



A 16-step synthesis of the isoryanodane diterpene (+)-perseanol

LITERATURE PRESENTATION

Wenshuai Zhong

May 7, 2026

Background



Sarah E. Reisman

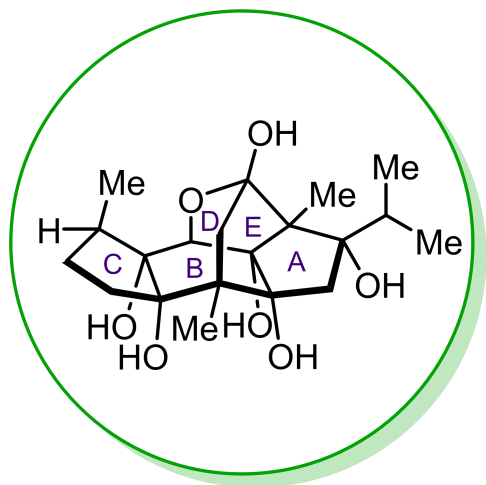
Professional Experience

2020-present	Bren Professor of Chemistry, Caltech
2014-2020	Professor of Chemistry, Caltech
2008-2014	Assistant Professor of Chemistry, Caltech

Education & Training

2006-2008	Postdoc, Harvard University	Advisor: Prof. Eric N. Jacobsen
2001-2006	Ph.D., Yale University	Advisor: Prof. John L. Wood
1997-2001	B.A., Connecticut College	Advisor: Timo V. Ovaska

Background

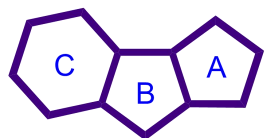


(+)-Perseanol

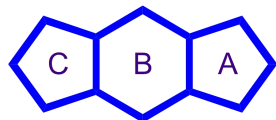
- Isolated from *Persea Indica*
- Isoryanodane diterpenes
- Antifeedant and insecticidal



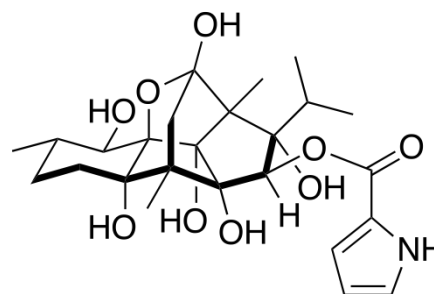
Persea Indica



[6-5-5]
Ryanodane core



[5-6-5]
Isoryanodane core

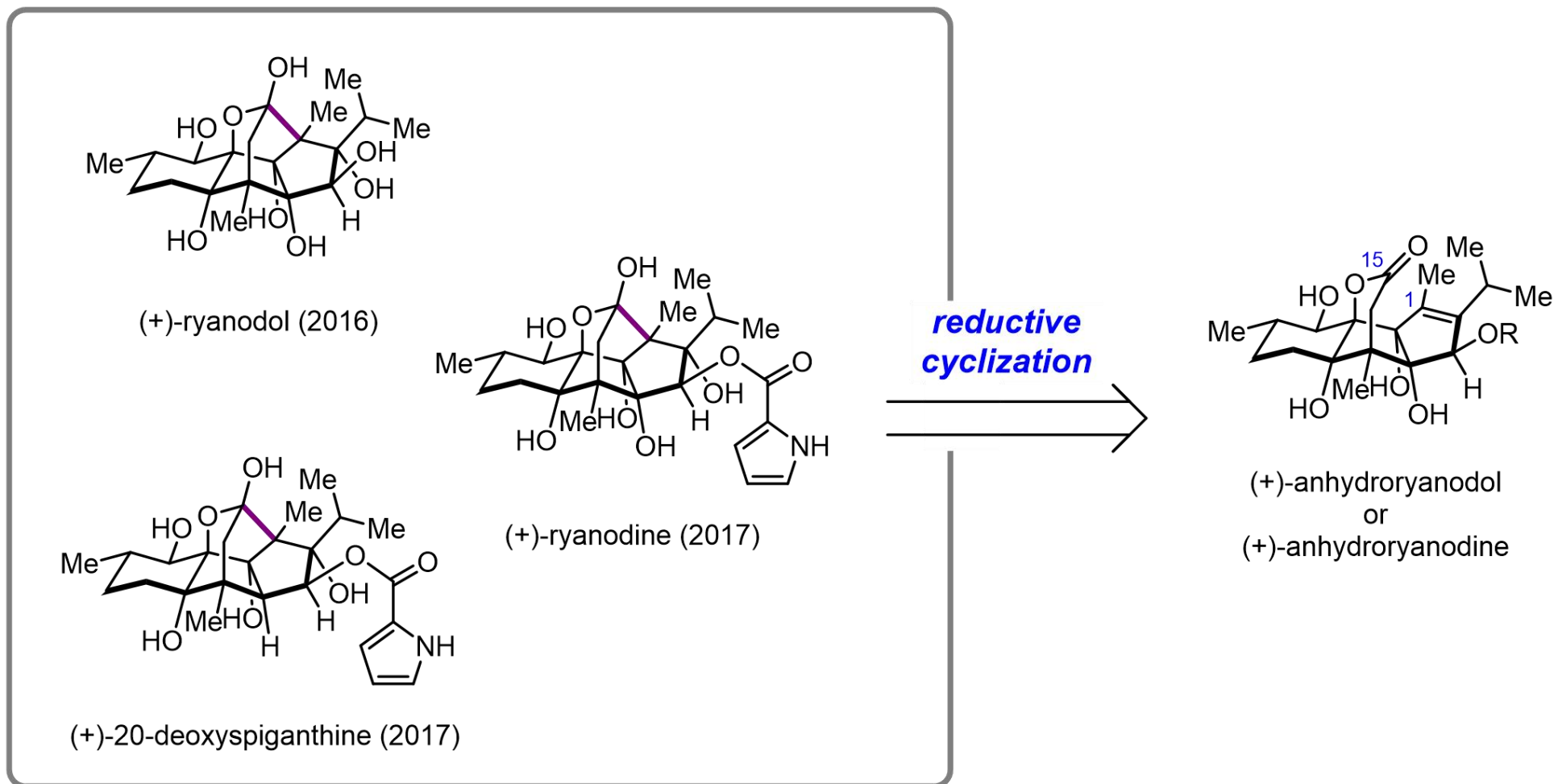


(+)-Ryanodine



Avocado

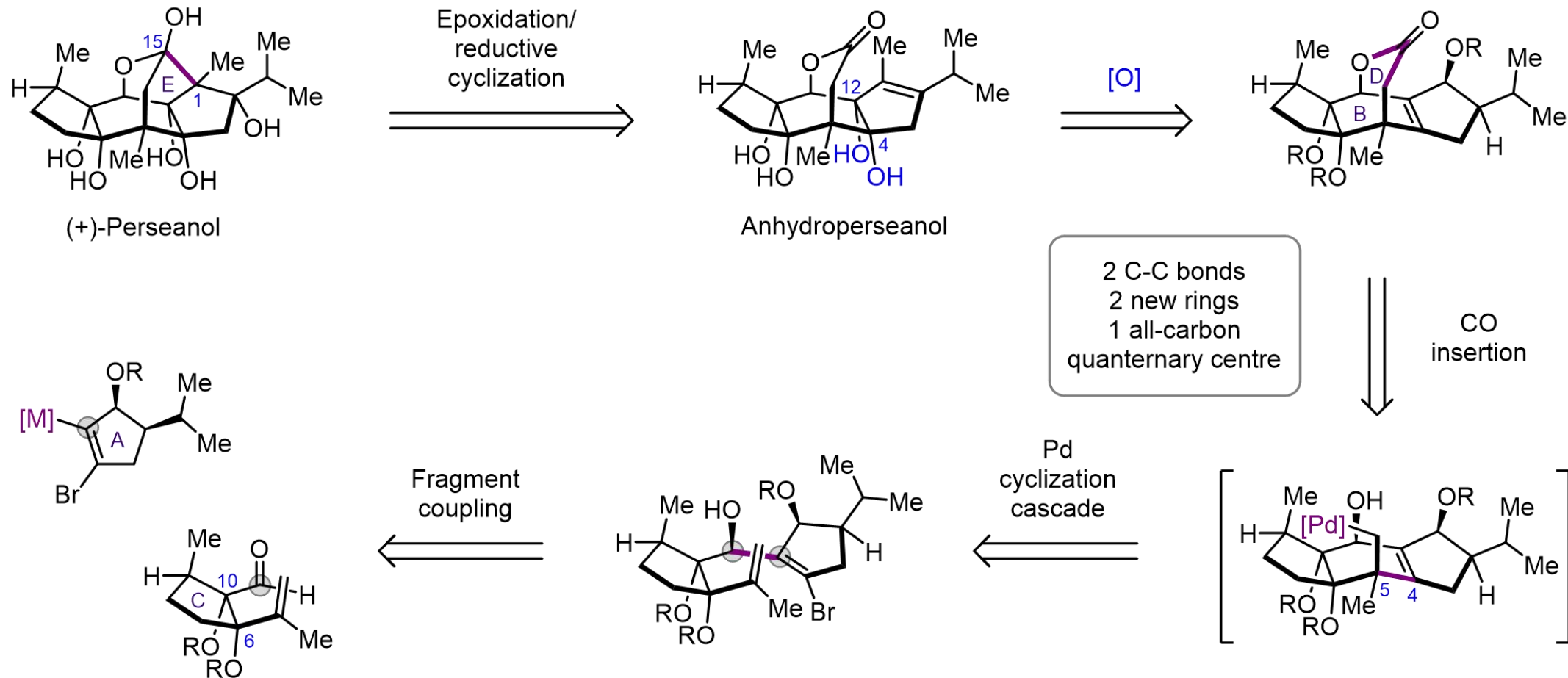
Background



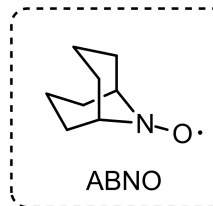
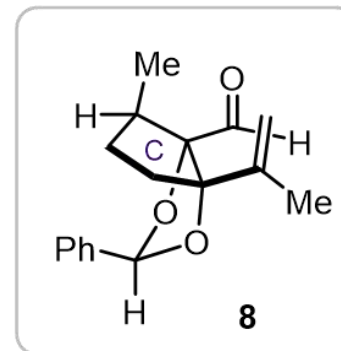
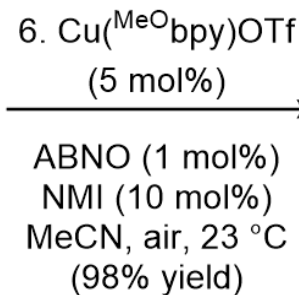
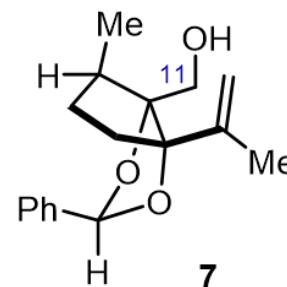
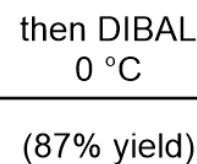
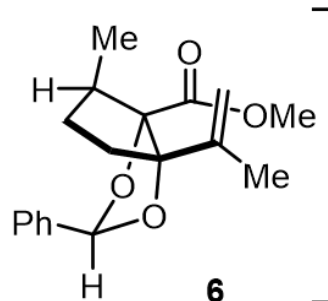
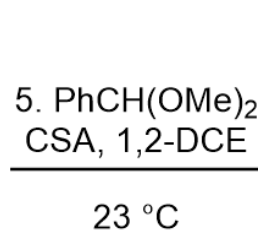
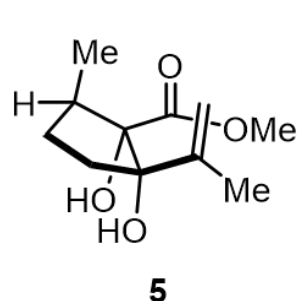
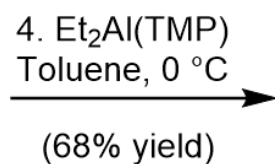
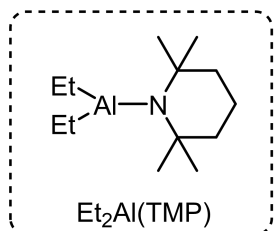
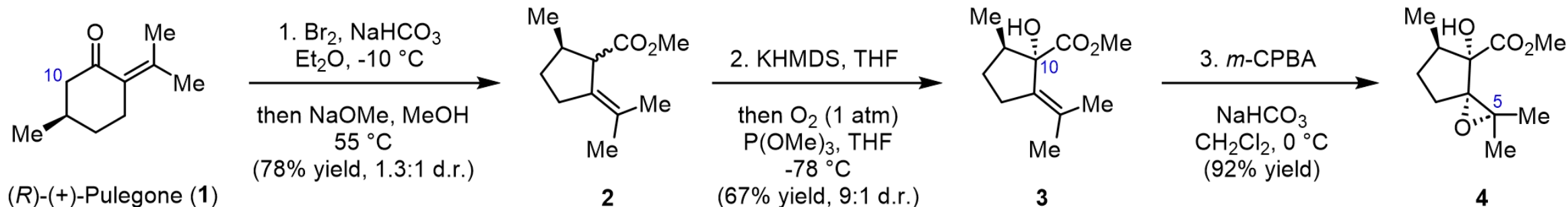
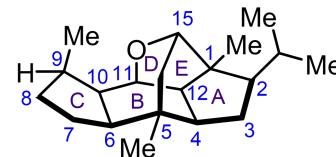
Science. **2016**, 353, 912-915.

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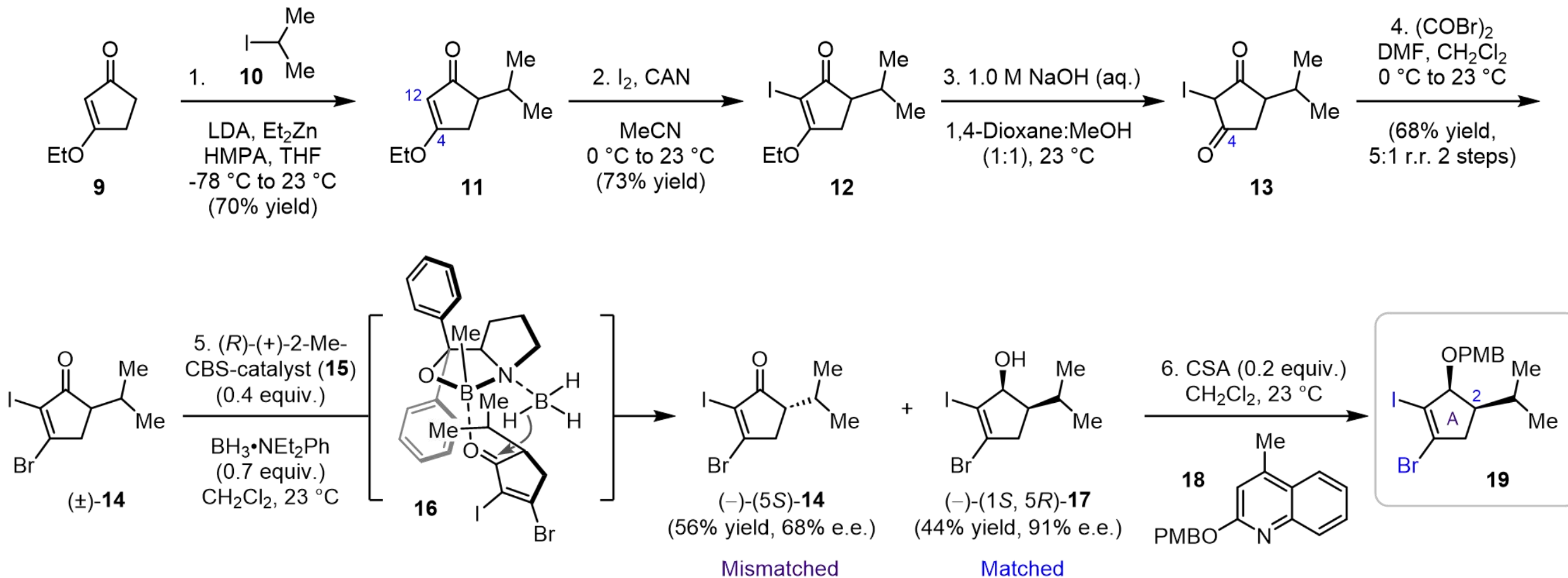
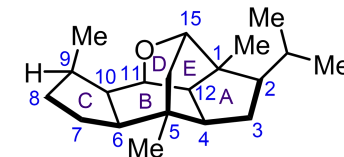
Retrosynthesis Planning



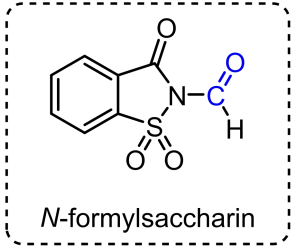
Preparation of C-ring Fragment



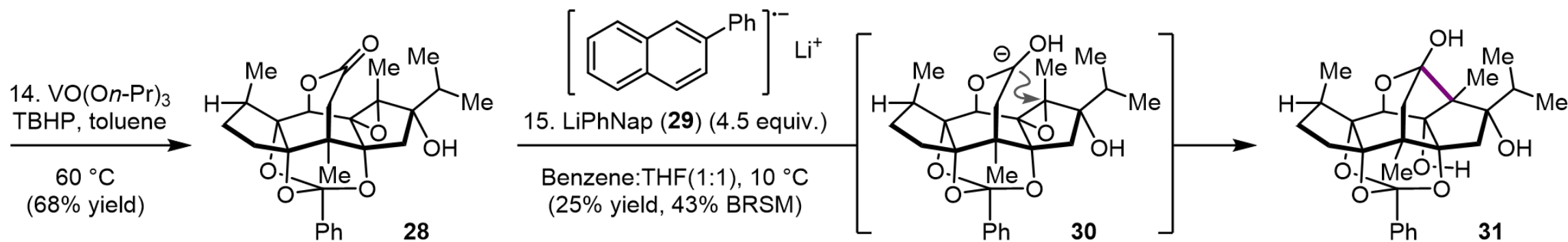
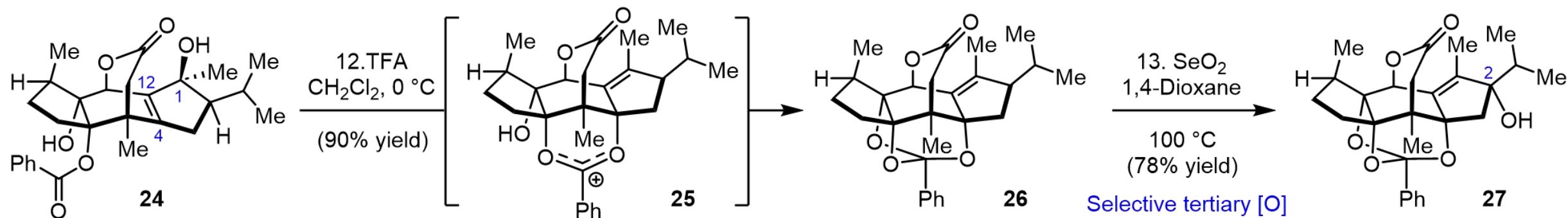
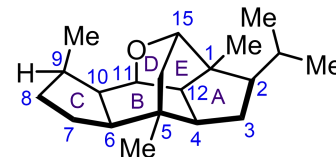
Preparation of A-ring Fragment



The diagram shows a complex polycyclic steroid-like structure. It features five fused rings labeled A, B, C, D, and E. The carbons are numbered 1 through 15. The structure includes several methyl groups (Me) and a hydrogen atom (H) at position 8. The rings are colored: A is purple, B is blue, C is green, D is orange, and E is yellow.

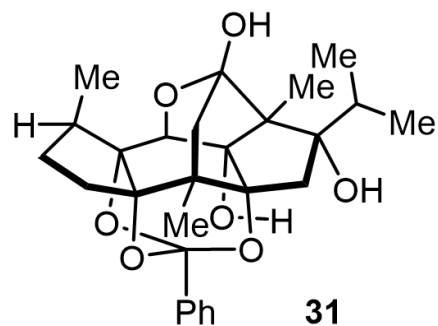
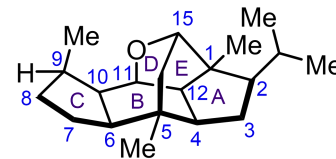


Synthesis of (+)-Perseanol



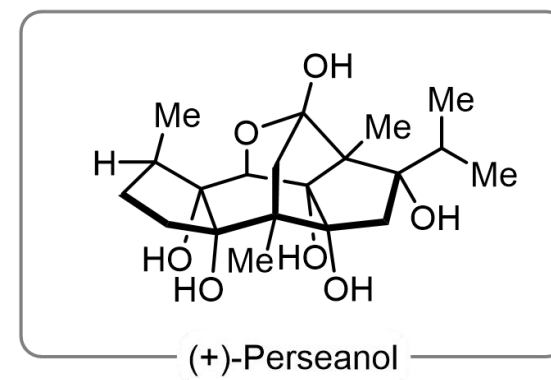
5-endo-tet

Synthesis of (+)-Perseanol

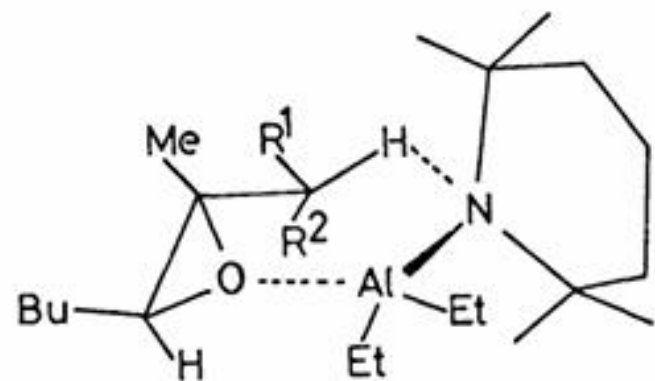


16. $\text{Pd}(\text{OH})_2/\text{C}$, H_2 (1 atm)

MeOH , 23 °C
(68% yield)



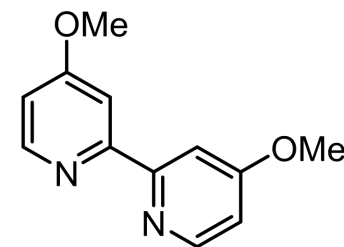
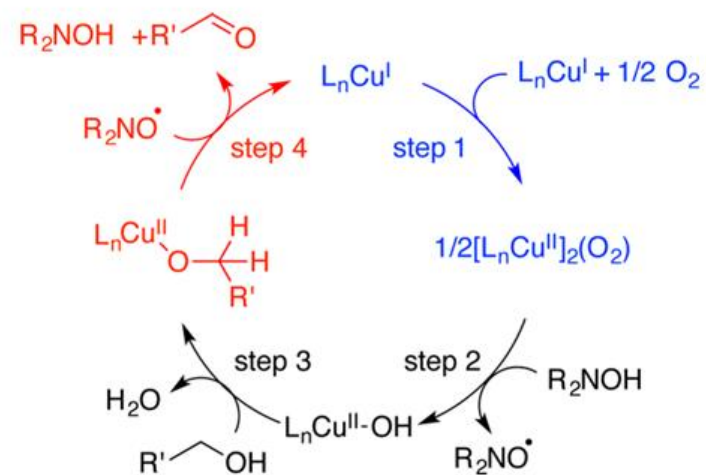
Mechanism



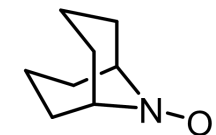
Conformer A ($R^1 = \text{Bu}$, $R^2 = \text{H}$)
 B ($R^1 = \text{H}$, $R^2 = \text{Bu}$)

Fig. 2.

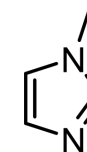
Scheme 2. Simplified Catalytic Cycle for Cu^{I} /TEMPO-Catalyzed Aerobic Alcohol Oxidation



MeObpy



ABNO



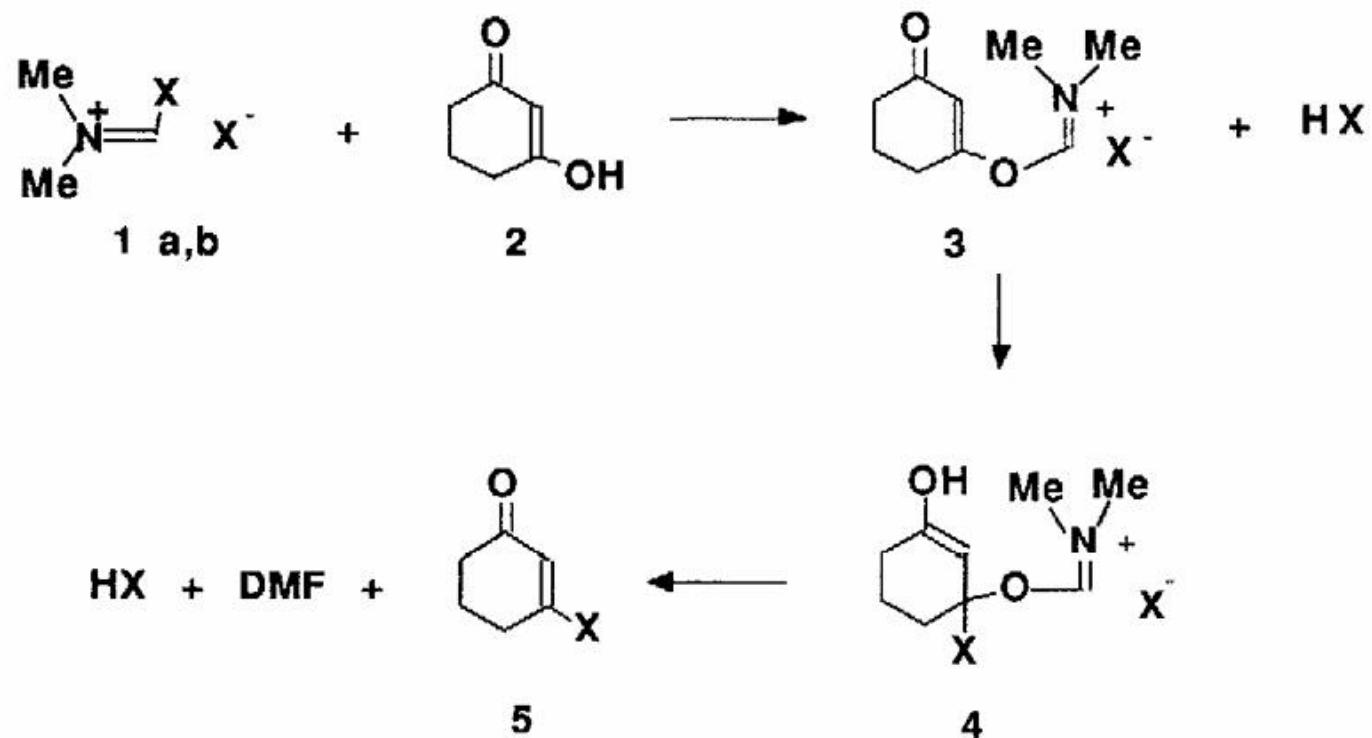
NMI

Tetrahedr. Lett. **1975**, 16, 1731-1734.

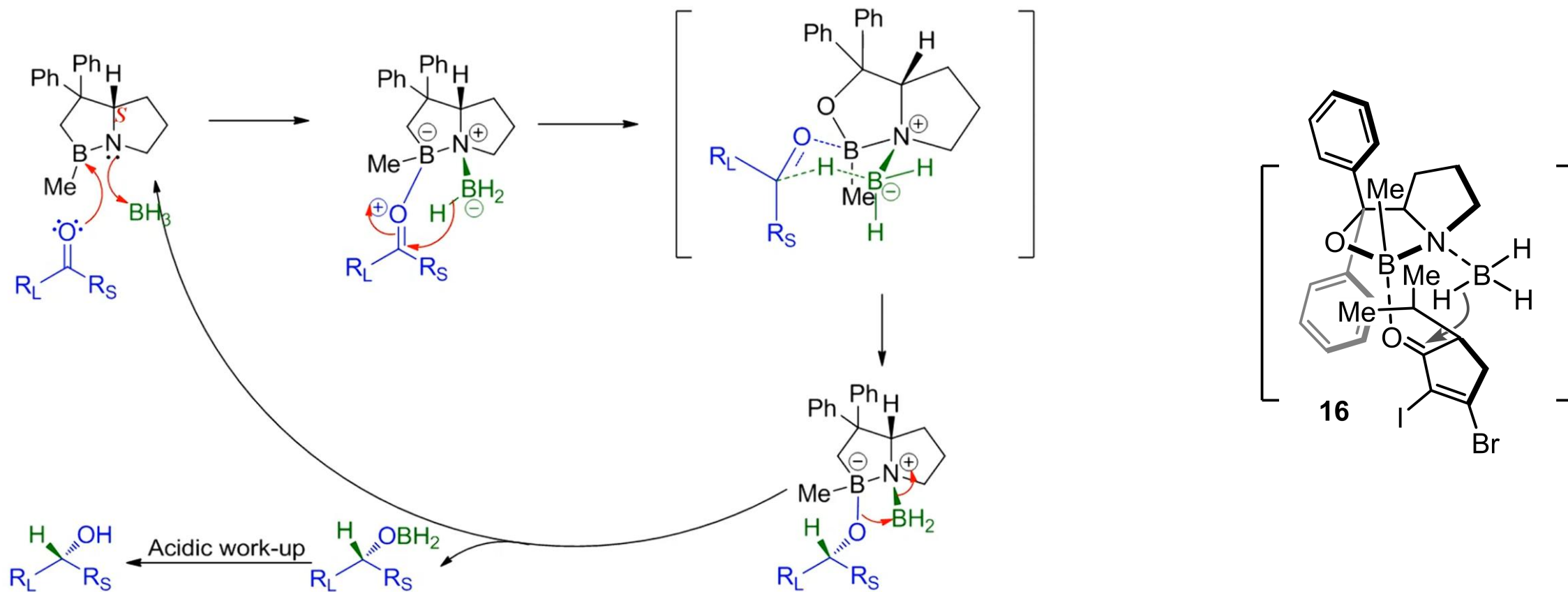
J. Am. Chem. Soc. **2013**, 135, 15742-15745.

Mechanism

SCHEME 1

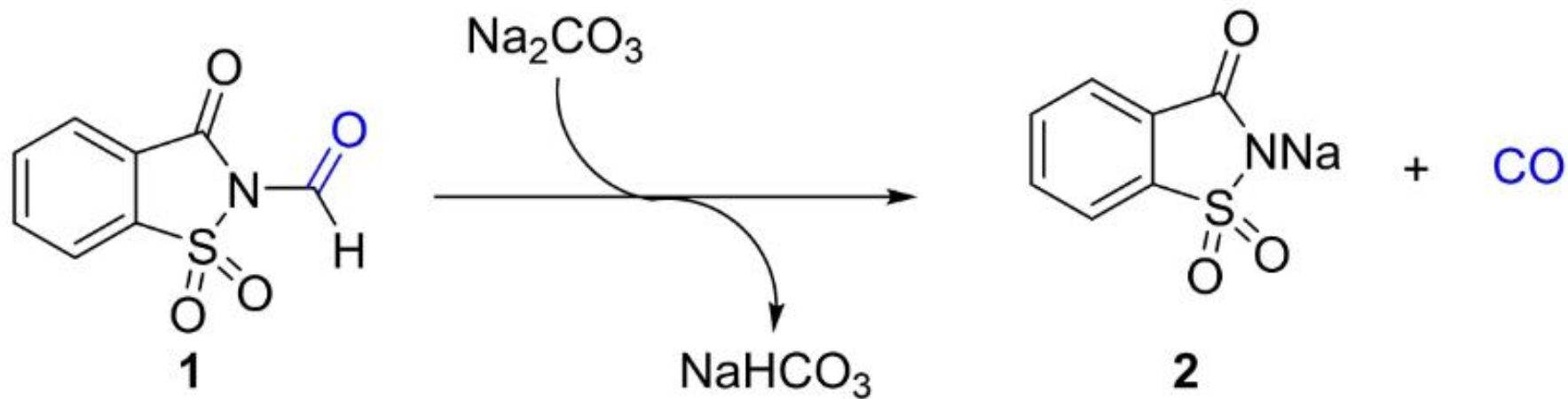


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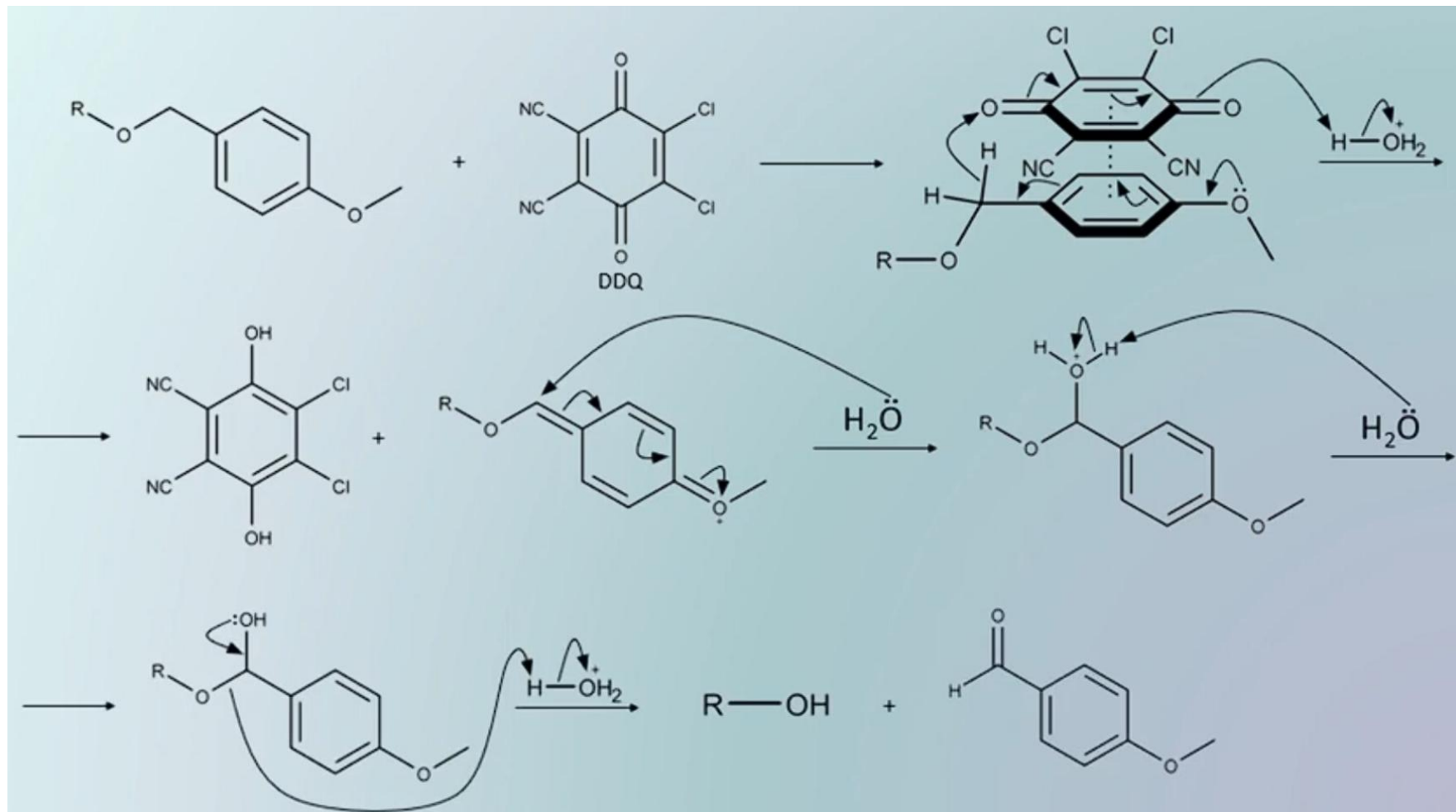


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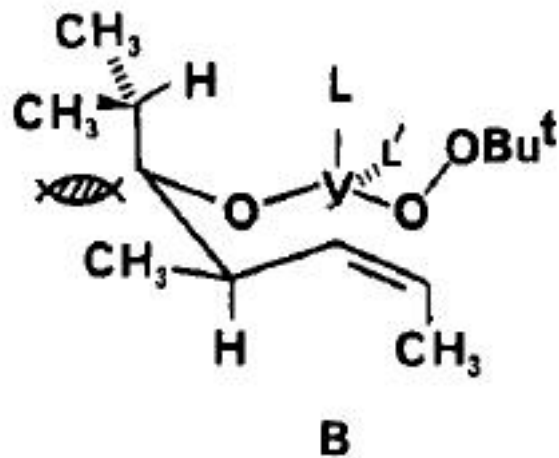
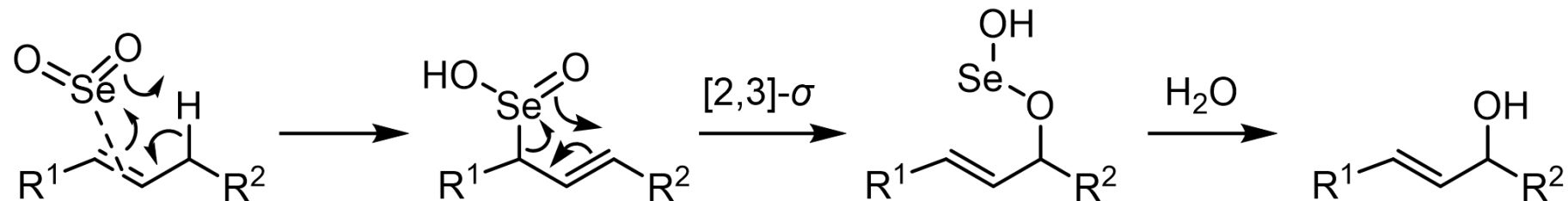
Scheme 1. Various compounds involving *N*-formylsaccharin as CO a source.



Mechanism



Mechanism





Thank You For Listening

LITERATURE PRESENTATION

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