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Asymmetric Total Synthesis and X-Ray Crystal Structure of the Cytotoxic Marine Diterpene (+)-Vigulariol
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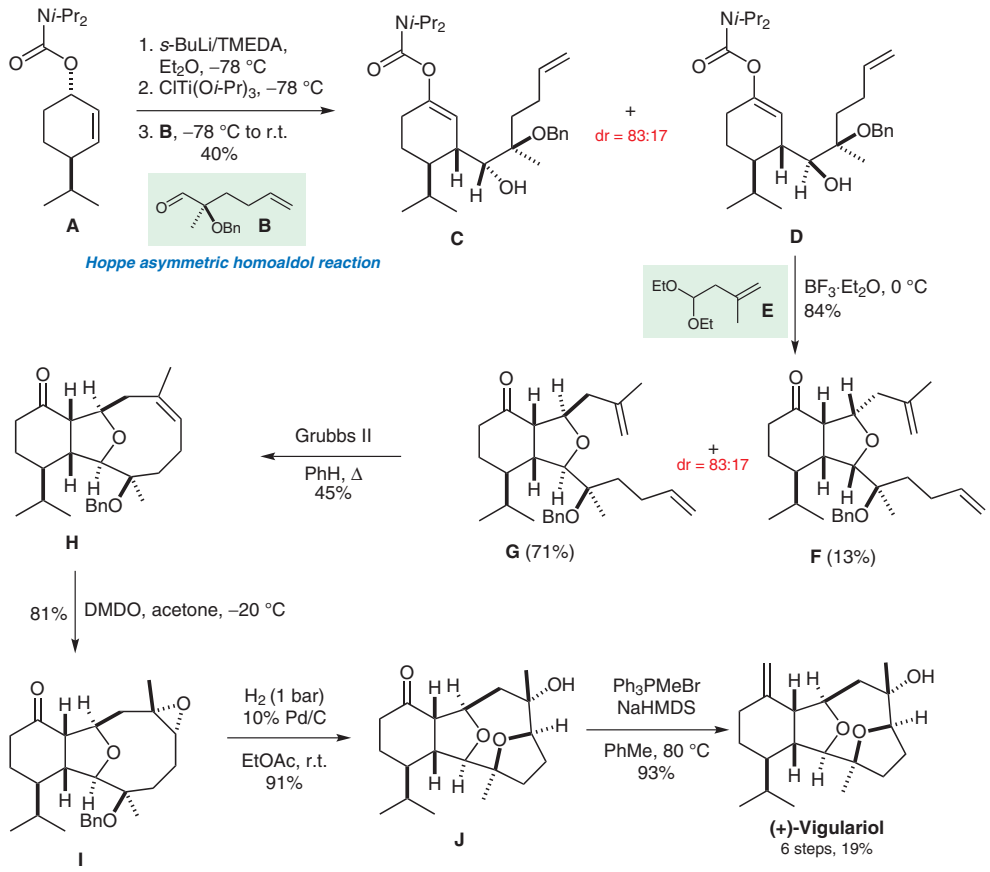
Synthesis of (+)-Vigulariol



Significance: (+)-Vigulariol is a cytotoxic marine diterpene isolated from the sea pen *Vigularia juncea* and shows cytotoxicity against A549 (human lung adenocarcinoma) cell culture. The key step in the short synthesis involved (1) asymmetric homoaldol reaction of chiral carbamate **A** with enal **B** and (2) ring-closing metathesis to form the tricyclic skeleton in **H**. This type of cyclization was reported unsuccessful earlier.

Comment: A substrate-controlled deprotonation of **A** and then treatment with aldehyde **B** gave an inseparable mixture of diastereoisomeric homoaldol adducts **C** and **D**. This mixture was then subjected to a Lewis acid mediated condensation with acetal **E** to afford tetrahydrofuran **G** as a major isomer. RCM of **G** gave the tricylic framework in 45% yield.

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