Syntheses of (+)-Flabellidine and (–)-Lycodine

Significance: In the wake of their interesting biological activities, Lycopodium alkaloids have attracted great attention from the synthetic community. A biosynthetic pathway has been proposed, in which the skeleton is constructed via a cyclization cascade. Inspired by this hypothesis, Takayama and co-workers report a successful implementation of this strategy leading to a synthesis of (–)-lycodine and the first synthesis of (+)-flabellidine.

Comment: Subjecting B to (+)-CSA triggered a cascade resulting in the formation of four rings and three contiguous stereogenic centers. Upon one-pot debenzylolation–N-Boc protection of the C and D mixture, the obtained diastereomers E and F were separated, with E being further elaborated to the target natural products (+)-flabellidine and (–)-lycodine.