Synthesis of Kapakahines B and F

Significance: Kapakahines are metabolites of the sponge Cribrochalina olemda. Kapakahine B has modest antileukemic activity but kapakahine F is inactive. A salient feature of this short and efficient synthesis is the in situ kinetic trapping of the α-carboline G which is in dynamic equilibrium with the pyrroloindoline F.

Comment: Cyclization of the amino acid F (participating atoms highlighted in red) gives a macrocycle (not shown) in 6% yield together with the desired α-carboline G. All the steps leading up to H were performed on a gram scale.