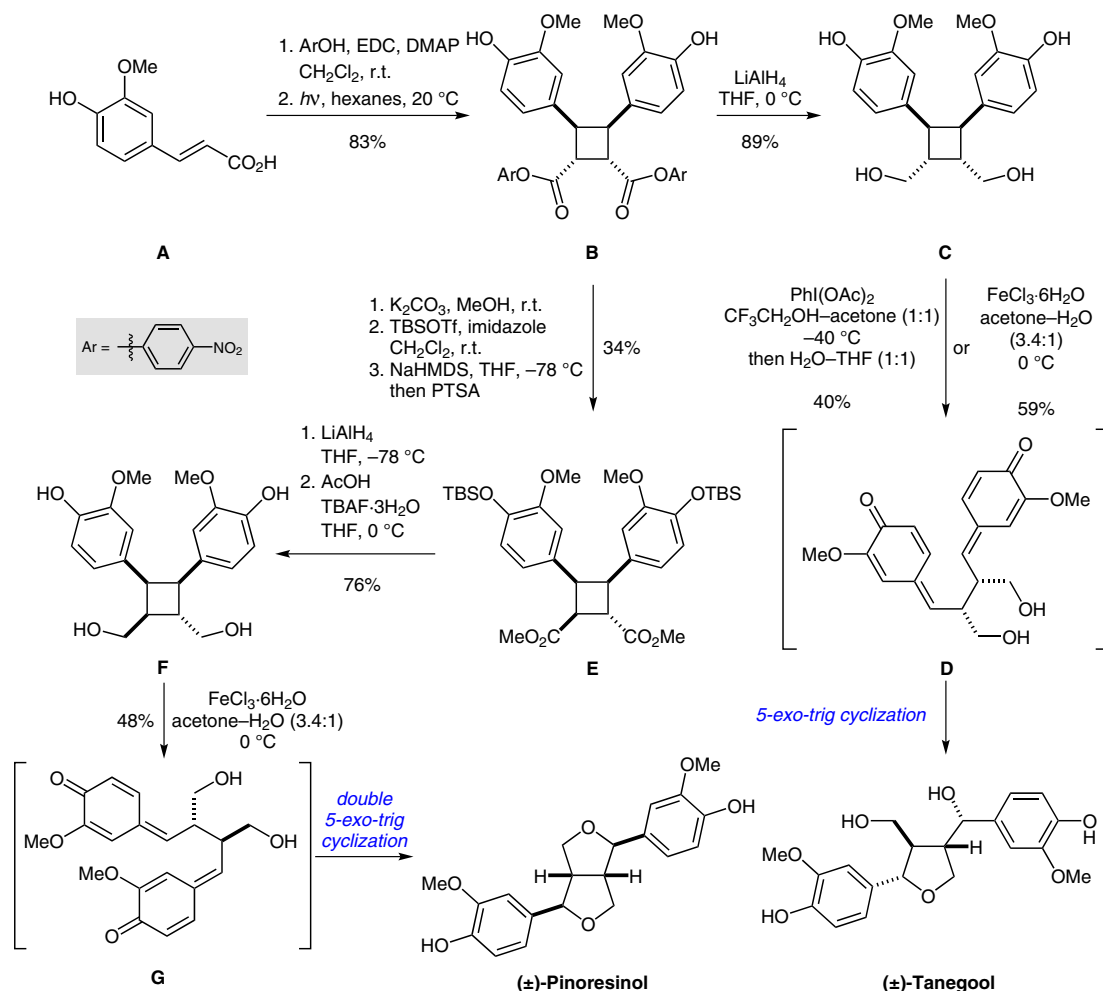


Synthesis of (±)-Tanegool and (±)-Pinoresinol



Significance: Lignin natural products offer a multitude of structural variety. Despite their diverse complexity, the biosynthesis is proposed to feature a common oxidative coupling of two propenyl phenols, resulting in a bis-*para*-quinone methide, such as **D** or **G**. In this communication, Albertson and Lumb elegantly accessed such an intermediate through the opening of a cyclobutane. Indeed, bis-*para*-quinone methides **D** and **G** underwent 5-*exo*-trig cyclizations to result in the lignin natural products tanegool and pinoresinol.

Comment: Ferulic acid **A** was first converted into cyclobutane **C**. For the synthesis of tanegool, reduction led to key intermediate **D**. Then, radical-induced cyclobutane opening with iron trichloride gave the natural product in 59% yield together with 15% of its C7' epimer. The same strategy was used to synthesize pinoresinol by first epimerizing the α -position of diester **B**. After reduction and deprotection of **E**, radical ring opening resulted in intermediate **G**, which cyclized to pinoresinol as a single diastereomer in 48% yield.