

Isolation from *Haliclona* sp.

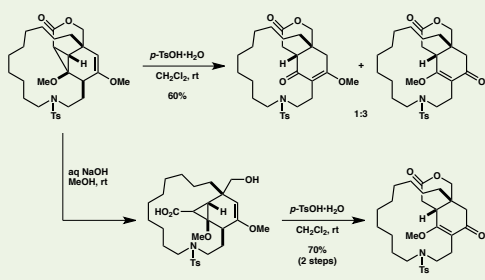
K.-B. Oh, J. Shin *et al.*, *Org. Lett.*, **11**, 1713 (2009)

Total Synthesis

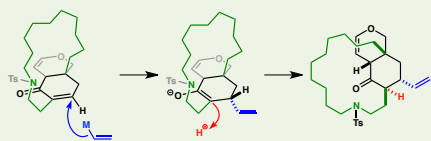
P.-Q. Huang *et al.*, *Angew. Chem. Int. Ed.*, **55**, 4064 (2016)

J. Ishihara *et al.*, *Org. Lett.*, **22**, 5046 (2020)

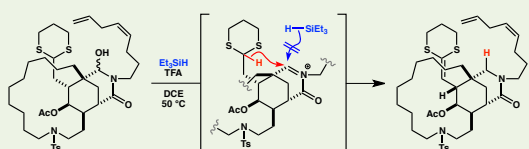
### 1 Construction of Vinylogous Ester



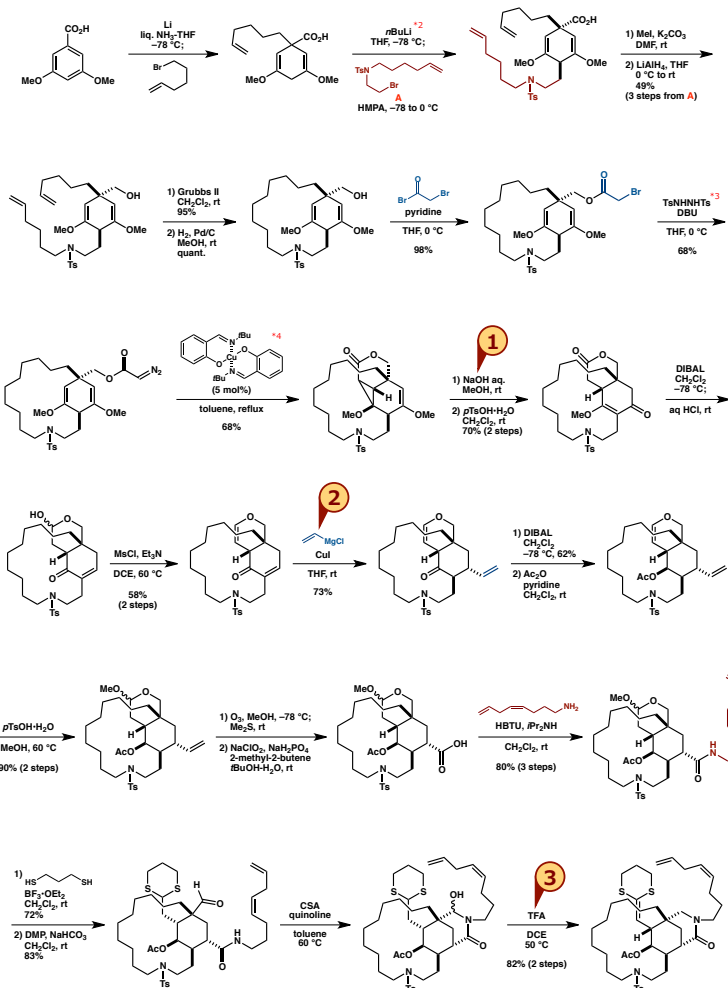
### 2 Stereoselective 1,4-Addition



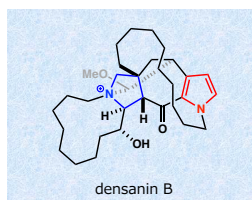
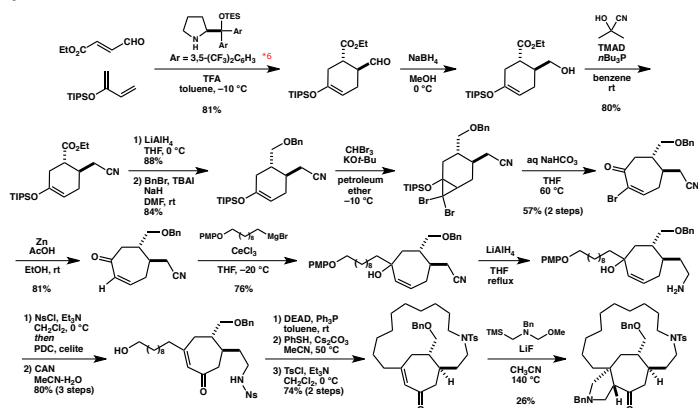
### 3 Unexpected 1,5-Hydride Shift



### Synthetic Studies on of Haliclodin A<sup>11</sup>



### Synthetic Studies on Densanin B<sup>15</sup>



Isolation from *Haliclona densaspicula*

J.-R. Rho *et al.*, *Org. Lett.*, **14**, 6154 (2012)

Synthetic Studies

J. Yang *et al.*, *Org. Lett.*, **18**, 1949 (2016)

### References

- <sup>11</sup> K. Orihara, F. Kawagishi, S. Yokoshima, T. Fukuyama, T. Synlett, **29**, 769 (2018); <sup>12</sup> N. J. Bennett, M. C. Elliott, N. L. Hewitt, B. M. Kariuki, C. A. Morton, S. A. Raw, S. Tomasi, *Org. Biomol. Chem.*, **10**, 3859 (2012); <sup>13</sup> T. Toma, J. Shimokawa, T. Fukuyama, *Org. Lett.*, **9**, 3195 (2007); <sup>14</sup> E. J. Corey and A. G. Myers, *Tetrahedron Lett.*, **25**, 3359 (1984); <sup>15</sup> K. Ueda and S. Yokoshima, *Heterocycles*, prepress, DOI: 10.3987/COM-20-S(K)4; <sup>16</sup> He L. You, X.-T. Liang, L.-M. Xu, Y.-F. Wang, J.-J. Zhang, Q. Su, Y.-H. Li, B. Zhang, S.-L. Yang, J.-H. Chen, Z. Yang, *J. Am. Chem. Soc.*, **137**, 10120 (2015)