Total Synthesis of Communesin F

**Significance:** The stereochemically complex polycyclic structure of the communesins has attracted the interest of several researchers and led to the total syntheses of communesin A, B and F. Funk and co-worker now report an elegant and concise synthesis of the moderately cytotoxic communesin F that relies on an unusual Diels–Alder cycloaddition of indol-2-one, a reaction developed by the group. Its considerable synthetic utility has previously been demonstrated in the total synthesis of perophoramidine and is now further showcased by the synthesis of communesin F in only 15 steps and an overall yield of 6.7%.

**Comment:** Indol-2-one B was generated from bromoxindole A and underwent smooth cycloaddition with indole C to afford E via intermediate D. Tosylation of the amide followed by methanolysis led to formation of aminal F. Advanced tetracyclic intermediate G was obtained in three more steps. Heck reaction of G with alcohol H, followed by a high-yielding mercuric-triflate promoted cyclization to the benzazepine gave I. Cyclization to the bridged lactam J could not be achieved under thermal conditions, but exposure to trimethyl aluminum effected the desired transformation. Synthetic communesin F was obtained after four more steps.