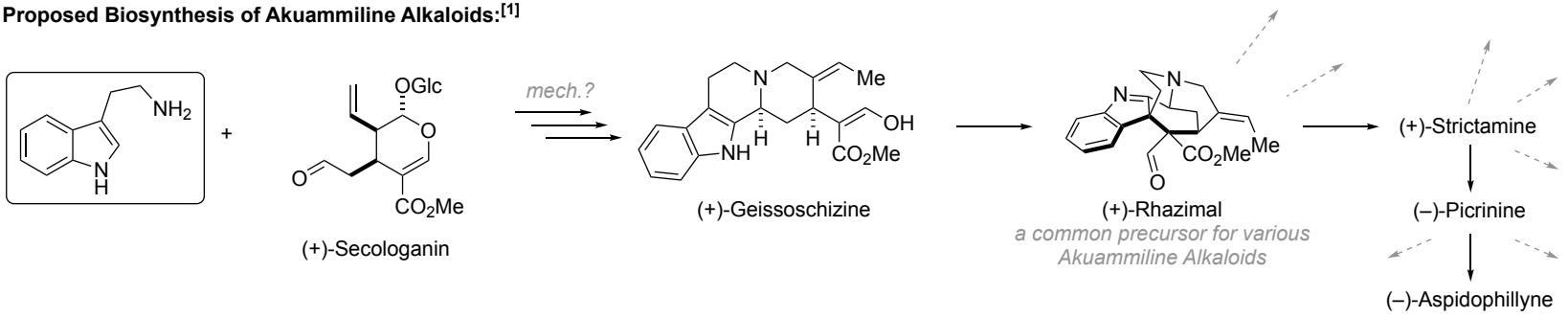
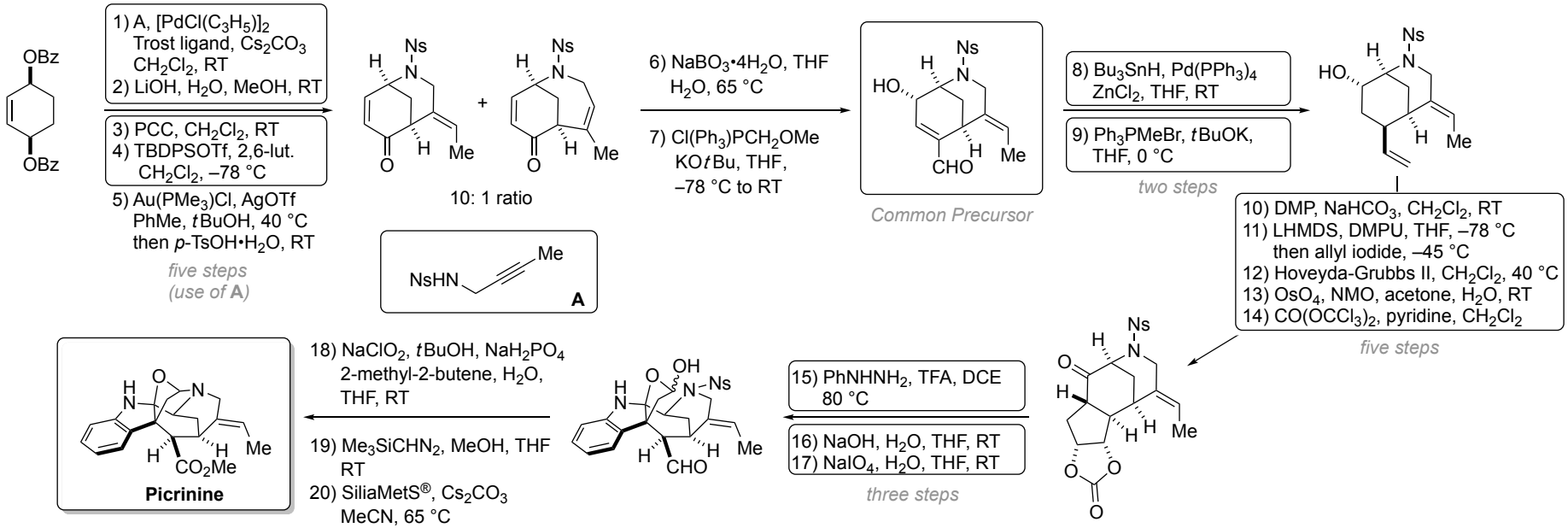
E64: Akuammiline Alkaloids: Proposed Biosynthesis and Total Syntheses of Picrinine, (–)-Aspidophylline A, (+)-Strictamine, (–)-2(S)-Cathafoline

Proposed Biosynthesis of Akuammiline Alkaloids:[1]



Asymmetric Construction of the common Precursor and Synthesis of Picrinine:[2,3]



[1] J. M. Smith, J. Moreno, B. W. Boal, N. K. Garg *Angew. Chem. Int. Ed.* **2015**, *54*, 400; A. I. Scott *Acc. Chem. Res.* **1970**, *3*, 151. [2] J. Moreno, E. Picazo, L. A. Morrill, J. M. Smith, N. K. Garg *J. Am. Chem. Soc.* **2016**, *138*, 1162. [3] J. M. Smith, J. Moreno, B. W. Boal, N. K. Garg *J. Am. Chem. Soc,* **2014**, *136*, 4504.

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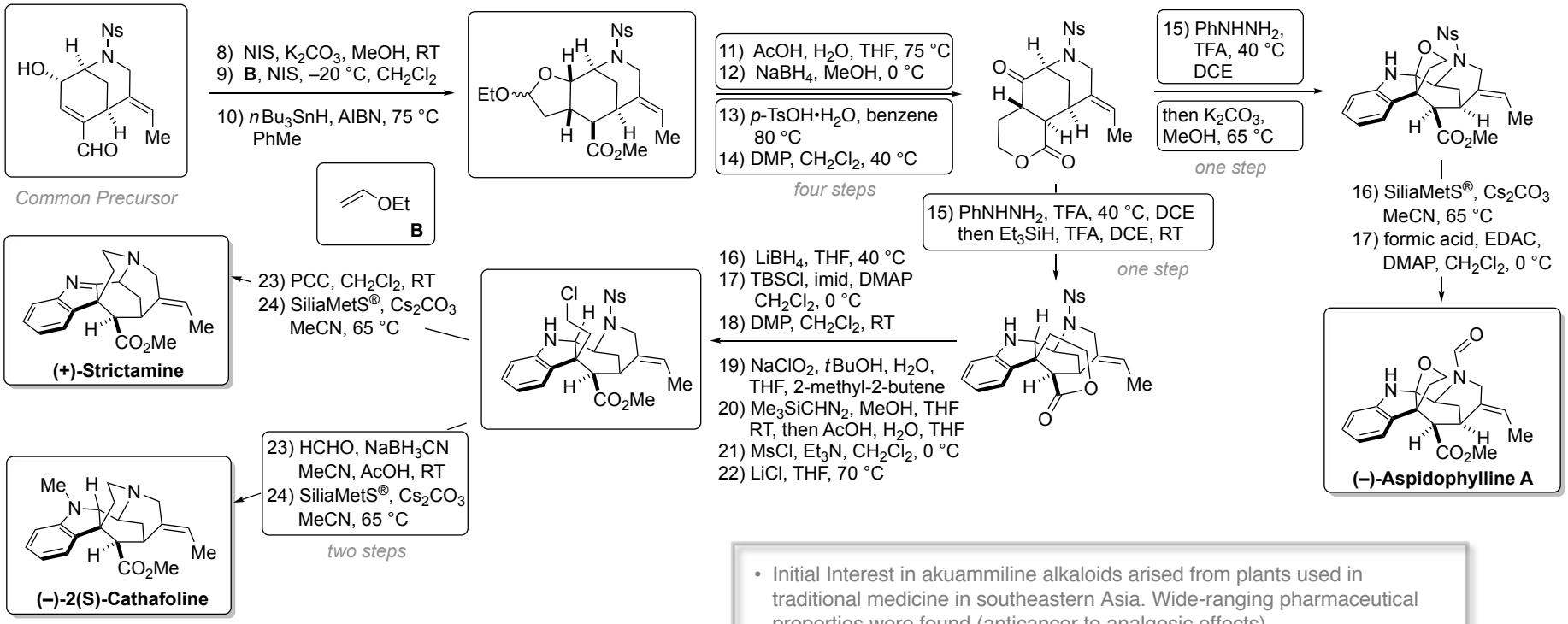
Total Synthesis of (–)-Aspidophylline A, (+)-Strictamine, (–)-2(S)-Cathafoline:[2,3]



- Initial Interest in akuammiline alkaloids arised from plants used in traditional medicine in southeastern Asia. Wide-ranging pharmaceutical properties were found (anticancer to analgesic effects).
- Early biosynthetic investigation propose geissoschizine as a key intermediate to various akuammiline alkaloids.
- Multiple research groups examined diverse synthetic methodologies for the synthesis of these alkaloids (e.g. organocatalysis, radical C–H functionalization) building a solid foundation for their accessibility.

[1] J. M. Smith, J. Moreno, B. W. Boal, N. K. Garg *Angew. Chem. Int. Ed.* **2015**, *54*, 400; A. I. Scott *Acc. Chem. Res.* **1970**, *3*, 151. [2] J. Moreno, E. Picazo, L. A. Morrill, J. M. Smith, N. K. Garg *J. Am. Chem. Soc.* **2016**, *138*, 1162. [3] J. M. Smith, J. Moreno, B. W. Boal, N. K. Garg *J. Am. Chem. Soc,* **2014**, *136*, 4504.

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