Asymmetric route to 2,5-disubstituted pyrrolines *via* a double palladium-catalysed AAA reaction - B. M. Trost.

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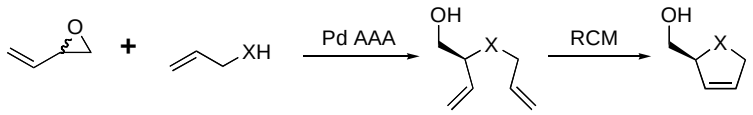
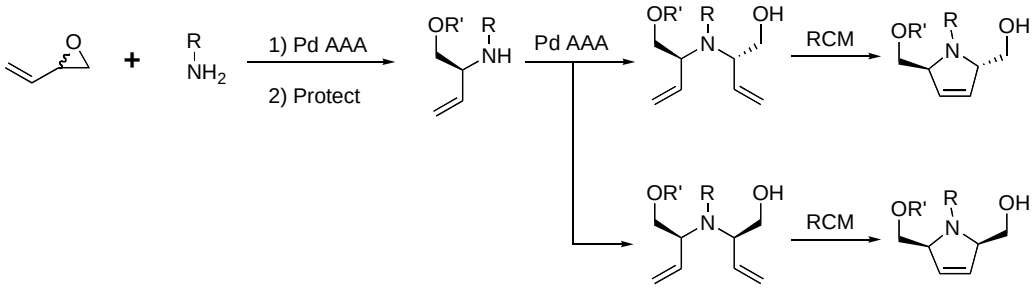
Literature 10th October, 2006.

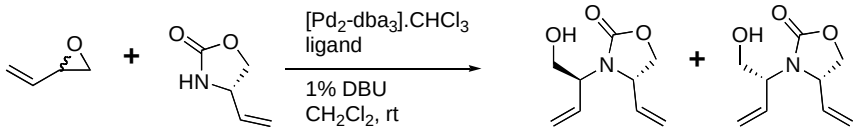
- Generic palladium-catalysed asymmetric allylic alkylation (AAA) for synthesis of 5-membered rings:



- Route towards 2,5-disubstituted pyrroline compounds:



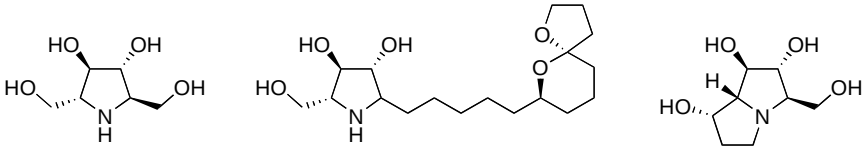
- Nitrogen protected as an oxzolidinone following first AAA reaction. Careful choice of ligand allows formation of either *anti* or *syn* diene in good diastereoselectivity. This then allows for formation of either *cis* or *trans* pyrroline compounds in an enantiopure fashion.



anti *syn*

Ligand	Yield	d.r. [*anti*/*syn*]
(*R*, *R*)	91%	93:7
(*S*, *S*)	83%	9:91

- Methodology used in the synthesis of DMDP (11 steps, 22% overall yield), broussonetine G (24 steps, 15 longest linear, 8.3% overall yield) and australine (unpublished).



DMDP broussonetine G australine

References:

- Trost, B. M.; Horne, D. B.; Woltering, M. J. *Chem. Eur. J.* **2006**, *12*, 6607-6620.
- Trost, B. M.; Horne, D. B.; Woltering, M. J. *Angew. Chem.* **2003**, *115*, 6169-6172; *Angew. Chem. Ind. Ed.* **2003**, *42*, 5987-5990.