## Indolizidine Formation through Dearomative [3+2] Annulation Reactions of N-Heterocycles with Aminocyclopropanes

J. Preindl<sup>1</sup>, S. Chakrabarty<sup>1</sup>, J. Waser<sup>1</sup>\*

<sup>1</sup>EPF Lausanne

Many natural abundant and highly bioactive alkaloids contain an indolizidine skeleton.<sup>[1]</sup> We developed a straightforward, high yielding methodology to synthesize this scaffold from simple planar *N*-heterocycles. A wide range of pyridines, quinolines, and isoquinolines react with 2-amino cyclopropane-1,1-dicarboxylates via an ytterbium catalyzed [3+2] annulation reaction to the desired products. They are generally obtained with high diastereoselectivities as *trans*-isomers. Additionally, we show that the aminal in the products can be easily converted into secondary and tertiary amines through intermediary imine formation followed by reduction or nucleophile addition.



[1] J. P. Michael, Nat. Prod. Rep. 2008, 25, 139-165.