

Career-In-Review (CIR)



Wolfgang Oppolzer (1937-1996)

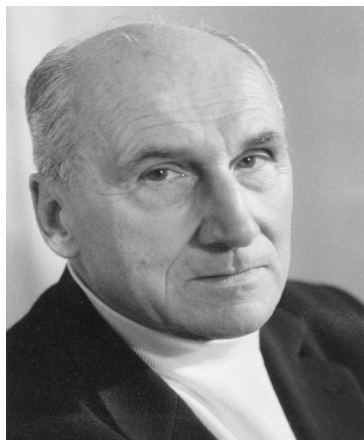
Shengping Zheng (Breslow Group)
July 27, 2007

Synthesis Literacy Group
Columbia University Chemistry

Disclaimer: All presentations are meant to highlight achievements in synthesis and are by no means meant to be a comprehensive representation of all of the author's contributions to chemistry.

Career Snapshot

- 1937 Born in Vienna, Austria
- 1960 Diploma at the University of Vienna
- 1960-1963 Dr. sc. techn. at ETH, Zürich with Vladimir Prelog
- 1963-1964 Postdoc at Harvard University, with E.J. Corey
- 1965-1967 Postdoc at the Woodward Research Institute, Basel. with R.B. Woodward
- 1967-1973 Research chemist at Sandoz company
- 1974-1996 Professor at the University of Geneva



V. Prelog



Five Most Cited Reviews

1. **OPPOLZER W** [INTRAMOLECULAR \[4+2\] AND \[3+2\] CYCLOADDITIONS IN ORGANIC SYNTHESIS](#) ANGEWANDTE CHEMIE INTERNATIONAL EDITION IN ENGLISH 16 (1): 10-23 1977

Times Cited: [596](#)

2. **OPPOLZER W** [ASYMMETRIC DIELS-ALDER AND ENE REACTIONS IN ORGANIC SYNTHESIS](#) ANGEWANDTE CHEMIE INTERNATIONAL EDITION IN ENGLISH 23 (11): 876-889 1984

Times Cited: [517](#)

3. **OPPOLZER W, SNIECKUS V** [INTRAMOLECULAR ENE REACTIONS IN ORGANIC SYNTHESIS](#) ANGEWANDTE CHEMIE INTERNATIONAL EDITION IN ENGLISH 17 (7): 476-486 1978

Times Cited: [413](#)

4. **OPPOLZER W** [INTRAMOLECULAR CYCLOADDITION REACTIONS OF ORTHO-QUINODIMETHANES IN ORGANIC SYNTHESIS](#) SYNTHESIS (11): 793-802 1978

Times Cited: [397](#)

5. **OPPOLZER W** [CAMPOR DERIVATIVES AS CHIRAL AUXILIARIES IN ASYMMETRIC SYNTHESIS](#) TETRAHEDRON 43 (9): 1969-2004 1987

Times Cited: [377](#)

ISI Web of Science: 07/27/07

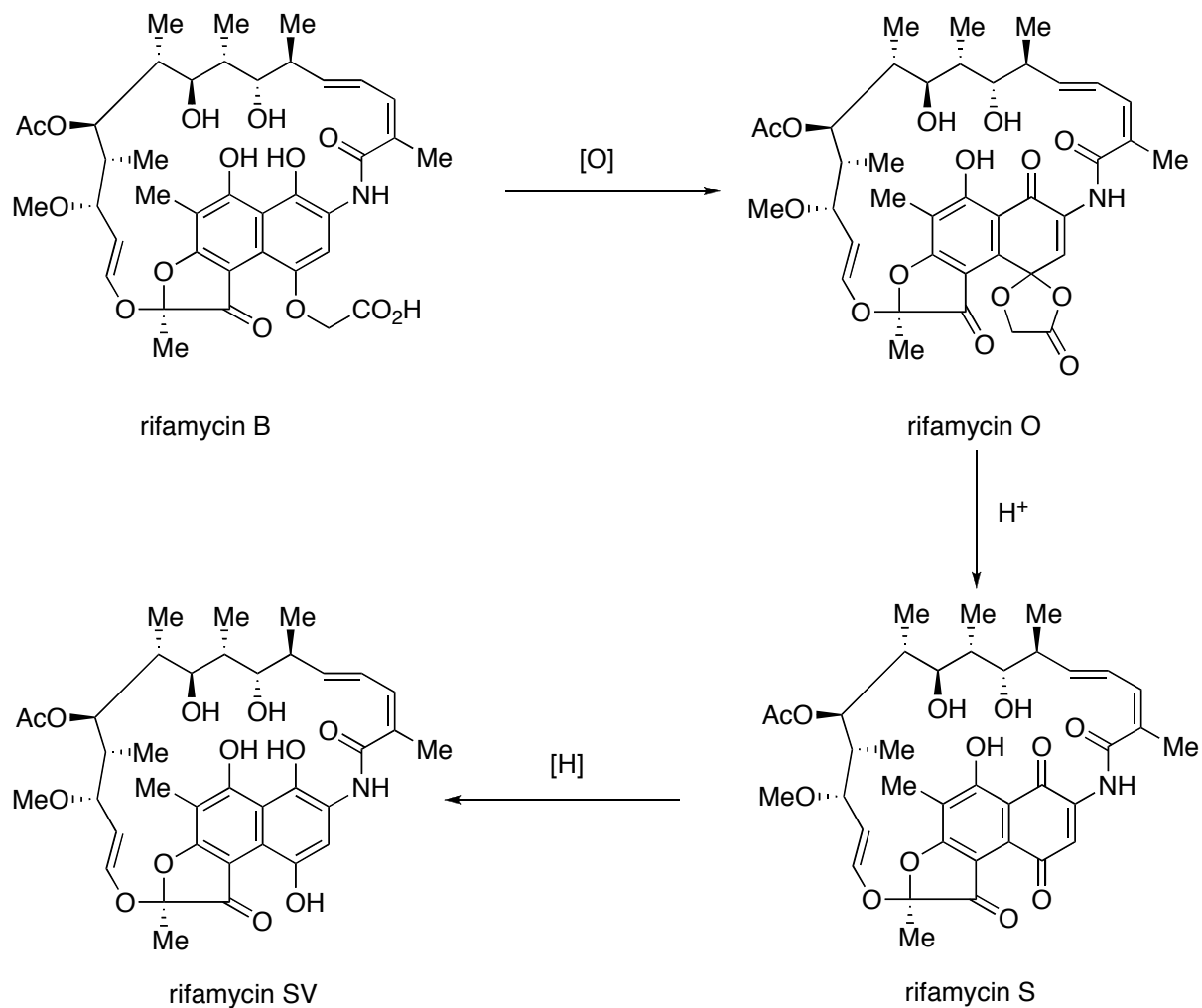
Five Most Cited Papers

1. WOODWARD RB, HEUSLER K, GOSTELI J, Naegali P, **Oppolzer W**, et al.
[TOTAL SYNTHESIS OF CEPHALOSPORIN C](#)
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY 88 (4): 852, 1966
Times Cited: [407](#)
2. **OPPOLZER W**, CHAPUIS C, BERNARDINELLI G
[CAMPBOR-DERIVED N-ACRYLOYL AND N-CROTONOYL SULTAMS - PRACTICAL ACTIVATED DIENOPHILES IN ASYMMETRIC DIELS-ALDER REACTIONS](#)
HELVETICA CHIMICA ACTA 67 (5): 1397-1401 1984
Times Cited: [219](#)
3. **OPPOLZER W**, BLAGG J, RODRIGUEZ I, et al.
[BORNANESULTAM DIRECTED ASYMMETRIC SYNTHESIS OF CRYSTALLINE, ENANTIOMERICALLY PURE SYN ALDOLS](#)
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY 112 (7): 2767-2772 MAR 28 1990
Times Cited: [181](#)
4. **OPPOLZER W**, KELLER K
[TOTAL SYNTHESIS OF DL-CHELIDONINE](#)
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY 93 (15): 3836, 1971
Times Cited: [131](#)
5. **OPPOLZER W**, KURTH M, REICHLIN D, et al.
[ASYMMETRIC INDUCTION IN DIELS-ALDER REACTIONS TO ACRYLATES DERIVED FROM CHIRAL SEC-ALCOHOLS PRELIMINARY COMMUNICATION](#)
HELVETICA CHIMICA ACTA 64 (8): 2802-2807 1981
Times Cited: [124](#)

H-index = 61, ISI Web of Science: 07/27/07

Wolfgang Oppolzer (1937-1996)

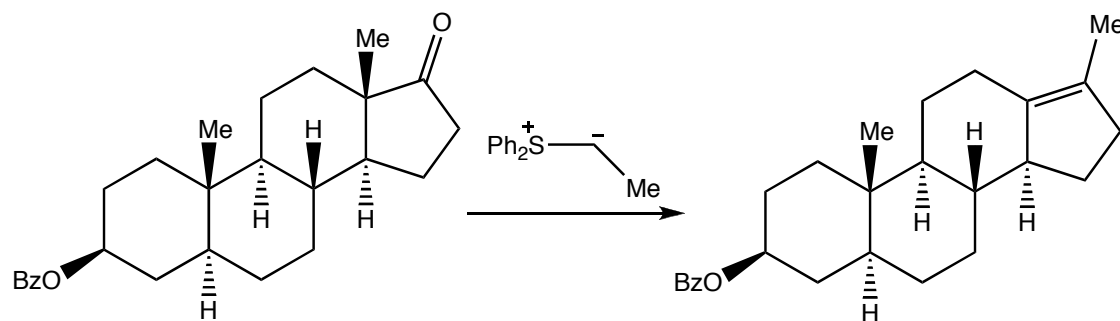
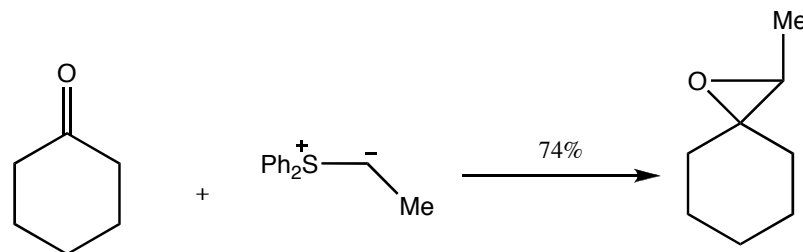
Shengping Zheng
(Breslow Group)



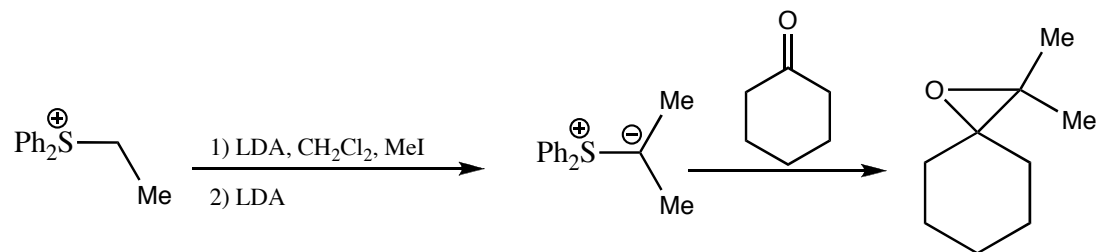
Oppolzer, W.; Prelog, V.; Sensi, P. *Experientia*, **1964**, *20*, 336.
 Leitich, J.; Oppolzer, W.; Prelog, V. *Experientia*, **1964**, *20*, 343
 Prelog, V.; Oppolzer, W. *Helv. Chim. Acta* **1973**, *56*, 2279.
 Oppolzer, W.; Prelog, V. *Helv. Chim. Acta* **1973**, *56*, 2287.

Wolfgang Oppolzer (1937-1996)

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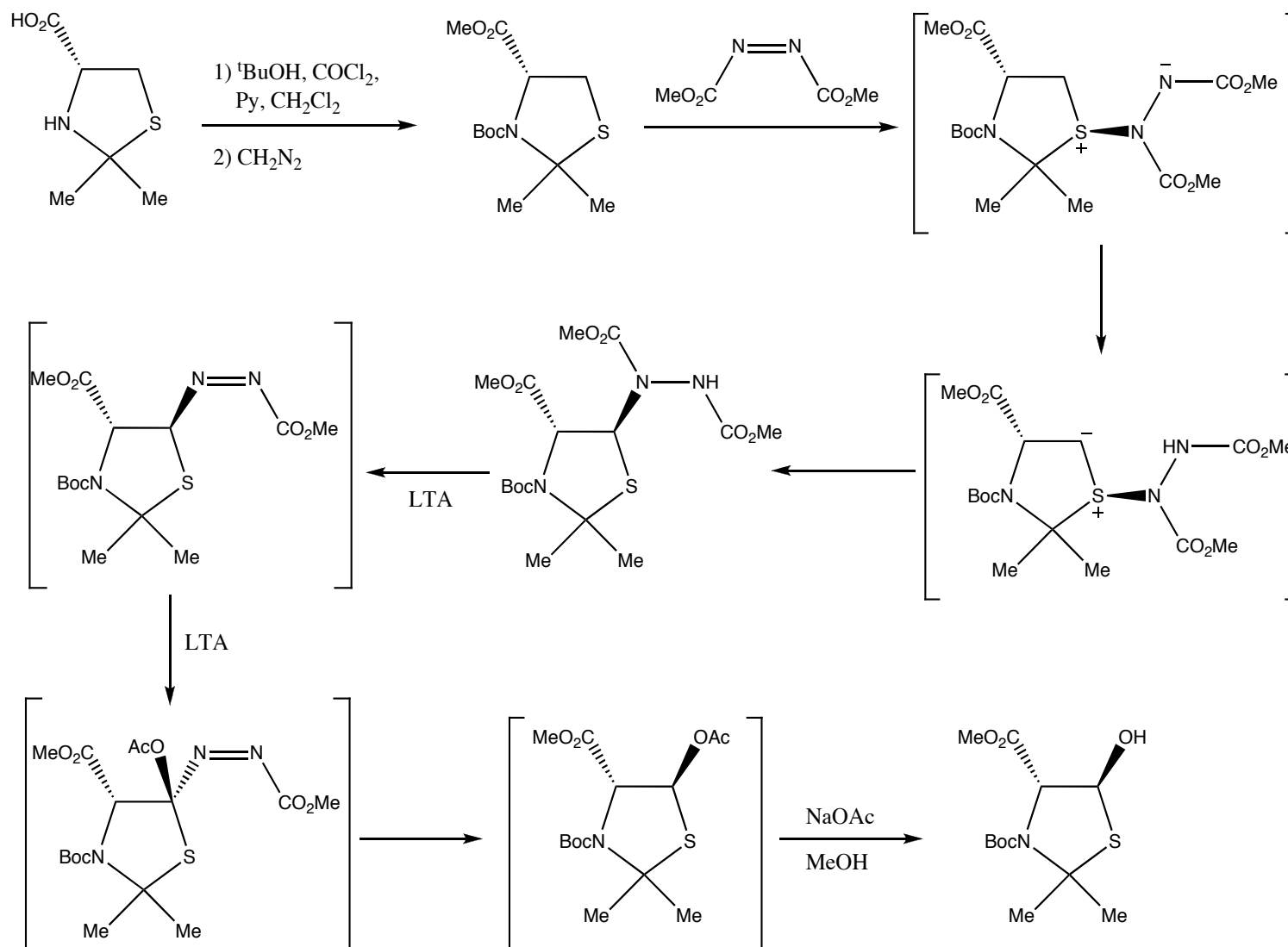
Corey, E. J.; Oppolzer, W. *J. Am. Chem. Soc.* **1964**, 86, 1899.

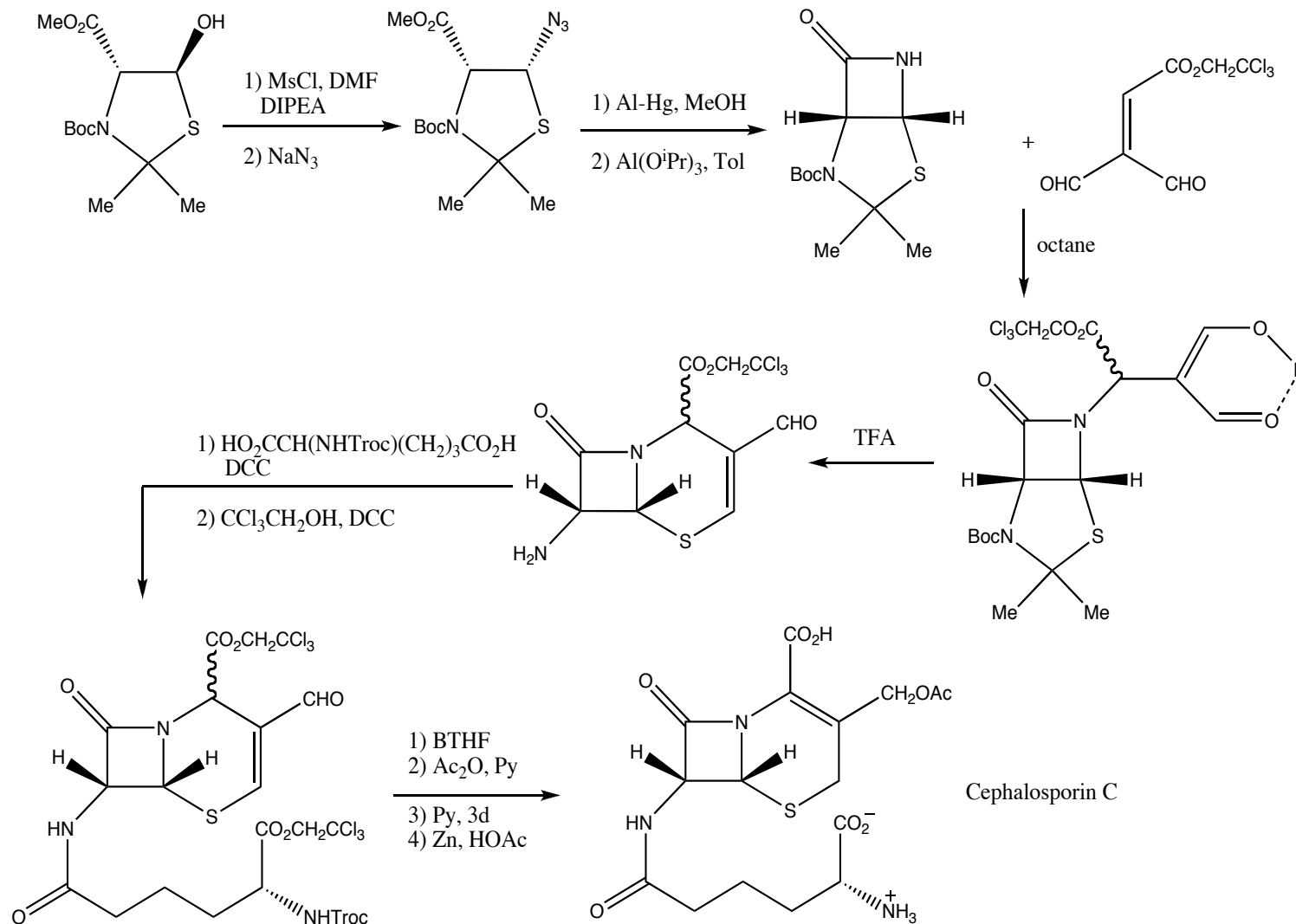


Corey, E. J.; Jautelat, M.; Oppolzer, W. *Tet. Lett.* **1967**, 8, 2325.

Wolfgang Oppolzer (1937-1996)

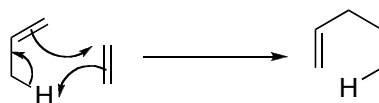
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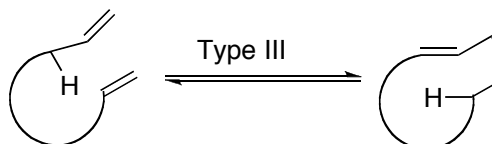
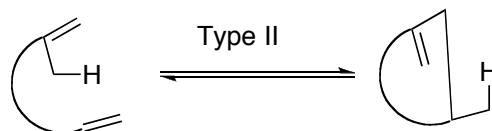
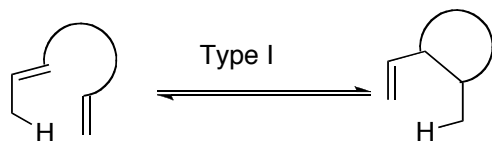


Woodward, R. B.; Heusler, K.; Gosteli, J.; Naegeli, P.; Oppolzer, W.; Ramage, R.; Ranganathan, S.; Vorbrüggen, H. *J. Am. Chem. Soc.* **1966**, *88*, 852.
 For transformation from penicillin to cephalosporin (Morin rearrangement), see: Morin, R. B. *et al. JACS*, **1963**, *85*, 1896.

Alder Ene reaction



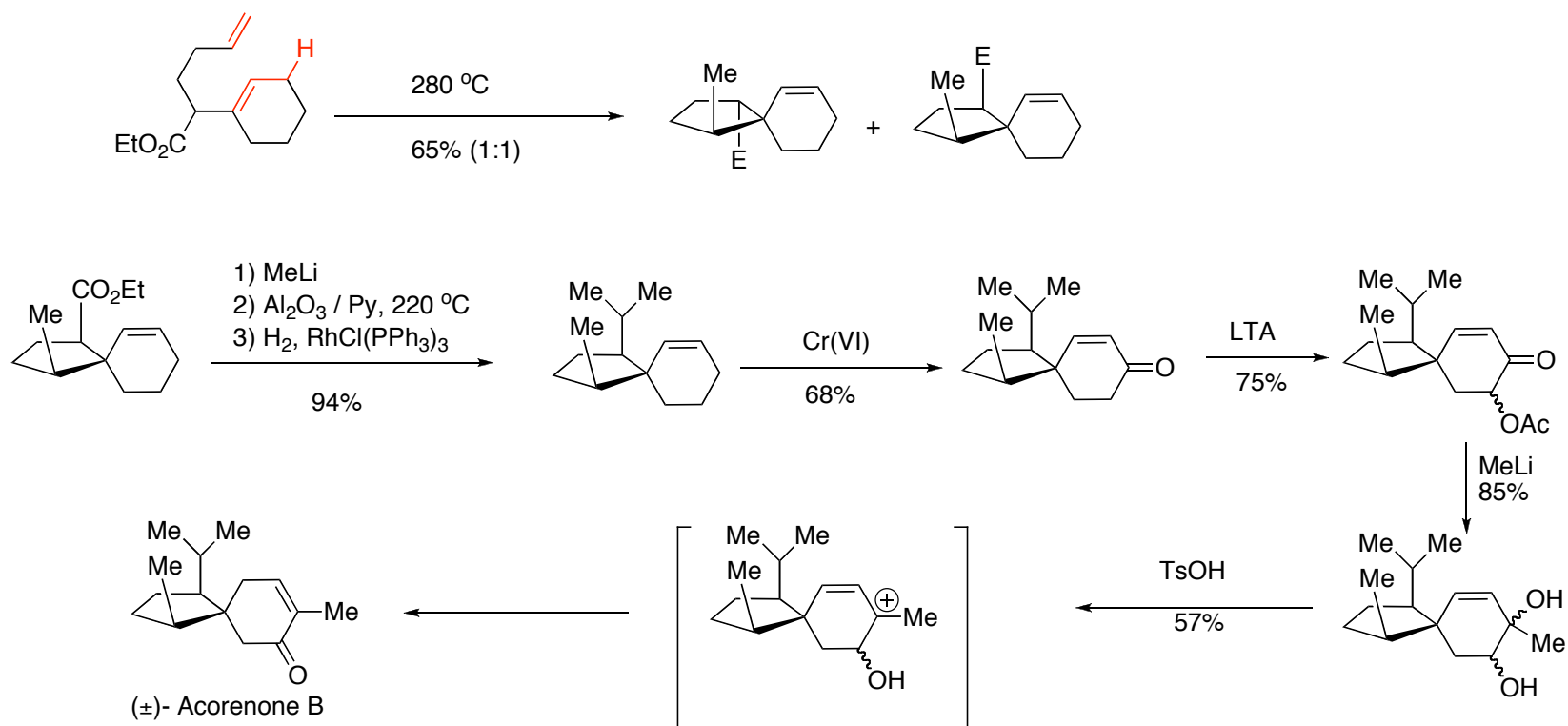
Intramolecular ene reaction



Review: Oppolzer, W.; Snieckus, V. *Angew. Chem. Int. Ed.* **1978**, *17*, 476.
Oppolzer, W. *Pure & Appl. Chem.* **1981**, *53*, 1181.

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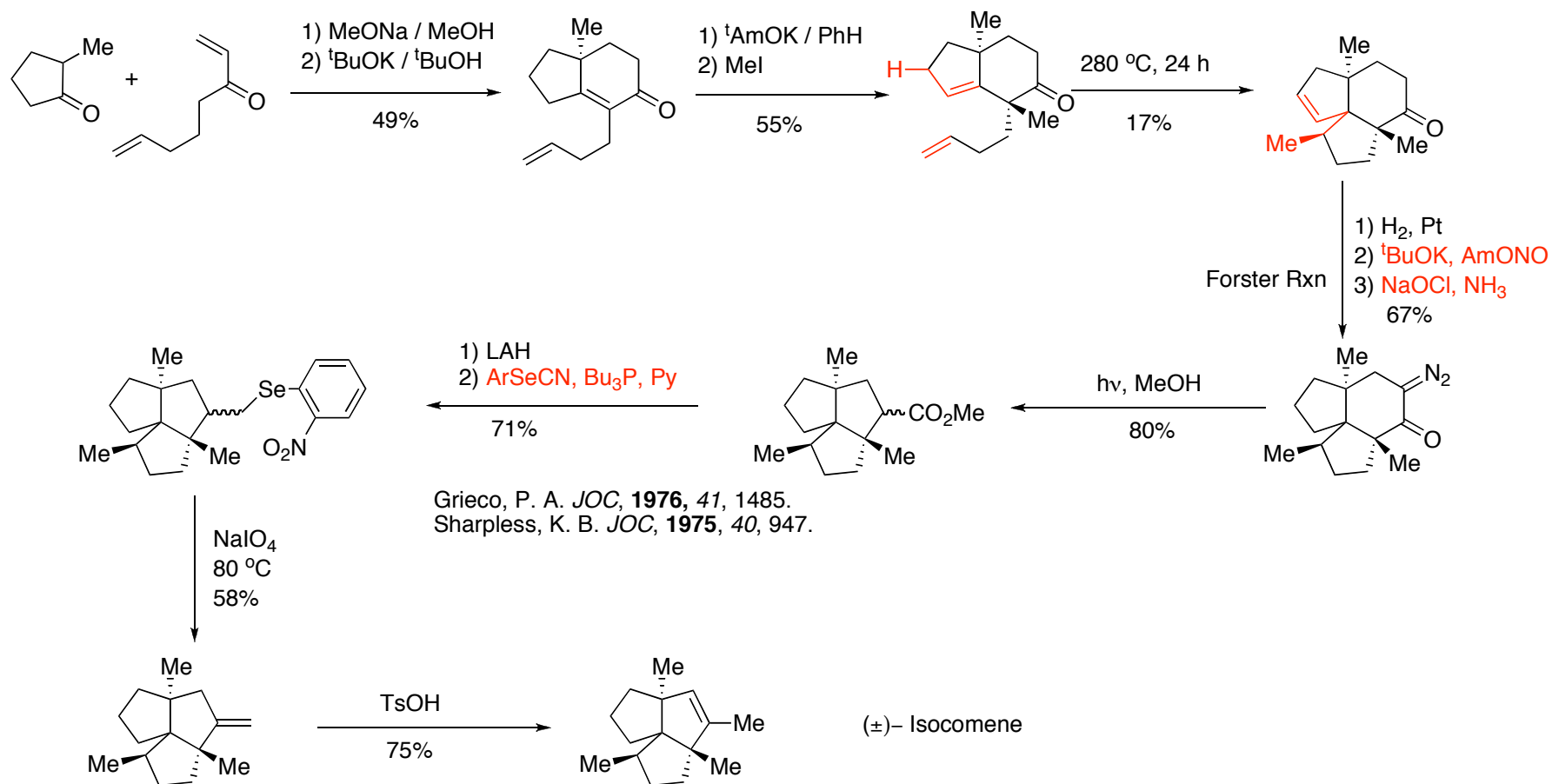
Shengping Zheng
(Breslow Group)



Oppolzer, W.; Mahalanabis, K. K. *Tet. Lett.* **1975**, *16*, 3411.

Wolfgang Oppolzer (1937-1996)

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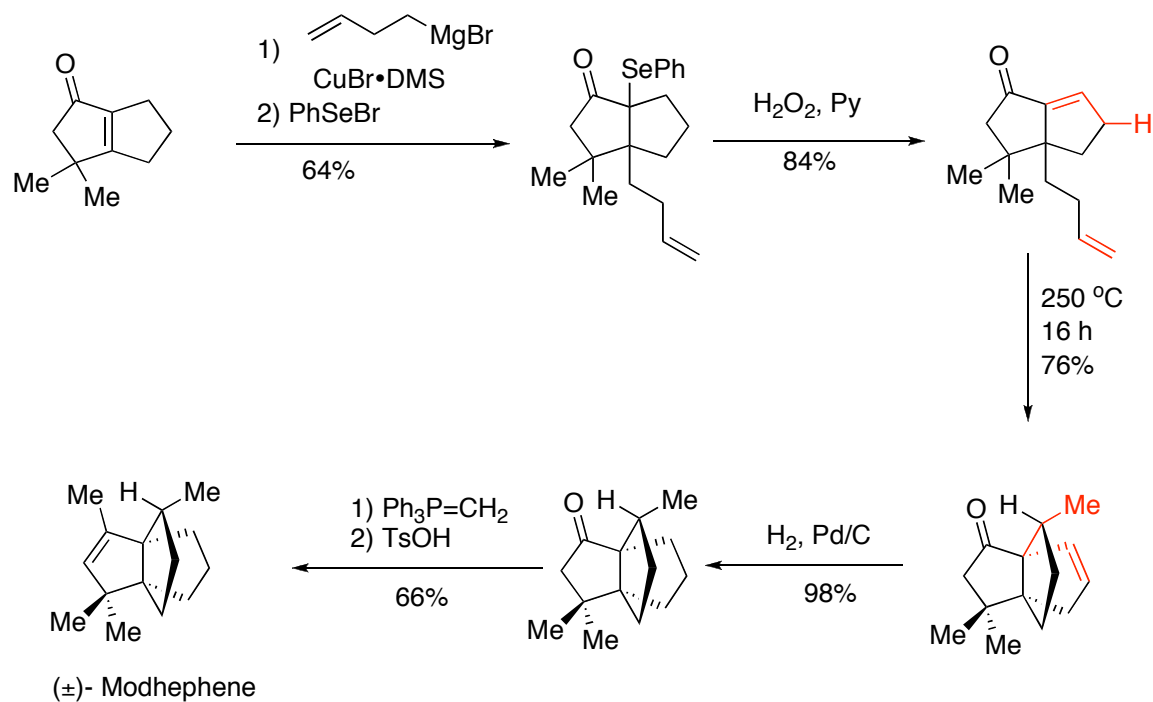
Oppolzer, W.; Bättig, K.; Hudlicky, T. *Helv. Chim. Acta* **1979**, *62*, 1493.

Oppolzer, W.; Bättig, K.; Hudlicky, T. *Tetrahedron* **1981**, *37*, 4359.

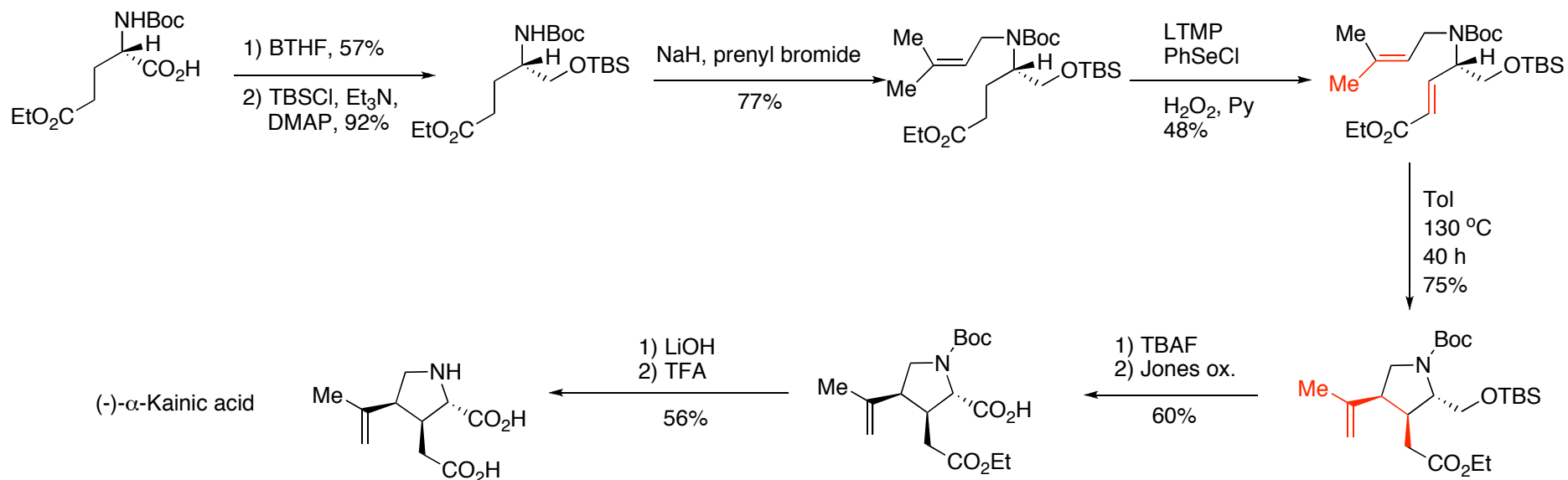
For another elegant synthesis, see: Pirrung, M. C. *J. Am. Chem. Soc.* **1981**, *103*, 82.

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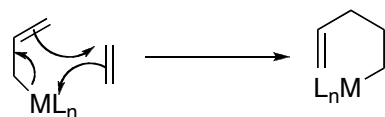


Oppolzer, W.; Marazza, F. *Helv. Chim. Acta* **1981**, *64*, 1575.
 Oppolzer, W.; Bättig, K. *Helv. Chim. Acta* **1981**, *64*, 2489.

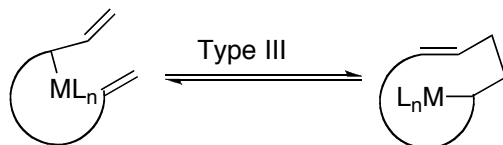
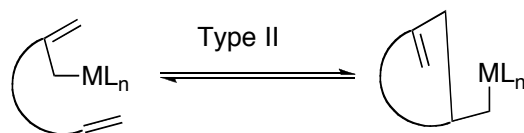
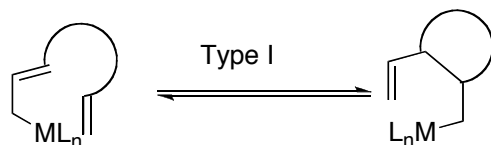


Oppolzer, W.; Robbiani, C.; Bättig, K. *Helv. Chim. Acta* **1980**, *63*, 2015.
Oppolzer, W.; Thirring, K. *J. Am. Chem. Soc.* **1982**, *104*, 4978.

Metallo-Ene reaction



Intramolecular metallo-ene reaction



M = Li, Mg, Zn stoichiometric

M = Pt, Ni, Pd, Rh catalytic

- 1) predominantly *cis* products
- 2) new handle for further reactions

Reviews: Oppolzer, W. *Angew. Chem. Int. Ed.* **1989**, 28, 38.

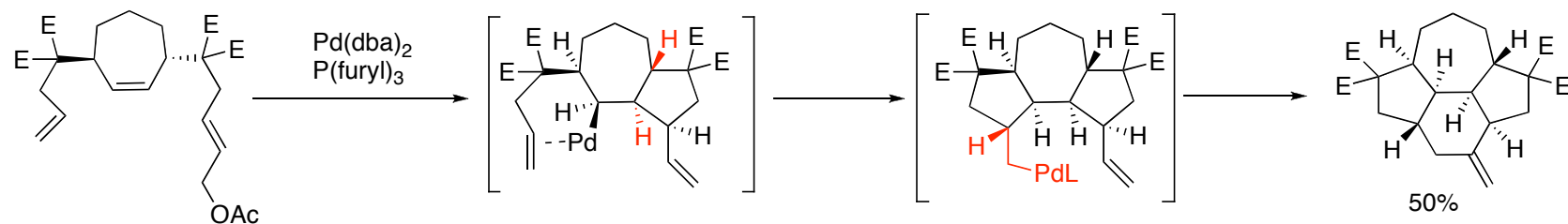
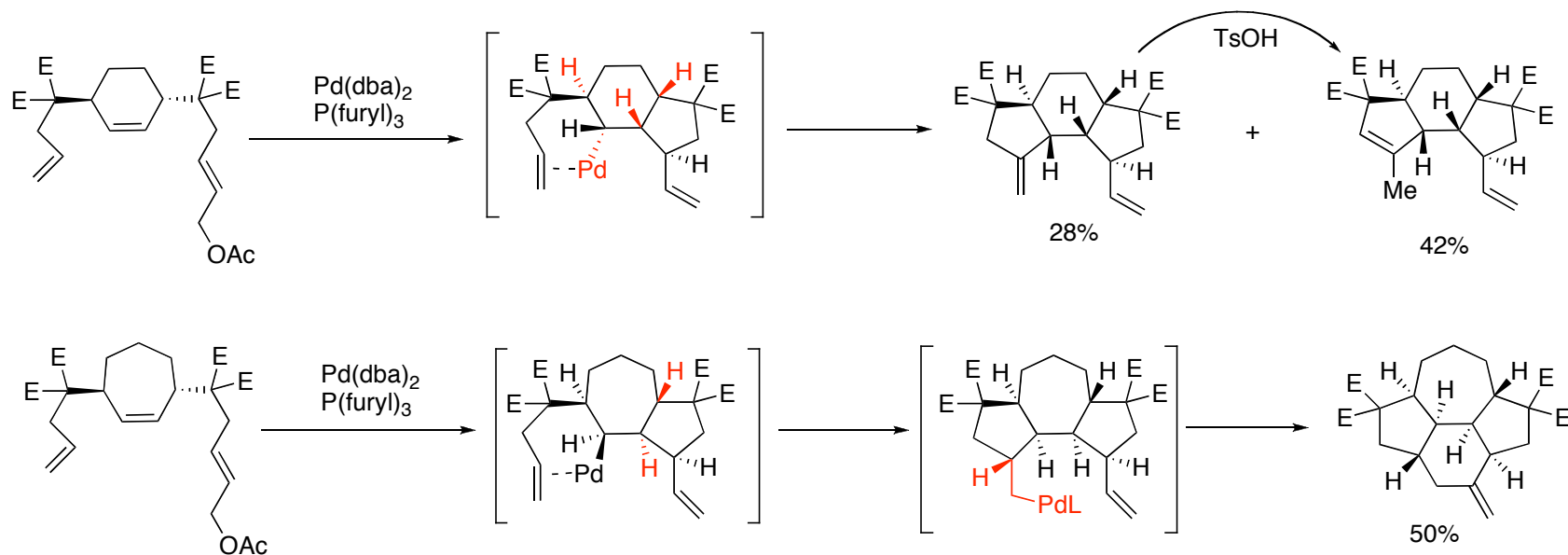
Oppolzer, W. *Pure & Appl. Chem.* **1988**, 60, 39.

Oppolzer, W. *Pure & Appl. Chem.* **1990**, 62, 1941.

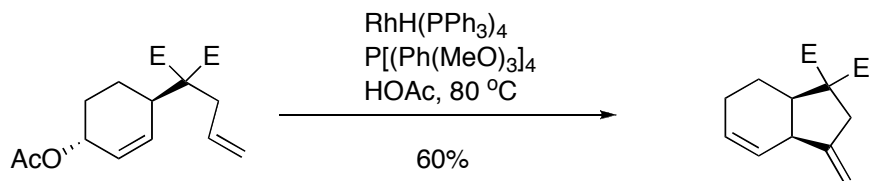
Oppolzer, W. In *Comprehensive Organic Synthesis*; Trost, B. M.; Fleming, I. Eds.; Pergamon Press: Oxford, 1991; Vol 5, p 29.

Wolfgang Oppolzer (1937-1996)

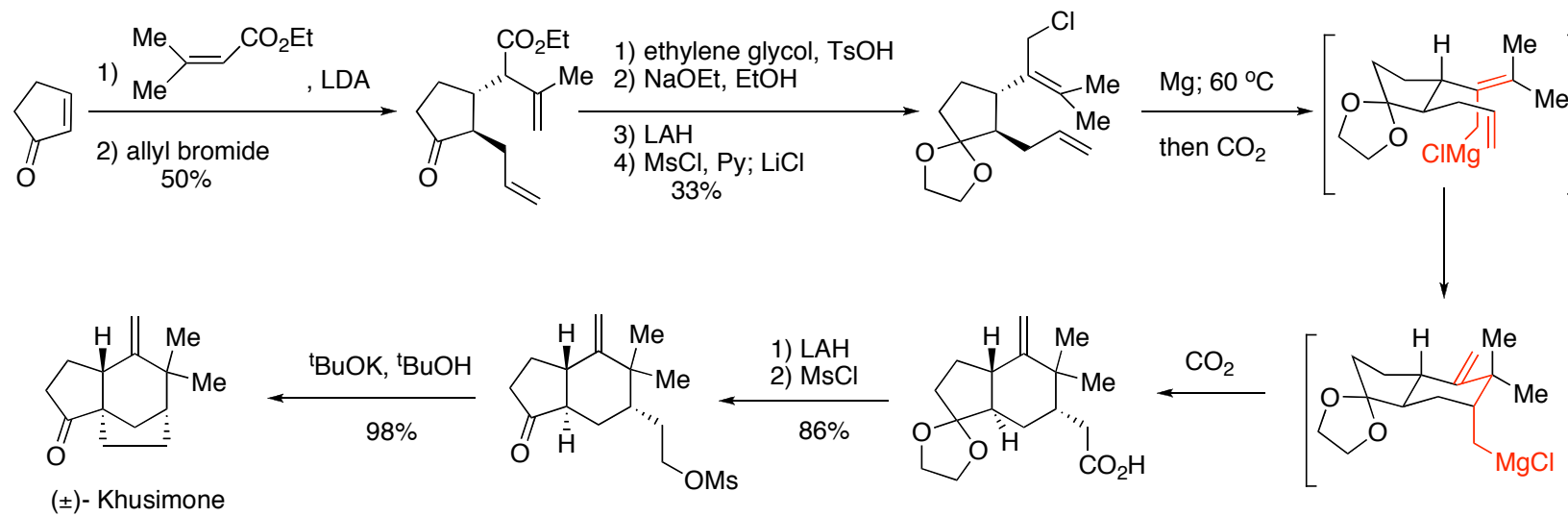
Shengping Zheng
(Breslow Group)



Oppolzer, W.; DeVita, R. J. *J. Org. Chem.* **1991**, *56*, 6256.



Oppolzer, W.; Fürstner, A. *Helv. Chim. Acta* **1993**, *76*, 2329.

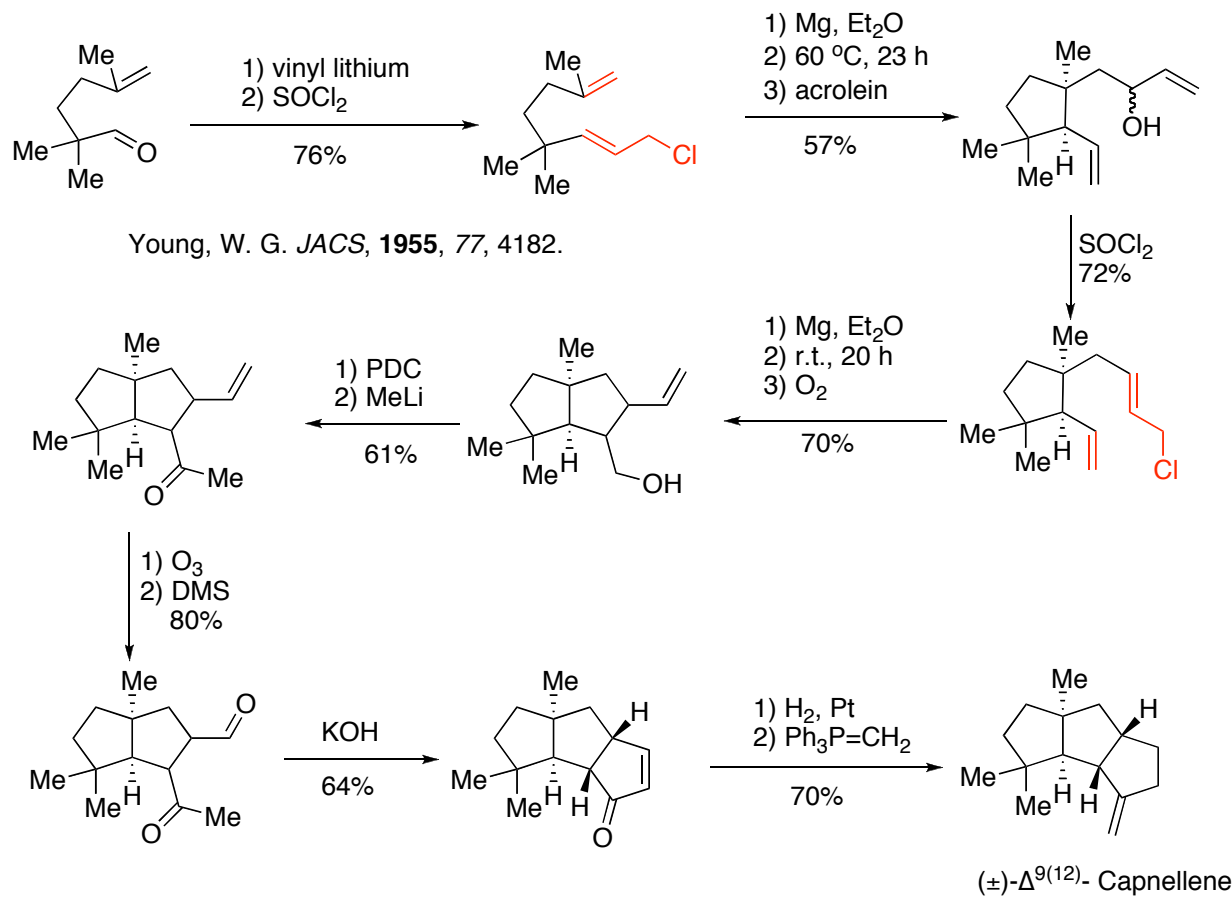


Oppolzer, W.; Pitteloud, R. *J. Am. Chem. Soc.* **1982**, *104*, 6478.

Oppolzer, W.; Pitteloud, R.; Bernardinelli, G.; Bättig, K. *Tet. Lett.* **1983**, *24*, 4975.

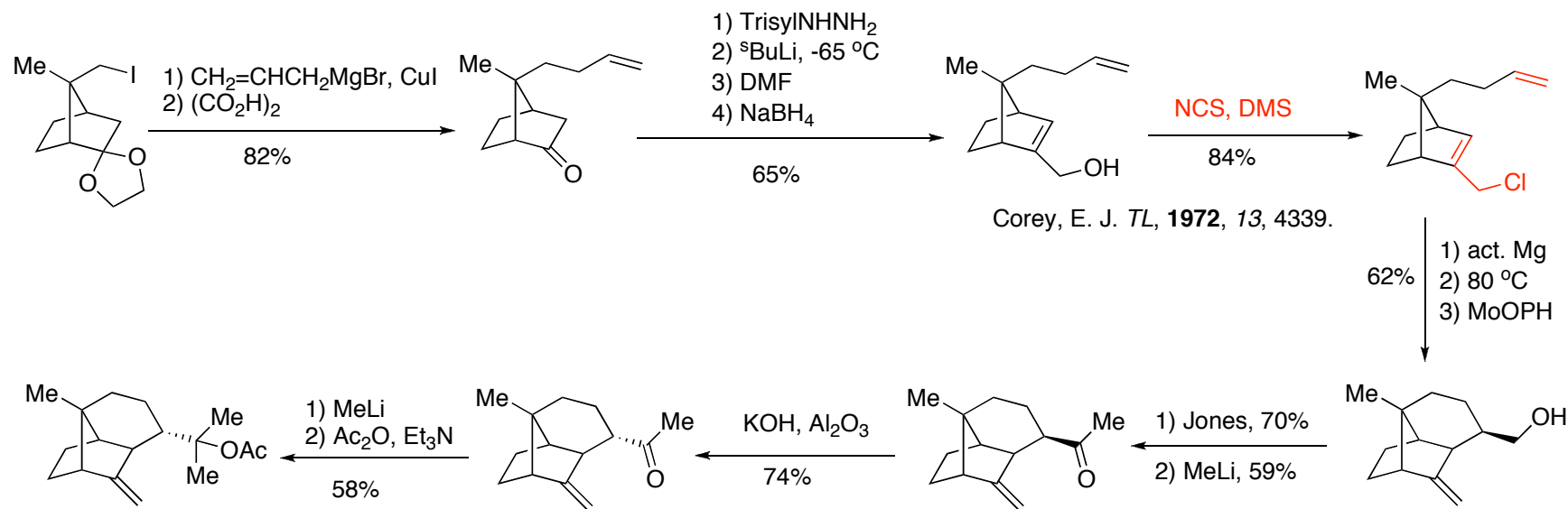
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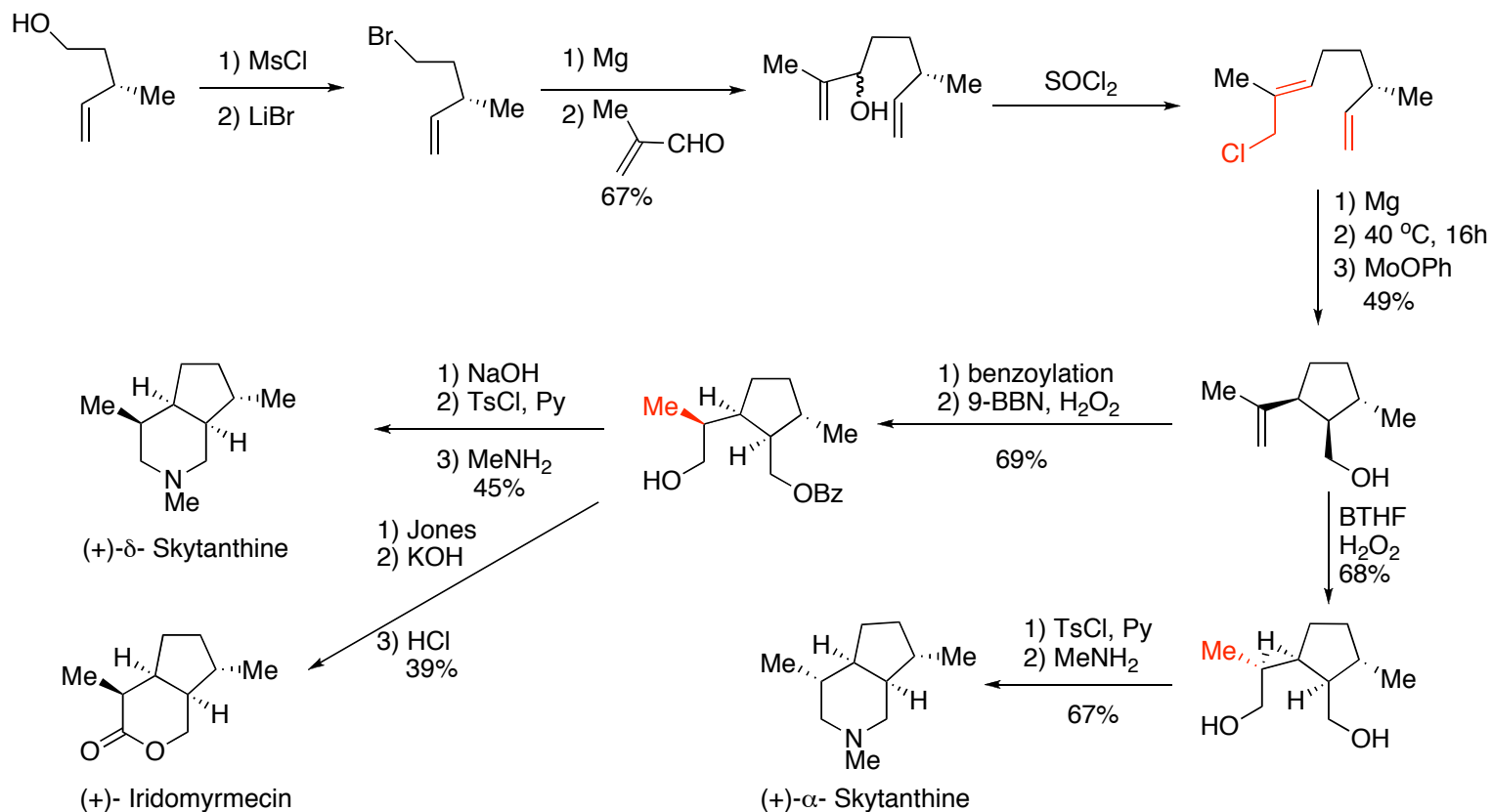


(±)-12- Acetoxysinularene

Oppolzer, W.; Strauss, H. F.; Simmons, D. P. *Tet. Lett.* **1982**, *23*, 4673.
Oppolzer, W.; Begley, T.; Ashcroft, A. *Tet. Lett.* **1984**, *25*, 825.

Wolfgang Oppolzer (1937-1996)

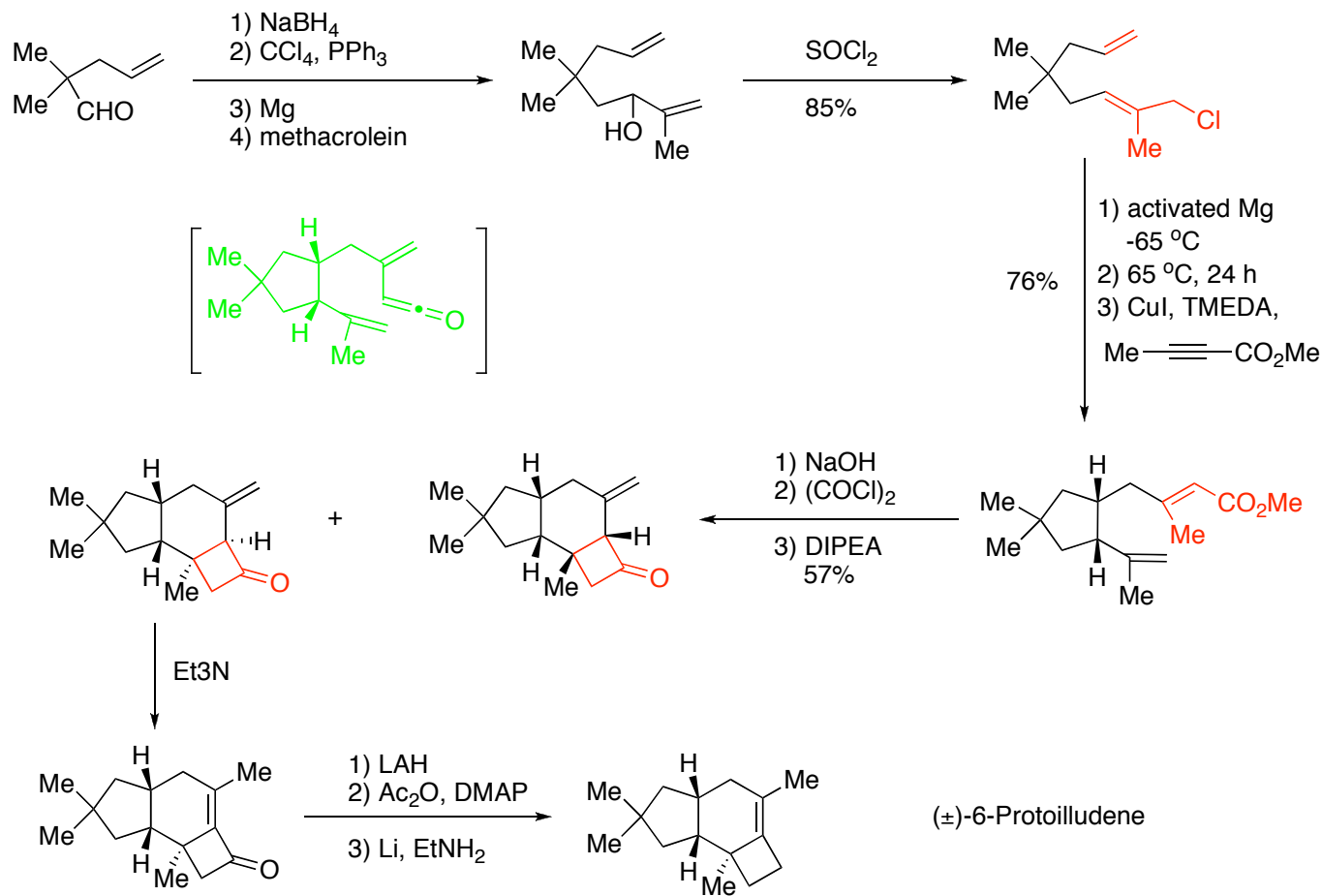
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(Breslow Group)



Oppolzer, W.; Jacobsen, E. J. *Tet. Lett.* **1986**, *27*, 1141.

Wolfgang Oppolzer (1937-1996)

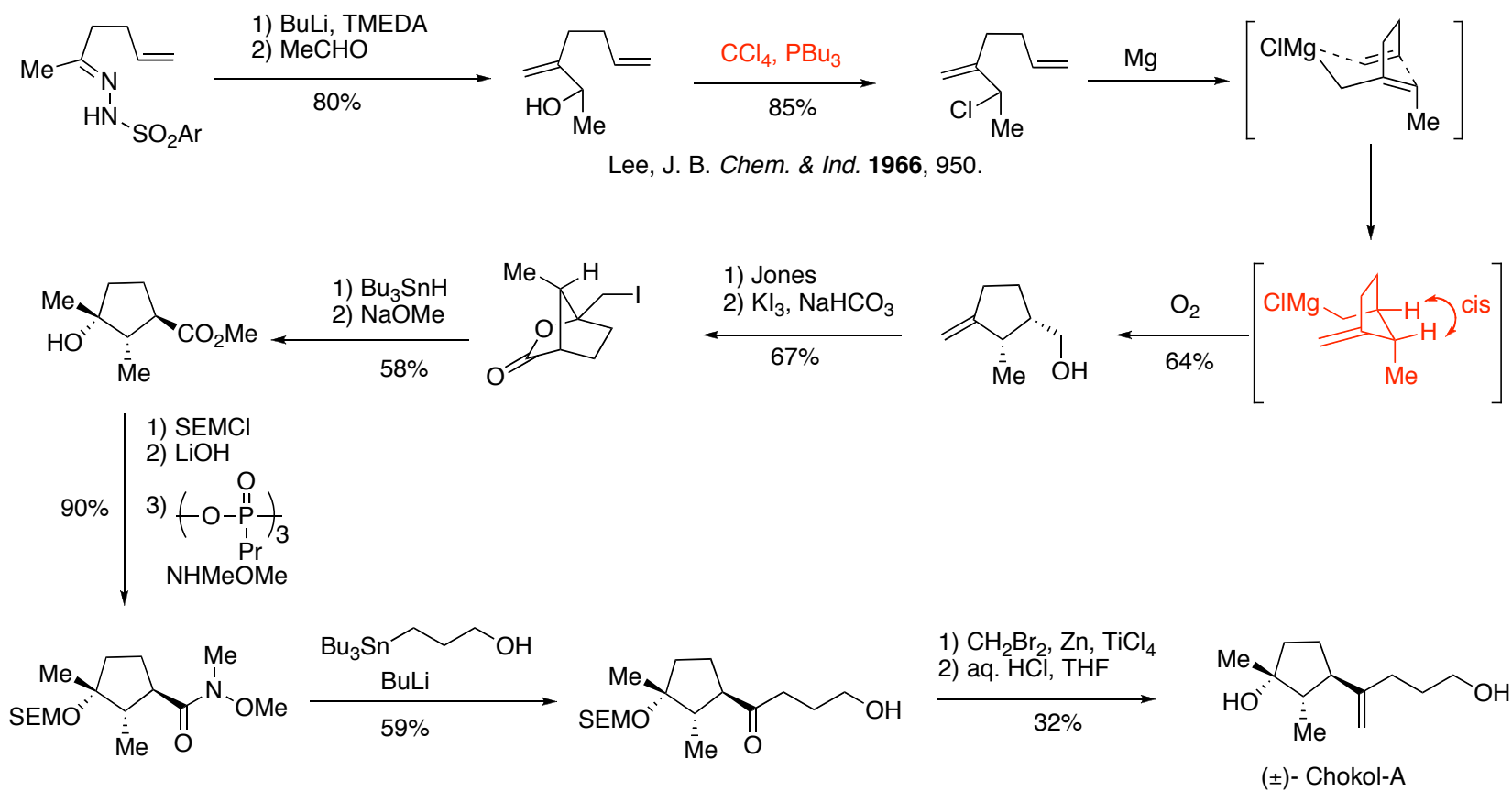
Shengping Zheng
(Breslow Group)



Oppolzer, W.; Nakao, A. *Tet. Lett.* **1986**, 27, 5471.

Wolfgang Oppolzer (1937-1996)

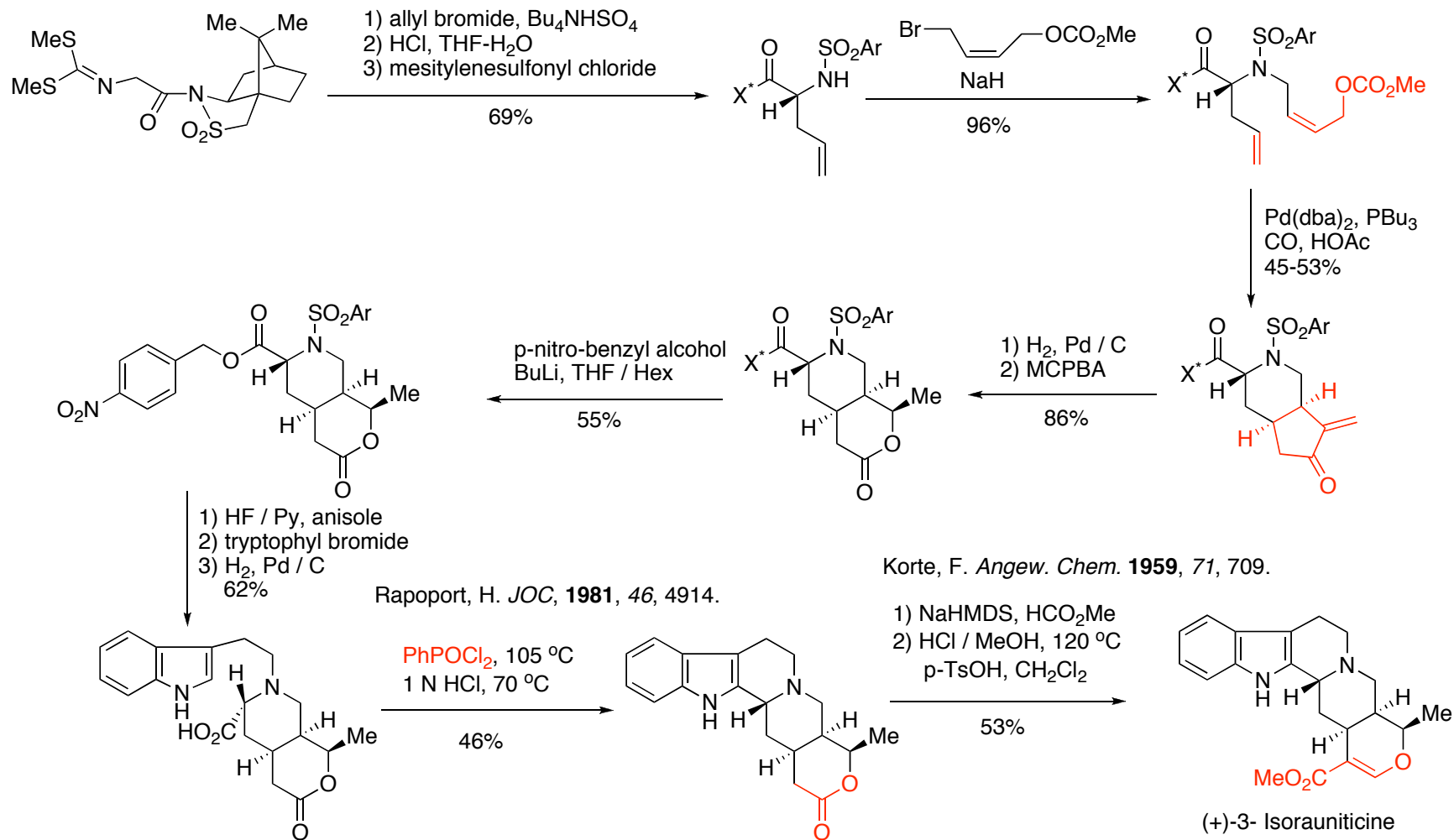
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Oppolzer, W.; Cunningham, A. F. *Tet. Lett.* **1986**, 27, 5467.

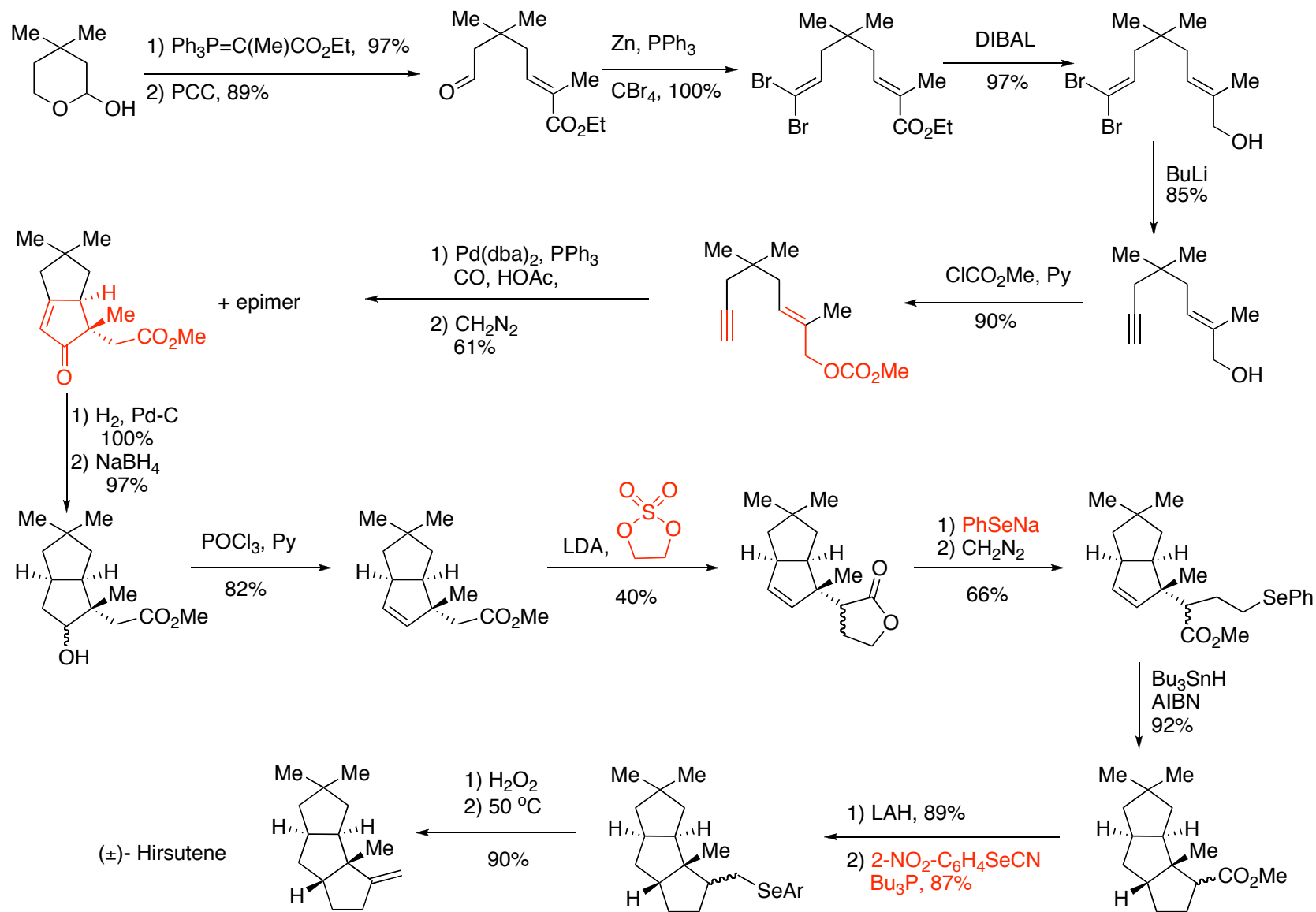
Wolfgang Oppolzer (1937-1996)

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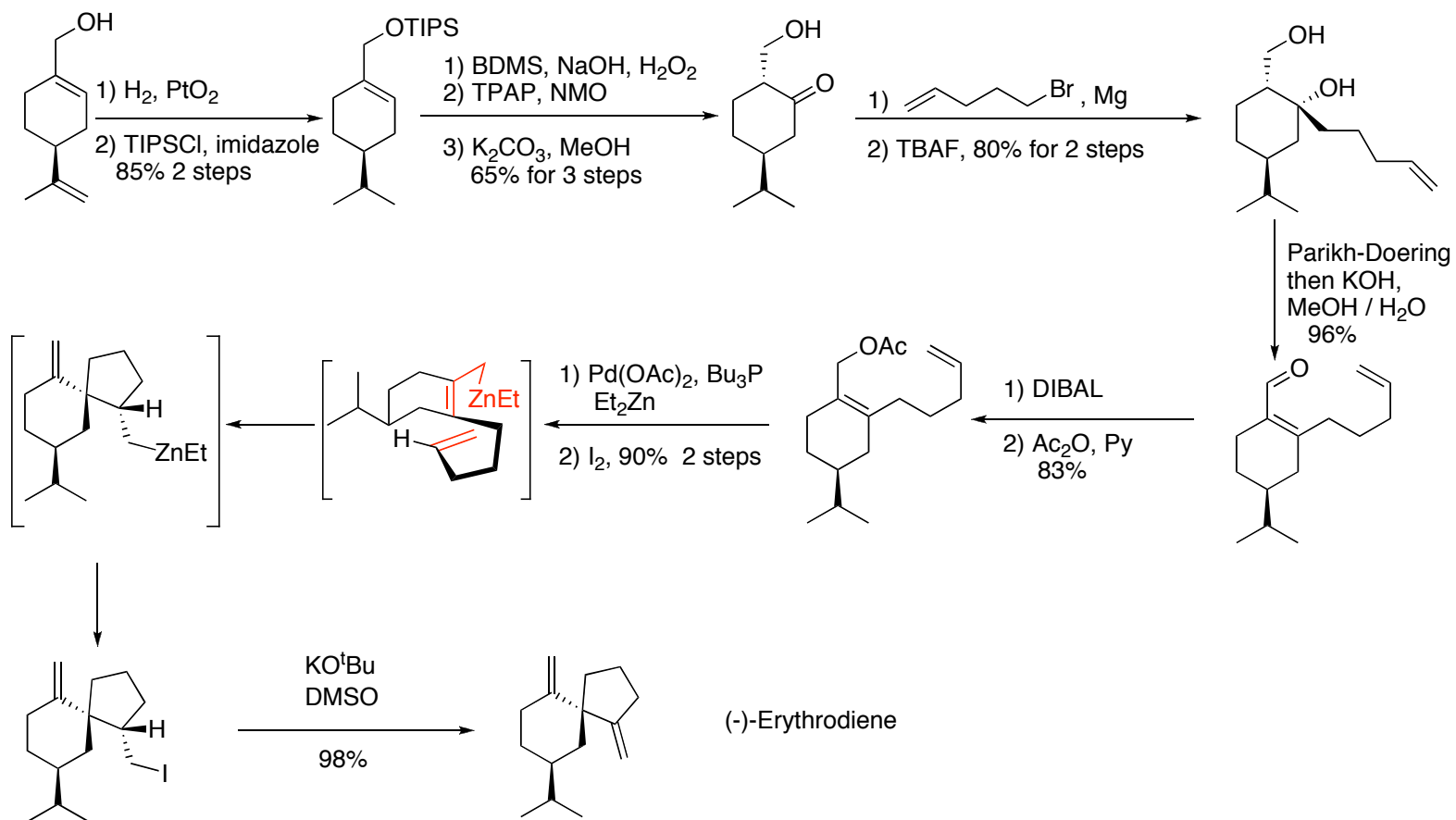
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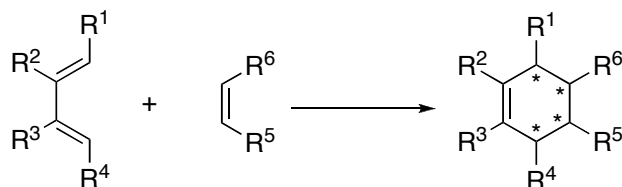
Wolfgang Oppolzer (1937-1996)

Shengping Zheng
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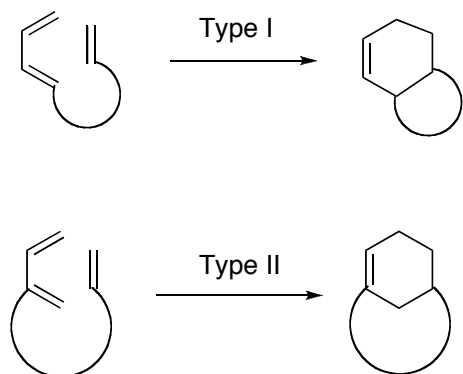


Oppolzer, W.; Flachsmann, F. *Tet. Lett.* **1998**, 39, 5019.
 Oppolzer, W.; Flachsmann, F. *Helv. Chim. Acta* **2001**, 84, 416.

Diels-Alder reaction [4+2]



Intramolecular Diels-Alder reaction



Reviews: Oppolzer, W. *Angew. Chem. Int. Ed.* **1977**, 16, 10.

Oppolzer, W. *Synthesis* **1978**, 793.

Oppolzer, W. *Heterocycles* **1980**, 14, 1615.

Oppolzer, W. *Pure & Appl. Chem.* **1981**, 53, 1181.

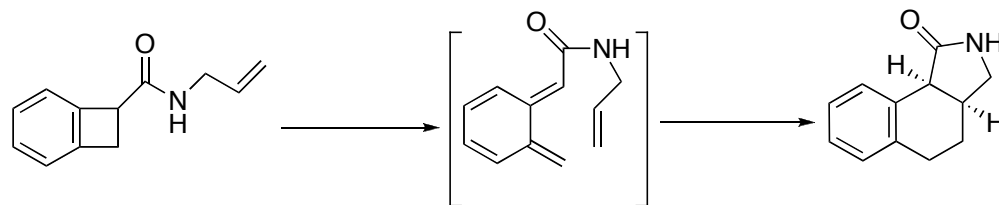
Oppolzer, W. *Angew. Chem. Int. Ed.* **1984**, 23, 876.

Oppolzer, W. In *Comprehensive Organic Synthesis*; Trost, B. M.; Fleming, I. Eds.; Pergamon Press: Oxford, 1991; Vol 5, p 315.

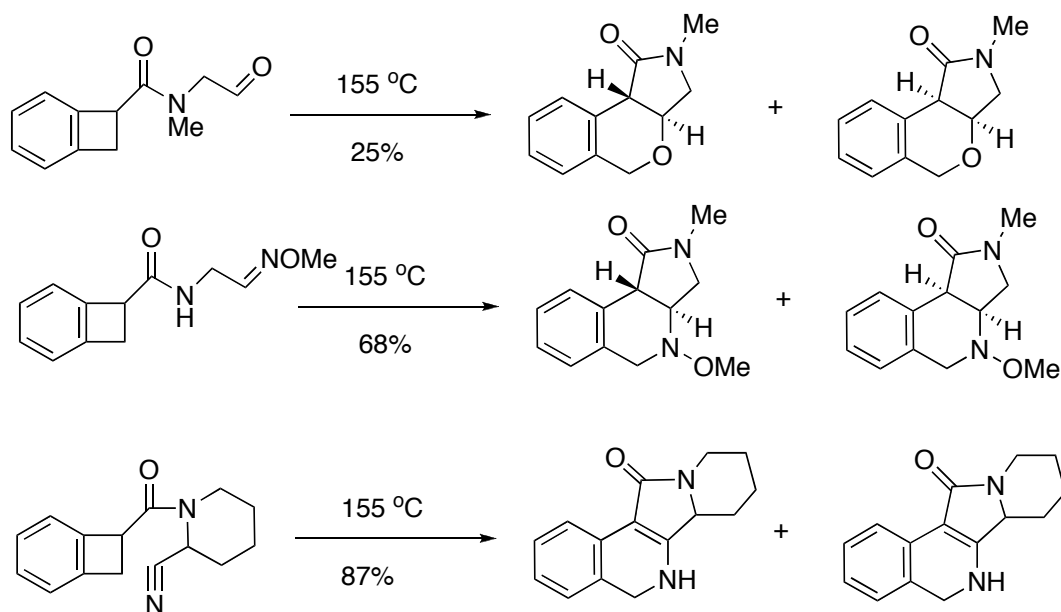
Wolfgang Oppolzer (1937-1996)

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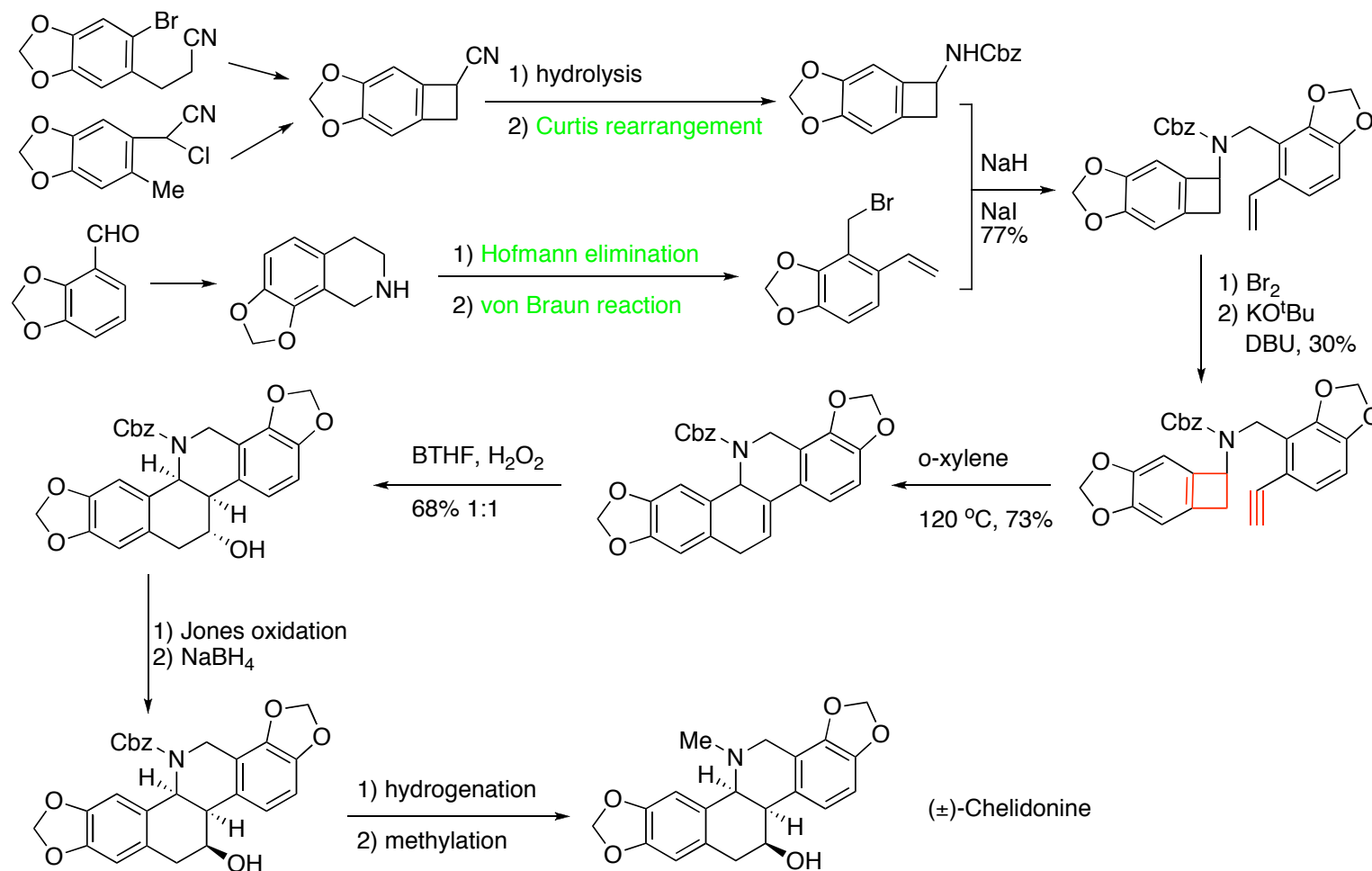
Intramolecular Quinodimethide Diels-Alder Reaction



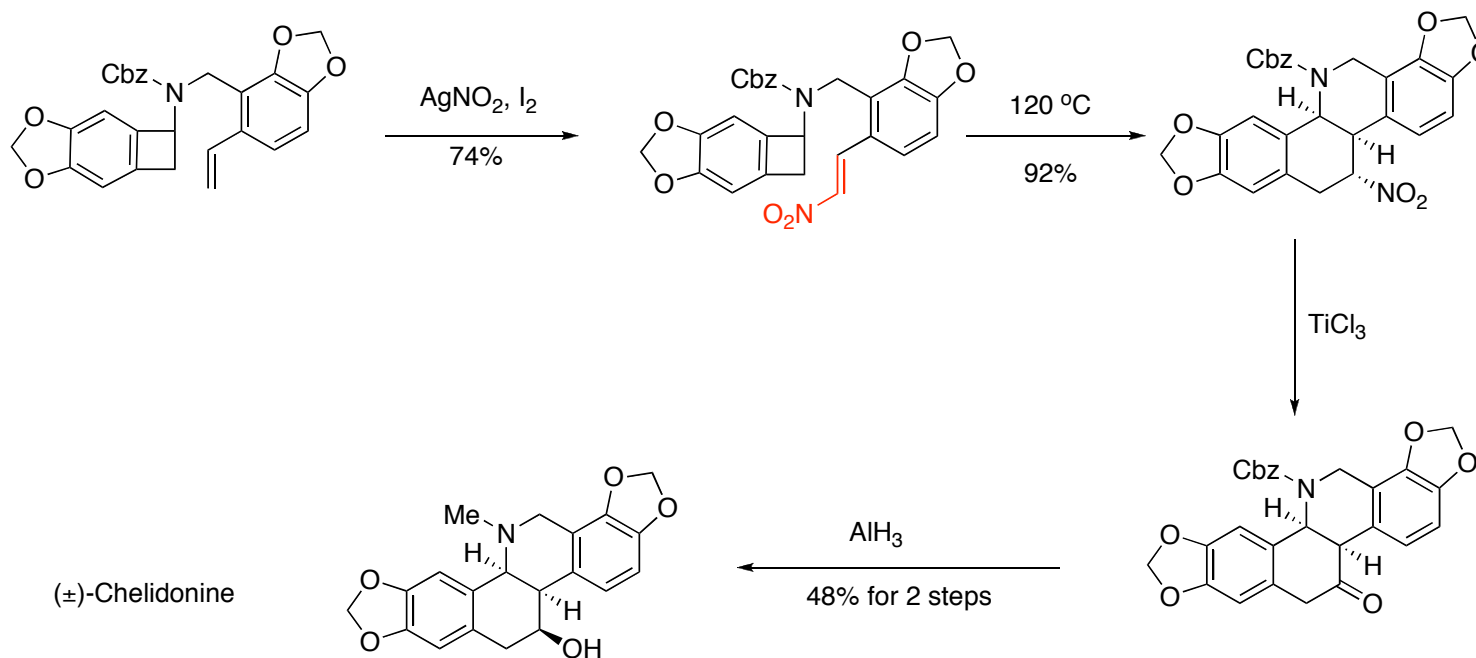
Oppolzer, W. *J. Am. Chem. Soc.* **1971**, *93*, 3833.



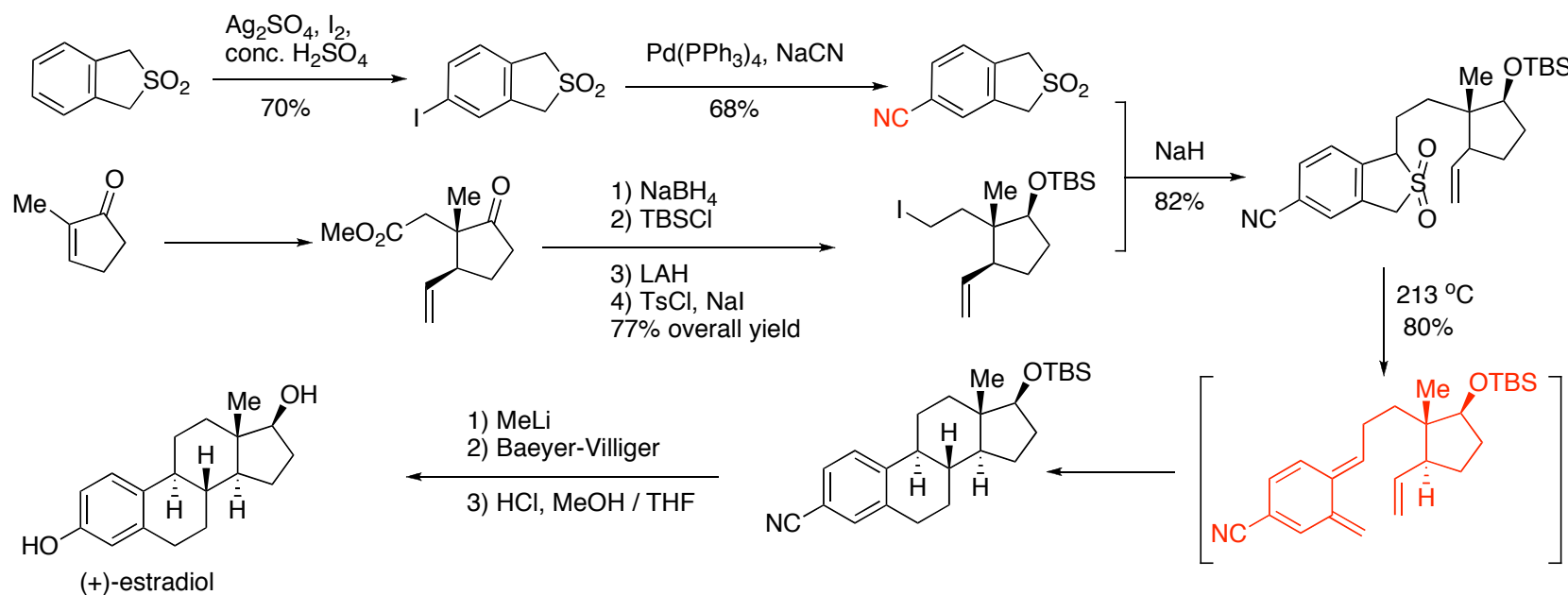
Oppolzer, W. *Angew. Chem. Int. Ed.* **1972**, *11*, 1031.



Oppolzer, W.; Keller, K. *J. Am. Chem. Soc.* **1971**, *93*, 3836.
Oppolzer, W.; Robbiani, C. *Helv. Chim. Acta* **1983**, *66*, 1119.



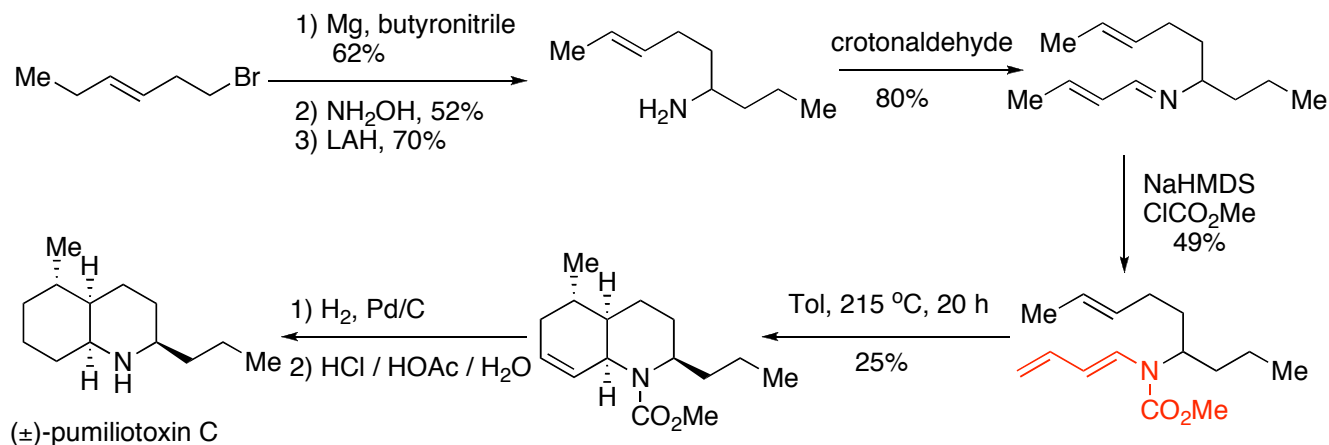
Oppolzer, W.; Keller, K. *J. Am. Chem. Soc.* **1971**, *93*, 3836.
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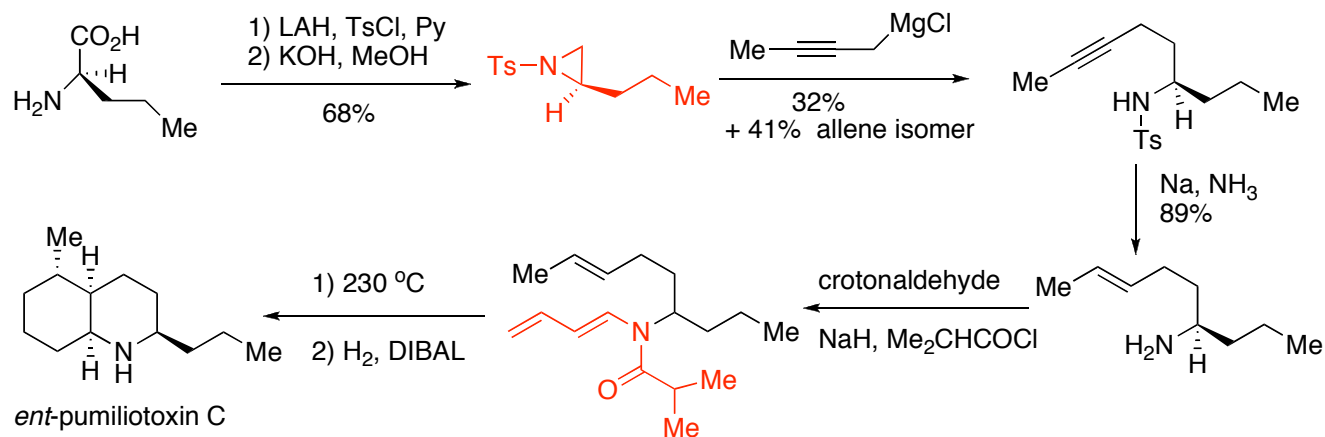
Oppolzer, W.; Roberts, D. A. *Helv. Chim. Acta* **1980**, *63*, 1703.
 For another elegant synthesis of steroid using similar strategy,
 see: Funk, R.; Vollhardt, K. P. C. *J. Am. Chem. Soc.* **1977**, *99*, 5483.
 Funk, R.; Vollhardt, K. P. C. *J. Am. Chem. Soc.* **1979**, *101*, 215.

Wolfgang Oppolzer (1937-1996)

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(Breslow Group)



Oppolzer, W.; Froestl, W.; Weber, H.P. *Helv. Chim. Acta* **1975**, *58*, 533.

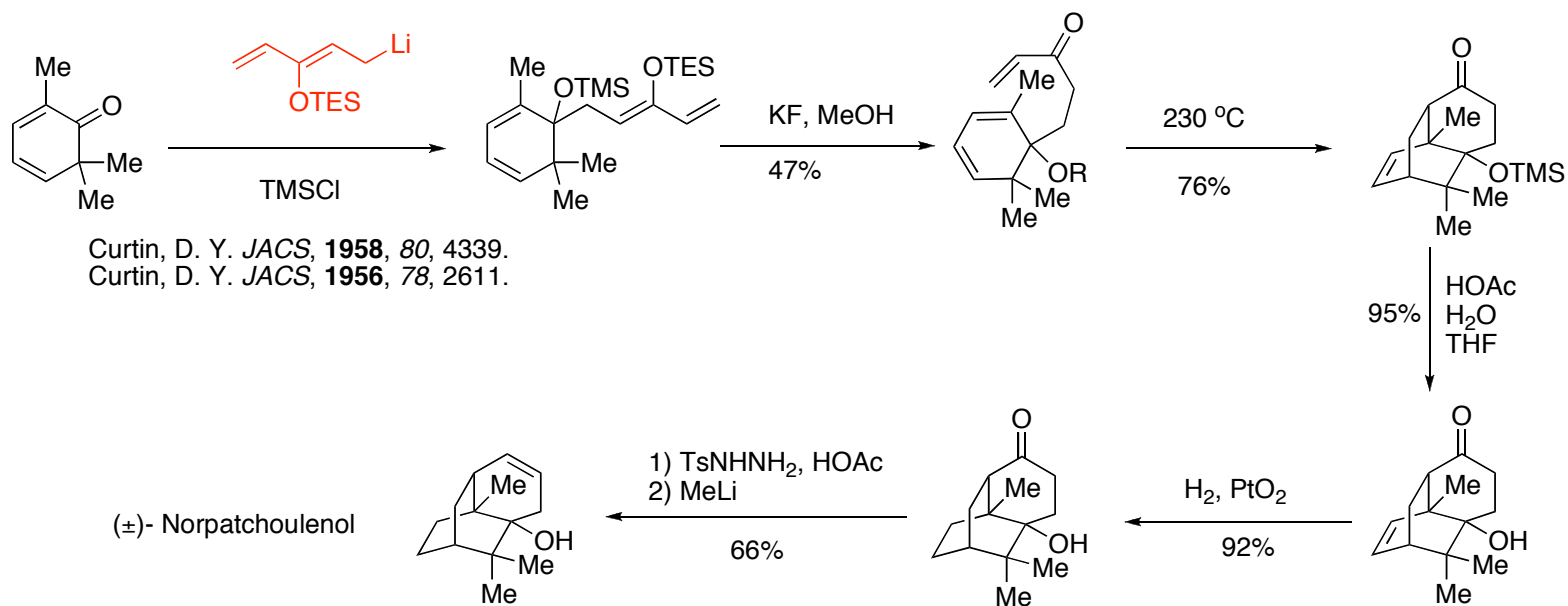


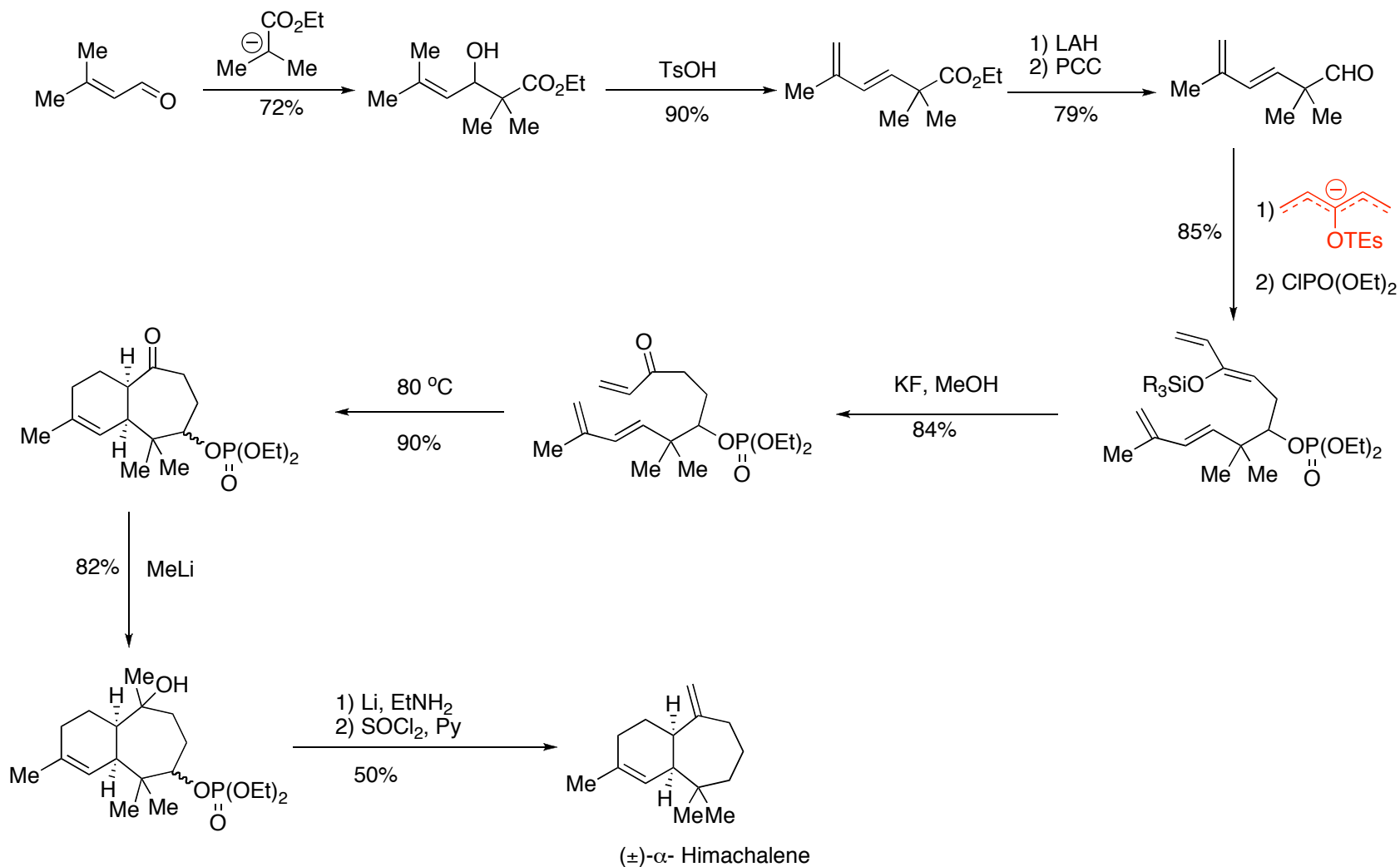
Oppolzer, W.; Flaskamp, E. *Helv. Chim. Acta* **1977**, *60*, 204.

Oppolzer, W.; Flaskamp, E.; Bieber, L. W. *Helv. Chim. Acta* **2001**, *84*, 141.

Wolfgang Oppolzer (1937-1996)

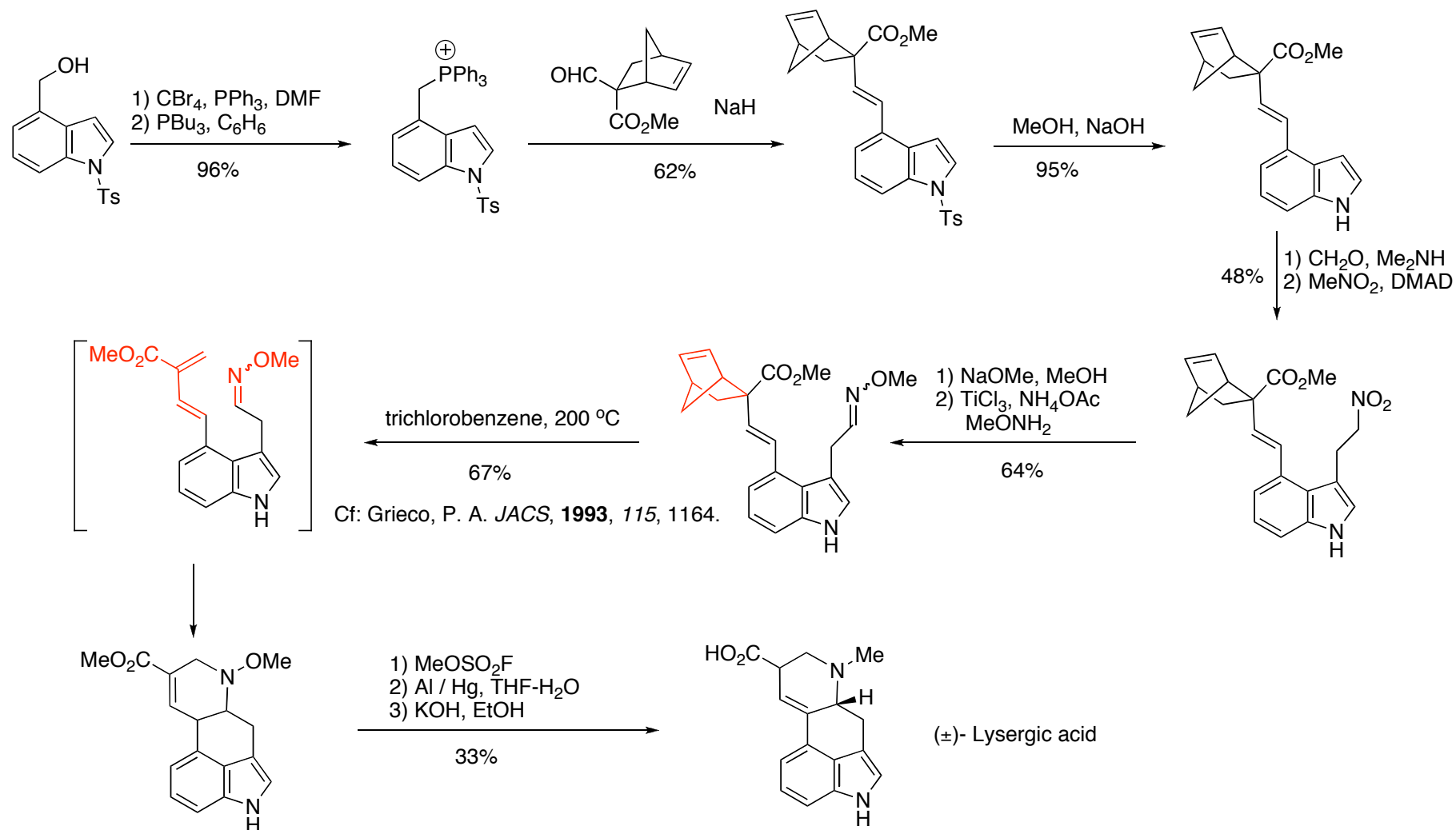
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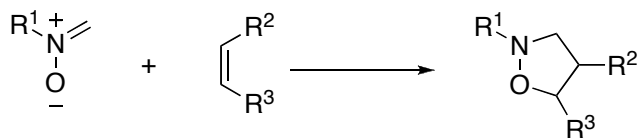


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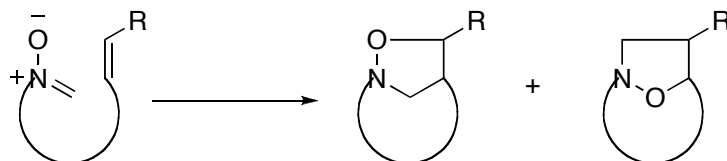
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Nitrono cycloaddition [3+2]



Intramolecular [3+2] addition

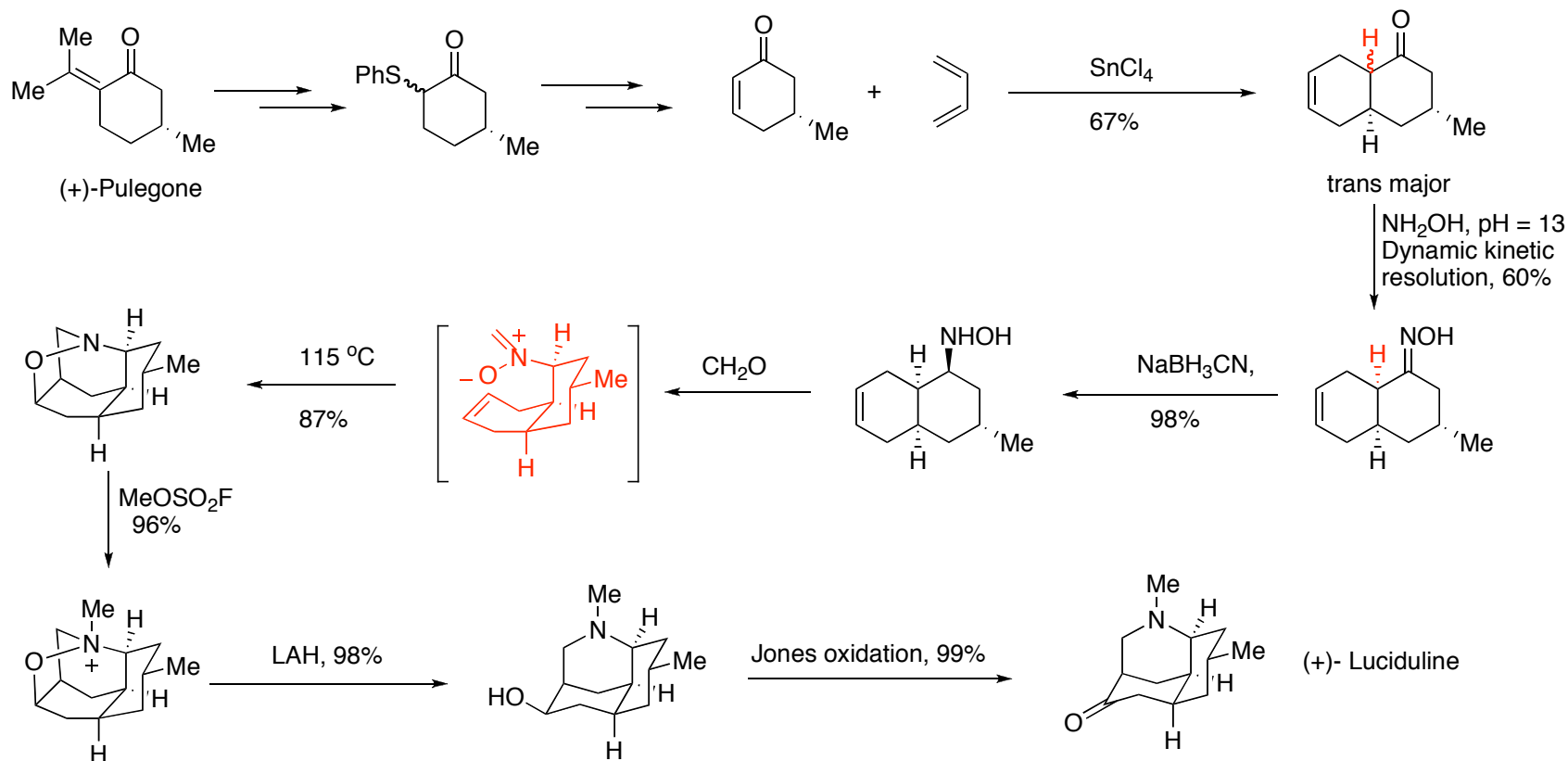


Reviews: Oppolzer, W. *Angew. Chem. Int. Ed.* **1977**, 16, 10.

Oppolzer, W. *Heterocycles* **1980**, 14, 1615.

Oppolzer, W. *Pure & Appl. Chem.* **1981**, 53, 1181.

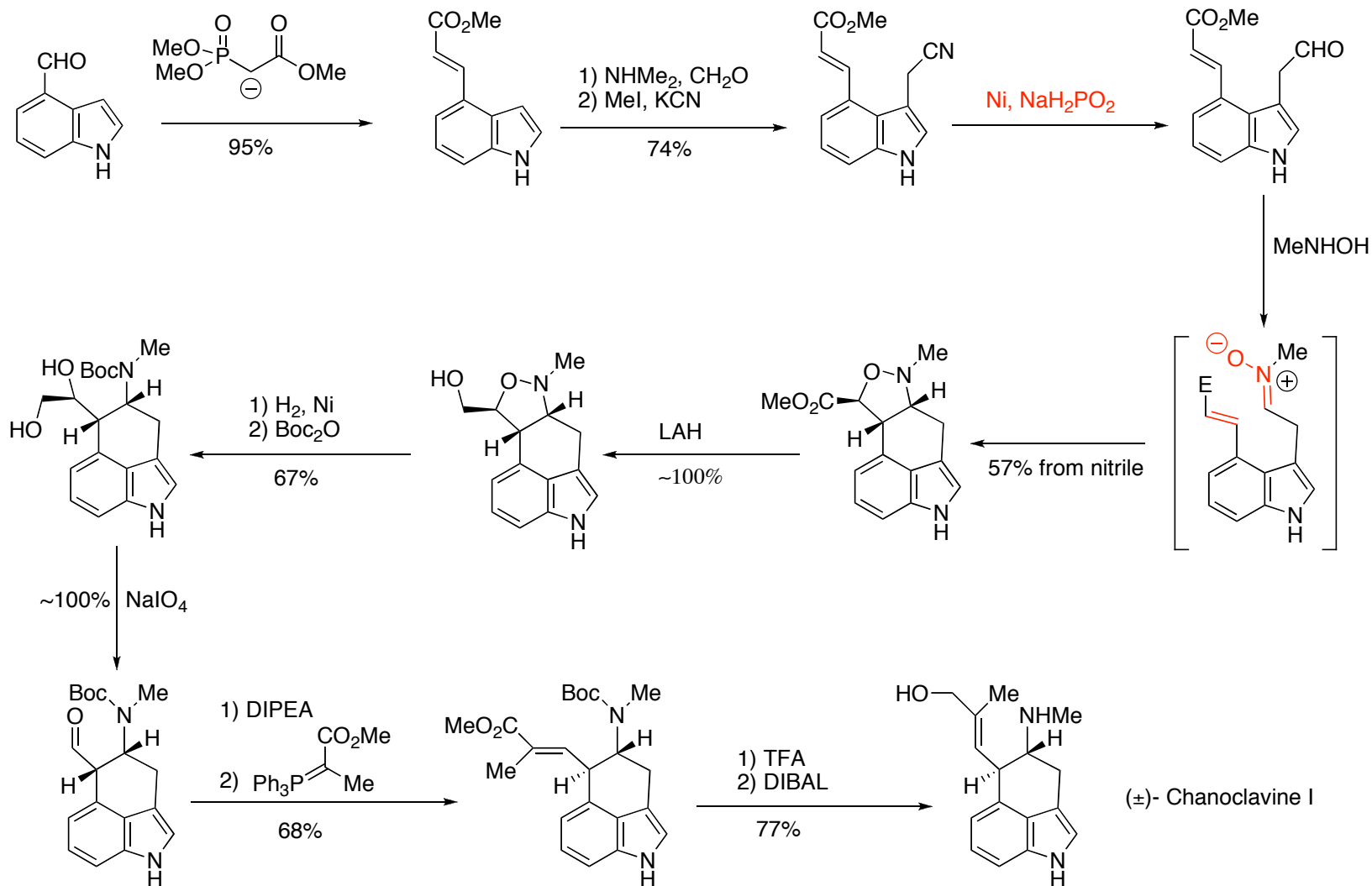
Oppolzer, W.; Siles, S.; Snowden, R. L.; Bakker, B. H.; Petrzilka, M. *Tetrahedron* **1985**, 41, 3497.



Oppolzer, W.; Petrzilka, M. *J. Am. Chem. Soc.* **1976**, *98*, 6722.

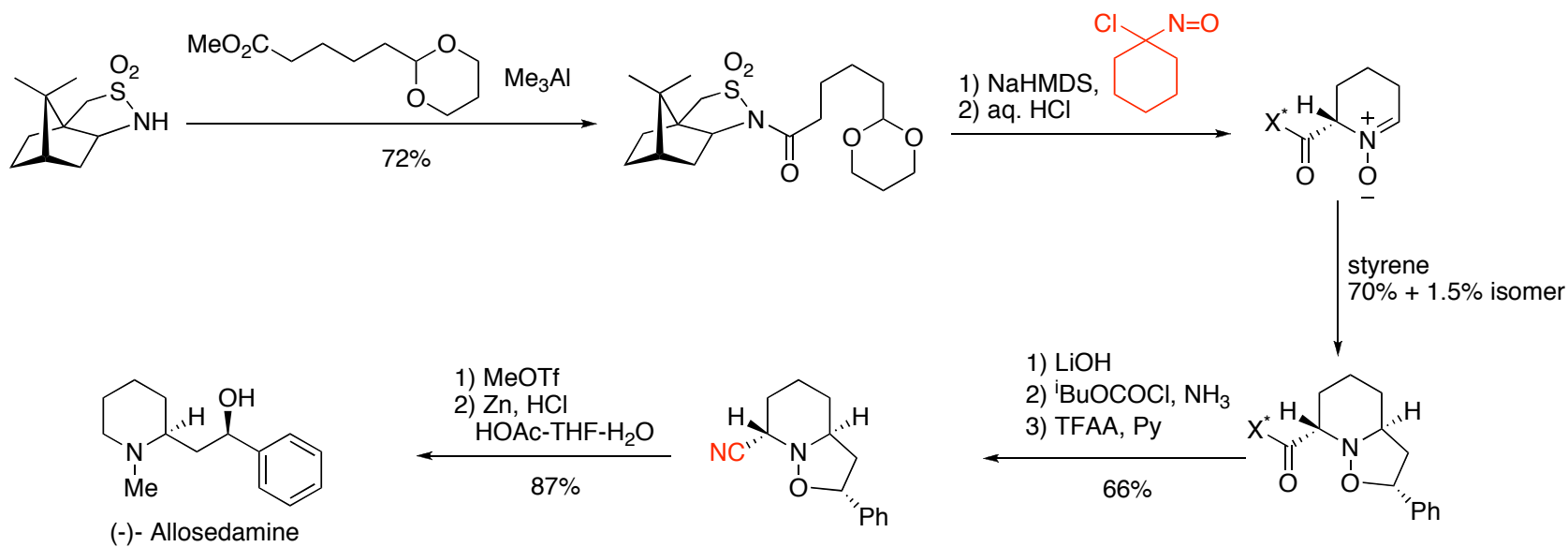
Oppolzer, W.; Petrzilka, M. *Helv. Chim. Acta* **1978**, *61*, 2755.

For another elegant synthesis, see: Scott, W. L.; Evans, D. A. *J. Am. Chem. Soc.* **1974**, *94*, 4779.



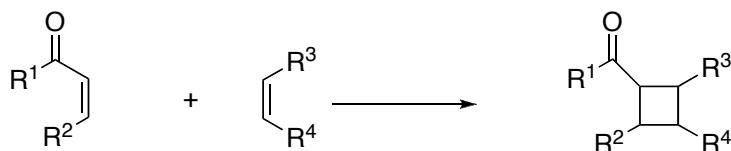
Oppolzer, W.; Grayson, J. I. *Helv. Chim. Acta* **1980**, *63*, 1706.

Oppolzer, W.; Grayson, J. I.; Wegmann, H.; Urrea, M. *Tetrahedron* **1983**, *39*, 3695.

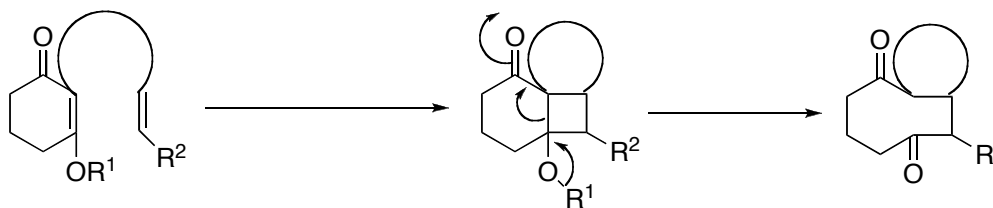


Oppolzer, W.; Deerberg, J.; Tamura, O. *Helv. Chim. Acta* **1994**, *77*, 554.

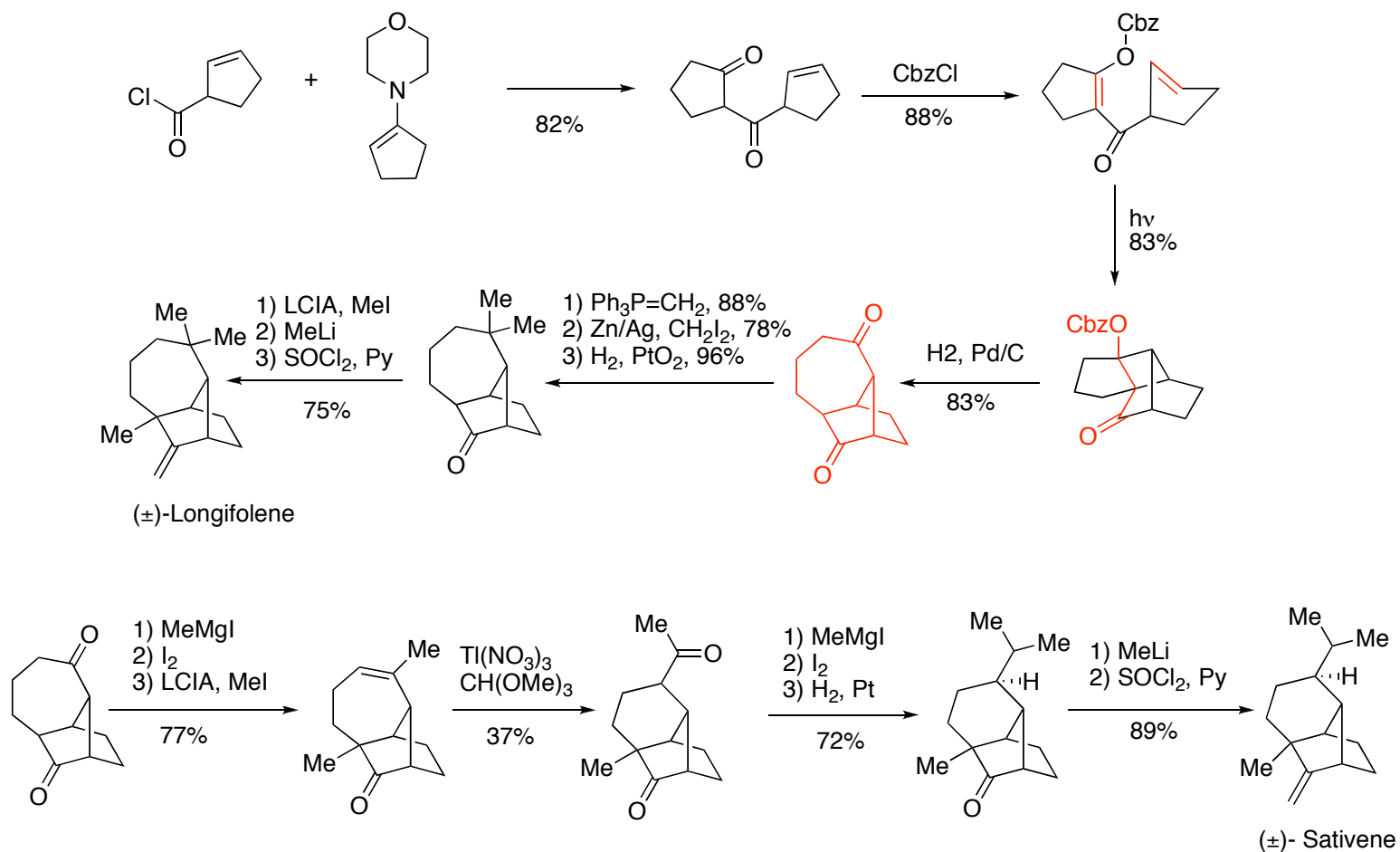
Photoaddition [2+2]



Intramolecular de Mayo-retro aldol reaction



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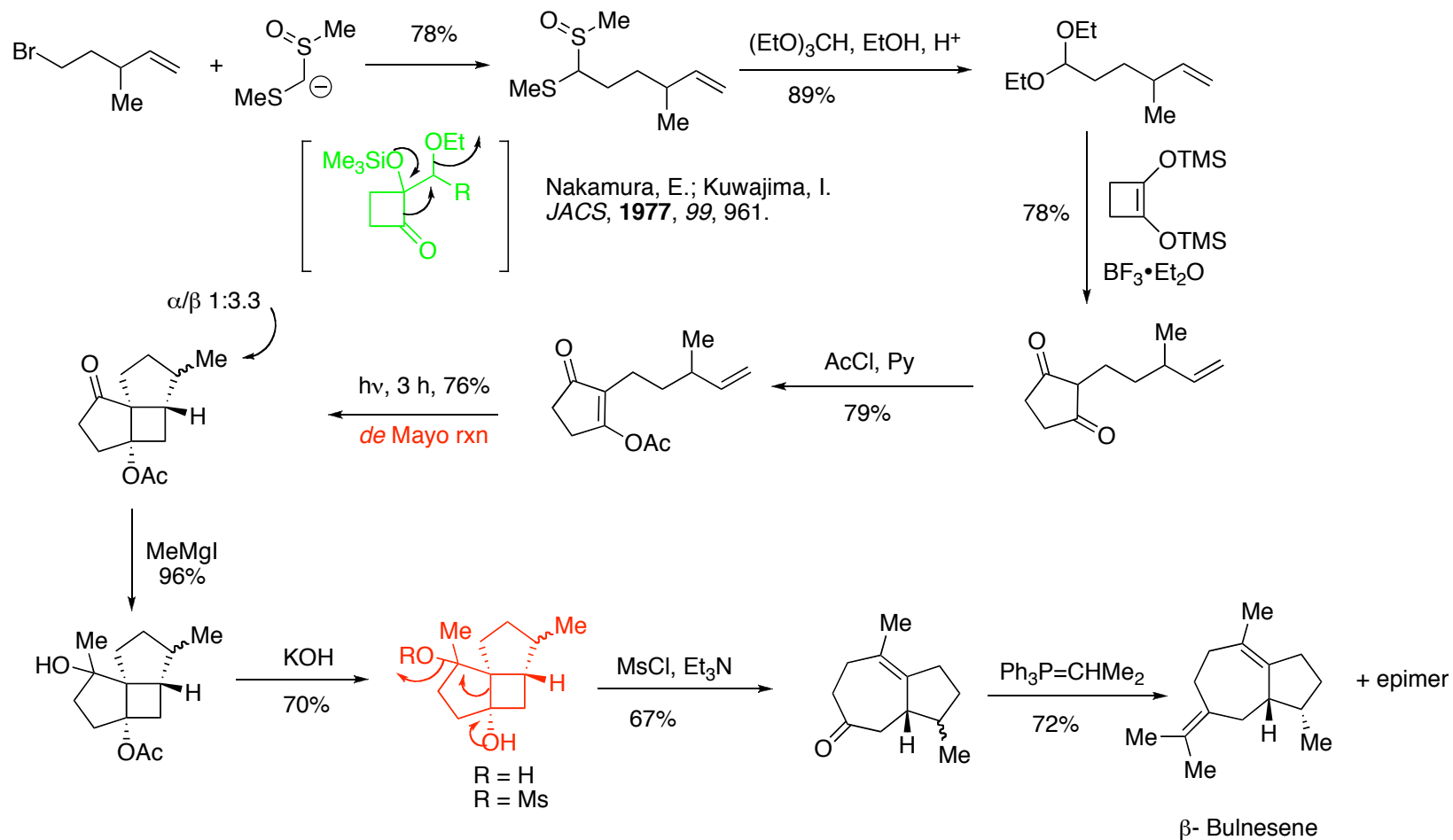
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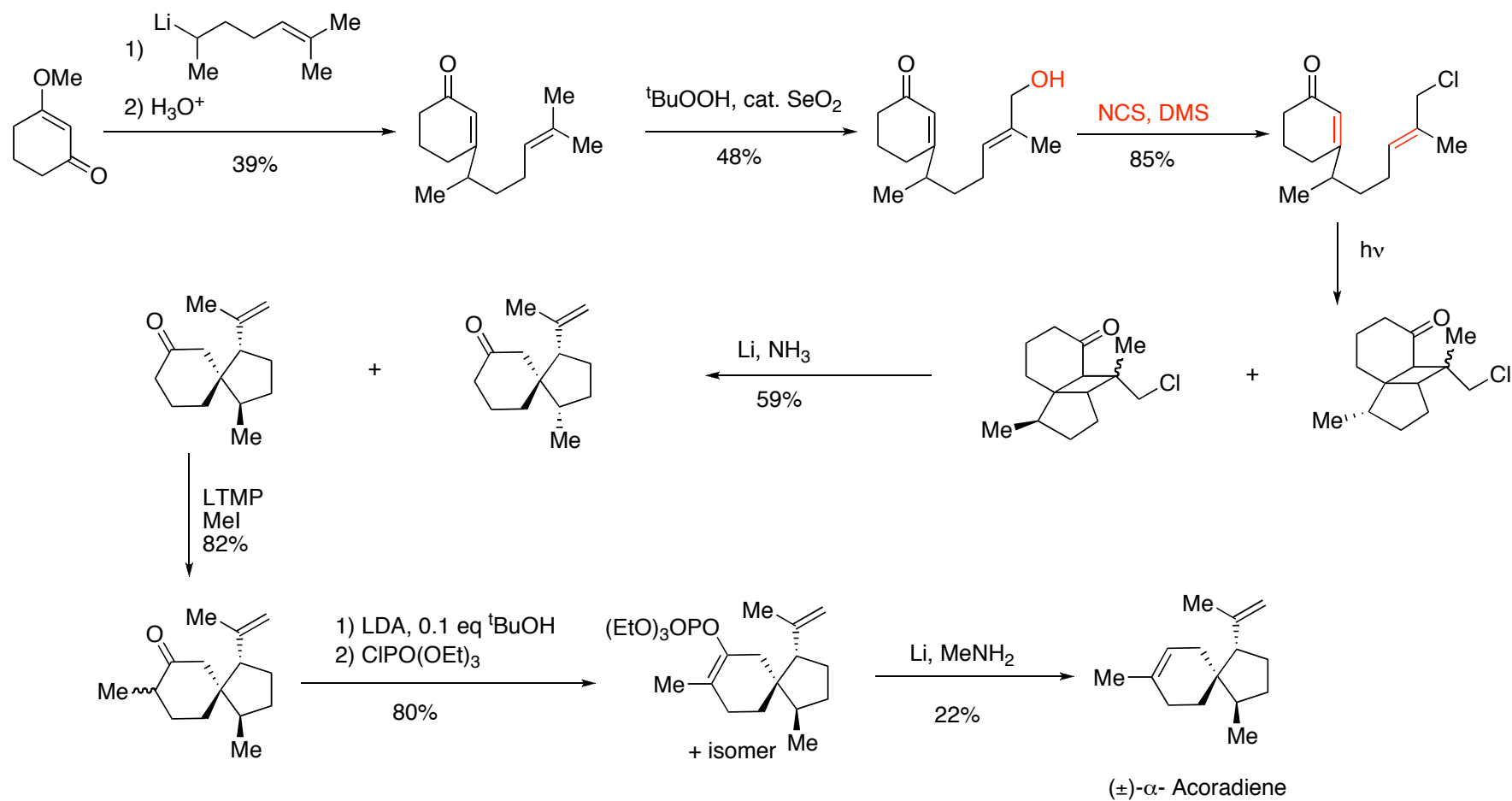
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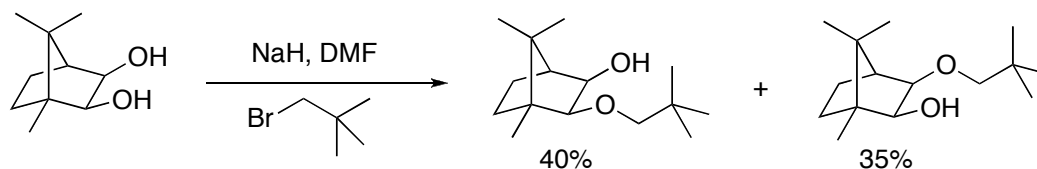


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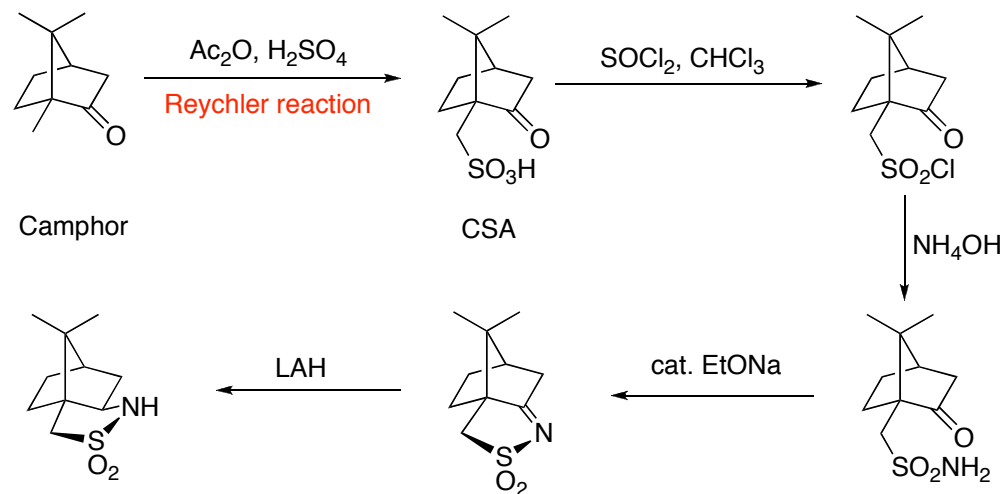


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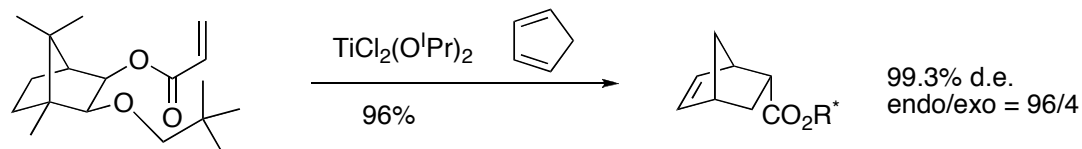
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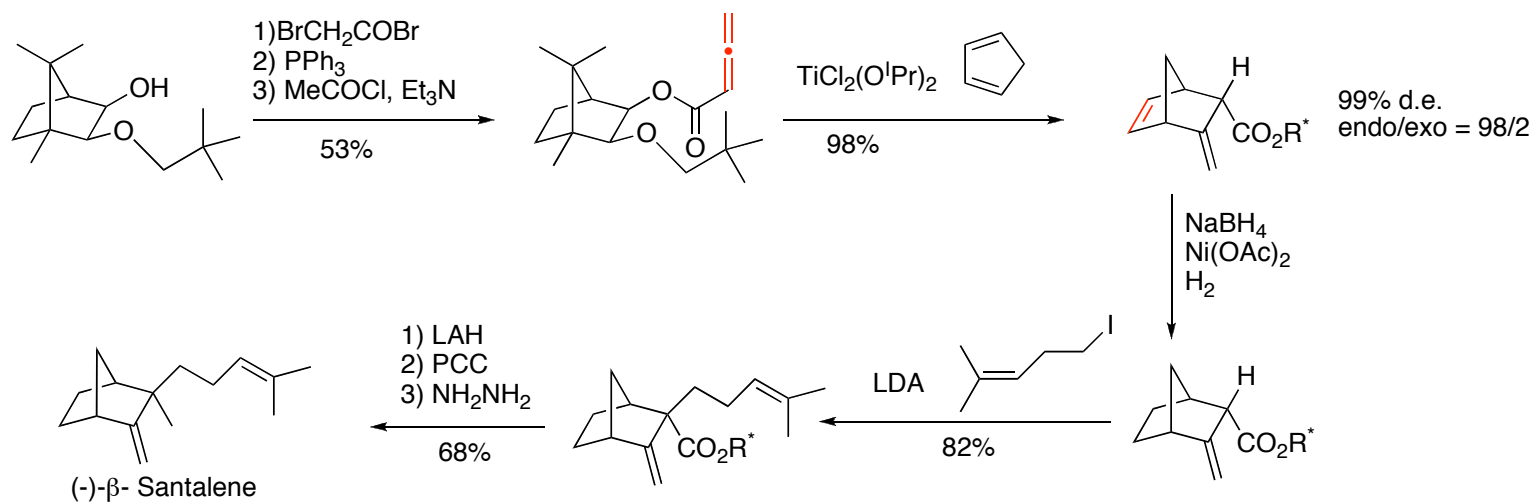
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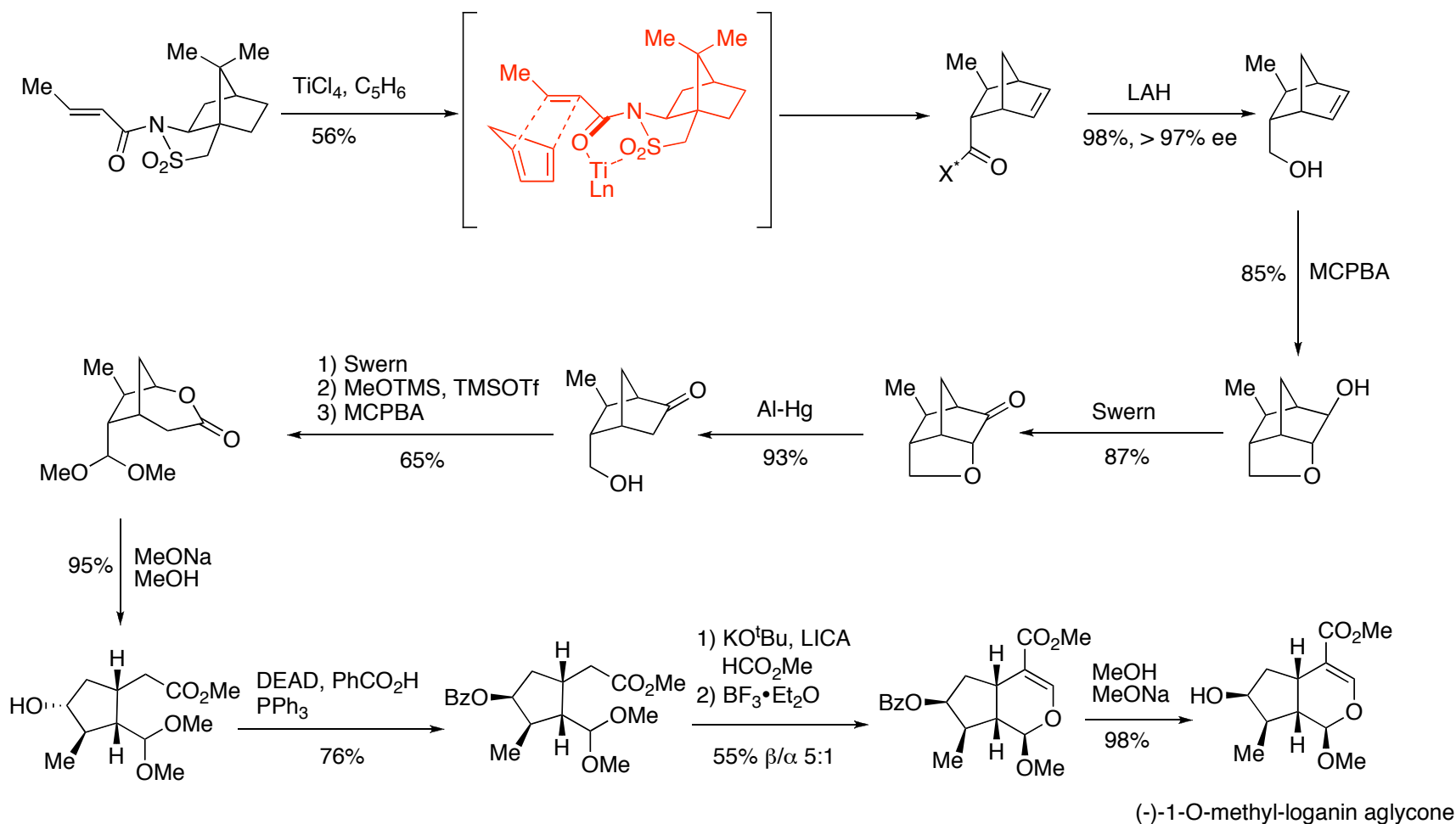


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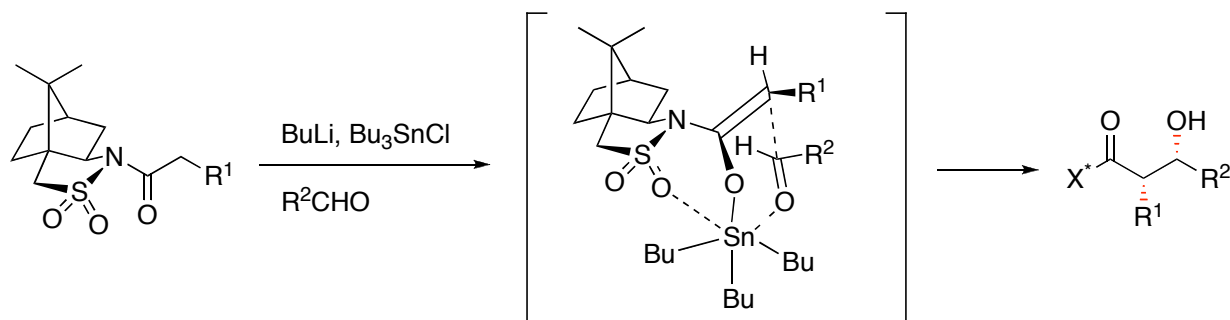
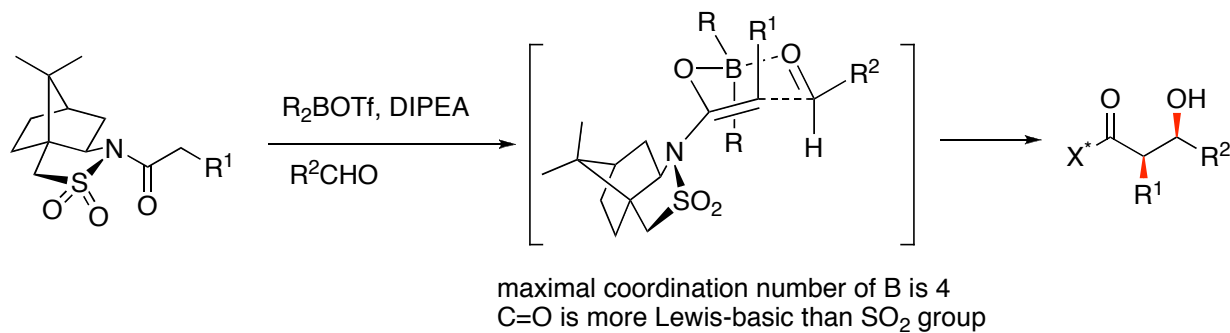
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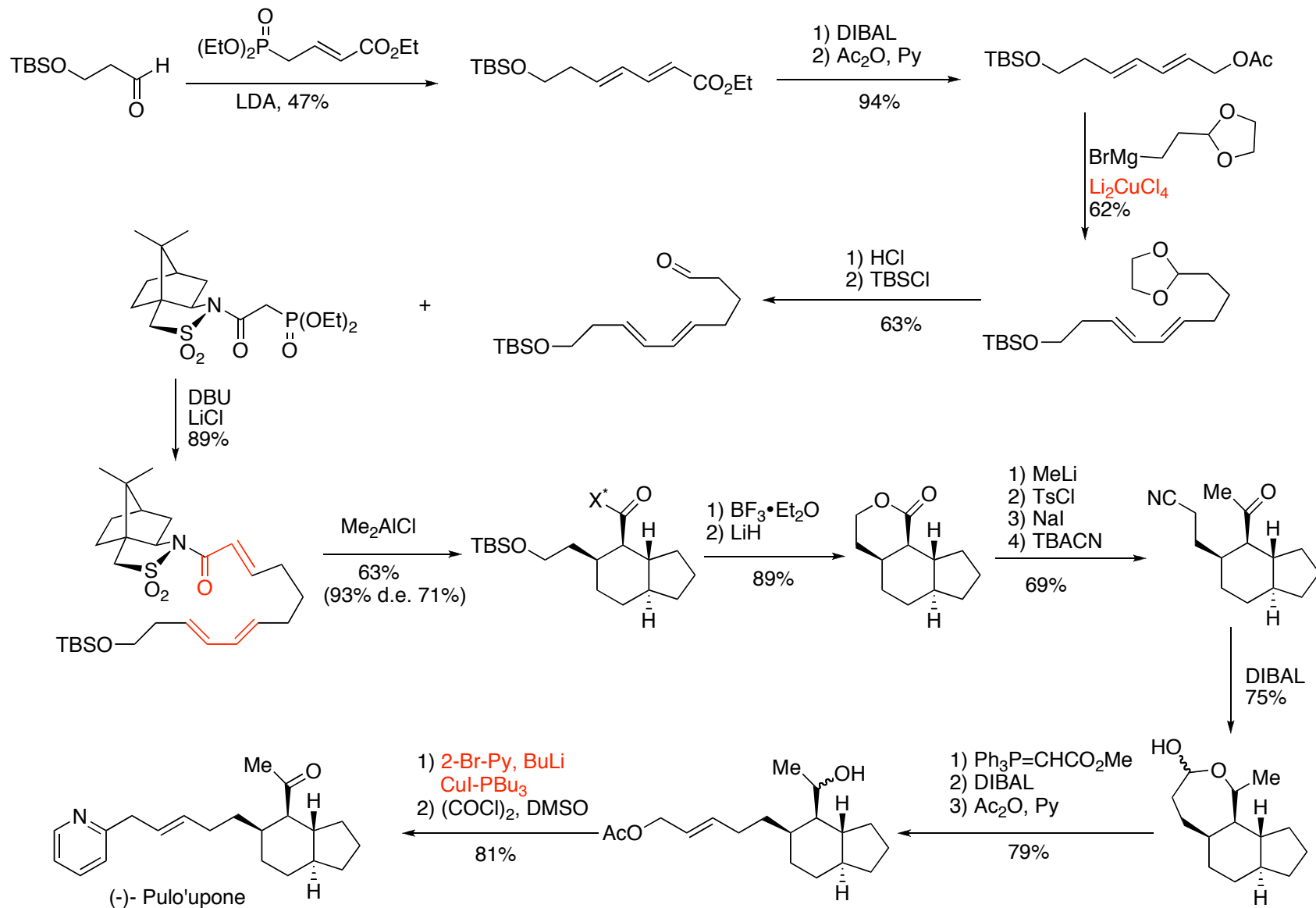
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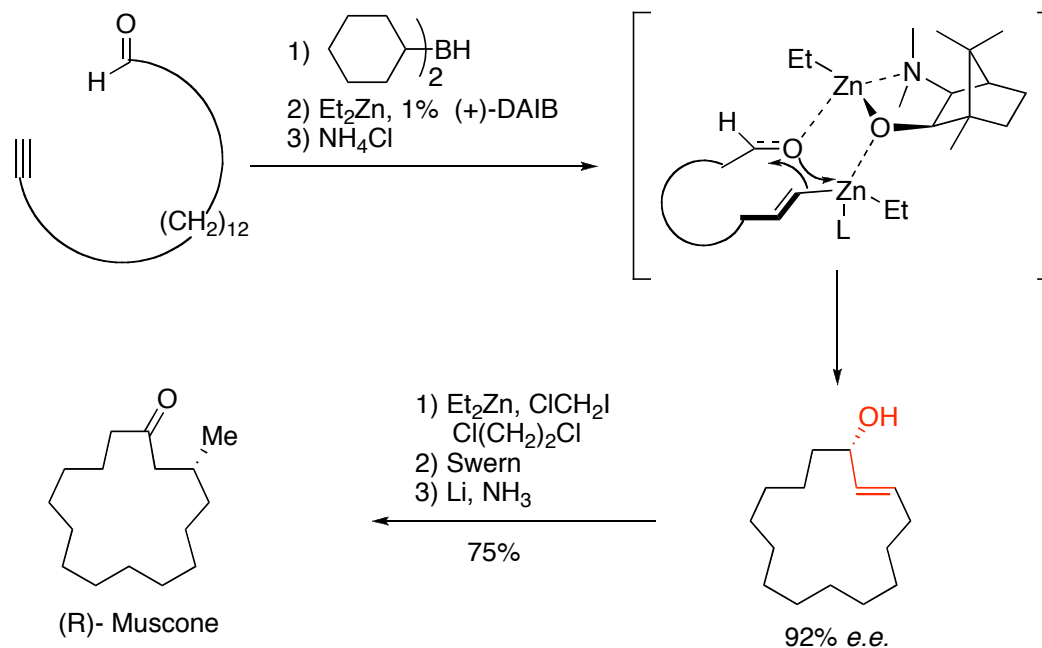


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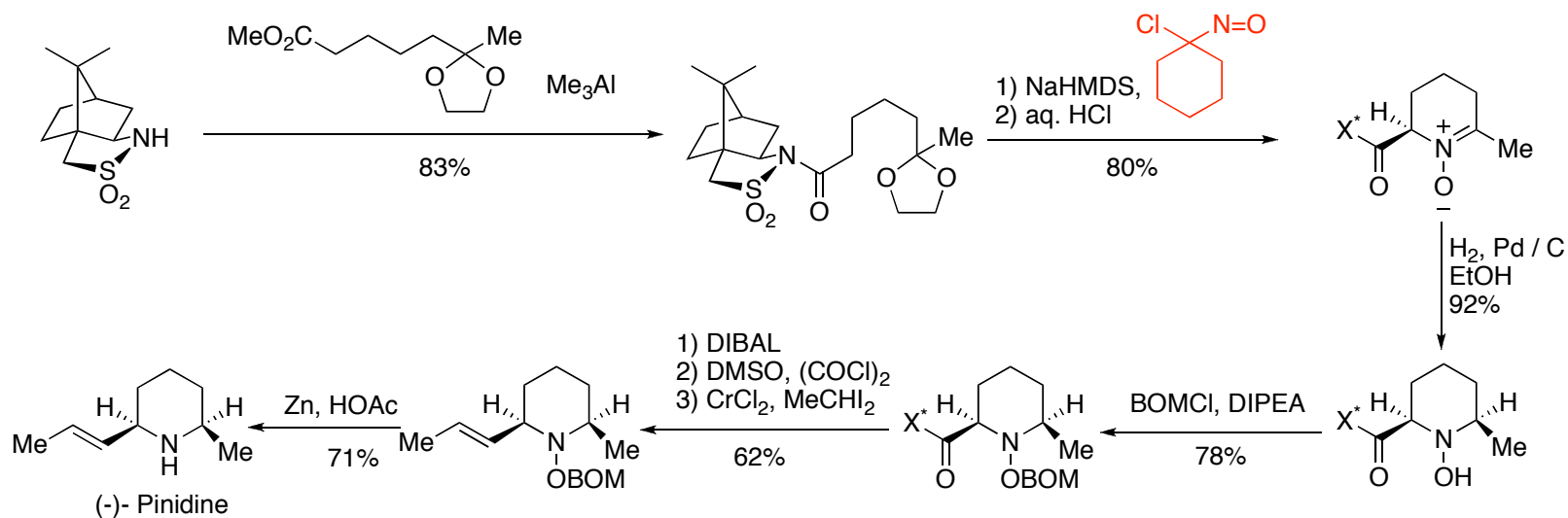
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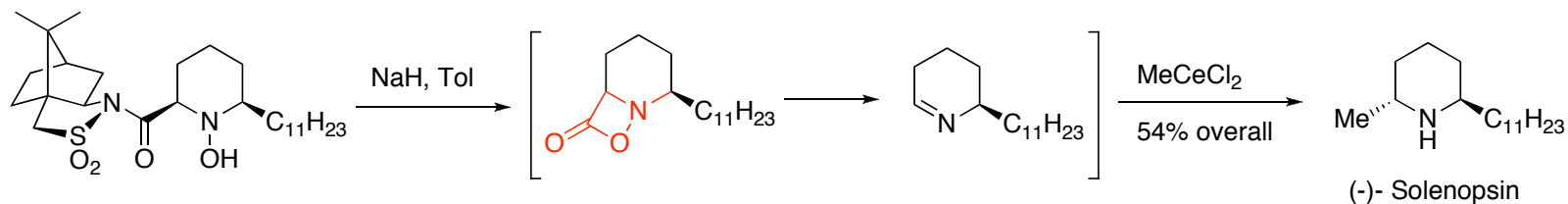
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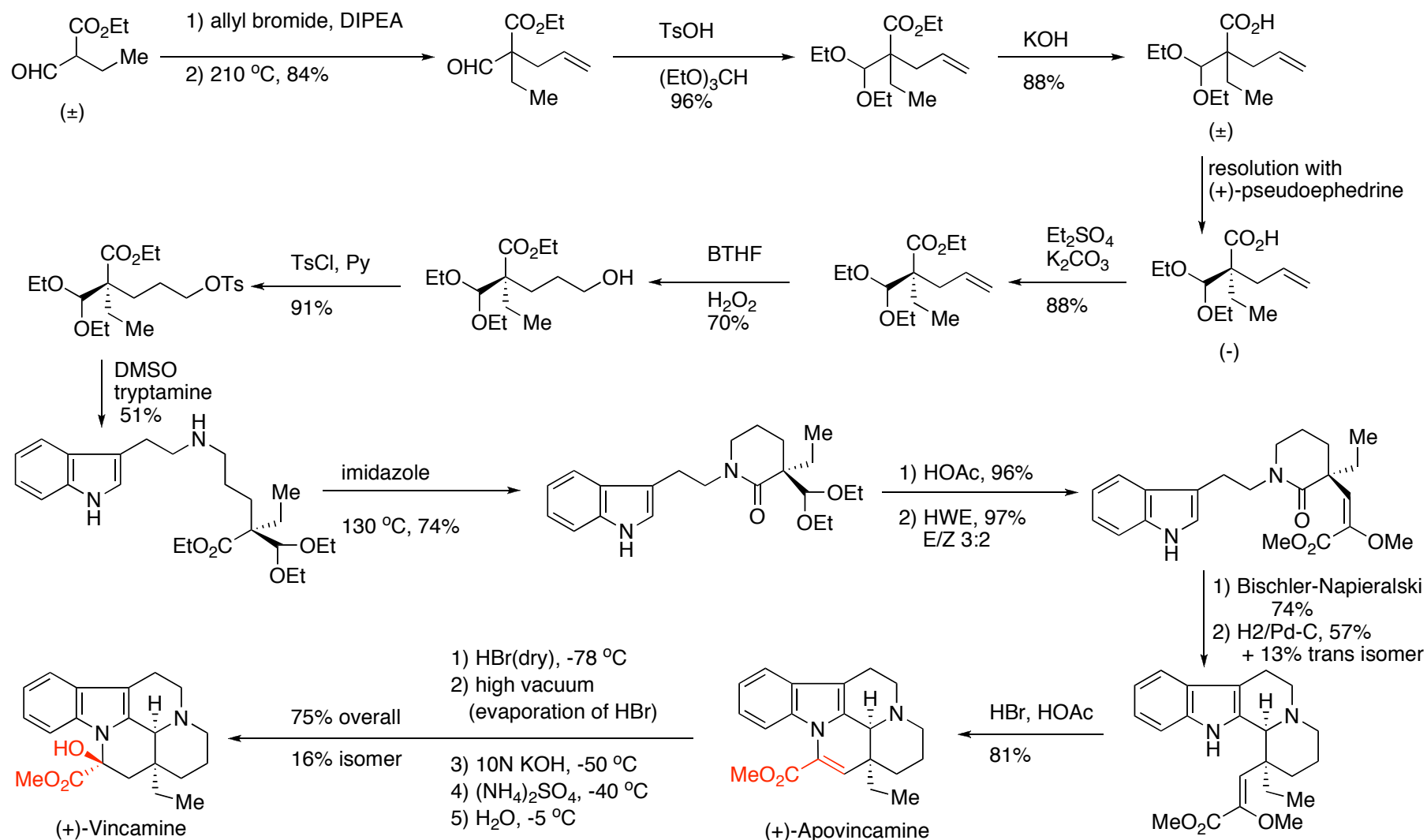
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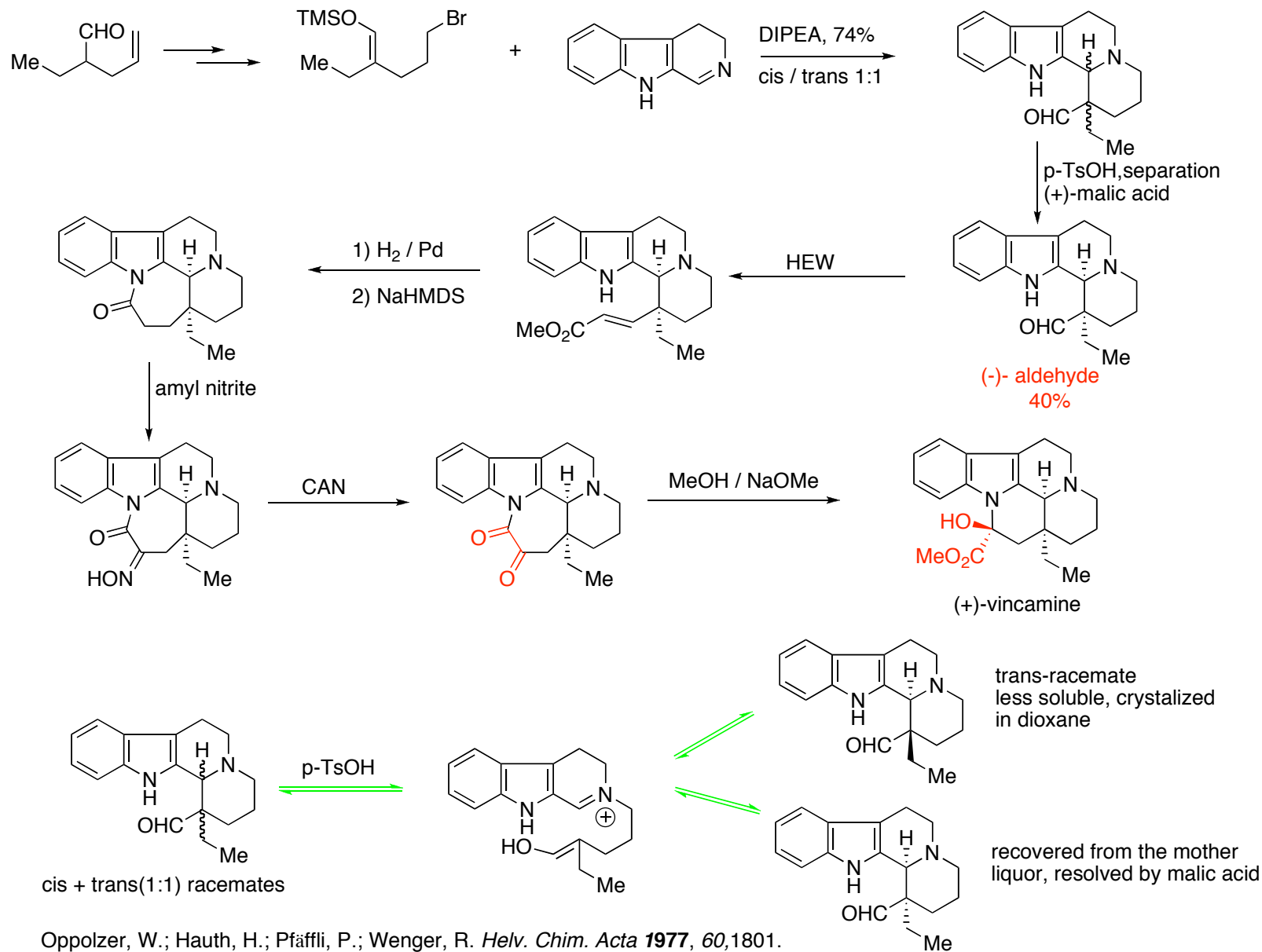


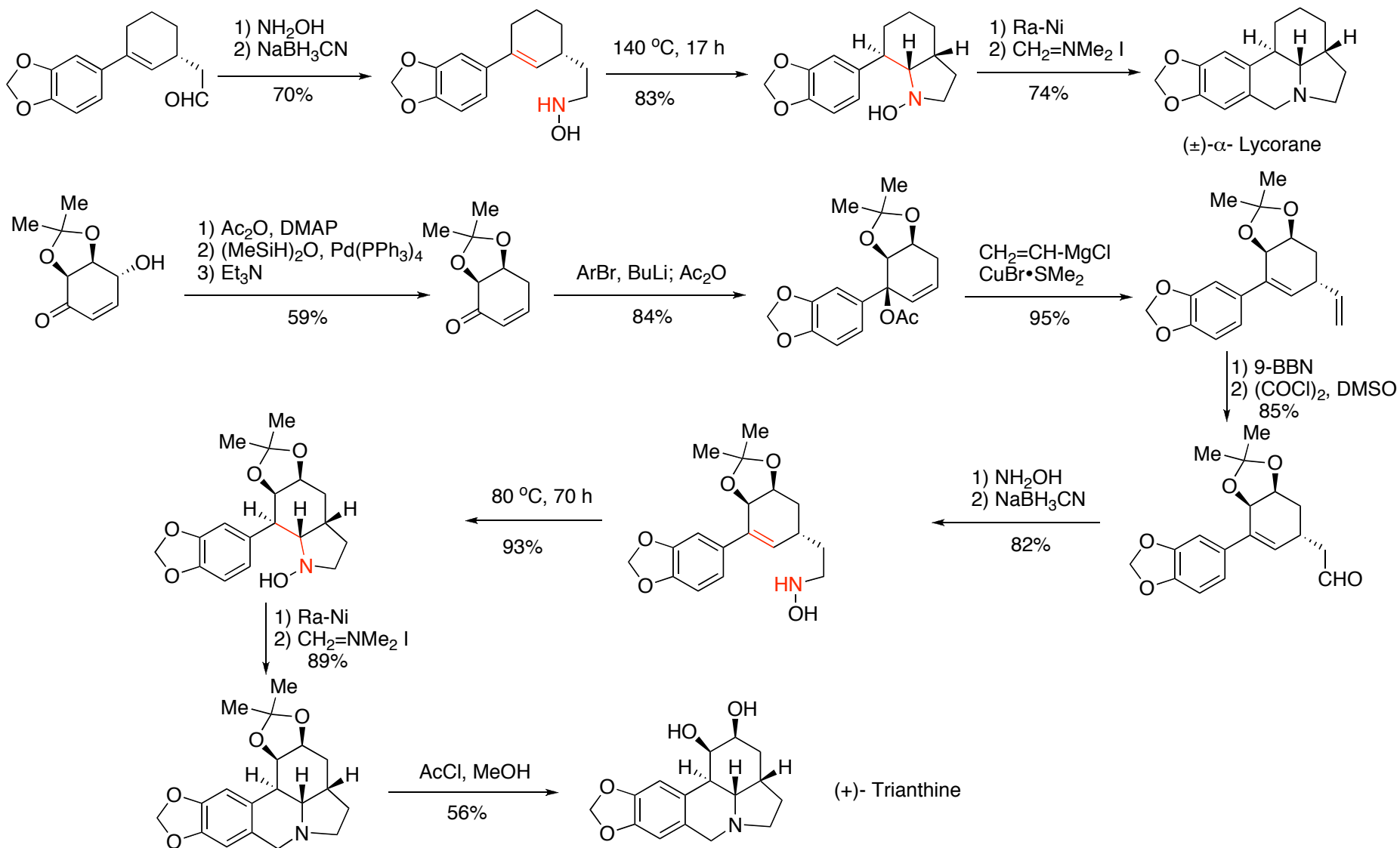
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