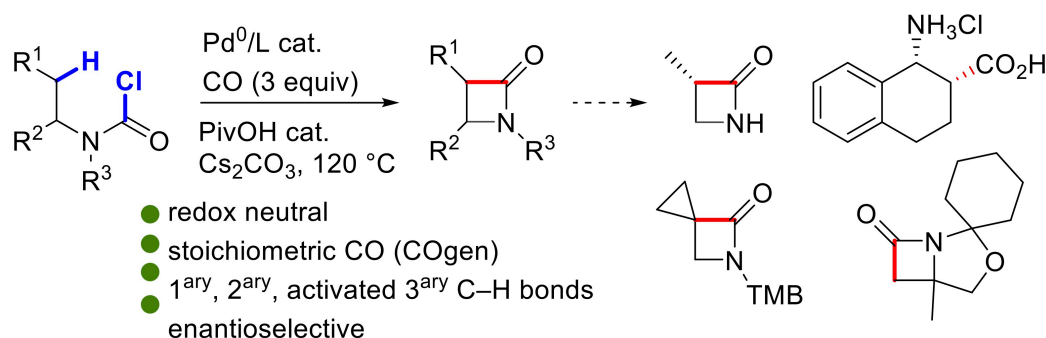


Synthesis of β -Lactams by Palladium(0)-Catalyzed C(sp³)-H Carbamoylation

R. Rocaboy¹, D. Dailler¹, O. Baudoin^{1*}

¹Department of Chemistry, University of Basel, St. Johanns-Ring 19, 4056 Basel

β -Lactams are very important scaffolds for drug discovery and are also important synthetic intermediates for the synthesis of beta amino-acids [1]. In the past few years, C(sp³)-H activation-based methods have been introduced to access this motif in a straightforward manner[2]-[5]. Inspired from the work of Takemoto [6], we developed a user-friendly and general method of synthesis of β -lactams, using intramolecular C(sp³)-H activation, from carbamoyl chloride [7]. This method, employing Pd(0)/phosphine catalysis, in the presence of pivalic acid, cesium carbonate and CO gas allows the formation of a broad scope of functionalized beta-lactams. In addition, the feasibility of an enantioselective version using a chiral phosphonite ligand is demonstrated [5]. Finally, this method can be employed to synthesize valuable enantiopure free β -lactams and β -amino acids.



- [1] M. Oairbide et al., *Top. Heterocycl. Chem.* **2010**, 22, 211
 [2] B.-F. Shi et al., *Angew. Chem. Int. Ed.* **2013**, 52, 13588
 [3] B. Wu et al., *Org. Lett.* **2014**, 16, 480
 [4] M. J. Gaunt et al., *Nature* **2014**, 510, 129
 [5] N. Cramer et al., *Angew. Chem. Int. Ed.* **2012**, 51, 12842
 [6] Y. Takemoto et al., *Angew. Chem. Int. Ed.* **2012**, 51, 2763
 [7] Baudoin et al., *Angew. Chem. Int. Ed.* **2017**, 56, 1 – 6