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 Me₃Al. 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.