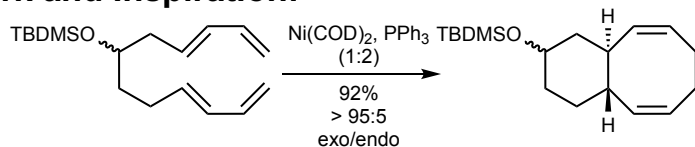
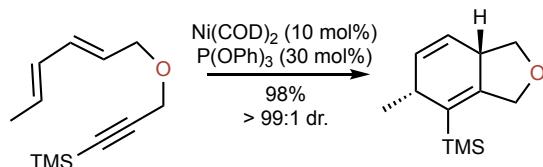


Early Work and Inspiration:



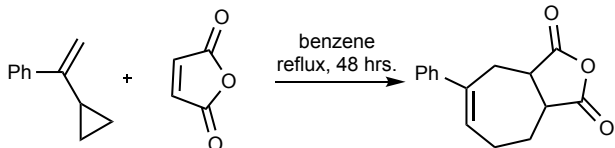
Wender, P. *J. Am. Chem. Soc.* **1986**, *108*, 4678. <https://doi.org/10.1021/ja00275a085>



Wender, P. *J. Am. Chem. Soc.* **1989**, *111*, 6432. <https://doi.org/10.1021/ja00198a071>

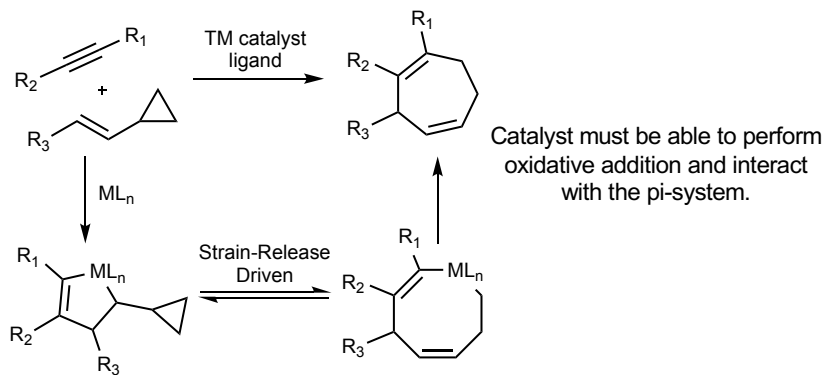
Successful development of the [4+4] and [4+2] cycloadditions raised an important fundamental question:
Are alternative cycloadditions also operative under similar catalytic conditions?

Of particular interest:



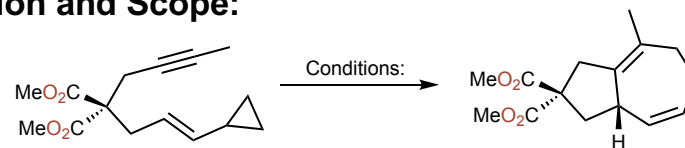
Sarel, S. *J. Am. Chem. Soc.* **1959**, *81*, 24, 6522. <https://doi.org/10.1021/ja01533a049>

Inception and Rationale:

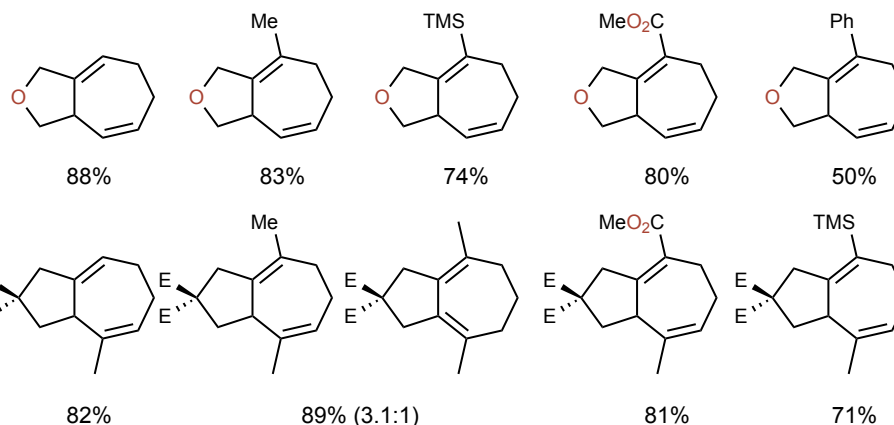


Wender, P. *J. Am. Chem. Soc.* **1995**, *117*, 4720. <https://doi.org/10.1021/ja00121a036>

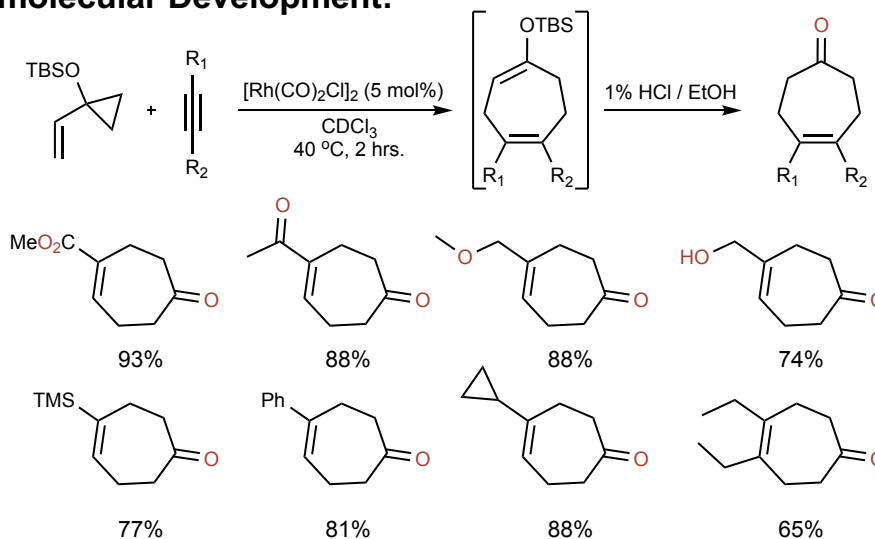
Optimization and Scope:



- A. Initial Discovery: [RhCl(PPh₃)₃] 10 mol%, 110 °C, toluene - 84%, full conversion
- B. Solvent Change: CF₃CH₂OH, 95% yield, 55 °C, 19 hrs. - 95% yield
- C. Additive Screen: [RhCl(PPh₃)₃] 10 mol%, AgOTf (0.5 mol%) 110 °C, toluene - 83%, 20 mins.

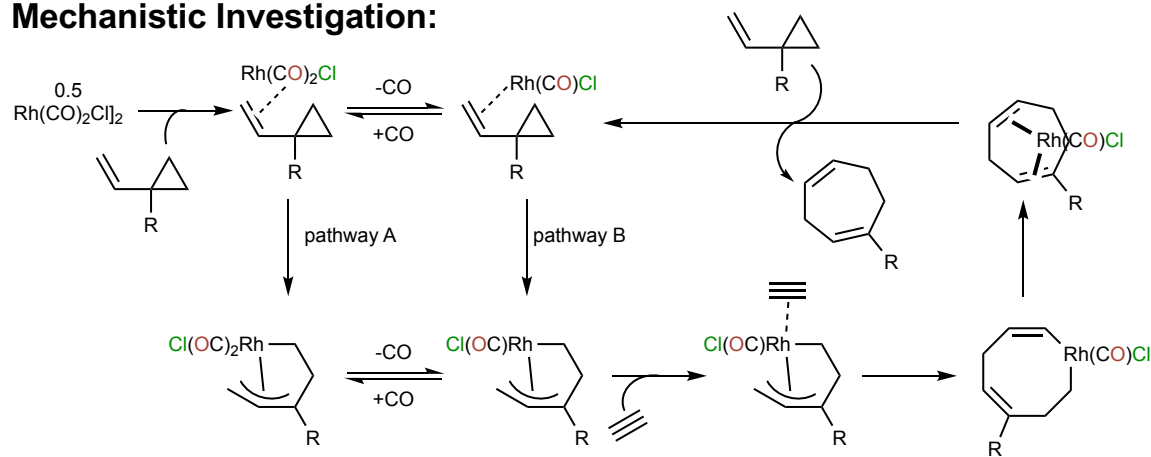


Intermolecular Development:



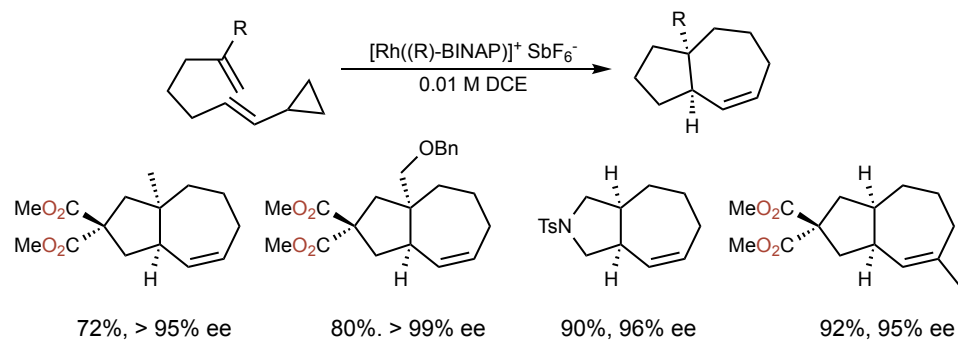
Wender, P. *J. Am. Chem. Soc.* **1998**, *120*, 10976. <https://doi.org/10.1021/ja982196x>

Mechanistic Investigation:

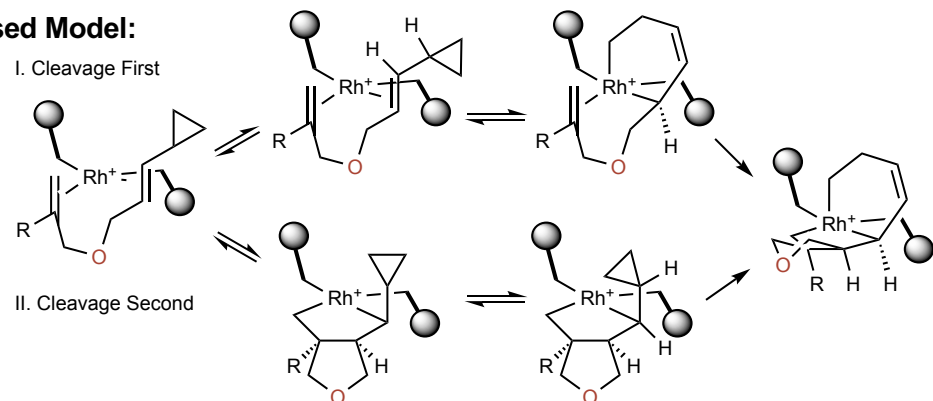


Houk, K., Wender, P. *J. Am. Chem. Soc.* **2004**, 126, 9154. <https://doi.org/10.1021/ja048739m>

Enantioselective Rendition:

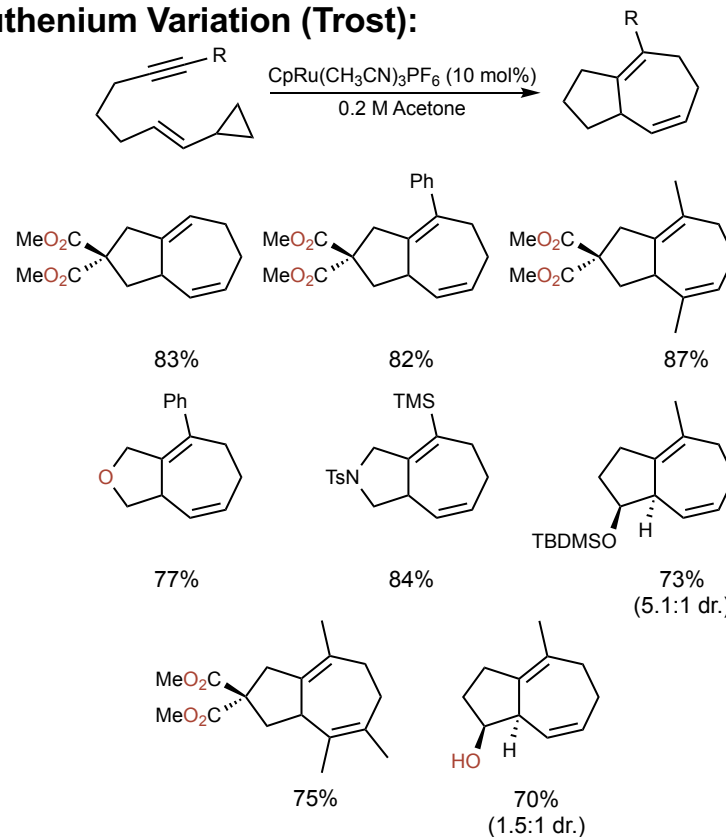


Proposed Model:

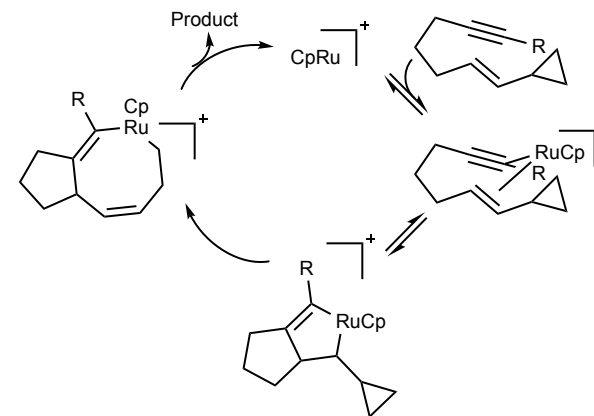


Wender, P. *J. Am. Chem. Soc.* **2006**, 128, 6302. <https://doi.org/10.1021/ja058590u>

Ruthenium Variation (Trost):

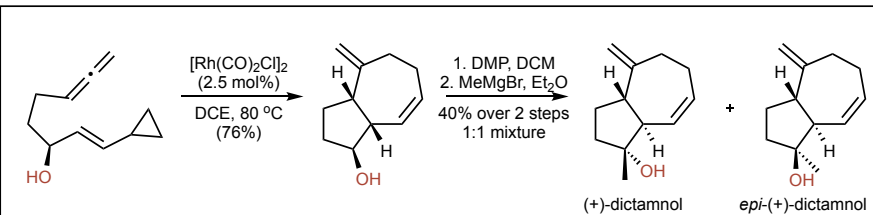


Proposed Catalytic Cycle:

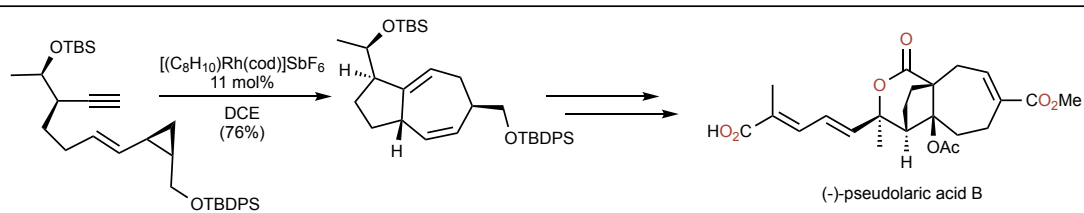


Trost, B. *J. Am. Chem. Soc.* **2000**, 122, 2379. <https://doi.org/10.1021/ja993400z>

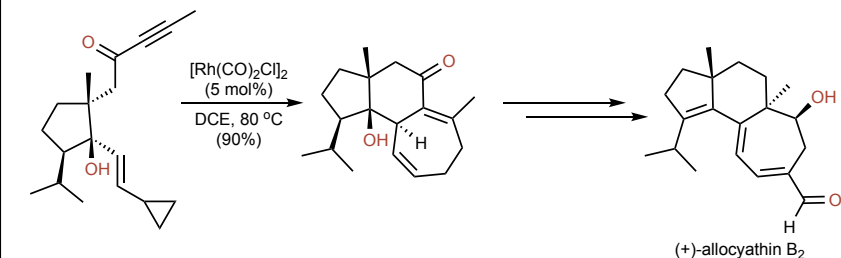
Applications in Total Synthesis:



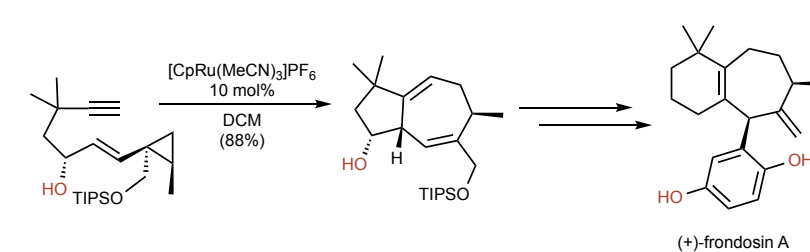
Wender, P. *Org. Lett.* **1999**, *1*, 137. <https://doi.org/10.1021/ol990599b>



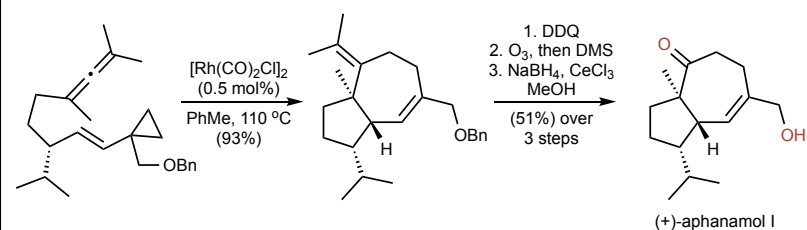
Trost, B. *J. Am. Chem. Soc.* **2007**, *129*, 14556. <https://doi.org/10.1021/ja076165g>



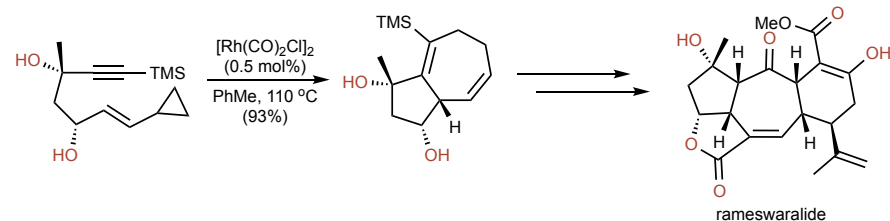
Wender, P. *Org. Lett.* **2001**, *3*, 2105. <https://doi.org/10.1021/ol0160699>



Trost, B. *J. Am. Chem. Soc.* **2007**, *129*, 11781. <https://doi.org/10.1021/ja073272b>



Wender, P. *Org. Lett.* **2000**, *2*, 2323. <https://doi.org/10.1021/ol006085q>



Trost, B. *Tetrahedron Letters*. **2010**, *51*, 6232. <https://doi.org/10.1016/j.tetlet.2010.09.042>