SPECIAL ORGANIC SEMINAR

Symmetry Breaking Routes to Natural and Unnatural Ladderanes

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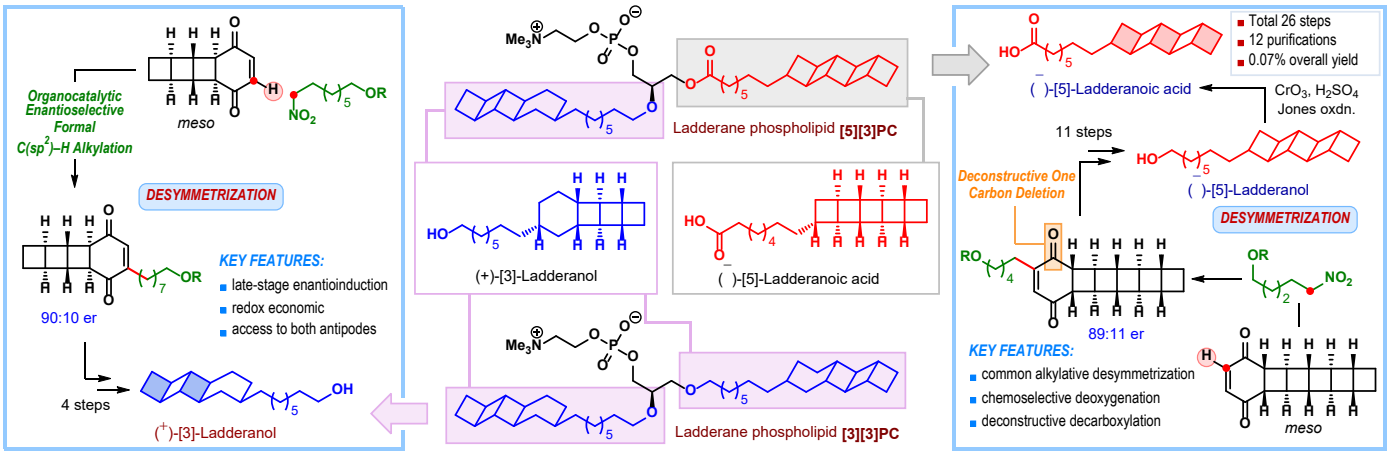
Breaking symmetry to generate asymmetry, commonly termed *desymmetrization*, is a remarkably powerful strategy for building molecular complexity. Successful implementation of this strategy holds the potential to forge multiple stereogenic centers in a single step. In fact, stereocenters can also be created away from the reaction site.

During the past few years, we have developed a number of organocatalytic enantioselective desymmetrization reactions including formal C(sp^2)–H alkylation[1] and *de novo* construction of (hetero)arenes.[2] We subsequently applied these reactions to the enantioselective synthesis complex targets.

Naturally occurring ladderane phospholipids represent a class of targets, which provided us with the motivation to develop some of these enantioselective desymmetrization reactions. This talk will focus on the application of our desymmetrizing C(sp^2)–H alkylation reaction to [3]- ladderanol,[3] [5]-ladderanoic[4] acid as well as their unnatural analogues in an effort to unravel their biosynthetic hypothesis. In addition, our recent work on the enantioselective synthesis of an unnatural benzo-analogue of [3]-ladderanol through the application of our newly developed alkoxy-directed dienamine catalysis[5] will also be discussed.



References:

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2. (a) Ghosh, B.; Harariya, M. S.; Mukherjee, S. *Angew. Chem. Int. Ed.* **2022**, *61*, e202204523. (b) Ghosh, B.; Balhara, R.; Jindal, G.; Mukherjee, S. *Angew. Chem. Int. Ed.* **2021**, *60*, 9086.
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