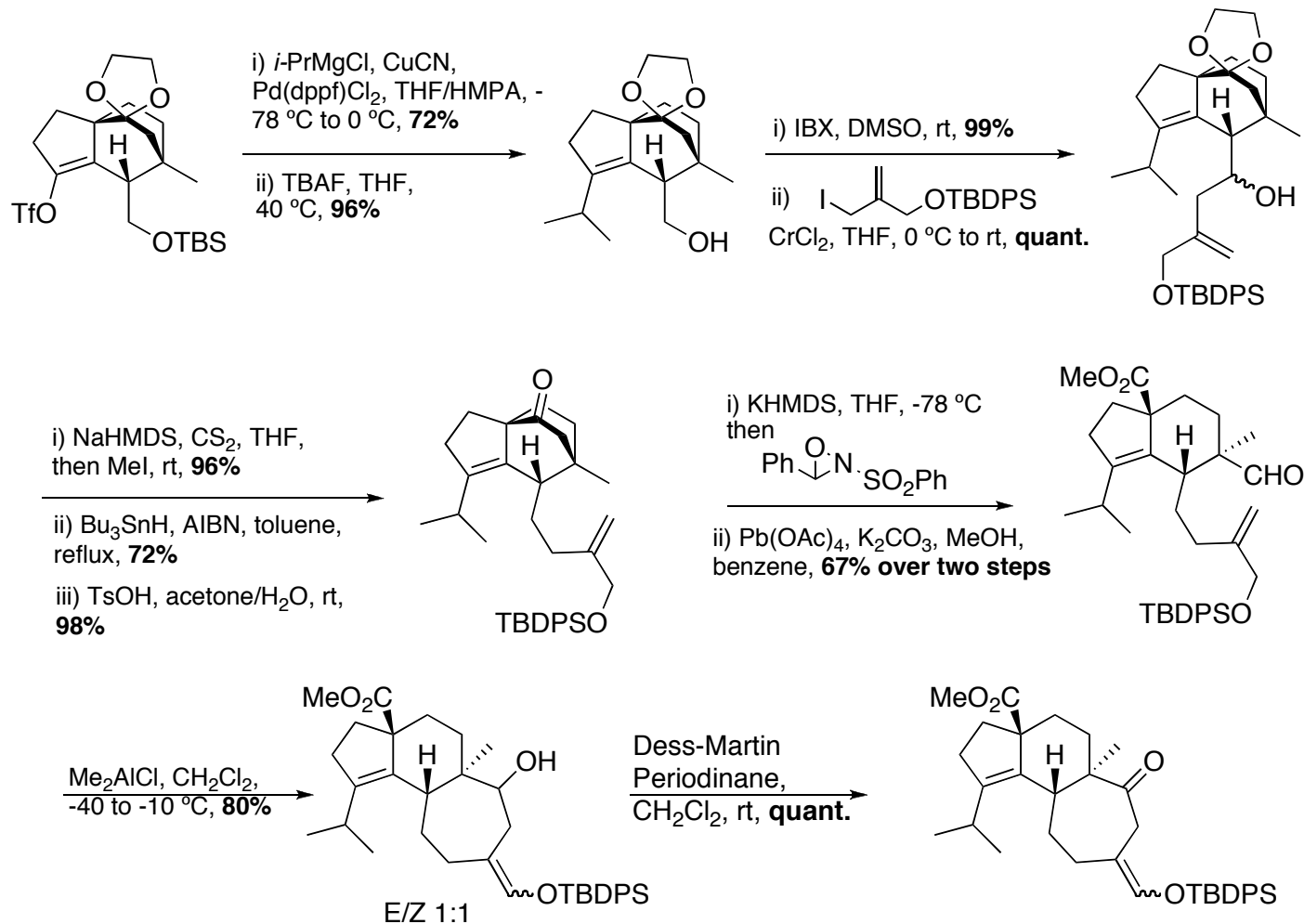
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N. Kanoh and co-workers *Org. Lett.* **2011**, ASAP

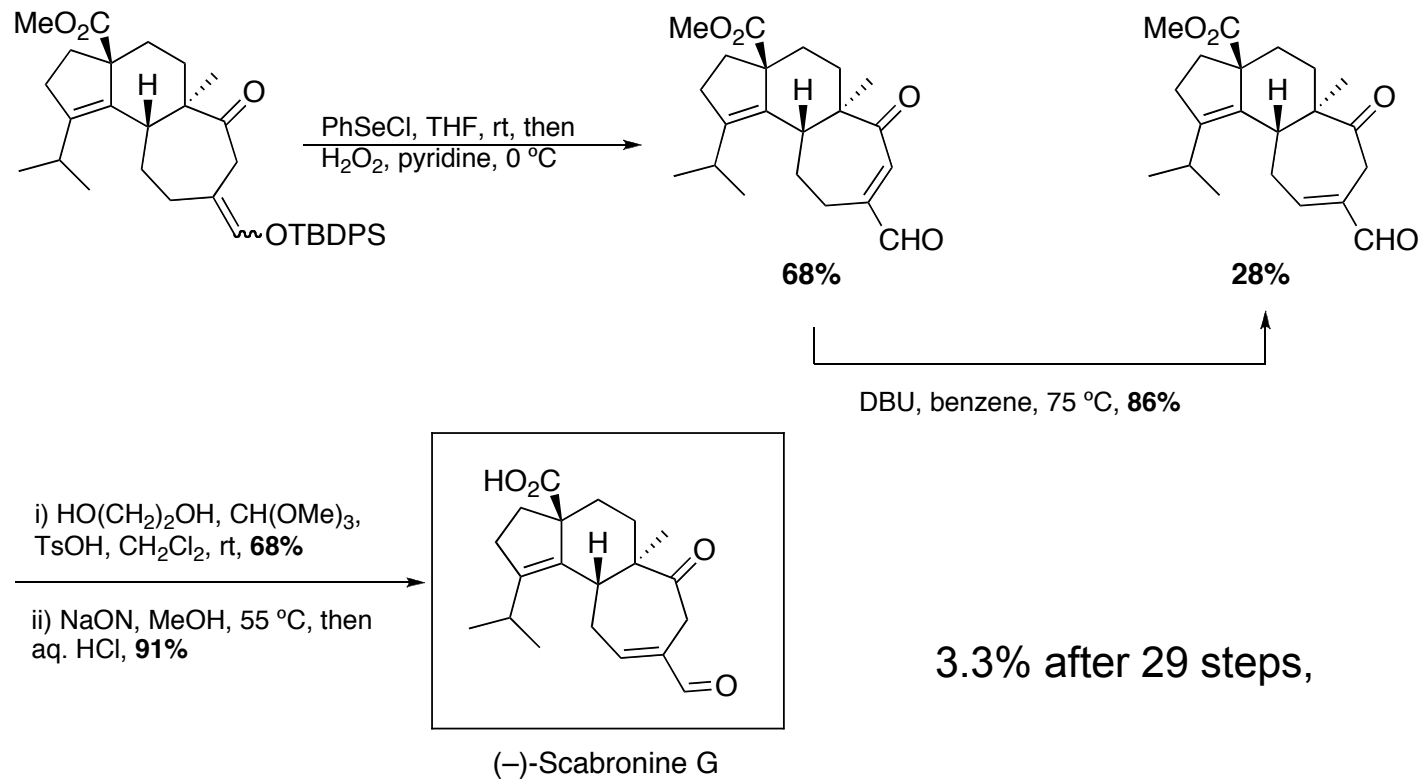


# Total synthesis (-)-Scabronine G



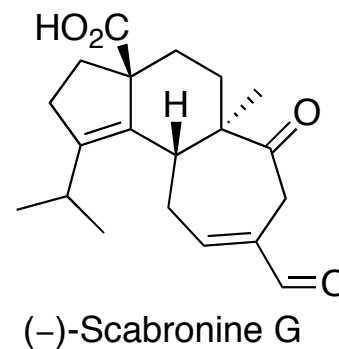
N. Kanoh and co-workers *Org. Lett.* **2011**, ASAP

# Total synthesis (-)-Scabronine G



N. Kanoh and co-workers *Org. Lett.* **2011**, ASAP

# Summary



- (-)-Scabronine G was synthesized in 29 steps in 3.2%
- Key transformations include selective Diels-Alder cyclization and Prins cyclization