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Asymmetric Total Synthesis of (−)-Phaeocaulisin A
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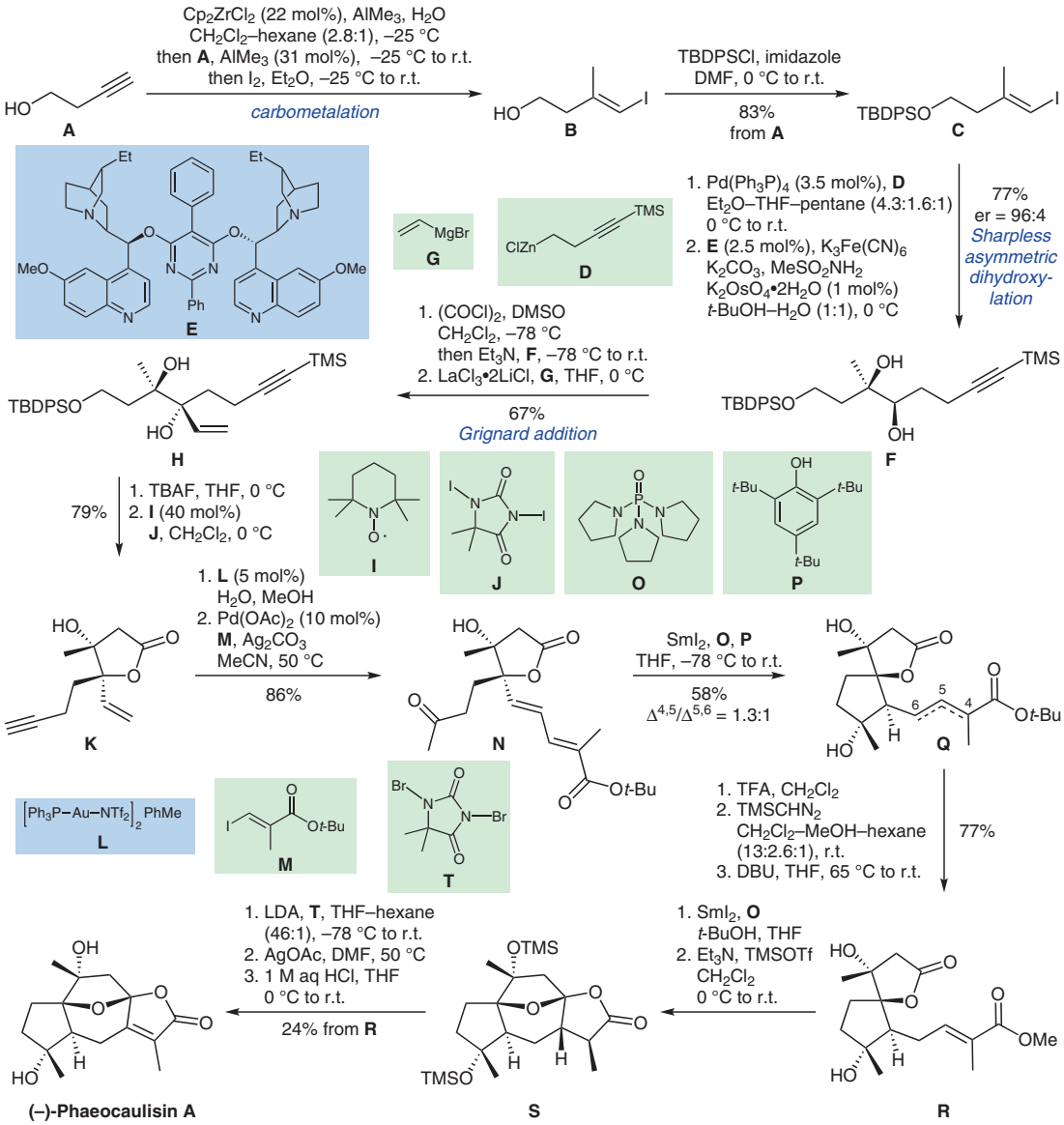
Total Synthesis of (–)-Phaeocaulisin A



Significance: Procter and co-workers report the first total synthesis of the guaiane type sesquiterpene (–)-phaeocaulisin A in 19 steps. The natural product exhibits anti-inflammatory and anticancer activity which is likely linked to the bridged acetal moiety.

Comment: On the one hand, chemoselective reduction of the ketone in **N** requires a *tert*-butyl ester to render the latter unreceptive for SET. On the other hand, SmI_2-mediated cyclization of **R** requires the methyl ester, otherwise the lactone in **S** does not form. Desaturation of **S** is achieved by α-bromination of the γ-lactone and elimination with silver acetate.

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Category

Synthesis of Natural Products and Potential Drugs

Key words

(–)-phaeocaulisin A

guaiane type sesquiterpenes

carbometalation

Sharpless asymmetric dihydroxylation

Grignard addition

samarium(II) iodide

SmI_2-mediated cyclization