To Phlegmarines and Beyond - Strategies for Efficiency and Diversity in Natural Product Synthesis

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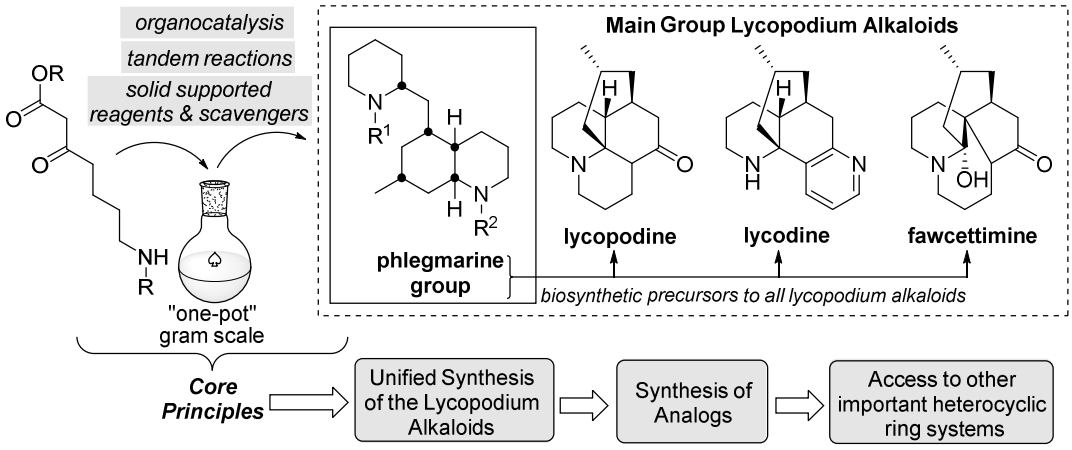
The Lycopodium alkaloids have attracted enormous attention in recent years for their medicinal properties as well as the synthetic challenges they present.[1]

We have used the stereochemically diverse phlegmarine group as a platform to develop new synthetic methods including the use of organocatalysis,[2] tandem reactions and stereocontrolled reductions based on radical, homogeneous and directed heterogeneous catalysis. The use of these methods in conjunction with solid supported reagents and pot economy strategies have allowed for easy gram scale synthesis of these compounds in a single flask.[3] This presentation will give an overview of this work and illustrate the potential of the underlying strategies to access all of the other Lycopodium alkaloids, their analogs as well as a diverse portfolio of other important heterocyclic nuclei.



[1] Ma, X.; Gang, D. R. *Nat. Prod. Rep.* **2004**, *21*, 752.

[2] Bradshaw, B.; Luque-Corredera, C.; Bonjoch, J. *Org. Lett*. **2013**, 15, 326.

[3] Bradshaw, B.; Luque-Corredera, C.; Bonjoch, J. *Chem Commun*. **2014**, *50*, 7099**.**