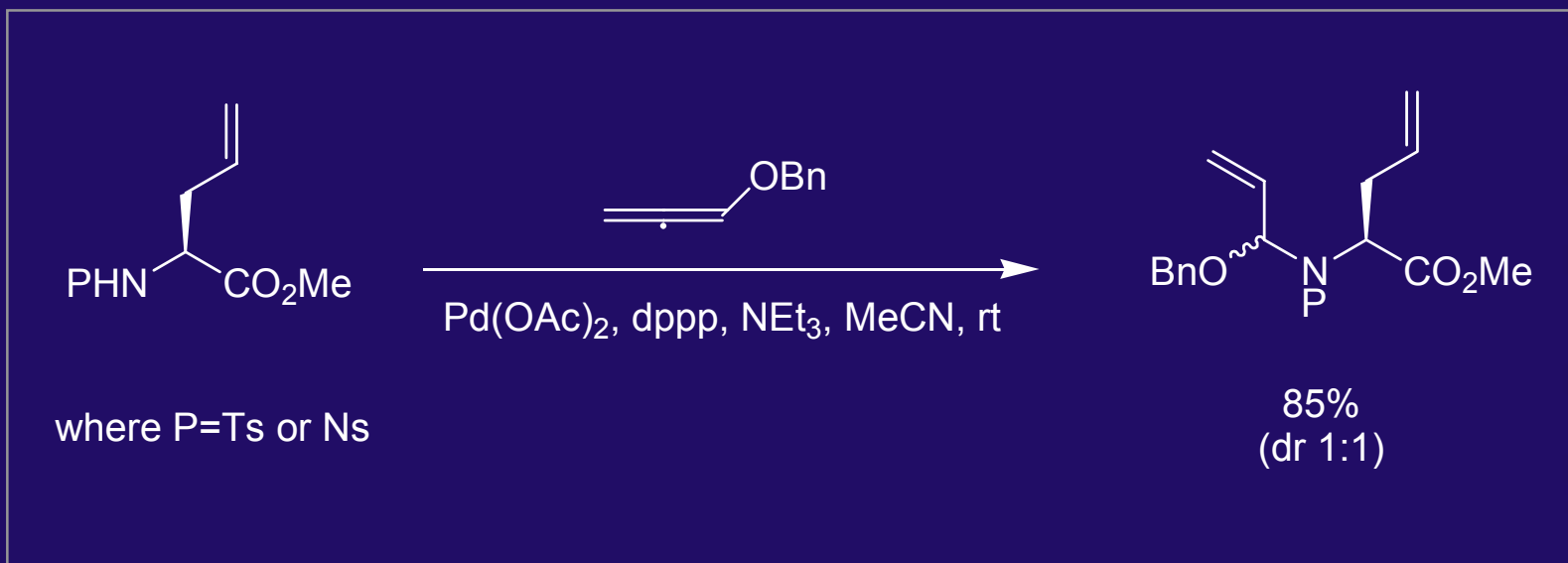


Metathesis reactions

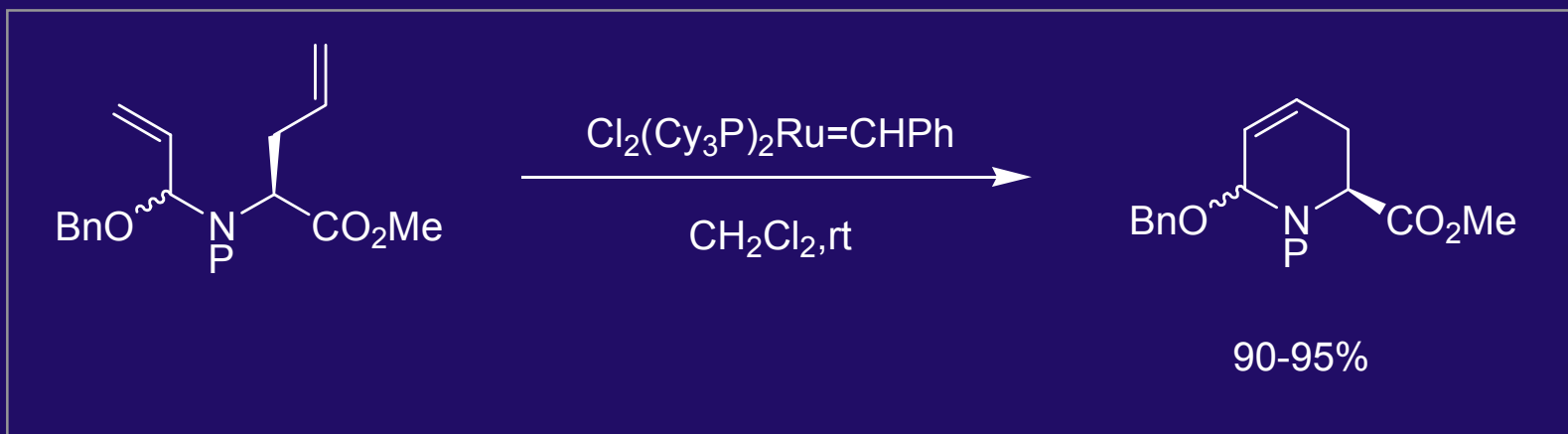
- Palladium chemistry can be used to prepare *N,O*-acetals
 - Performing the reaction at reflux provides the vinyl ether isomer



Tjen, K. C. M. F.; Kinderma, S. S.; Schoemaker, H. E.; Hiemstra, H.; Rutjes, F. P. J. T.
J. Chem. Soc., Chem. Commun., **2000**, 699.

Metathesis reactions

- Grubb's catalyst provides the pipercolic acid derivative

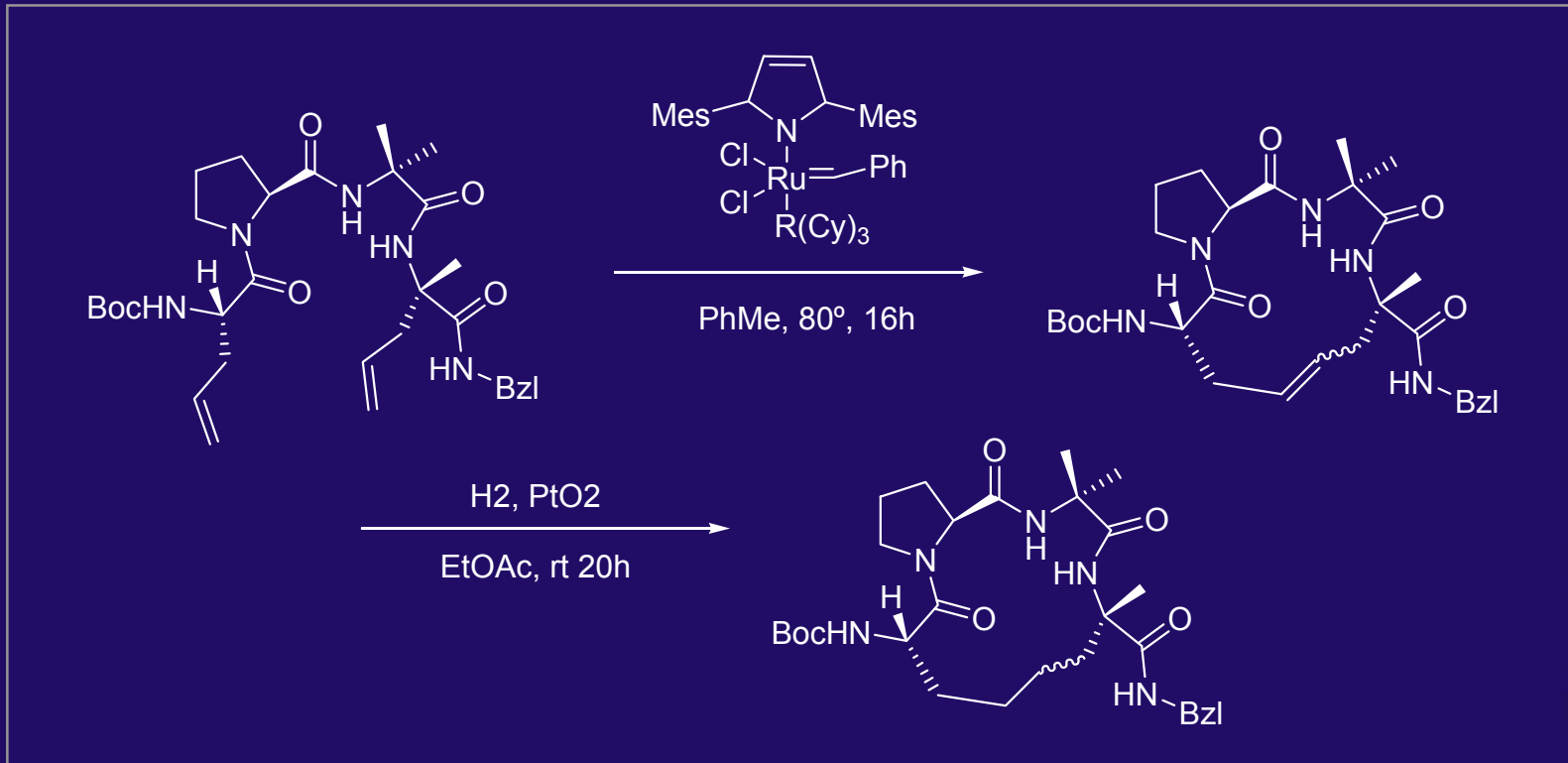


Tjen, K. C. M. F.; Kinderma, S. S.; Schoemaker, H. E.; Hiemstra, H.; Tutjes, F. P. J. T. *J. Chem. Soc., Chem. Commun.*, **2000**, 699.

See also Kinderman, S. S.; van Maarseveen, J. H.; Schoemaker, H. E.; Hiemstra, H.; Rutjes, F. P. J. T. *Org. Lett.*, **2001**, 3, 2045.

Metathesis example

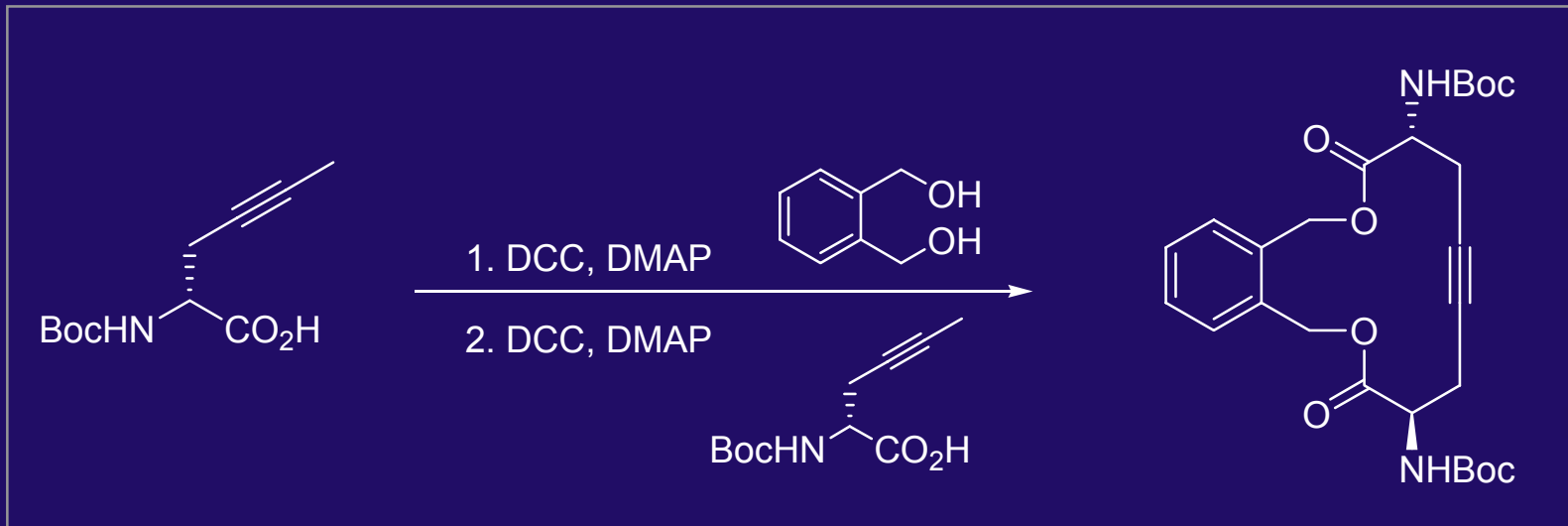
- The reaction can be used to close a macrocyclic ring in a tetrapeptide



Kaptein, B.; Broxterman, Q. B.; Schoemaker, H. E.; Rutjes, F. P. J. T.; Veerman, J. J. N.; Kamphuis, J.; Peggion, C.; Formaggio, F.; Toniolo, C. *Tetrahedron*, **2001**, *57*, 6567.

Metathesis example

- The cyclisation can be used to access cystine isosteres



Anguilera, B.; Wolf, L. B.; Nieczyk, P.; Rutjes, F. P. J. T.; Overkleeft, H. S.; van Hest, J. C. M.; Schoemaker, H. E.; Wang, B.; Mol, J. C.; Fürstner, A.; Overhand, M.; van der Marel, G. A.; van Boom, J. H. *J. Org. Chem.*, **2001**, *66*, 3584.