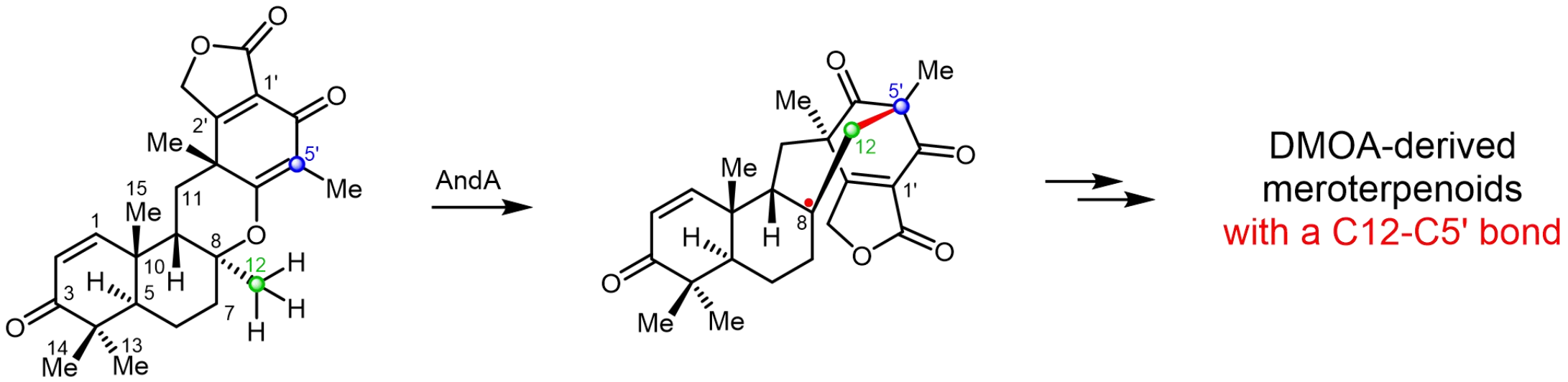
Group Seminar

陈丽君

2026.03.26

Synthesis of DMOA-Derived Meroterpenoids

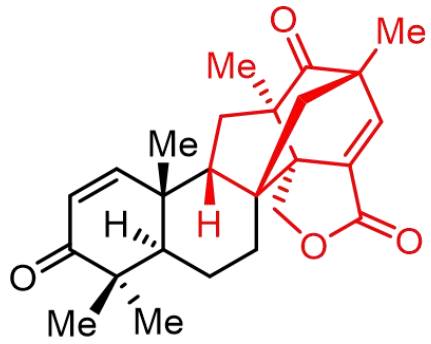
Focusing on Members with a C12–C5′ Bond

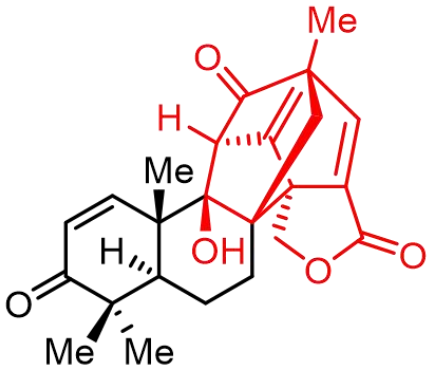


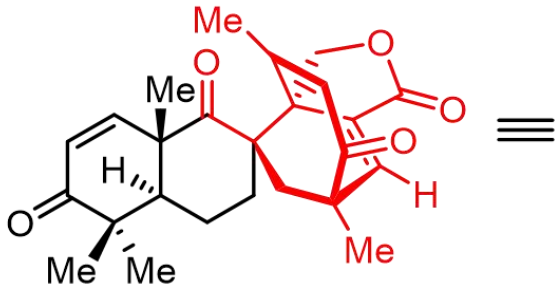
纲　要

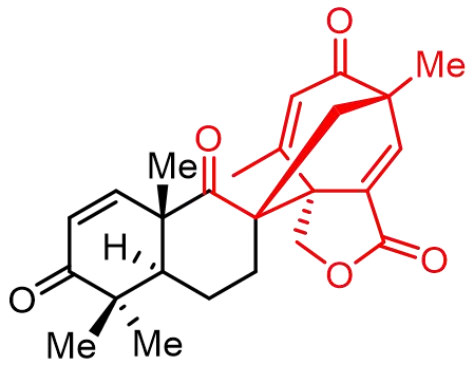
- 背景介绍
  a) 代表性的天然产物
  b) 分离来源和生物学活性
  c) 生物合成途径及多样化过程
- 合成研究进展
  a) Andiconin类天然产物的合成研究
  b) Spiroaspertrione类天然产物的合成研究
- 领域内主要的贡献者

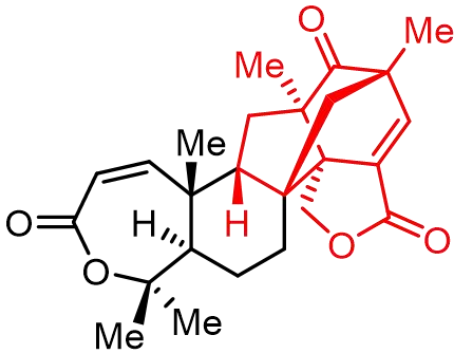
代表性的天然产物

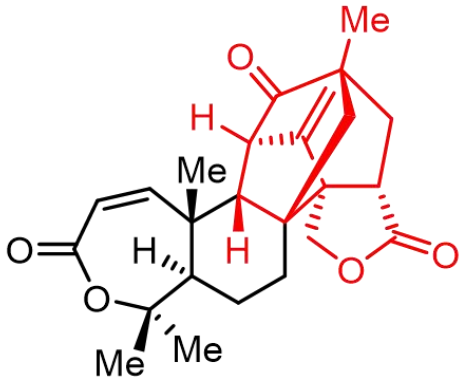

andiconin D

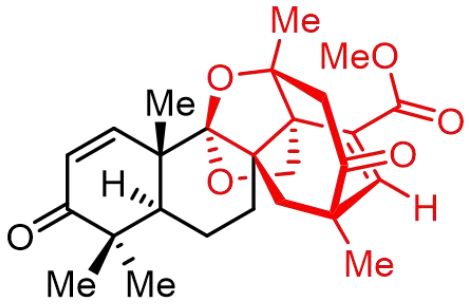

emervaridione

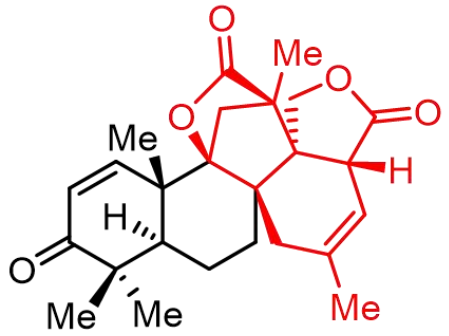

spiroaspertrione A




andilesin B


anditomin

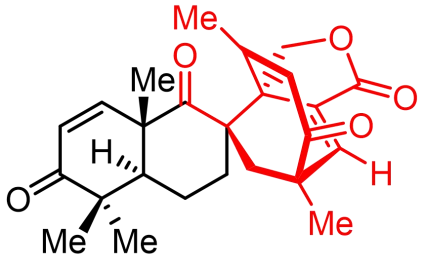

aspermerodione


emeridone A

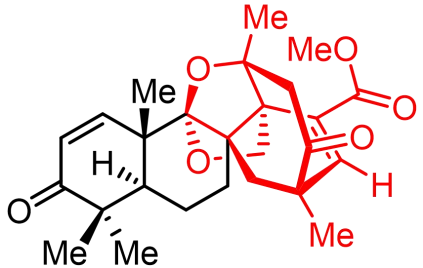
背景介绍

分离来源和生物学活性

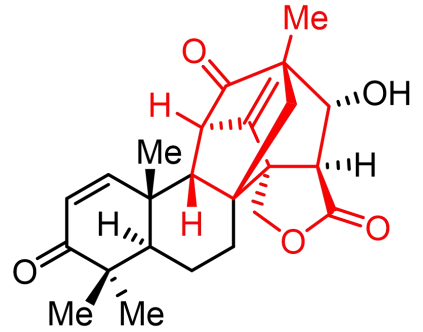
- 分离自曲霉属（*Aspergillus*）真菌
- 中等的细胞毒性
- 显著的抗菌活性
  a) Spiroaspertrione A对 MRSA 的最低抑菌浓度值为 4 μg/mL；
  b) Spiroaspertrione A恢复 MRSA 对苯唑西林的敏感性;
  c) Aspermerodione是青霉素结合蛋白 2a 的抑制剂;
  d) Emervaridone A对大肠杆菌的最低抑菌浓度值为 2 μg/mL.



spiroaspertrione A



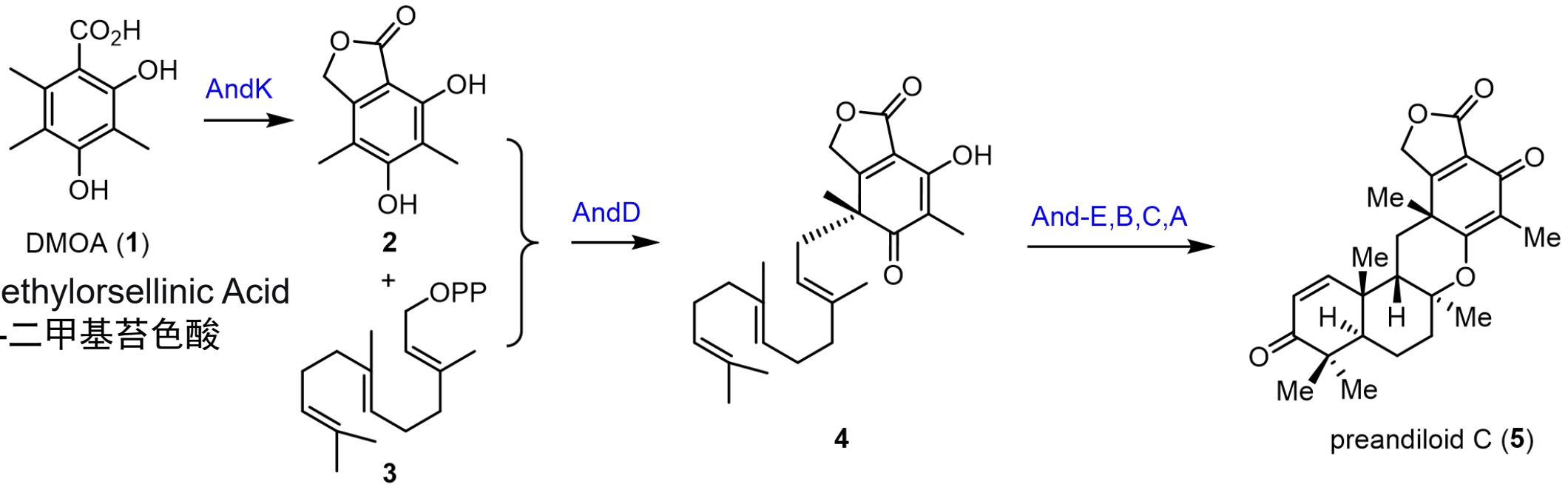
aspermerodione



emervaridone A

1. Carmeli, S.; *et al. Bioorg. Med. Chem.* **2011**, *19*, 6587-6593.
2. King, T. J.; *et al. J. Chem. Soc., Chem. Commun.* **1976**, 270-270; *J. Chem. Soc., Chem. Commun.* **1978**, 533-534.
3. Sihanonth, P.; *et al. Tetrahedron Lett.* **2011**, *52*, 6427-6430.
4. Simpson, T. J.; *et al. J. Chem. Soc., Perkin Trans. 1* **1979**, 2118-2121; *J. Chem. Soc., Chem. Commun.* **1981**, 914-915.
5. Zhang, Y.; *et al. J. Org. Chem.* **2017**, *82*, 3125-3131; *J. Nat. Prod.* **2017**, *80*, 2399-2405; *Sci. Rep.* **2018**, *8*, 5454; *J. Org. Chem.* **2019**, *84*, 1534-1541.

生物合成途径及多样化过程



DMOA (**1**)

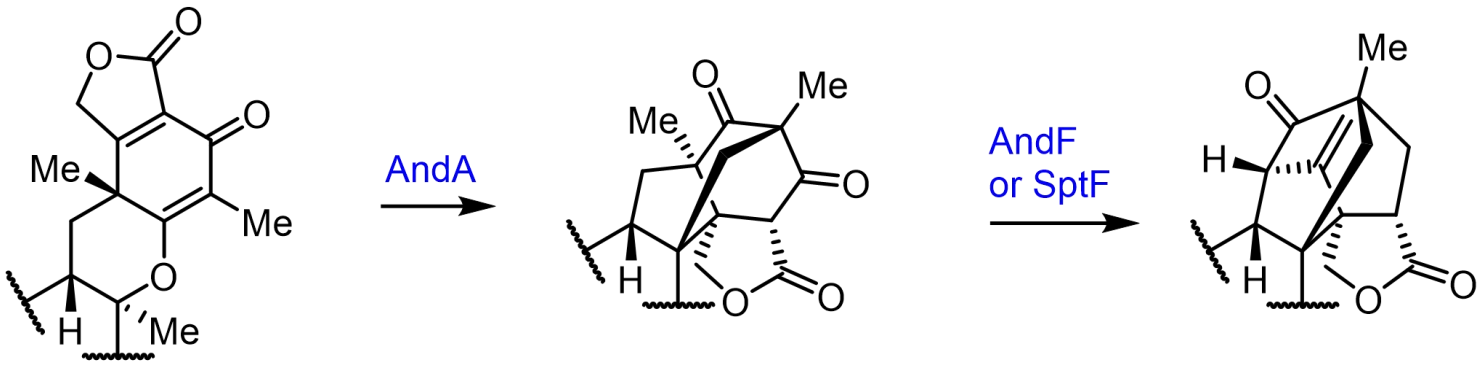
3,5-Dimethylorsellinic Acid

3,5-二甲基苔色酸

preandiloid C (**5**)

Abe, I.; *et al. J. Am. Chem. Soc.* **2014**, *136*, 15326−15336; *J. Am. Chem. Soc.* **2018**, *140*, 9743−9750.

生物合成途径及多样化过程



6 **7** **8**

Abe, I.; *et al. J. Am. Chem. Soc.* **2014**, *136*, 15326−15336; *J. Am. Chem. Soc.* **2018**, *140*, 9743−9750.

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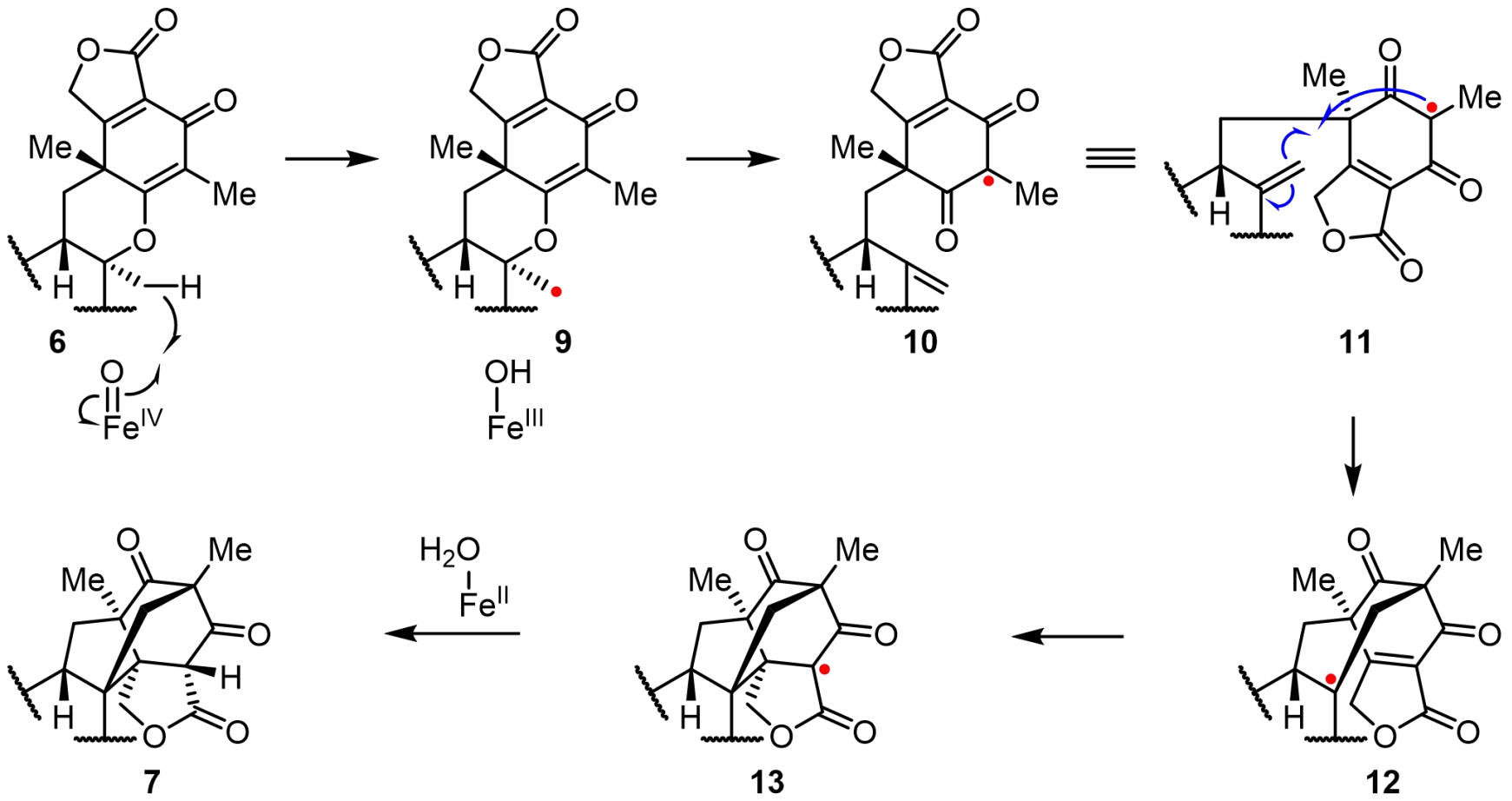

Abe, I.; *et al. J. Am. Chem. Soc.* **2014**, *136*, 15326−15336; *J. Am. Chem. Soc.* **2018**, *140*, 9743−9750.

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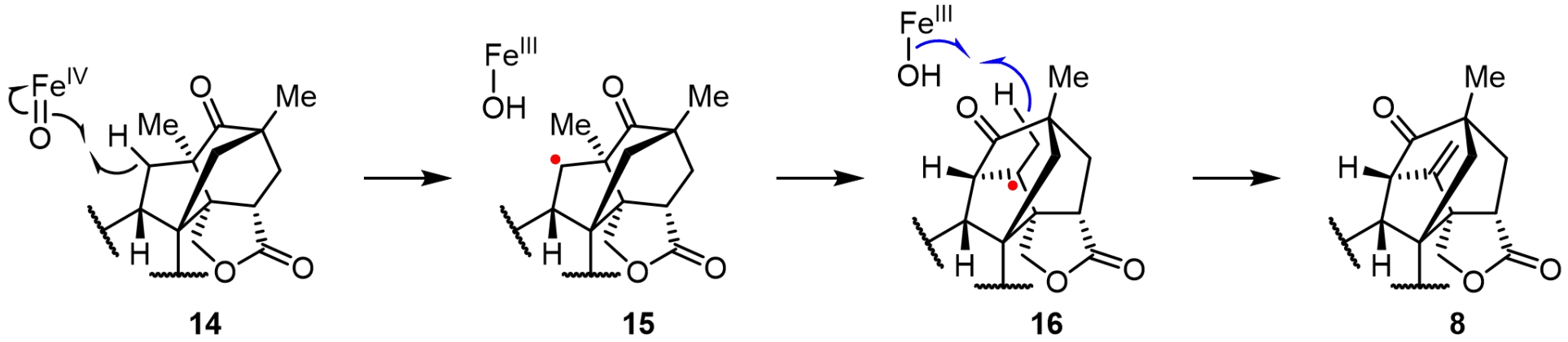
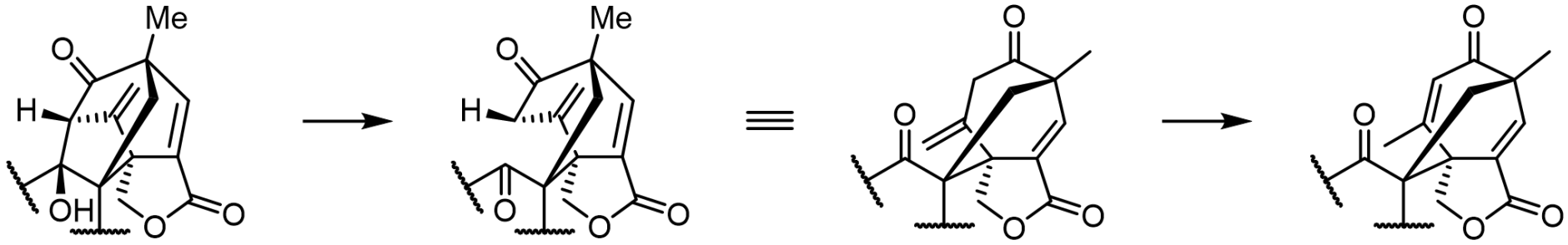


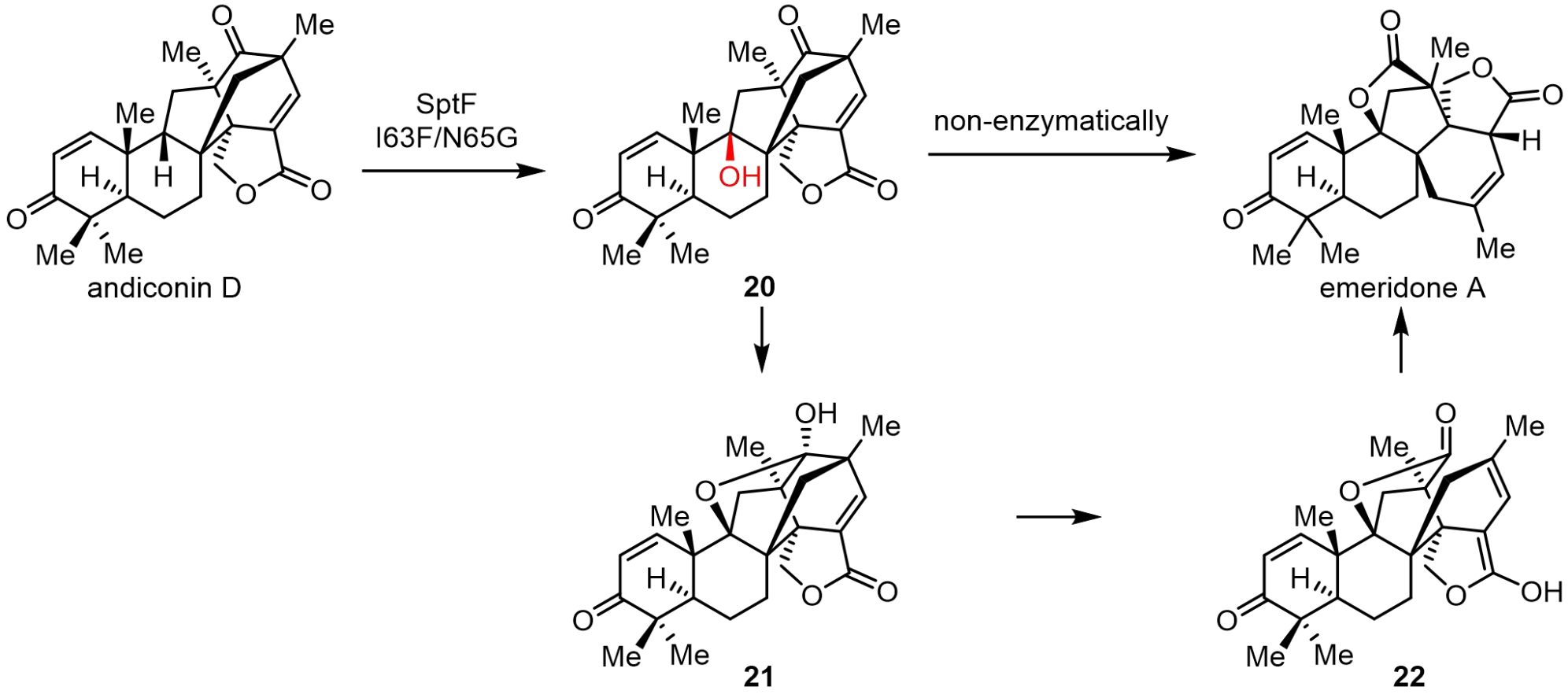
Abe, I.; *et al. Nat. Commun.* **2022**, *13*, 95.

生物合成途径及多样化过程



Abe, I.; *et al. Org. Lett.* **2020**, *22*, 4311−4315.

生物合成途径及多样化过程



Abe, I.; *et al. Org. Lett.* **2022**, *24*, 1737−1741.
Zhang Y.; *et al. J. Org. Chem.* **2019**, *84*, 1534−1541.

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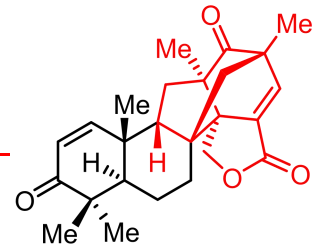
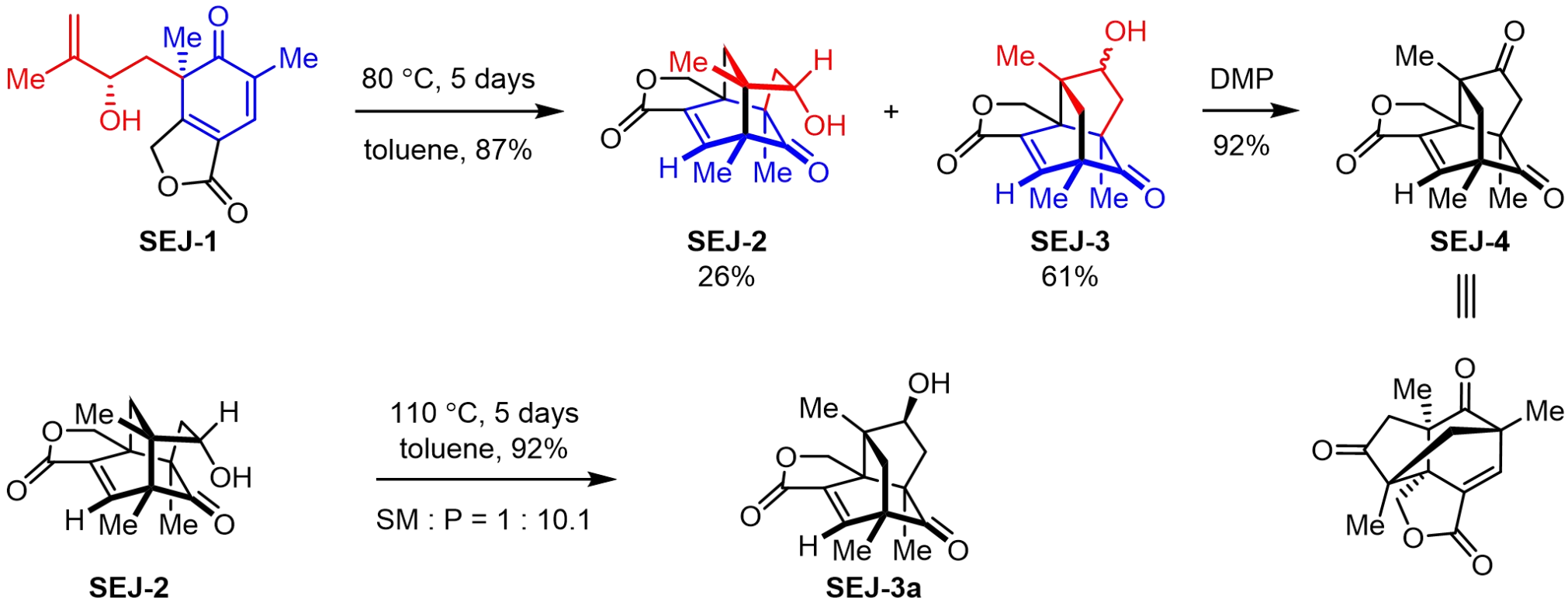
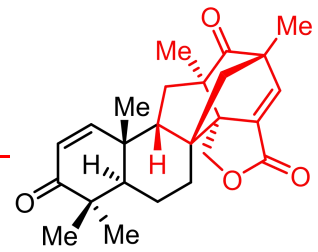
Sorensen教授：分子内D-A环加成策略

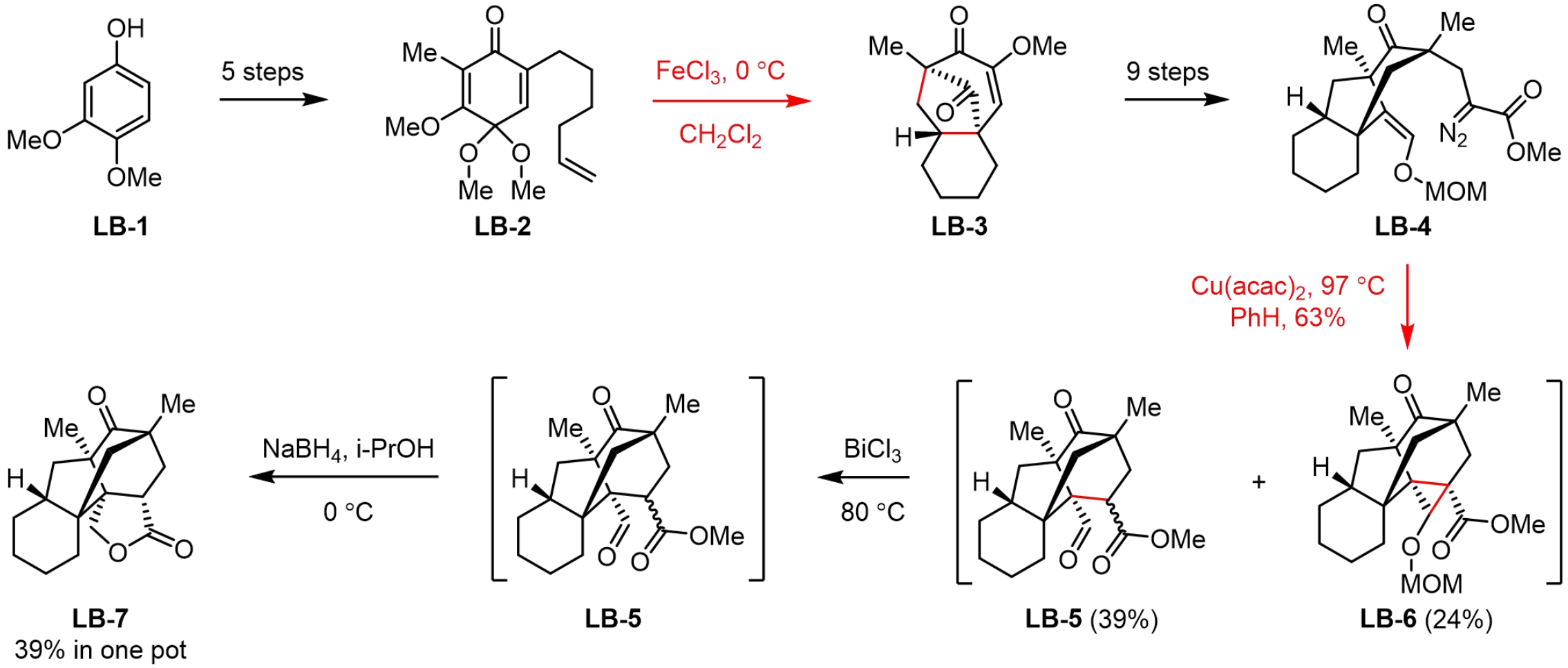




Sorensen, E. J.; *et al. Tetrahedron* **2009**, *65*, 6739–6745

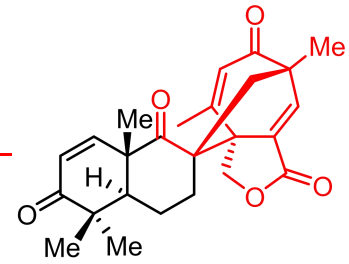
刘波教授：5+2环加成及环丙烷化策略

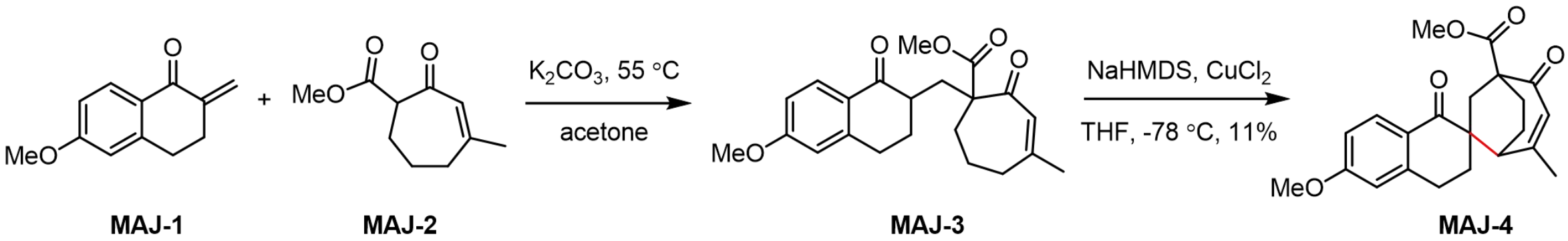


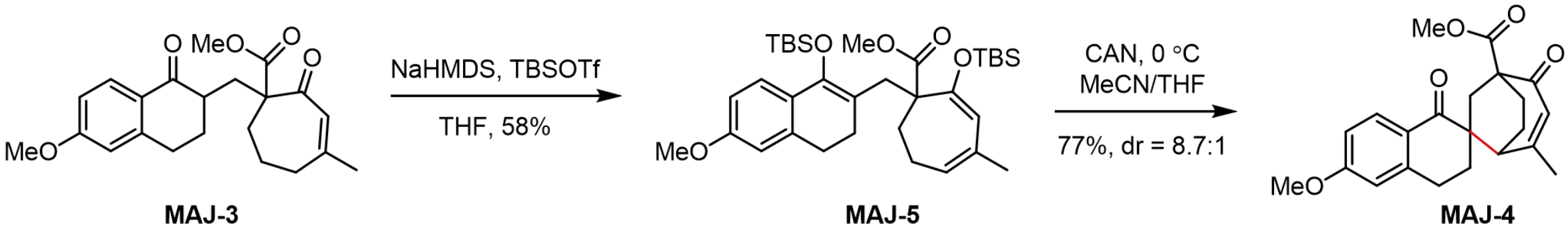


Liu, B.; *et al. Org. Lett.* **2019**, *21*, 7809−7812.

马爱军教授：氧化偶联策略

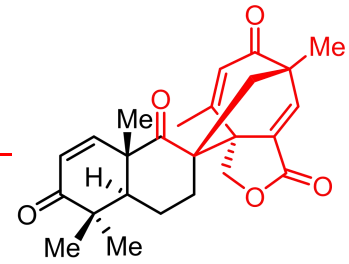


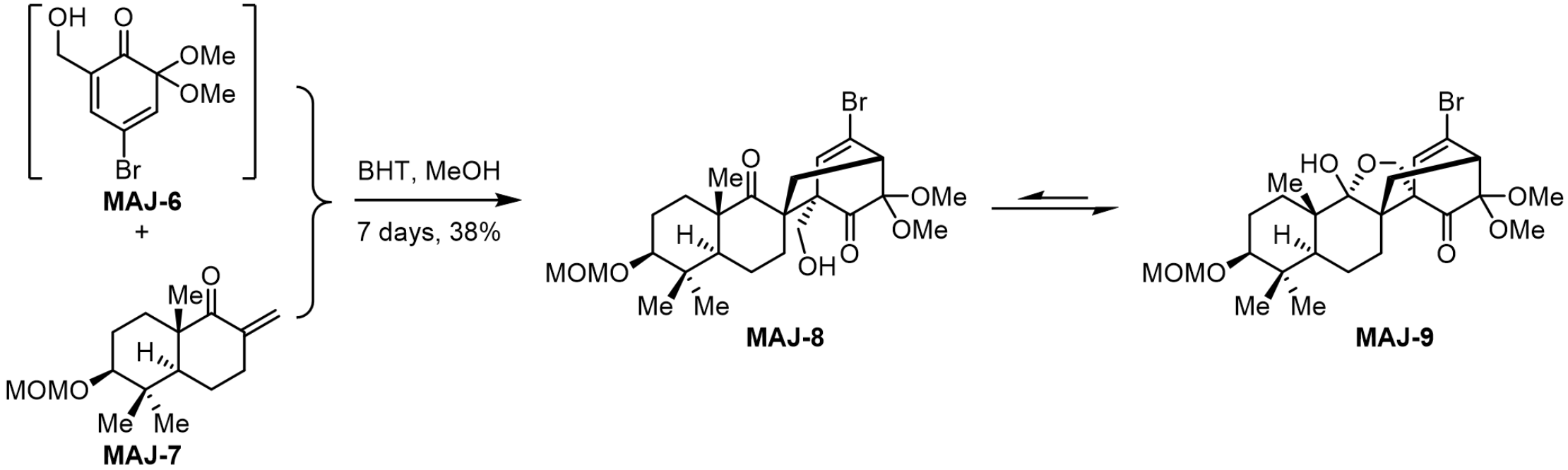




Ma, A.-J.; *et al. Front. Chem.* **2022**, *10*, 1022533.

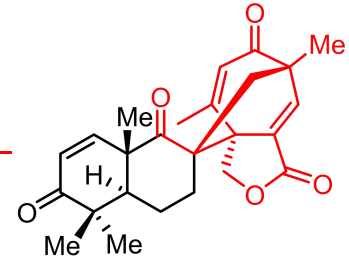
马爱军教授：分子间D-A环加成策略

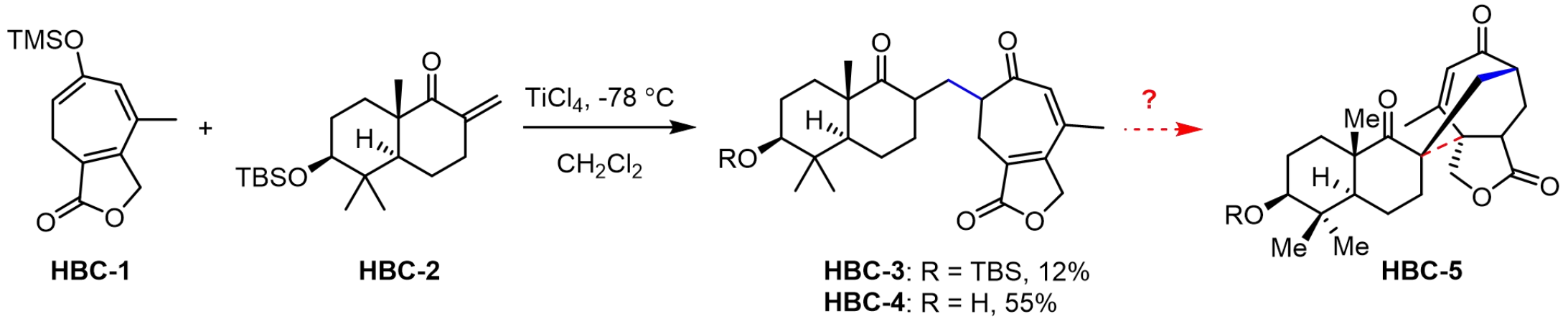




Ma, A.-J.; *et al. Org. Chem. Front.* **2026**, *13*, 967–972.

Hawkins教授：双Michael加成策略





HBC-1

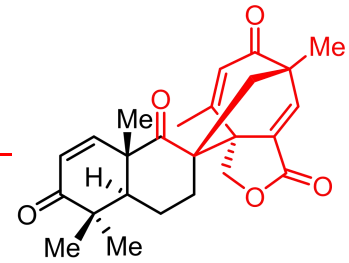
HBC-2

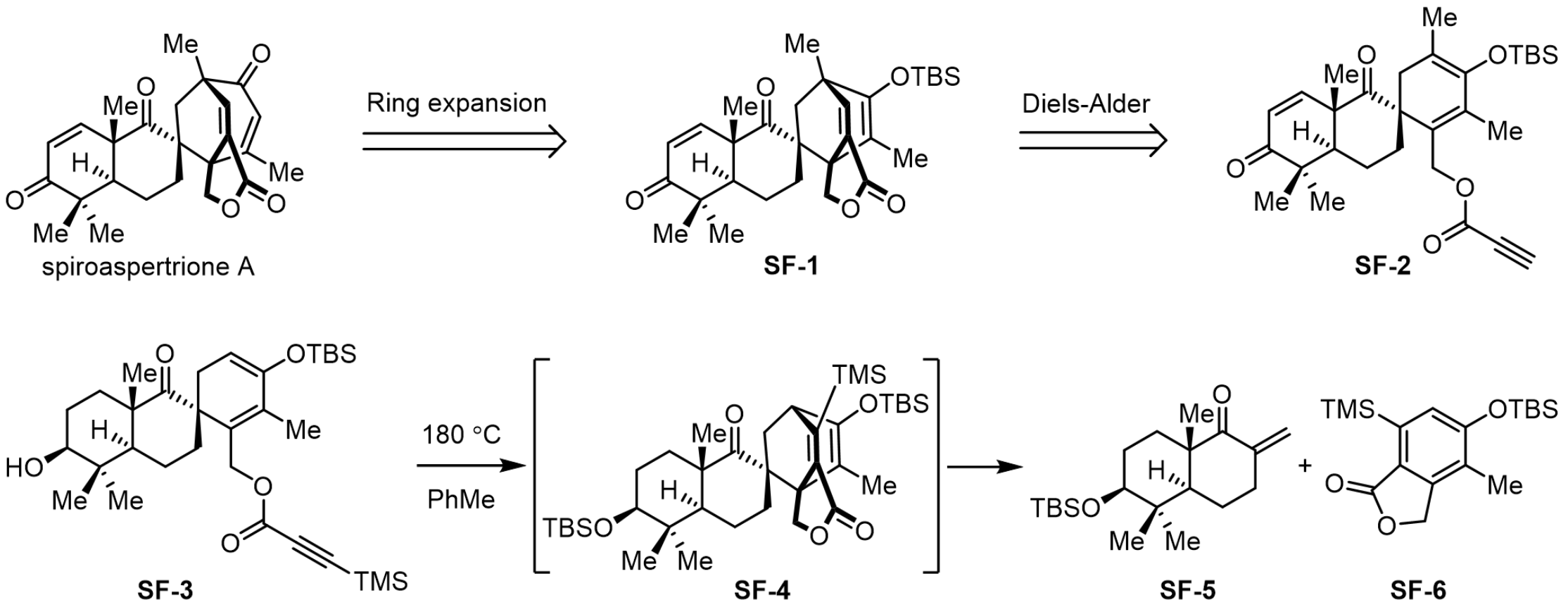
HBC-3: R = TBS, 12%
HBC-4: R = H, 55%

HBC-5

Hawkins, B. C.; *et al. J. Org. Chem.* **2025**, *90*, 12480−12484.

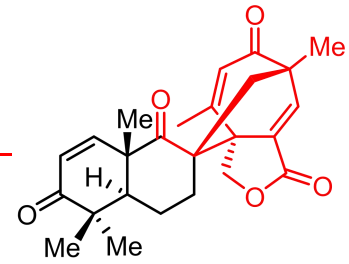
Gaich教授：分子内D-A环加成策略

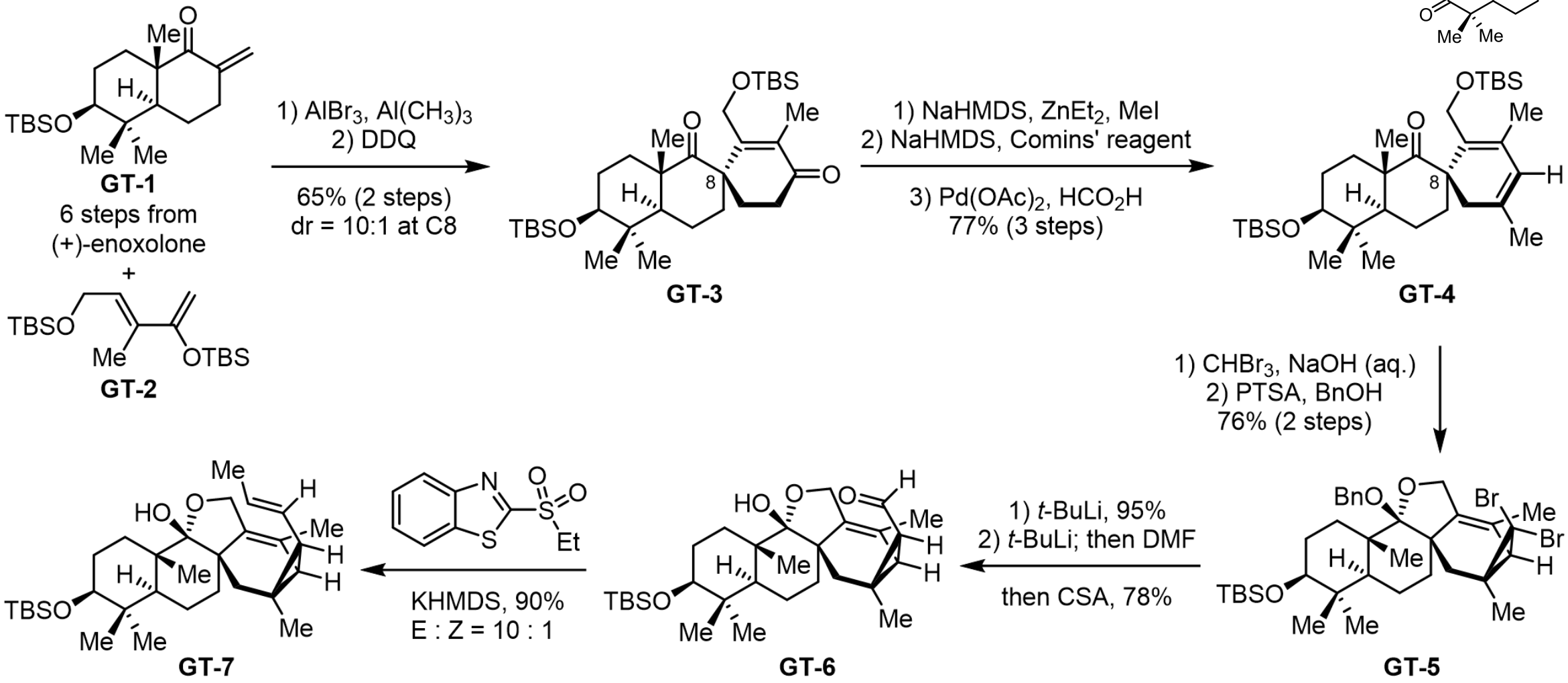




Schneider, F. *The Total Synthesis of Canataxpropellane*, University of Konstanz, Konstanz, Germany, 2021. Ph.D. Thesis.

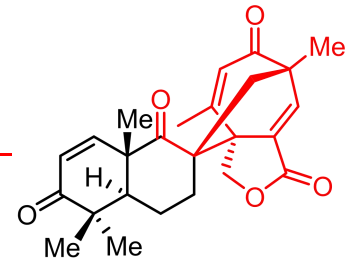
Gaich教授：二烯基环丙烷重排策略

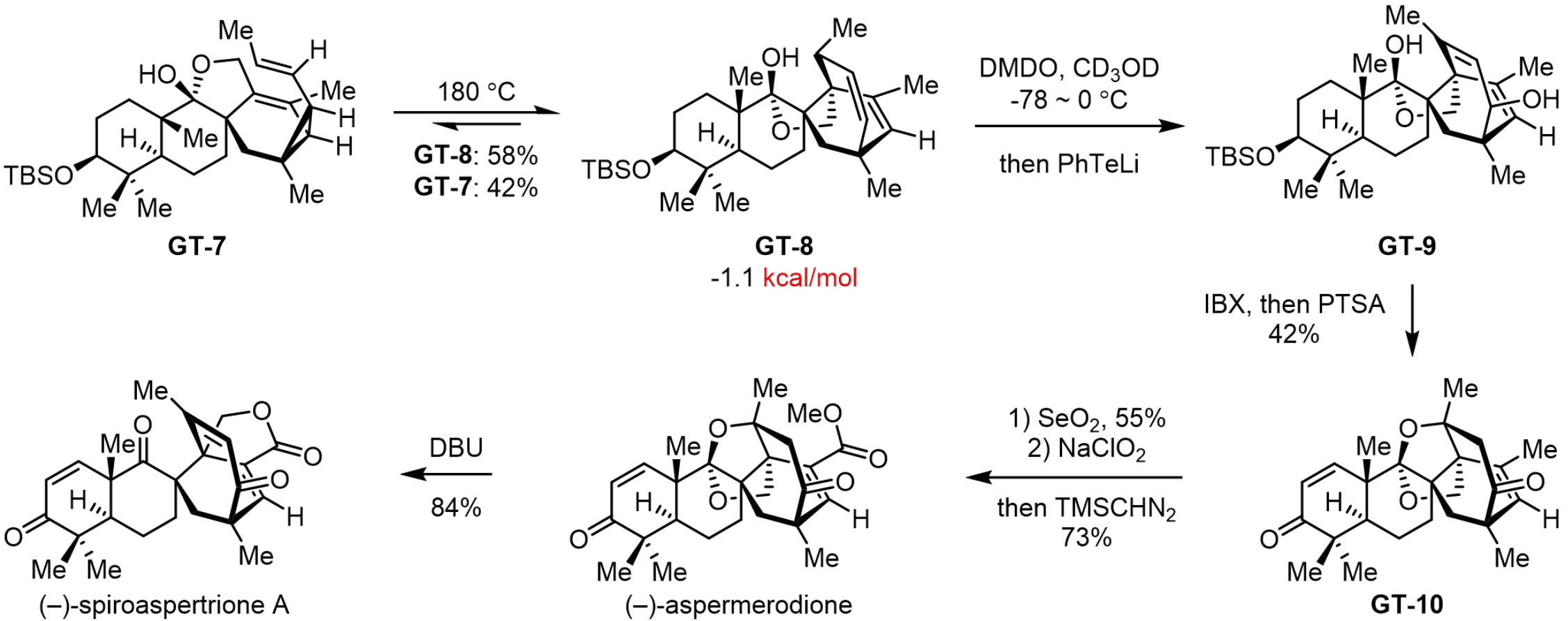




Schneider, F.; Gaich, T.; *et al. Science* **2025**, *390*, 261-265.

Gaich教授：二烯基环丙烷重排策略





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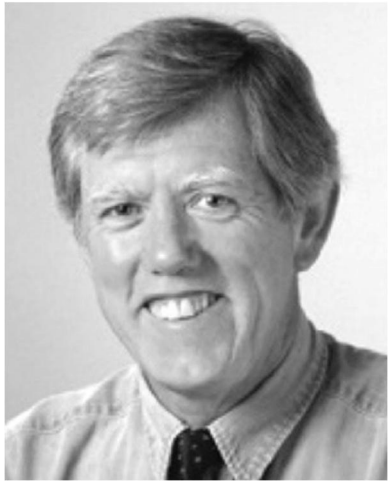

Tom Simpson

Ikuro Abe

张勇慧

Erik J. Sorensen

刘波

马爱军

Bill Hawkins

Fabian Schneider

Tanja Gaich

Group Seminar

That is all, thanks

陈丽君

2026.03.26