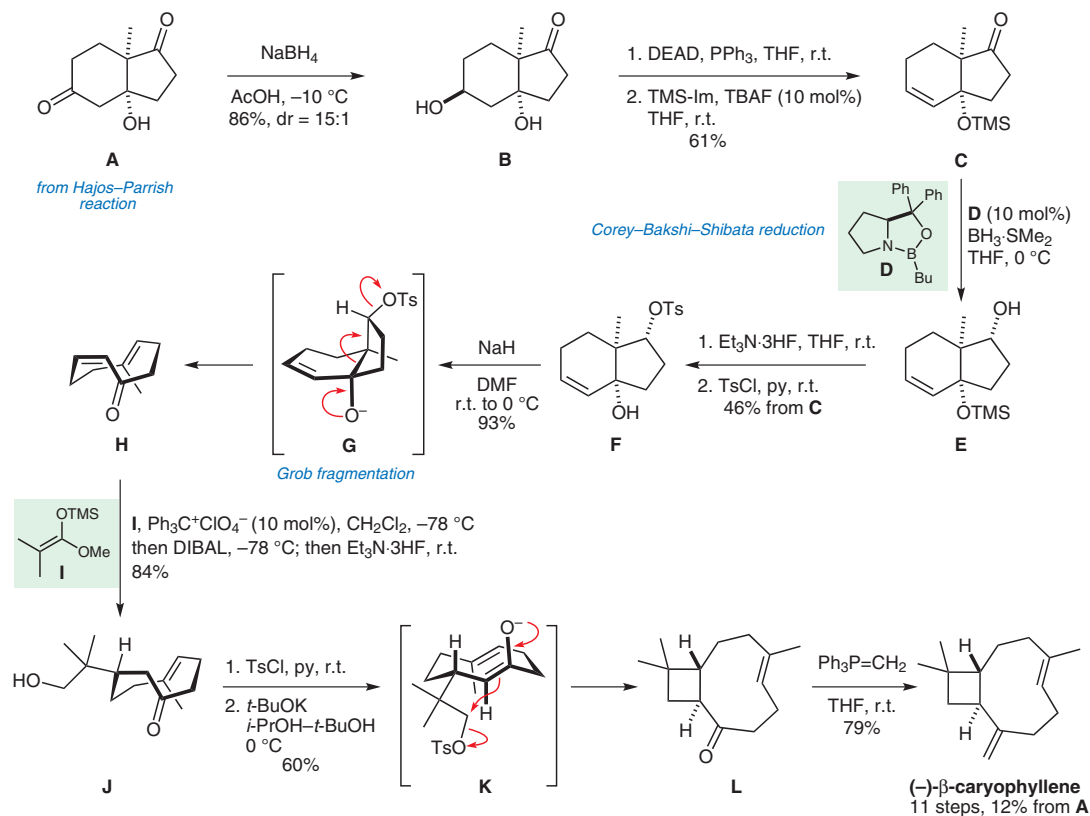


# Synthesis of (-)- $\beta$ -Caryophyllene



**Significance:** The synthesis of  $\beta$ -caryophyllene and coraxenolide A by Larionov and Corey is distinctive because it is a rare example of the use of planar chirality in natural product synthesis. Both enantiomers of (2*Z*,6*E*)-6-methylcyclonona-2,6-dienone (**H**) were prepared and used as chiral precursors for the synthesis of the (-)- $\beta$ -caryophyllene and coraxenolide A.

**Comment:** The absence of stereoselectivity in the reduction of **C** with  $\text{NaBH}_4$  was overcome by using the CBS reduction. Planar chiral **H** was obtained as a single enantiomer that is stable against racemization at room temperature owing to restricted C–C bond rotation in the 9-membered ring. By contrast, cyclononene racemizes in a few minutes at room temperature.