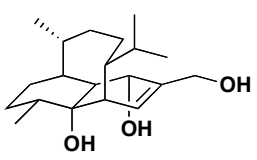
N. Z. Burns

Vinigrol

Sep. 12, 2007



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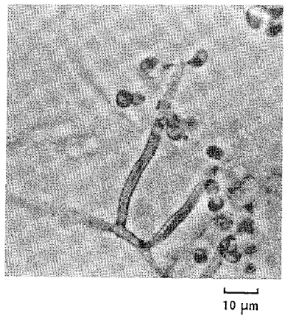
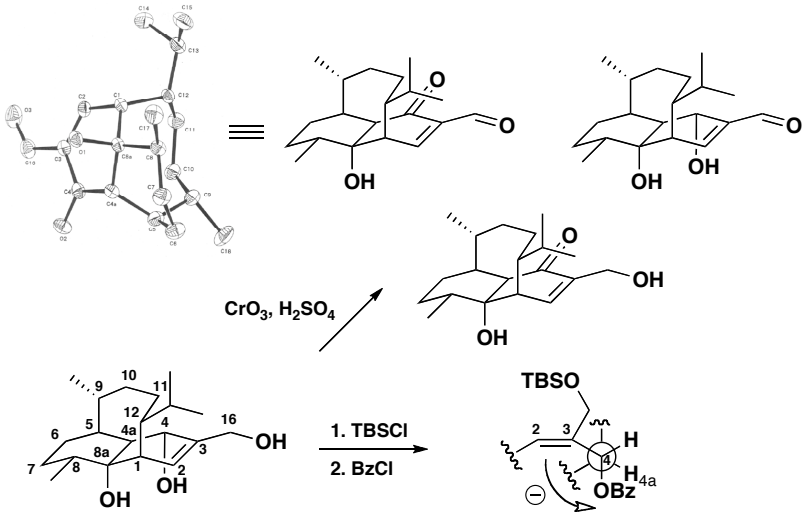
Novel diterpenoid isolated in 1987 by Ando and coworkers at Fujisawa Pharmaceutical Co. from fungal strain *Virgaria nigra*, isolated from soil collected at the foot of Mt. Aso, Japan:



***Virgaria nigra* also found in US, Canada, and Cuba**



proof of absolute configuration

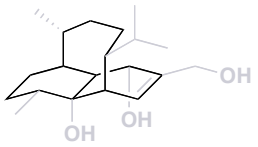
J. Org. Chem. **1987**, *52*, 5292 – 5293.

Biological activity: antihypertensive, inhibition of platelet aggregation (rabbit and human), induces contraction of aortic smooth muscle (rat) through Ca^{2+} ion channel agonist activity, TNF antagonist for possible treatment of endotoxic shock, inflammation, muscle atrophy, progression of ARC to AIDS, autoimmune diseases, arthritis...

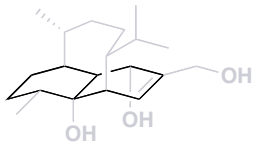
J. Antibiot. **1988**, *41*, 25 – 30 and 31 – 35.
Org. Prep. Proc. Int., **2007**, *39*, 311 – 353.

Publication breakdown: 16 studies toward, 4 dissertations, 8 patents, 1 review, 0 total syntheses.

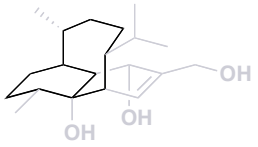
embedded core structures:



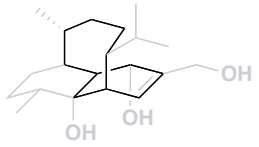
decahydro-1,5-butanonaphthalene



***cis*-decalin**



bicyclo[5.3.1]undecane



bicyclo[5.3.1]undecane

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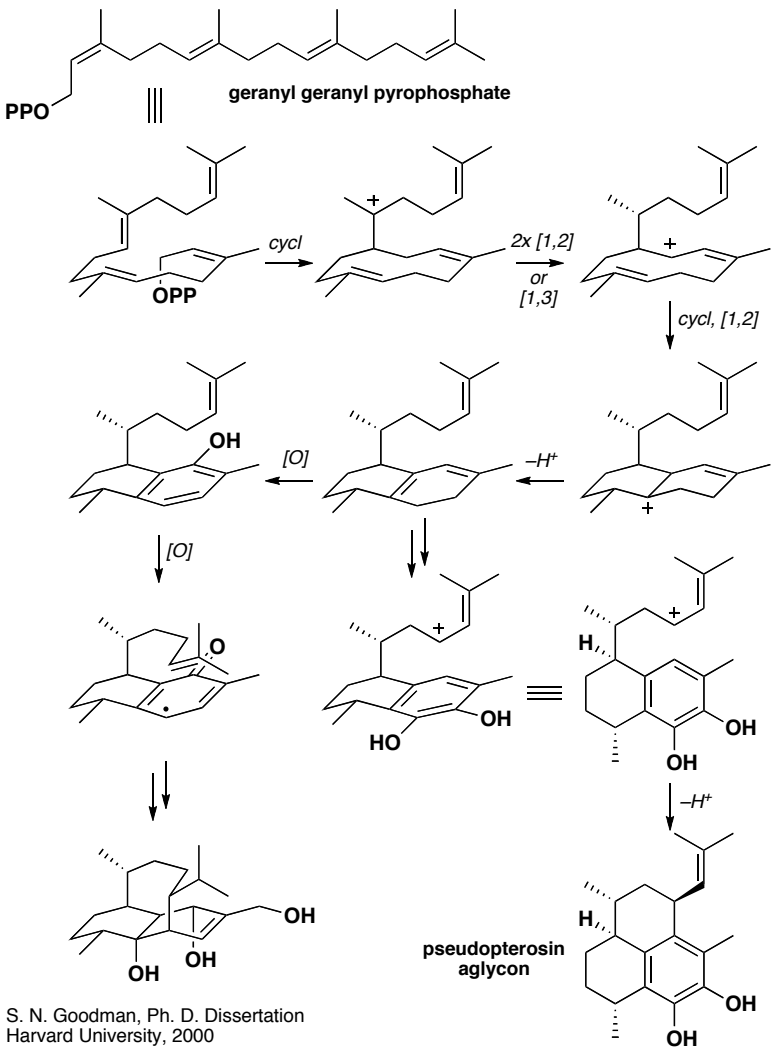
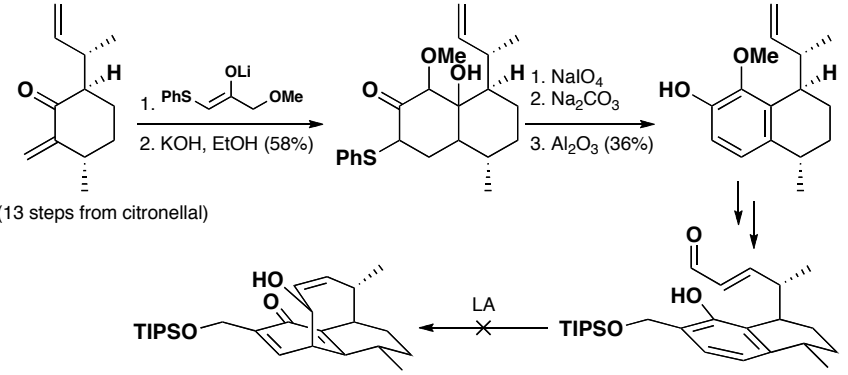
Proposed biosynthesis by Corey and Goodman:



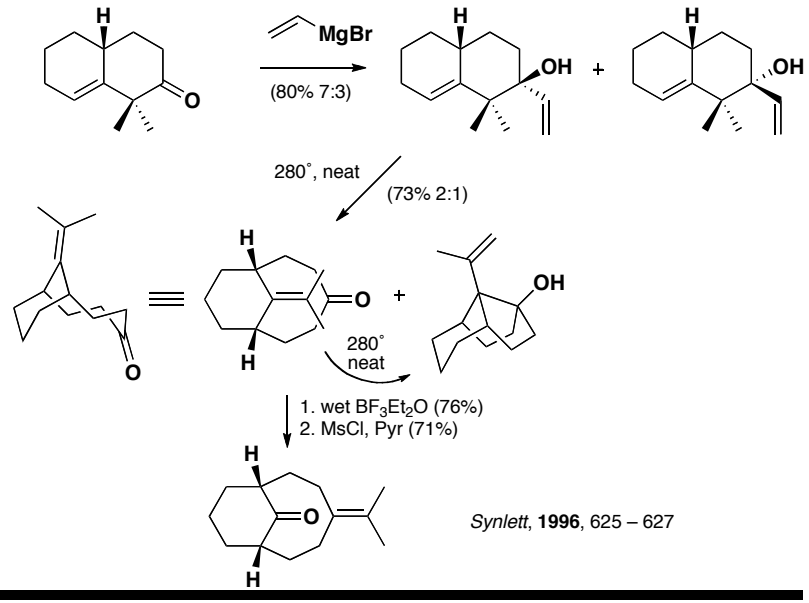
S. N. Goodman, Ph. D. Dissertation
Harvard University, 2000

Corey biomimetic approach:



A. Palani, Harvard University, Unpublished results in:
S. N. Goodman, Ph. D. Dissertation, Harvard University, 2000

Mehta's bicyclo[5.3.1]undecane:



Synlett, **1996**, 625 – 627

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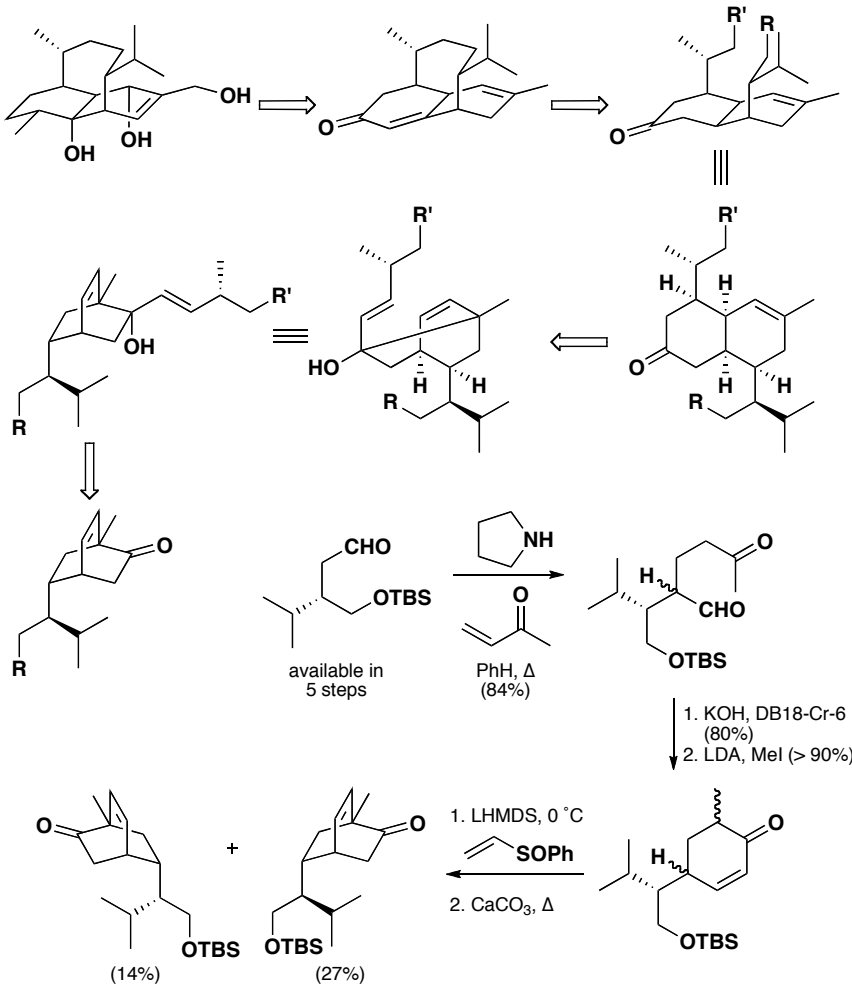
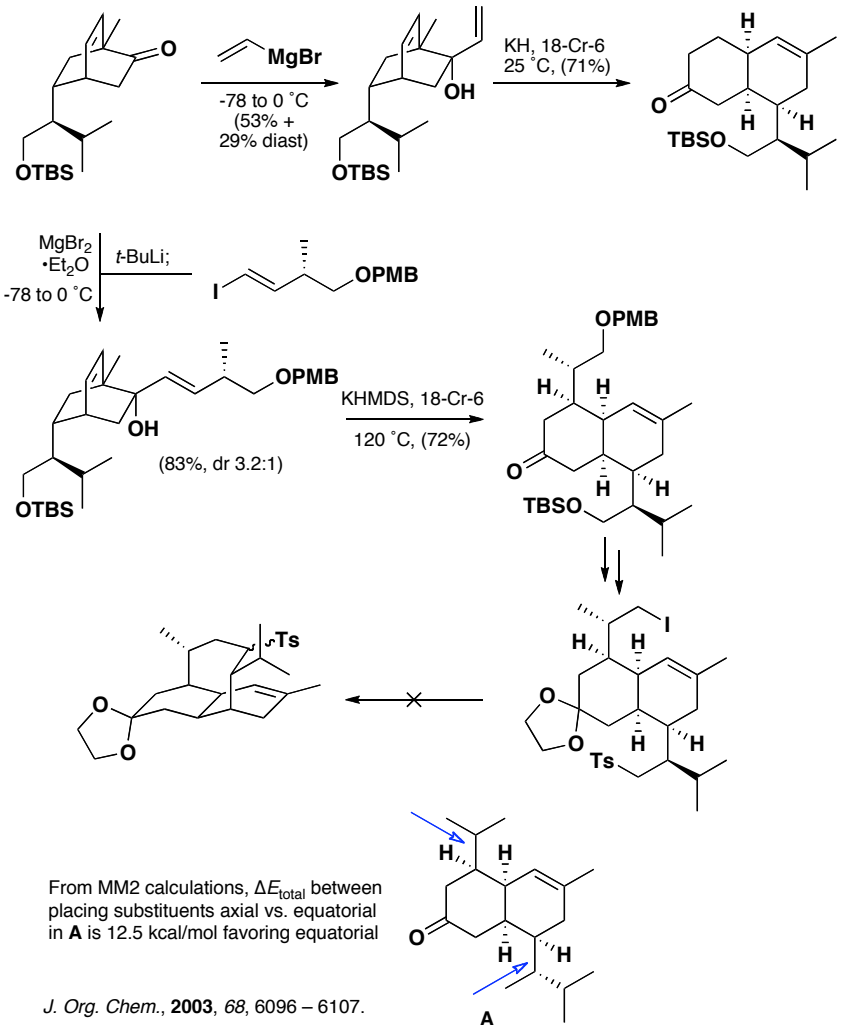
Paquette first generation:





J. Org. Chem., **2003**, *68*, 6096 – 6107.

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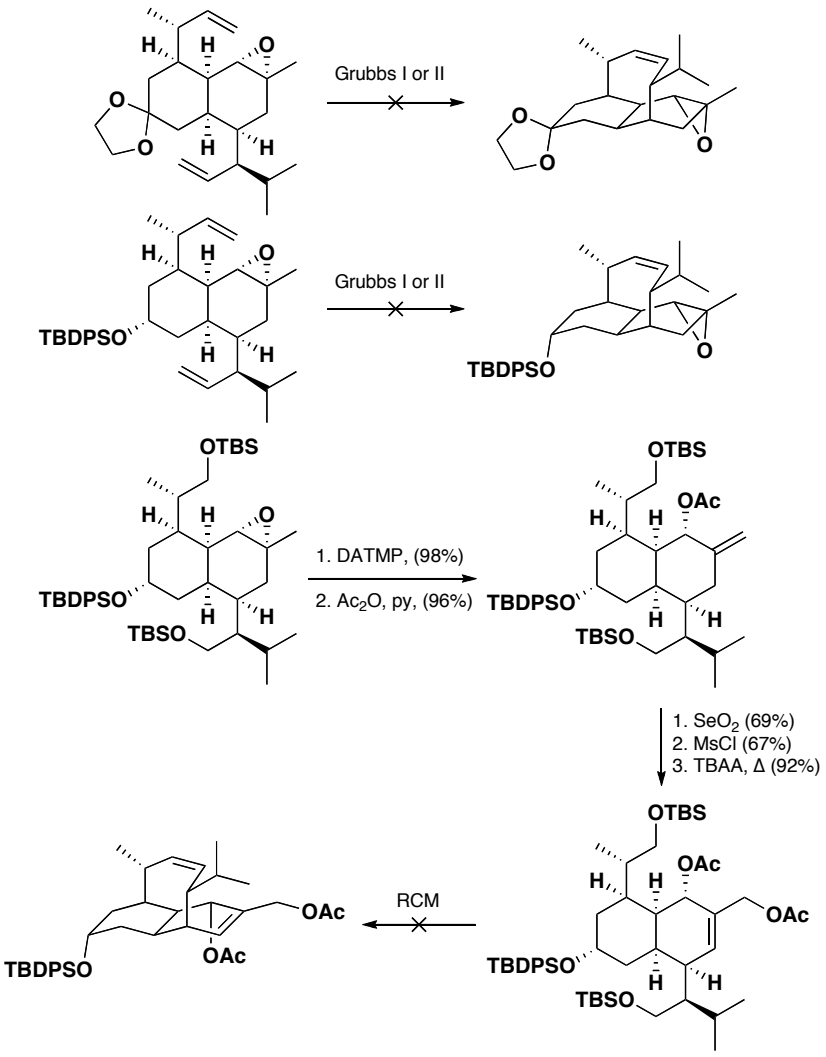
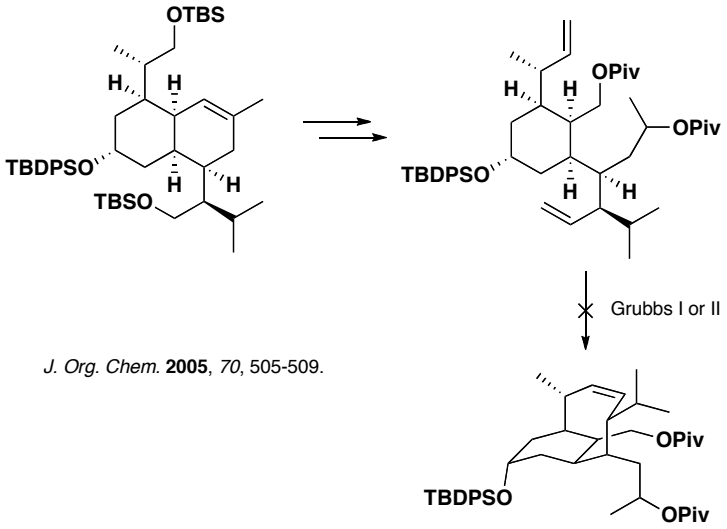
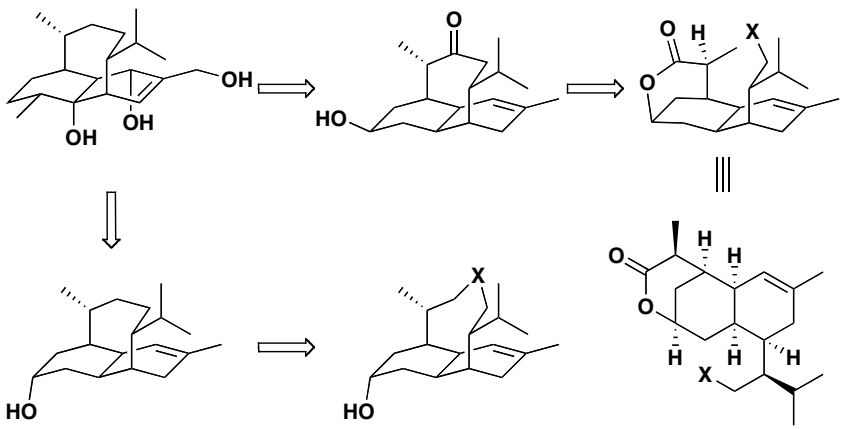
Paquette part deux:





J. Org. Chem. **2005**, *70*, 505-509.

Paqette generation two and three:



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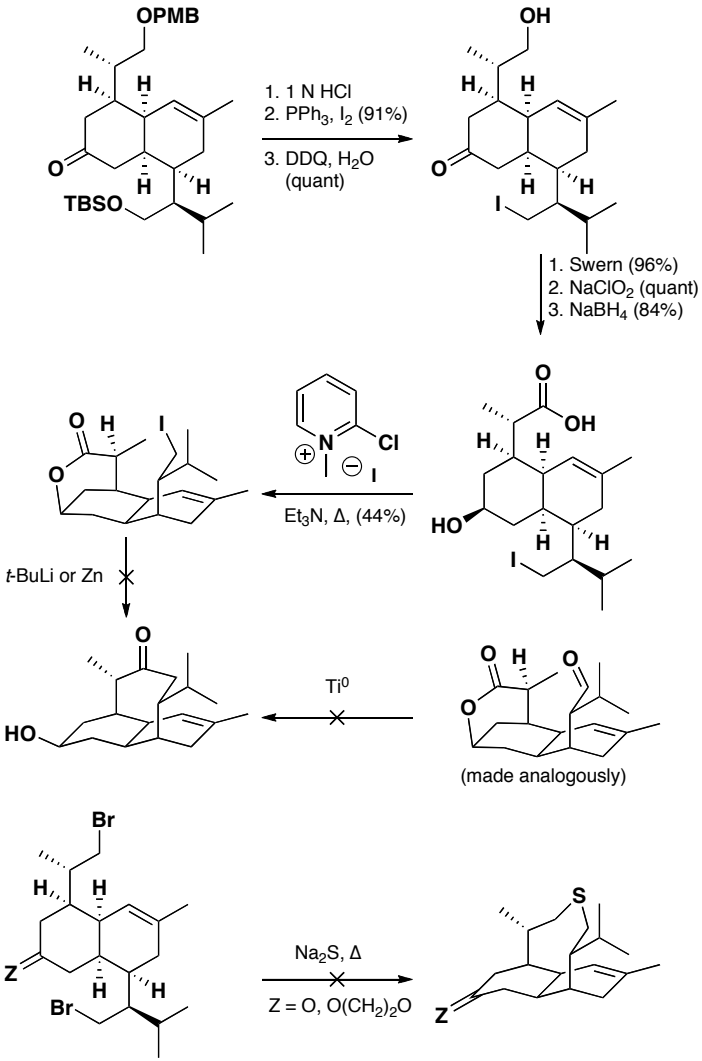

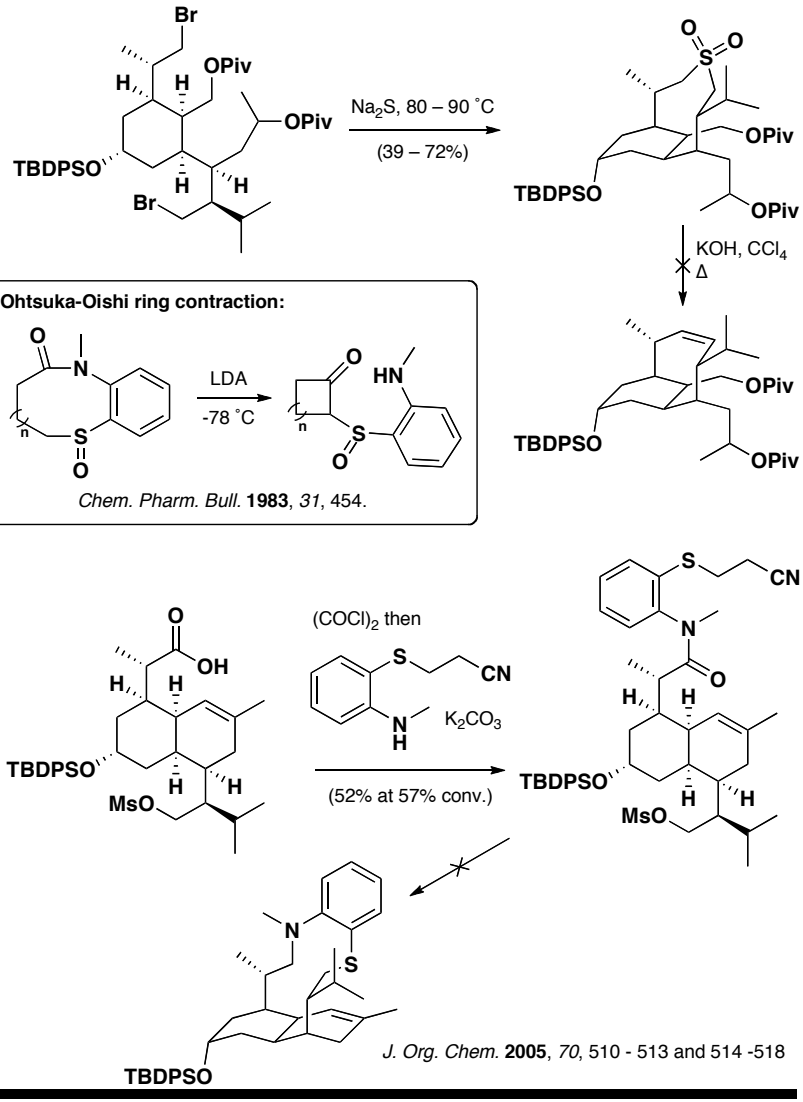

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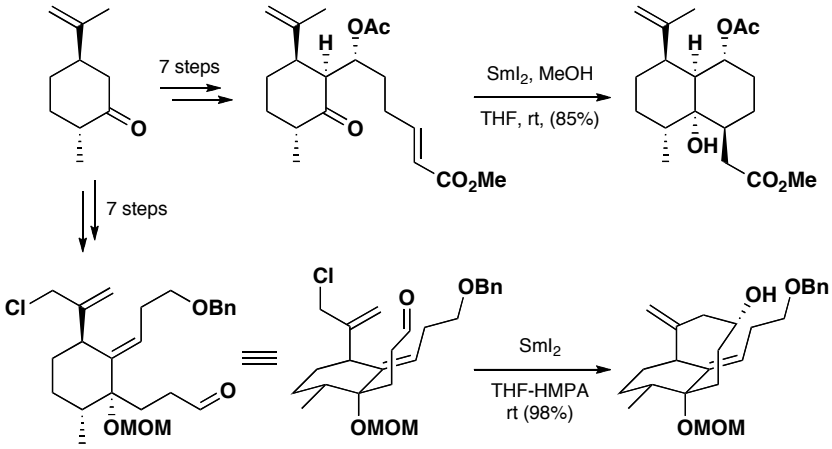
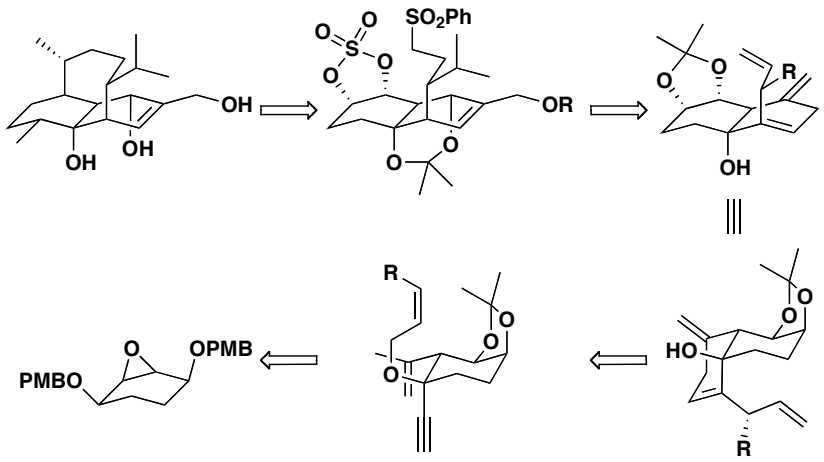
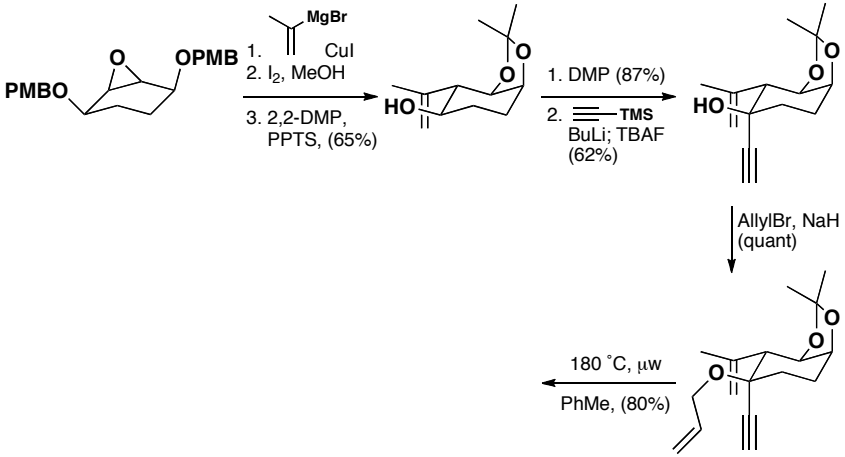
Matsuda's SmI_2 approaches:

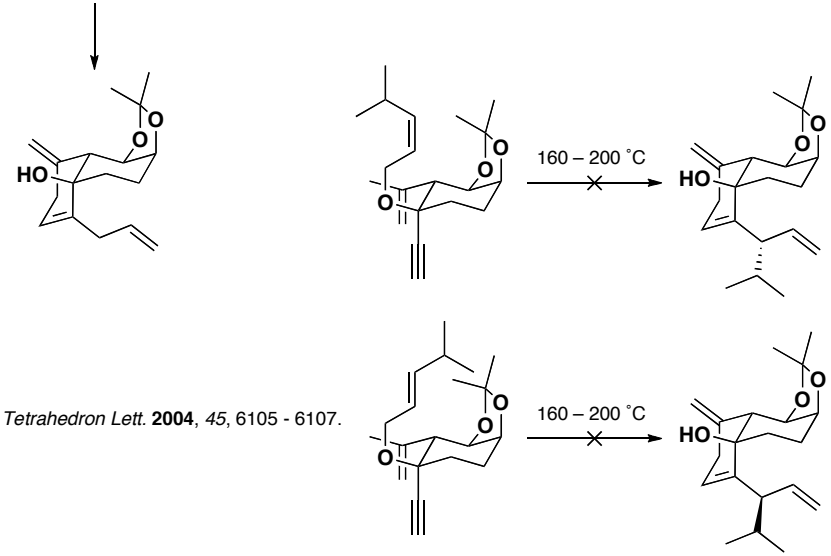


Synlett, **1996**, 1057 - 1060.
Synlett, **1997**, 219 - 220.
Tetrahedron, **1999**, *55*,14369 - 14380.

Barriault cascade:







Tetrahedron Lett. **2004**, *45*, 6105 - 6107.

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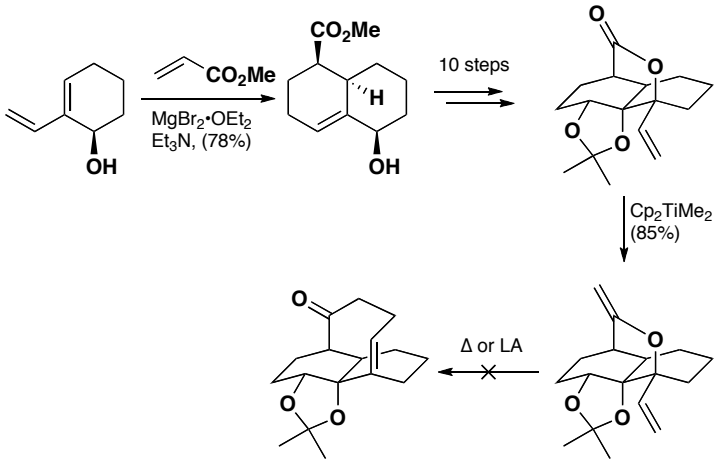
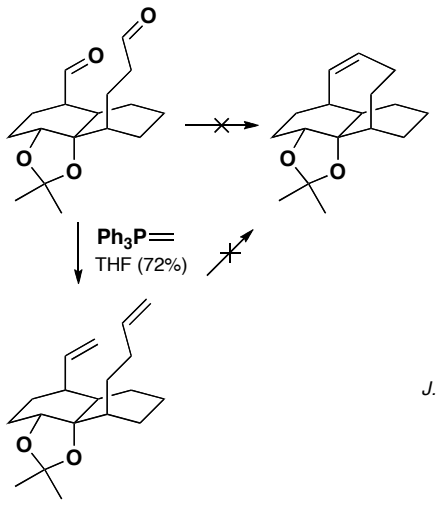
Barriault second generation:

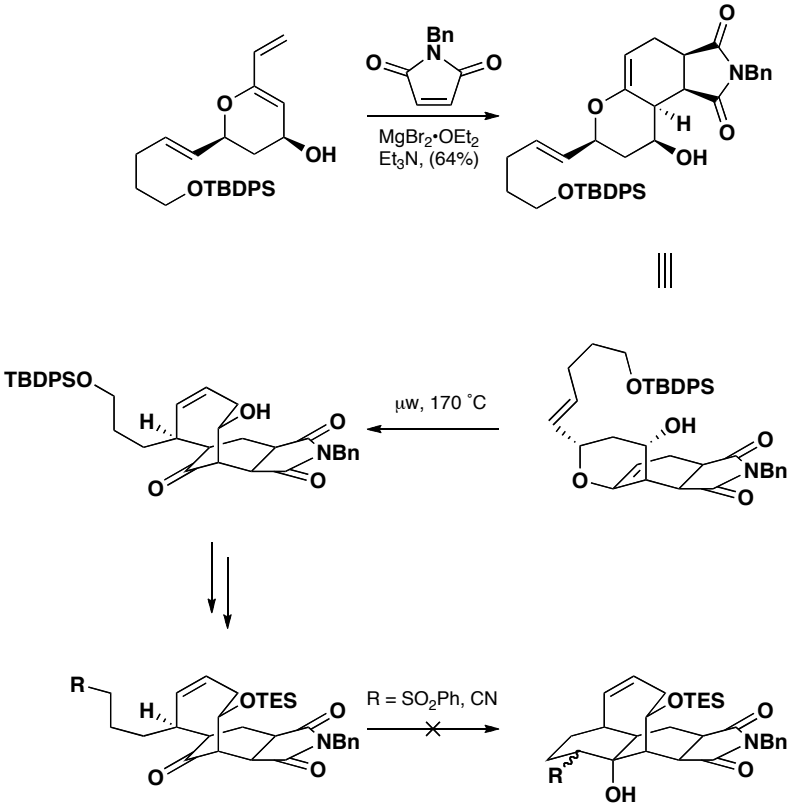


Barriault macrocyclization:



J. Org. Chem. **2005**, *70*, 8841 - 8853.

Barriault fourth generation:



J. Org. Chem. **2005**, *70*, 8841 - 8853.

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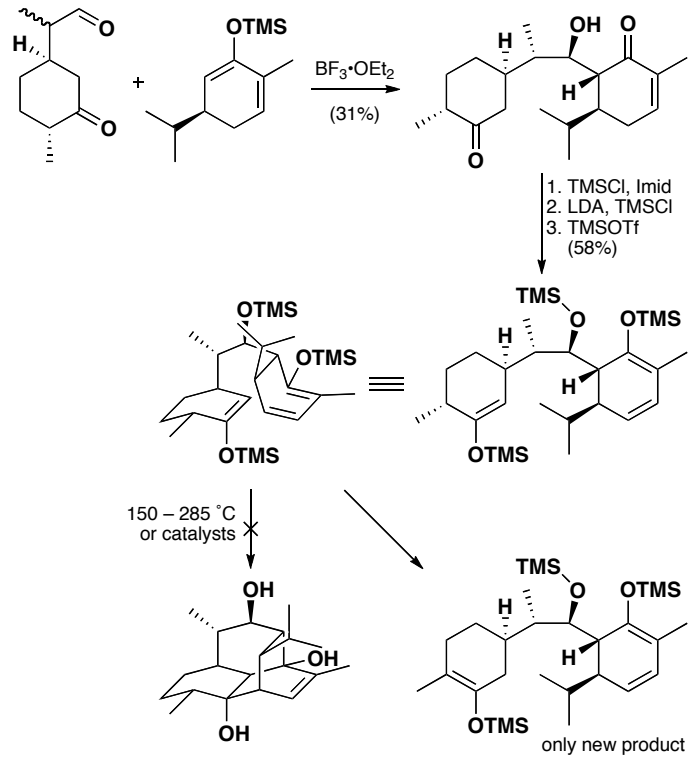
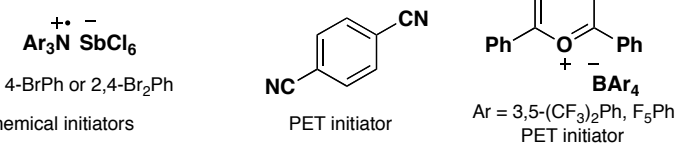
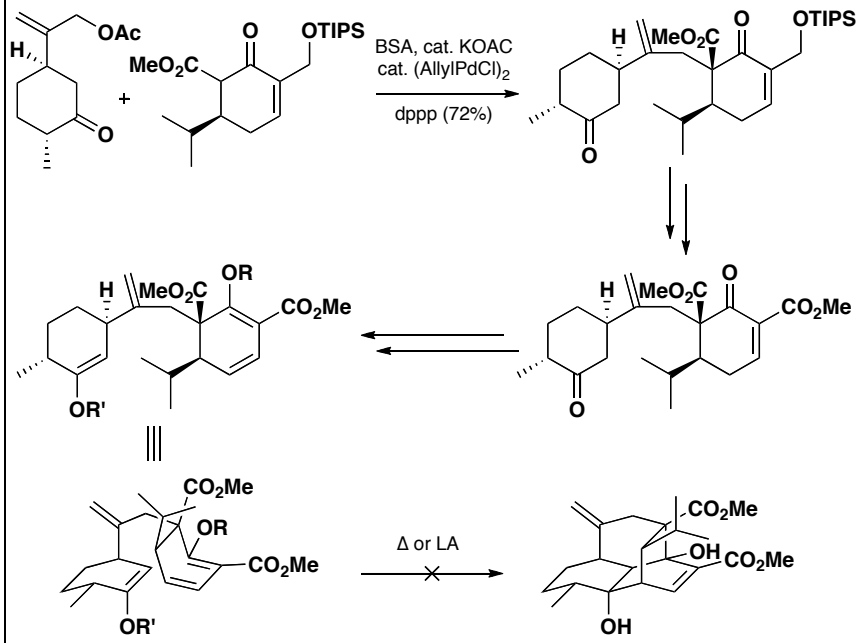
Corey IMDA approaches:

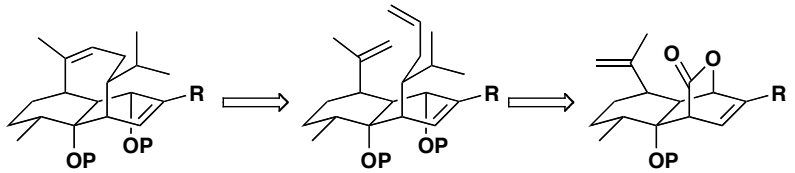


CET or PET catalysts tried for DA:





Another Corey strategy:



S. N. Goodman, Ph. D. Dissertation
Harvard University, 2000

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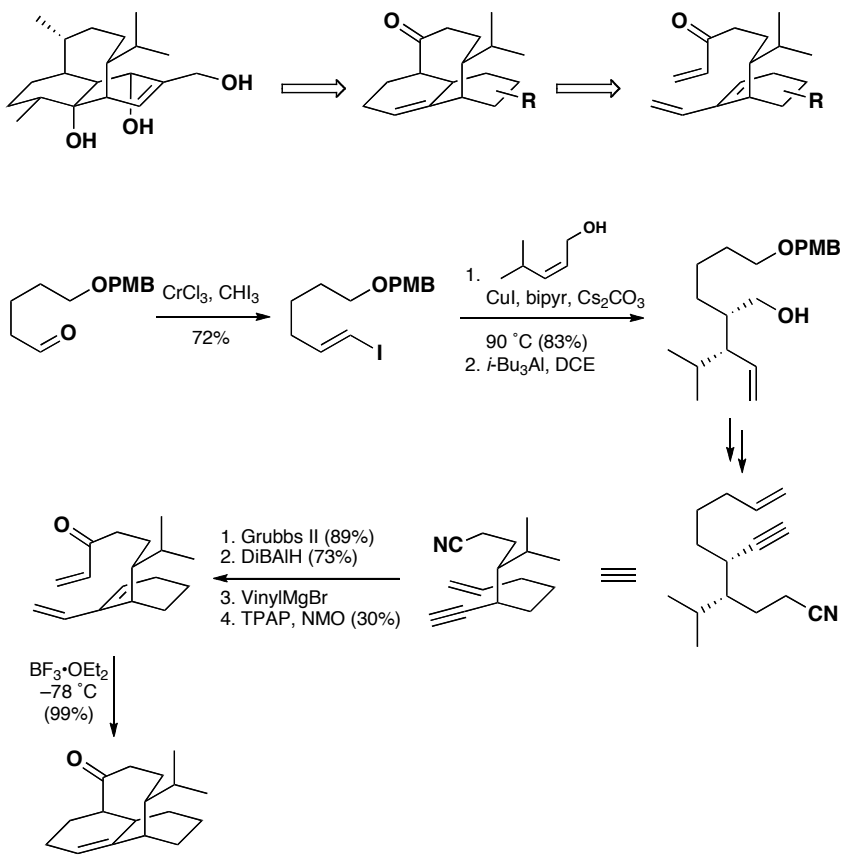
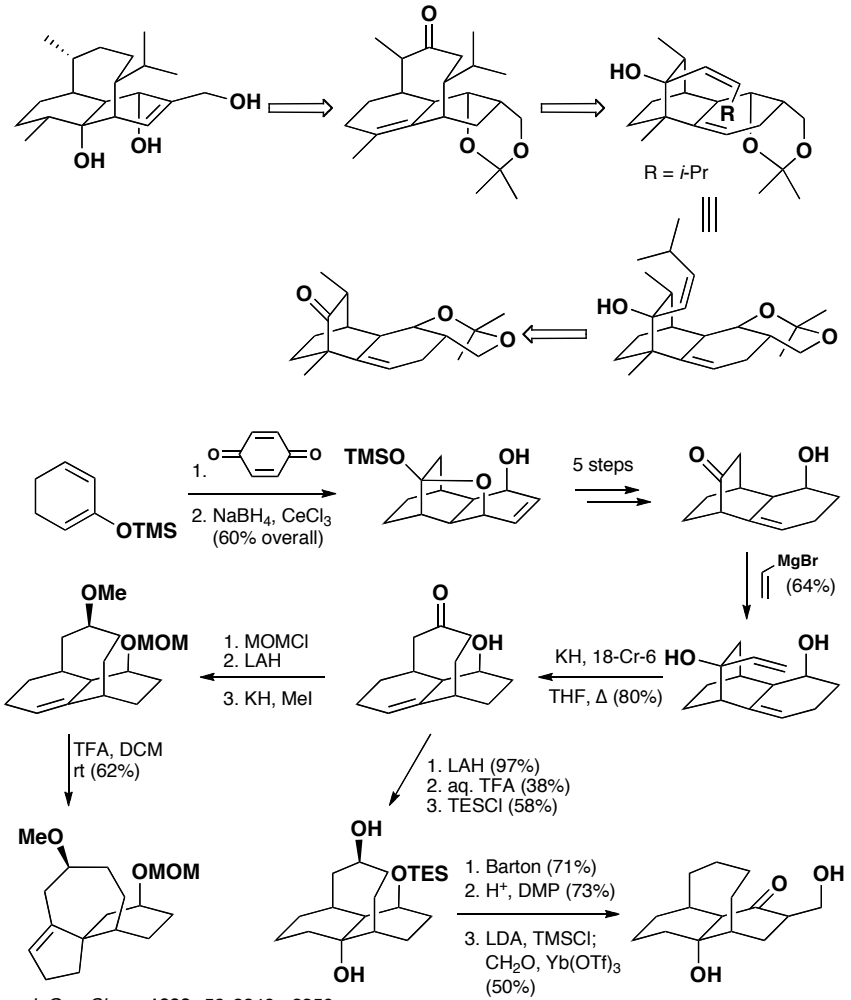
Barriault assault:



Org. Lett. **2007**, *9*, 1545 - 1548.

Hanna's advanced intermediate:



J. Org. Chem. **1993**, *58*, 2349 - 2350.
J. Chem. Res. (Syn), **1996**, 32 -33.

J. Org. Chem. **1997**, *62*, 5062 - 5068.

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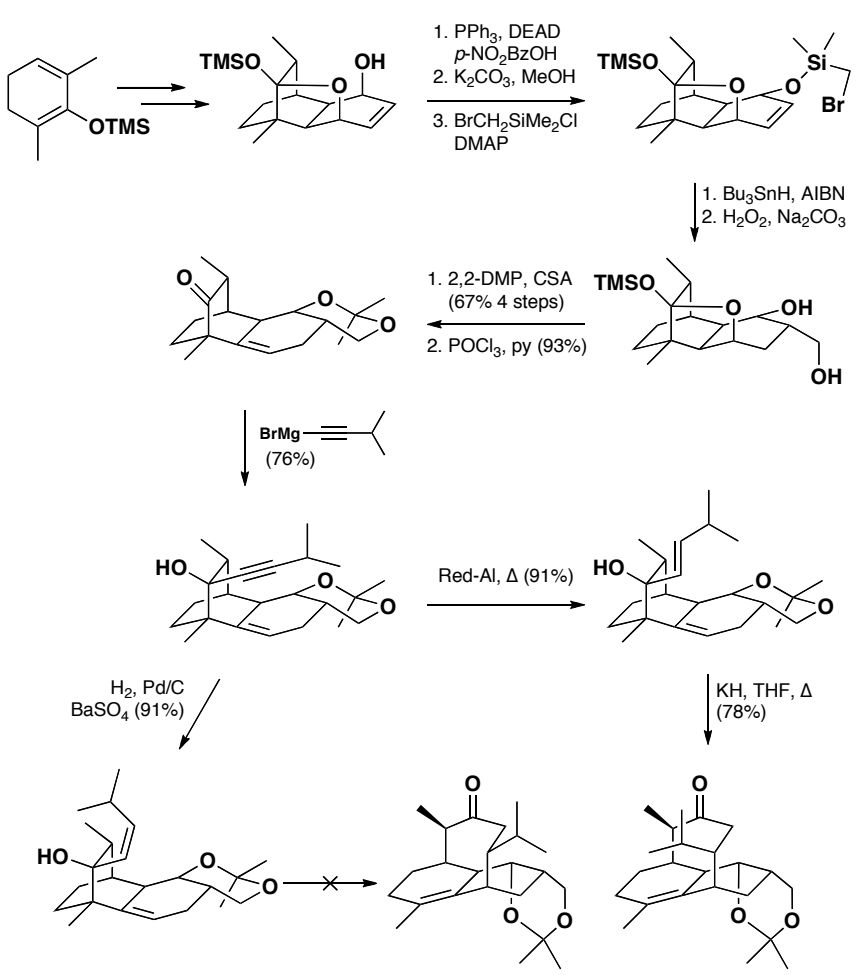

Org. Lett. **2003**, *5*, 1139 - 1142.