Synthesis of Zoanthamine

**Significance:** Zoanthamine is a marine metabolite that inhibits phorbol myristate-induced inflammation. It is also an analgesic that inhibits human platelet aggregation. Major challenges in this synthesis were (1) construction of the trans–anti–trans perhydrophenanthrene ABC ring system; (2) construction of the three ring C quaternary centers at C9, C12 and C22; (3) construction of the two quaternary aminal centers.

**Comment:** The trans–anti–trans ring system in intermediate H was constructed by an exo-selective intramolecular Diels–Alder reaction. Nine of the eleven stereogenic centers were created by dia-stereoselective reactions starting from \((R)-5\)-methyl-2-cyclohexenone (A) and \((R)\)-citronellal. The synthesis required 43 steps and proceeded in 2.2% overall yield (average 91% yield per step).