Enantiocontrolled Natural Product Synthesis Using Designed Chiral Building Blocks

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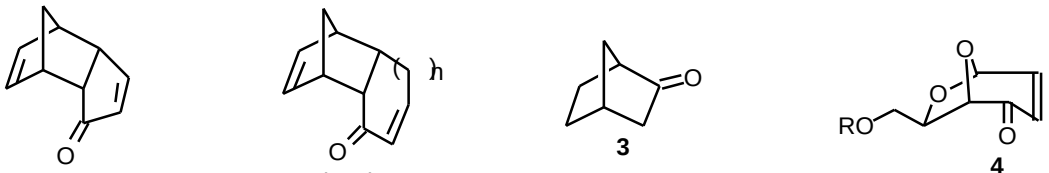
We have been examining the preparation of versatile chiral building blocks and their utilization for the enantiocontrolled construction of natural products. In this lecture, acquisition and utilization of four chiral building blocks, **1** ~ **4**, having inherent convex-face selectivity, will be discussed.



1 **1** (n=0) **2** (n=1) **3** **4**

Besides commercially available **3**, the chiral building blocks **1** and **2** were prepared in both enantiomeric forms from meso precursors employing either enzymatic or catalytic asymmetric desymmetrization as key step, while **4** was prepared in both enantiomeric forms employing Sharpless asymmetric dihydroxylation as key step.

Based on their inherent steric background, these chiral building blocks allow highly diastereoselective modification of their enone or ketone functionality serving **1** as chiral cyclopentadienone **5**, **2** as chiral cyclohexadienone **6**, **3** as chiral methanetriacetic acid **7** and **4** as chiral diketohexadiene **8**, respectively, to produce a wide variety of natural products enantioselectively.