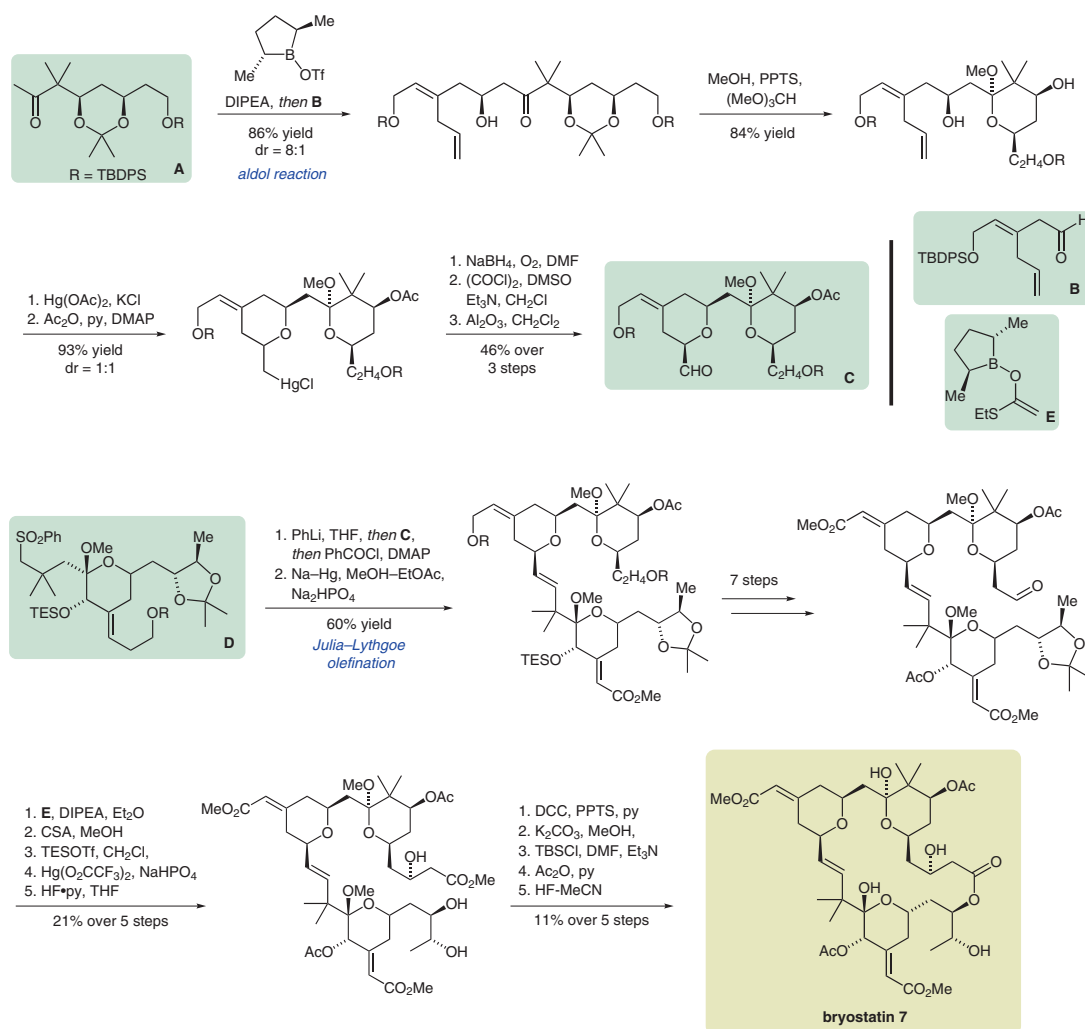


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Synthesis of Bryostatin 7

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The First Total Synthesis of Bryostatin 7



Significance: The bryostatins are a family of 21 marine natural products boasting a wide range of biological activities. They have been explored as anticancer agents, treatments for Alzheimer's disease, and as antivirals against HIV. Of this family, the first to succumb to total synthesis was bryostatin 7 in a heroic synthesis by the Masamune group requiring a total of 79 steps with a 41 step longest linear sequence.

Comment: Retrosynthetically, bryostatin 7 was broken into three fragments (**A**, **B**, and **D**). **A** and **B** were used for a matched aldol reaction followed by Hg-mediated cyclization. Further manipulations yielded **C**. Fragment **D** (prepared in 22 steps) underwent a Julia-Lythgoe olefination with **C** to complete the unification of all fragments. A DCC-mediated macrocyclization was used to close the lactone.

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