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Total Synthesis of the Antibiotic BE-43472B
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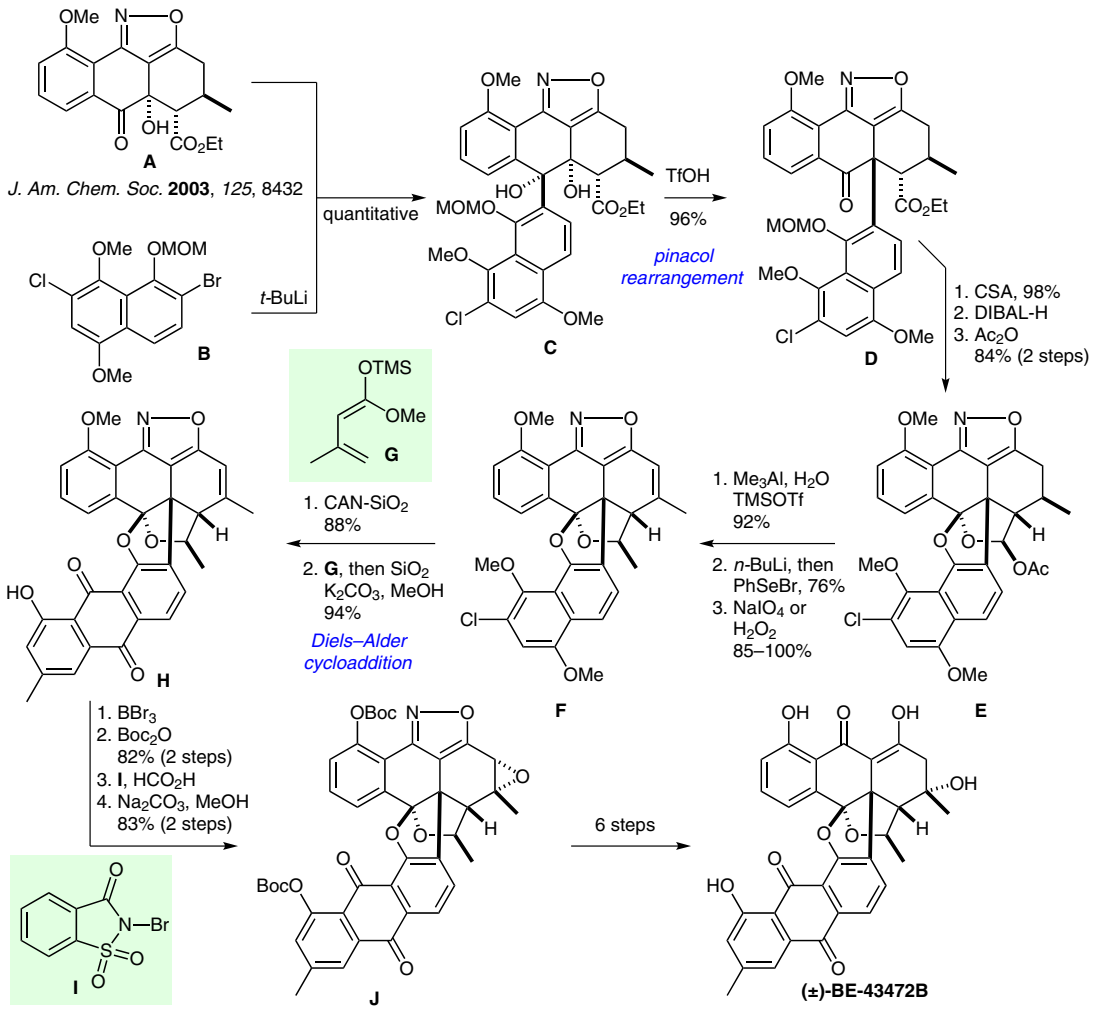
Total Synthesis of BE-43472B



Significance: The aromatic polyketide BE-43472B was isolated from a marine *Streptomyces* species and was shown to exhibit significant activity against several drug-resistant bacterial strains. Moreover, its unprecedented structure includes two anthraquinones linked through a highly hindered carbon–carbon bond as well as five contiguous stereocenters. The strategy reported by Suzuki and co-workers relies on a highly efficient pinacol rearrangement to form the key C–C bond between the two anthraquinone monomers.

Comment: The synthesis starts with lithiation of bromonaphthalene **B**, followed by addition to ketone **A**. The resulting tertiary alcohol **C** was treated with triflic acid to induce a pinacol rearrangement to produce ketone **D**. Construction of the tetrahydrofuran ring proceeded via acetal **E** followed by methylation using Me_3Al. Oxidation of **F** and subsequent quinone Diels–Alder reaction with diene **G** delivered anthraquinone **H**. This intermediate was converted into the natural product (±)-BE-43472B via epoxide **J**.

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Category
Synthesis of Natural Products and Potential Drugs

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Diels–Alder cycloaddition