

# *Catalytic Asymmetric Halolactonization*

报告： 时磊      检查： 陈木旺

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有机催化的不对称卤内酯化

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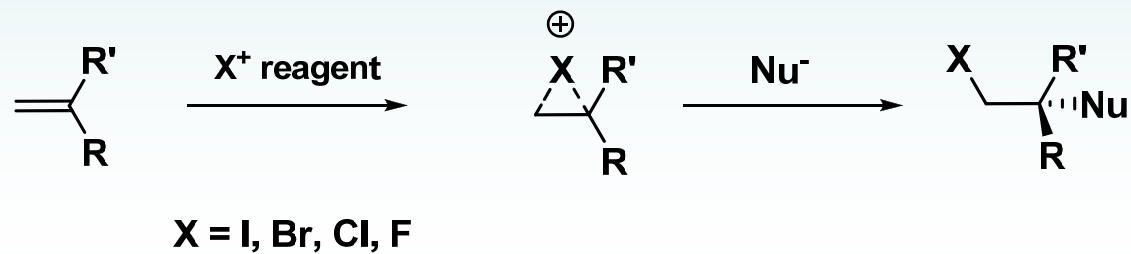
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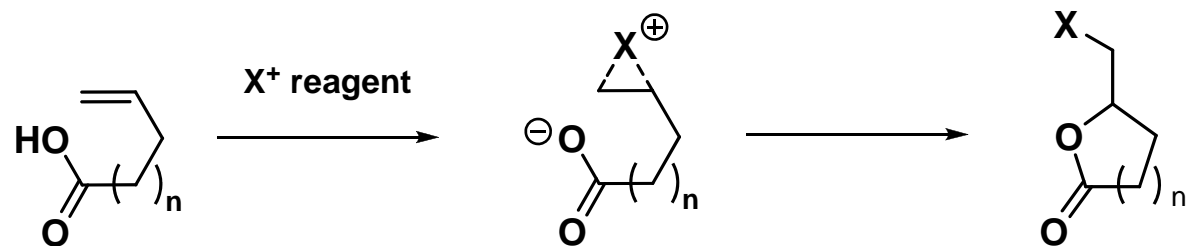
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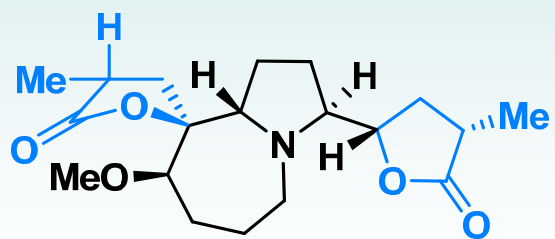
## 1. 简介

### *Halofunctionalization*

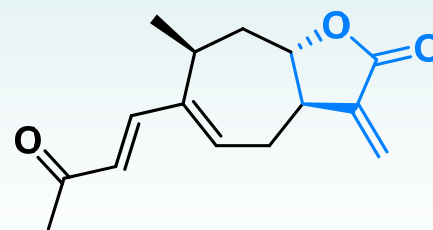


### *Halolactonization*

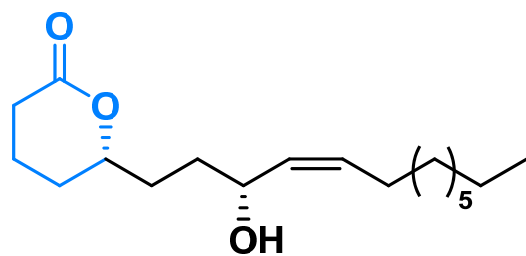




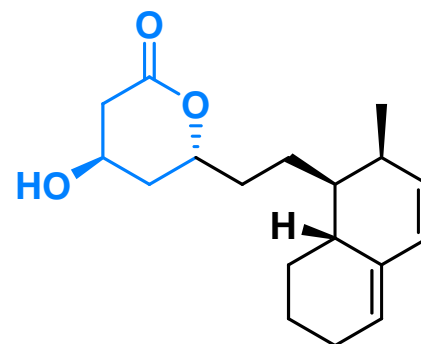
**(-)-Stemospironine**



**(-)-Xanthatin**

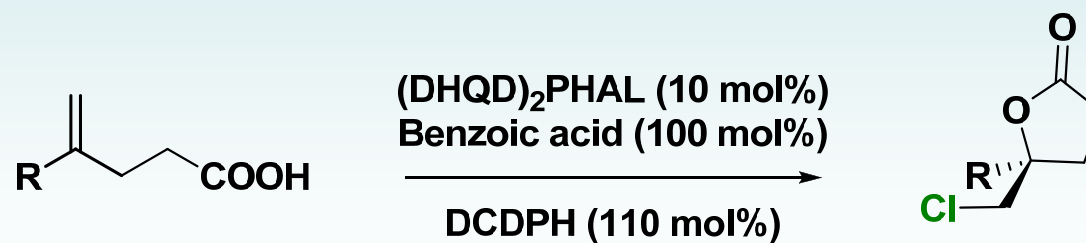


**psiA $\beta$**

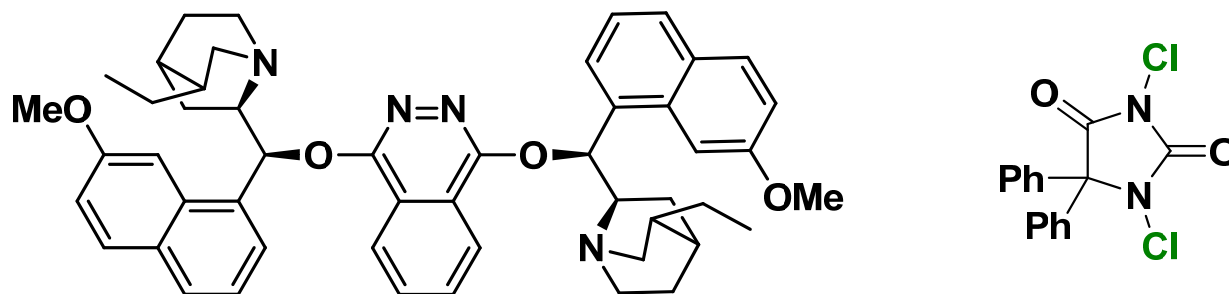


**Monacolone**

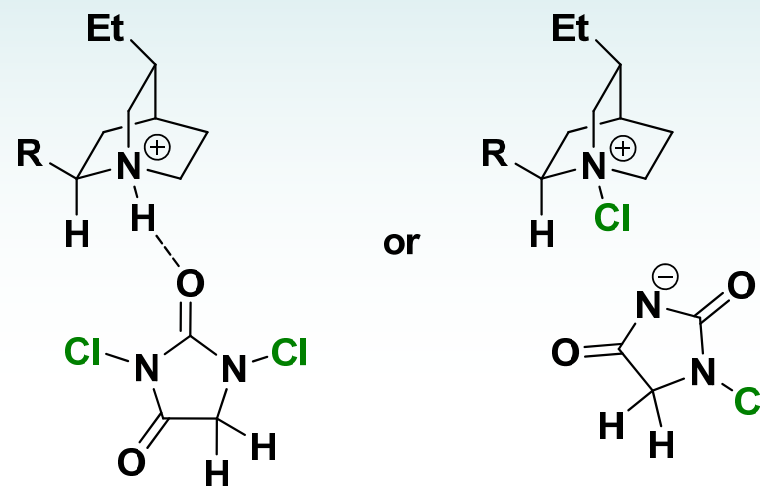
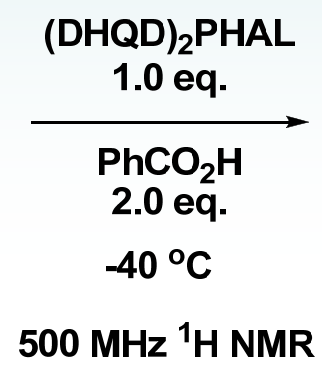
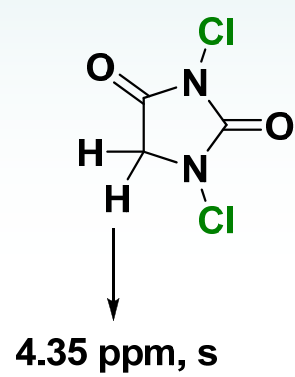
## 2. 有机催化的卤内酯化反应



*8 examples, yield 55~99%, ee up to 90%*

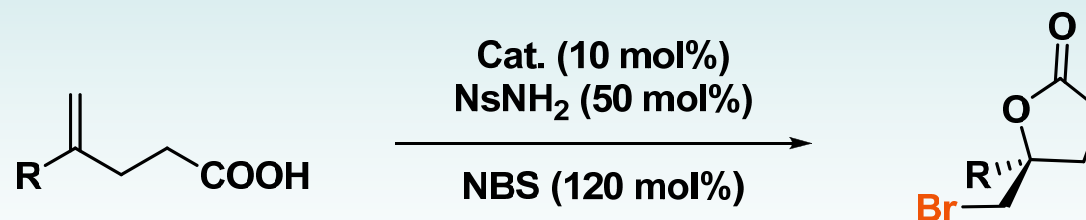


Borhan, B. et al. *J. Am. Chem. Soc.* **2010**, *132*, 3298.

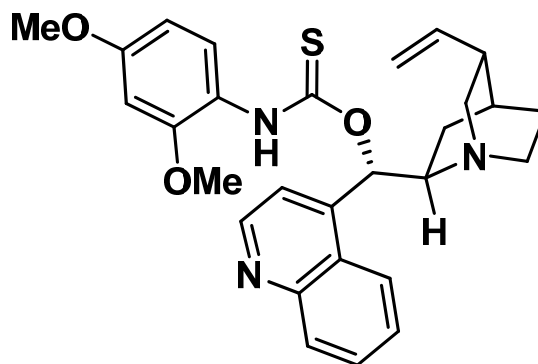


4.30 ppm, AB ( $J_{AB} = 16.5\text{Hz}$ )

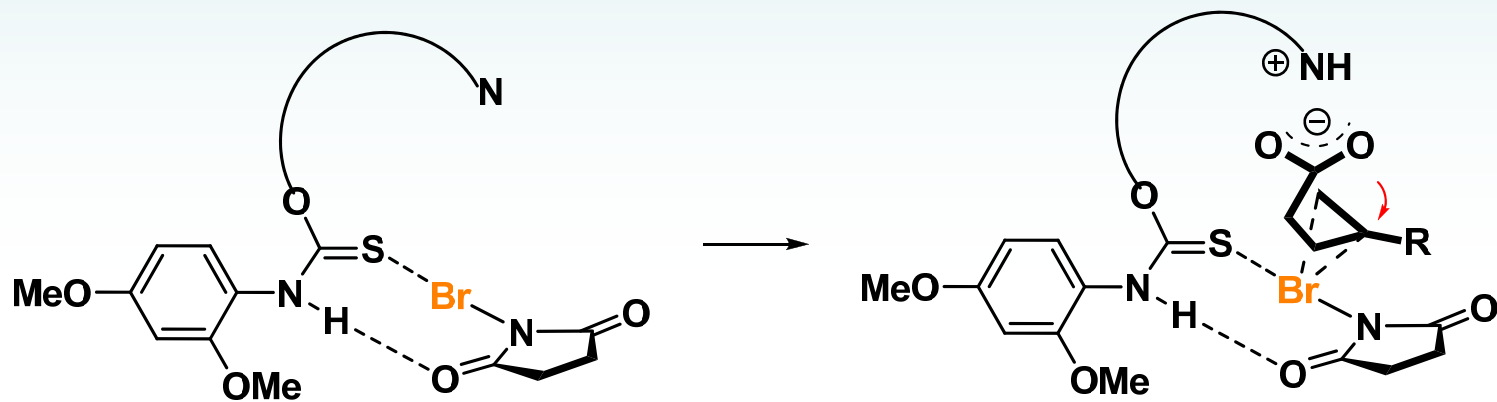
Borhan, B. et al. *J. Am. Chem. Soc.* **2010**, 132, 3298.



*21 examples, yield 67~99%, ee up to 93%*

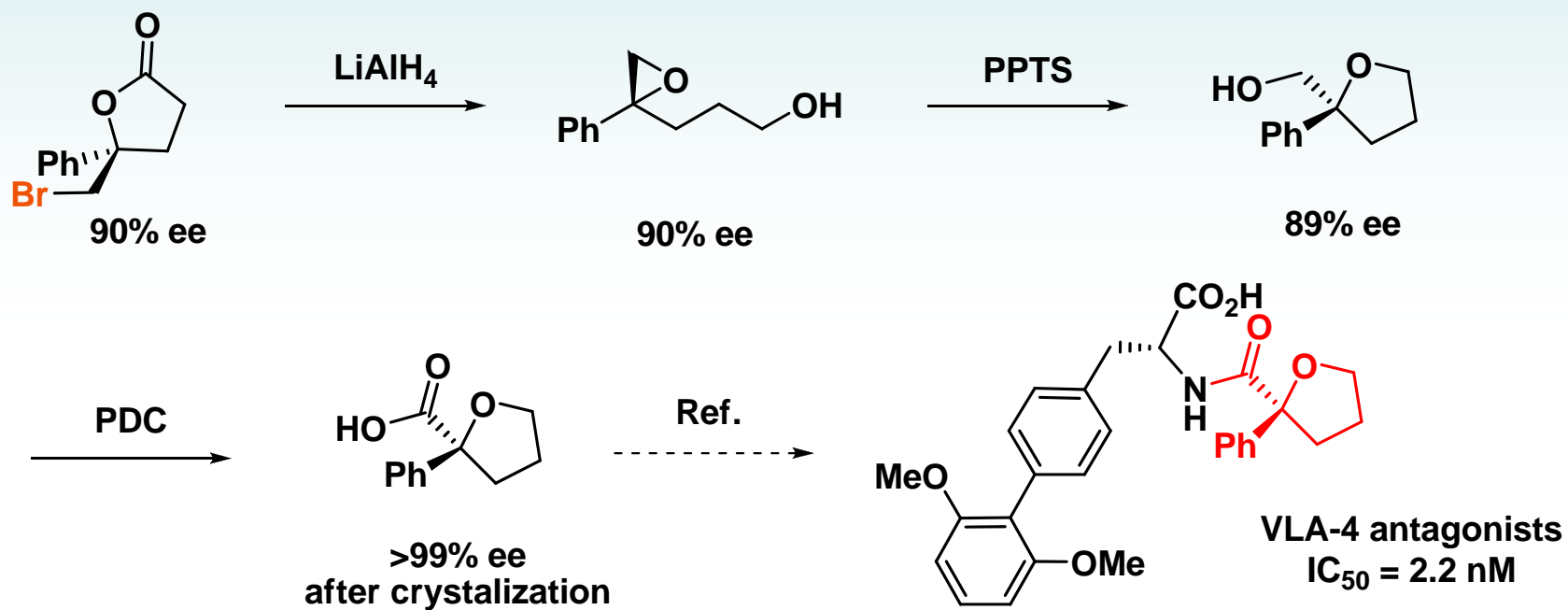


Yeung, Y. Y. et al. *J. Am. Chem. Soc.* **2010**, 132, 15474.

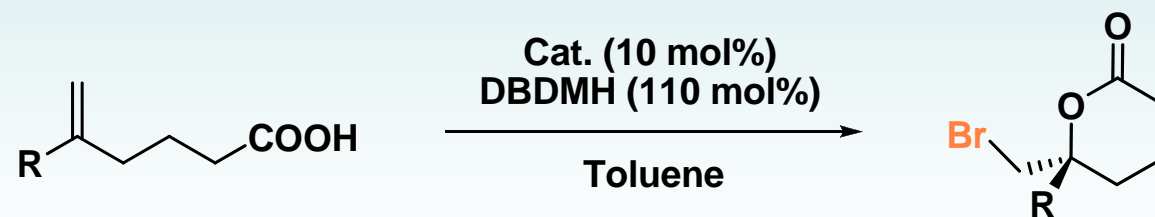


Yeung, Y. Y. et al. *J. Am. Chem. Soc.* **2010**, 132, 15474.

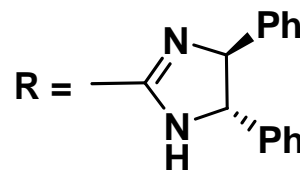
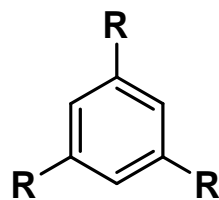




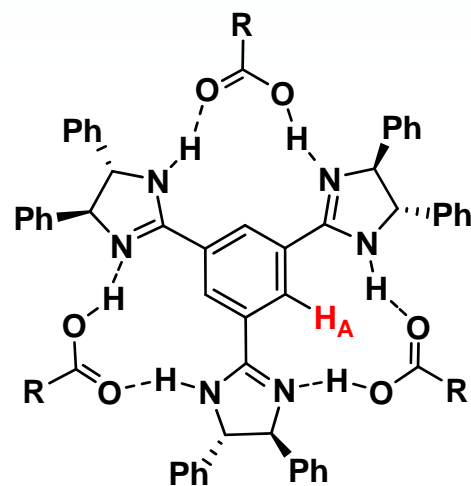
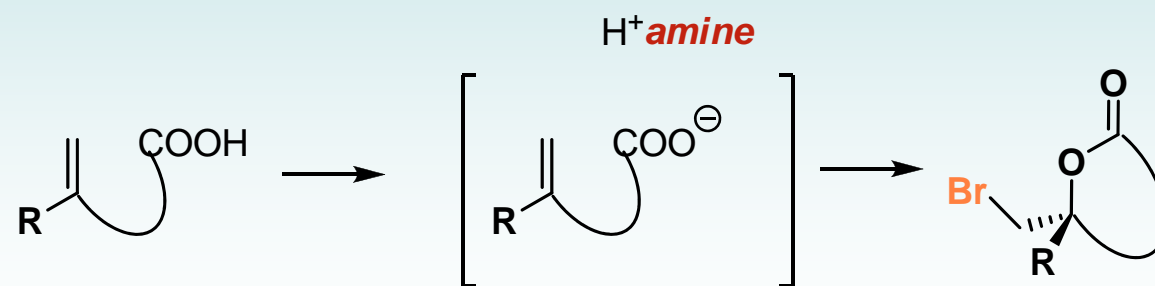
Yeung, Y. Y. et al. *J. Am. Chem. Soc.* **2010**, 132, 15474.



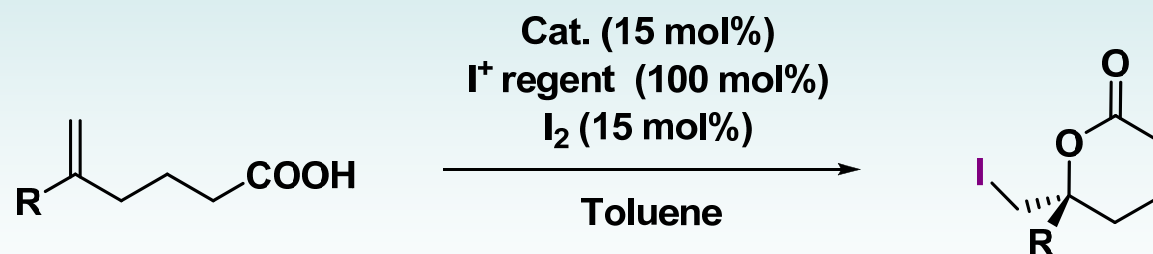
*13 examples, yield 74~99%, ee up to 91%*



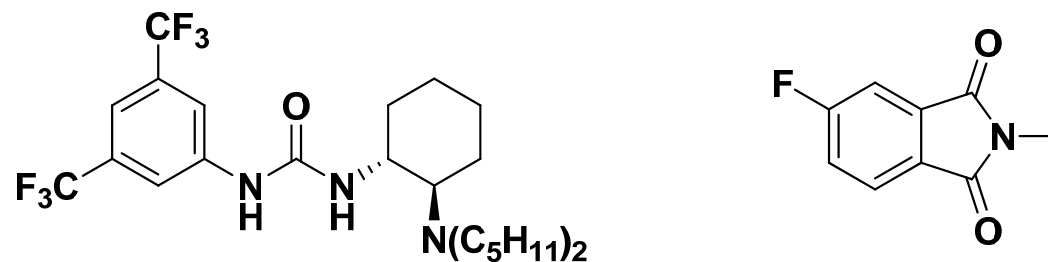
Fujioka, H. et al. *Angew. Chem. Int. Ed.* **2010**, *49*, 9174.



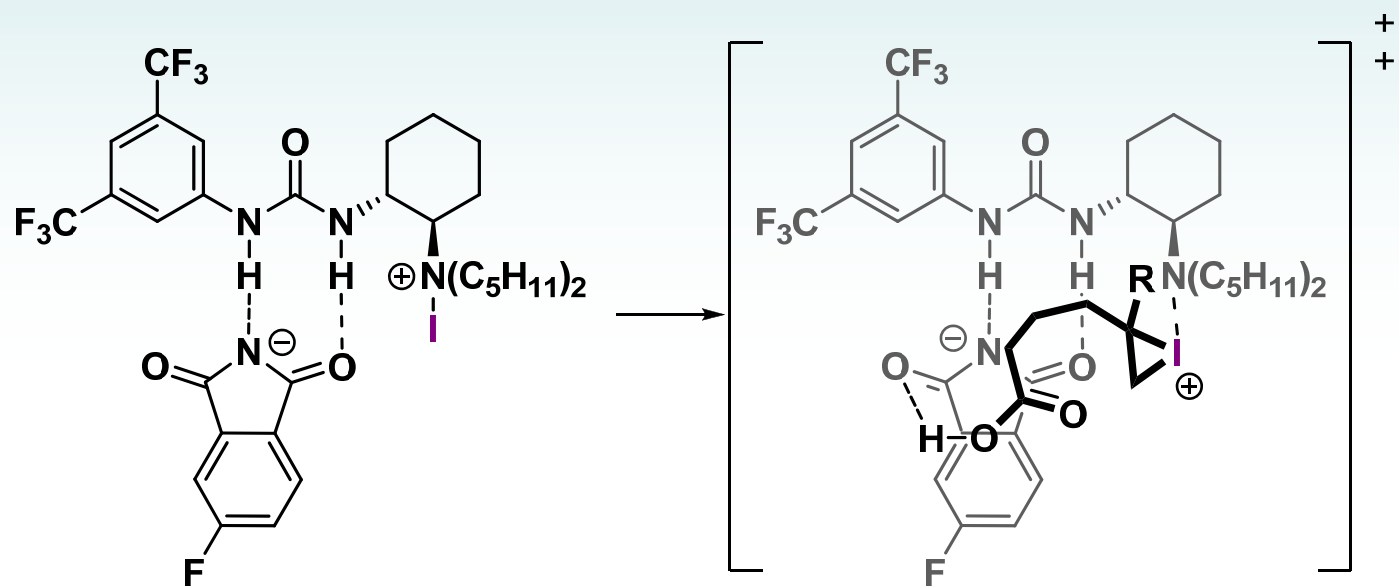
Fujioka, H. et al. *Angew. Chem. Int. Ed.* **2010**, *49*, 9174.



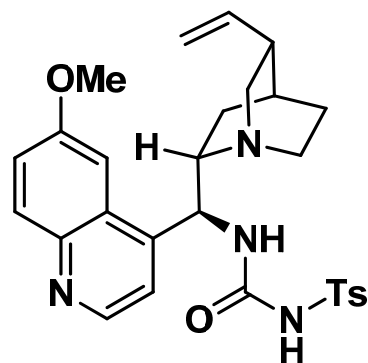
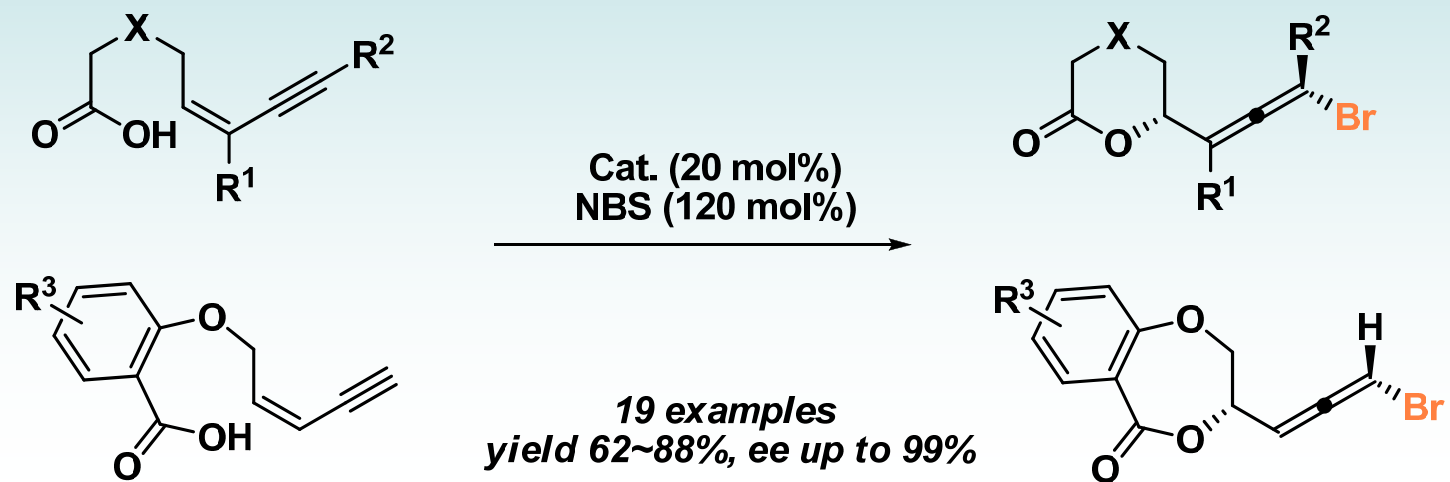
9 examples, yield 71~96%, ee up to 96%



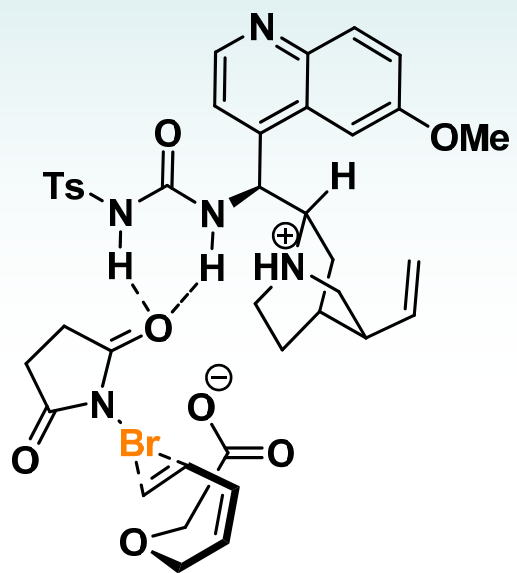
Jacobsen, E. N. et al. *Angew. Chem. Int. Ed.* **2010**, 49, 7332.



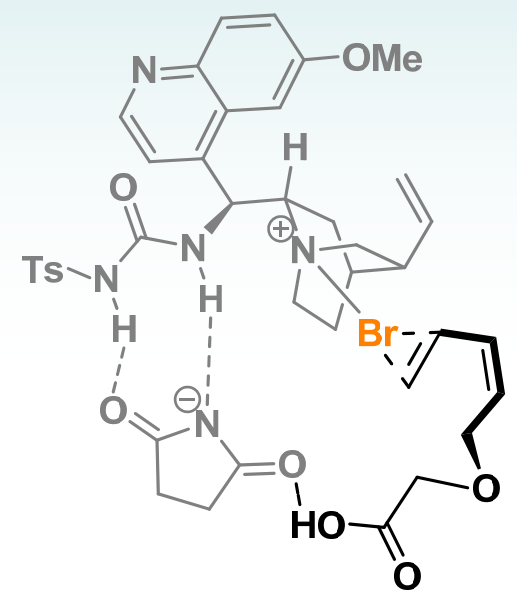
Jacobsen, E. N. et al. *Angew. Chem. Int. Ed.* **2010**, *49*, 7332.

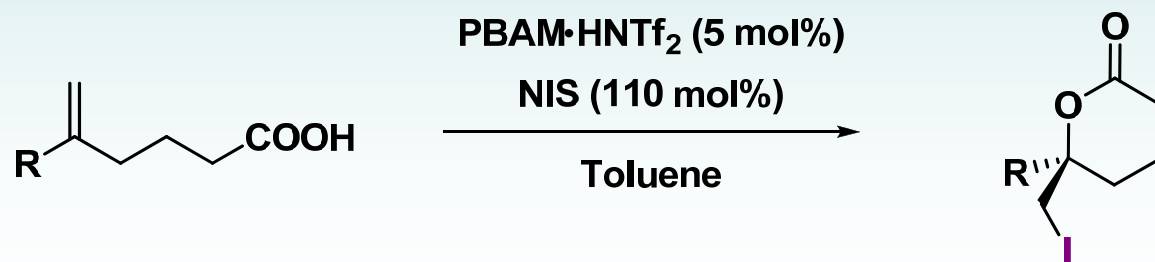


Tang, W. et al. *J. Am. Chem. Soc.* **2010**, 132, 3664.

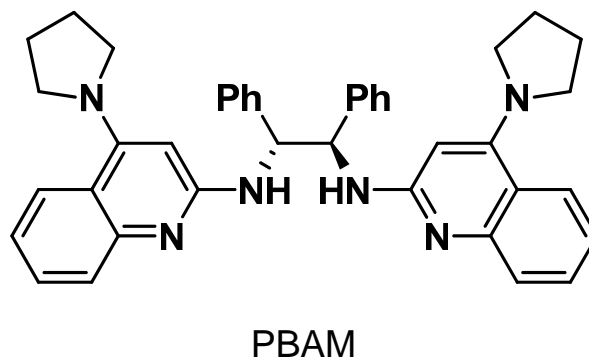


or





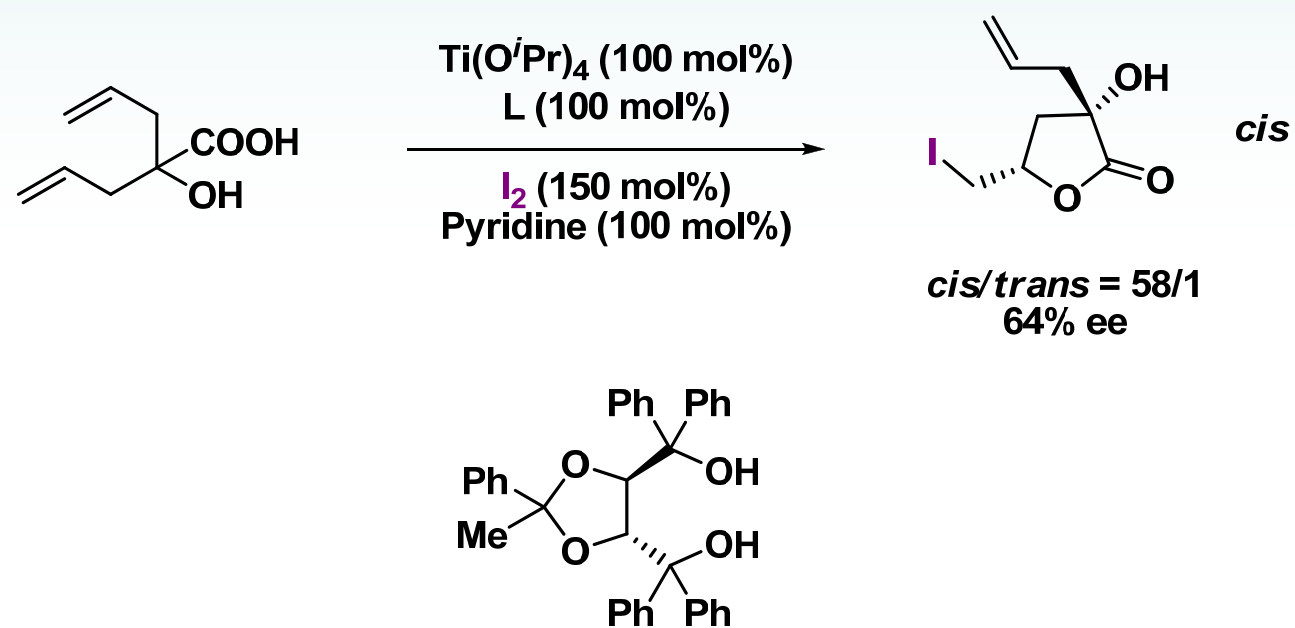
*18 examples, yield 25~99%, ee up to 98%*



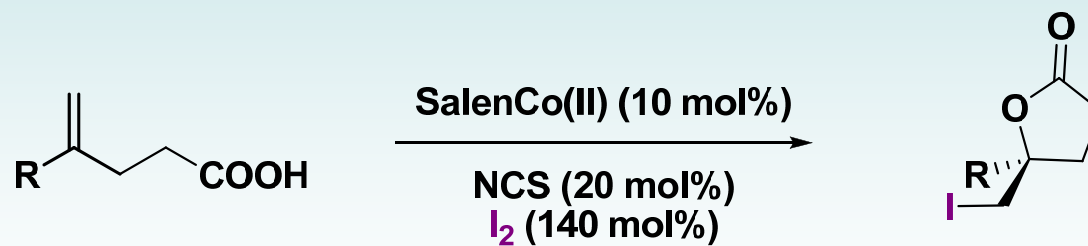
Johnston, J. N. et al. *J. Am. Chem. Soc.* **2012**, 134, 6068.



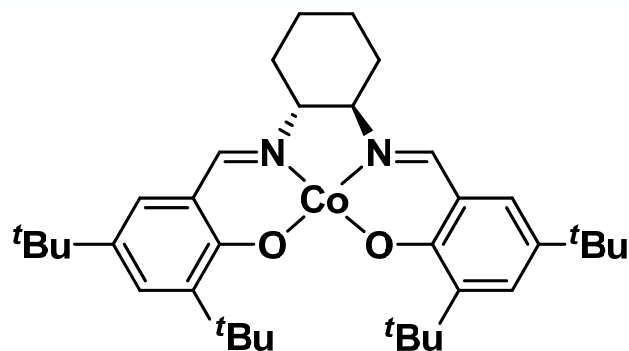
### 3. 金属催化的不对称卤内酯化



Taguchi, T. et al. *J. Chem. Soc. Chem. Commun.* **1992**, 1005.



*6 examples, yield 72~93%, ee up to 83%*



Gao, L. et al. *Synlett* **2009**, 2291.

## 总结与展望

- Halogen sources: NIS, NBS, DCDPH
- Activation: Lewis acid/Lewis Base, Hydrogen bond, Brønsted Acid
- 有机催化 *vs* 金属催化

## 参考文献

- [1] Yeung, Y. Y. et al. *J. Am. Chem. Soc.* **2010**, 132, 15474.
- [2] Borhan, B. et al. *J. Am. Chem. Soc.* **2010**, 132, 3298.
- [3] Fujioka, H. et al. *Angew. Chem. Int. Ed.* **2010**, 49, 9174.
- [4] Jacobsen, E. N. et al. *Angew. Chem. Int. Ed.* **2010**, 49, 7332.
- [5] Tang, W. et al. *J. Am. Chem. Soc.* **2010**, 132, 3664.
- [6] Johnston, J. N. et al. *J. Am. Chem. Soc.* **2012**, 134, 6068.
- [7] Taguchi, T. et al. *J. Chem. Soc. Chem. Commun.* **1992**, 1005.
- [8] Gao, L. et al. *Synlett* **2009**, 2291.

水平有限， 欢迎批评指正！

