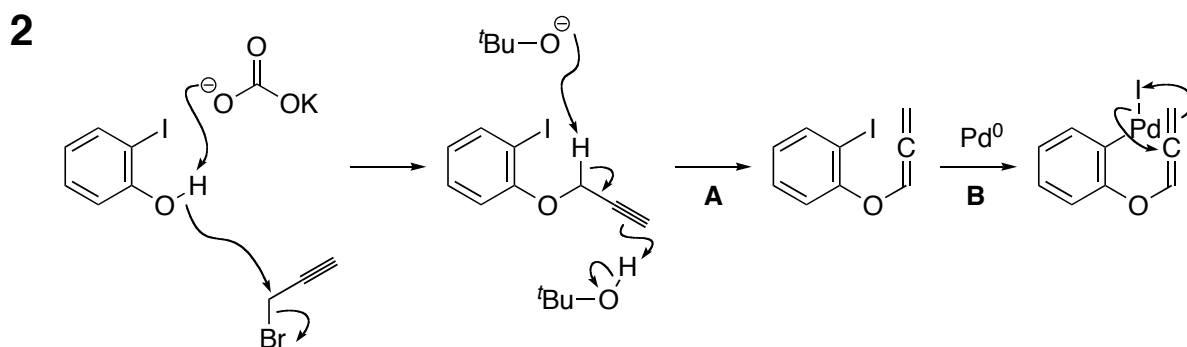
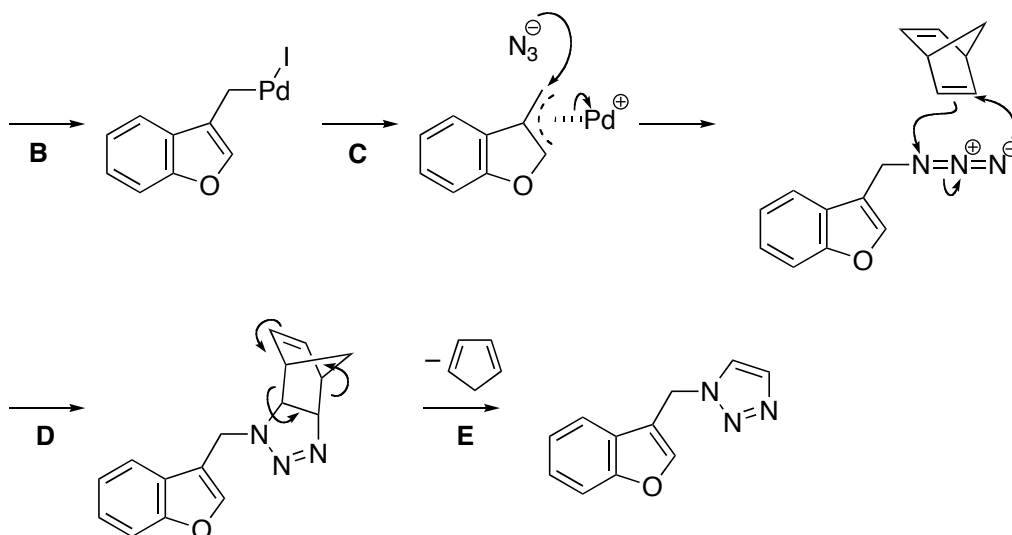


Johnson, J. S. *et al.* *Org. Lett.* **2006**, *8*, 573.

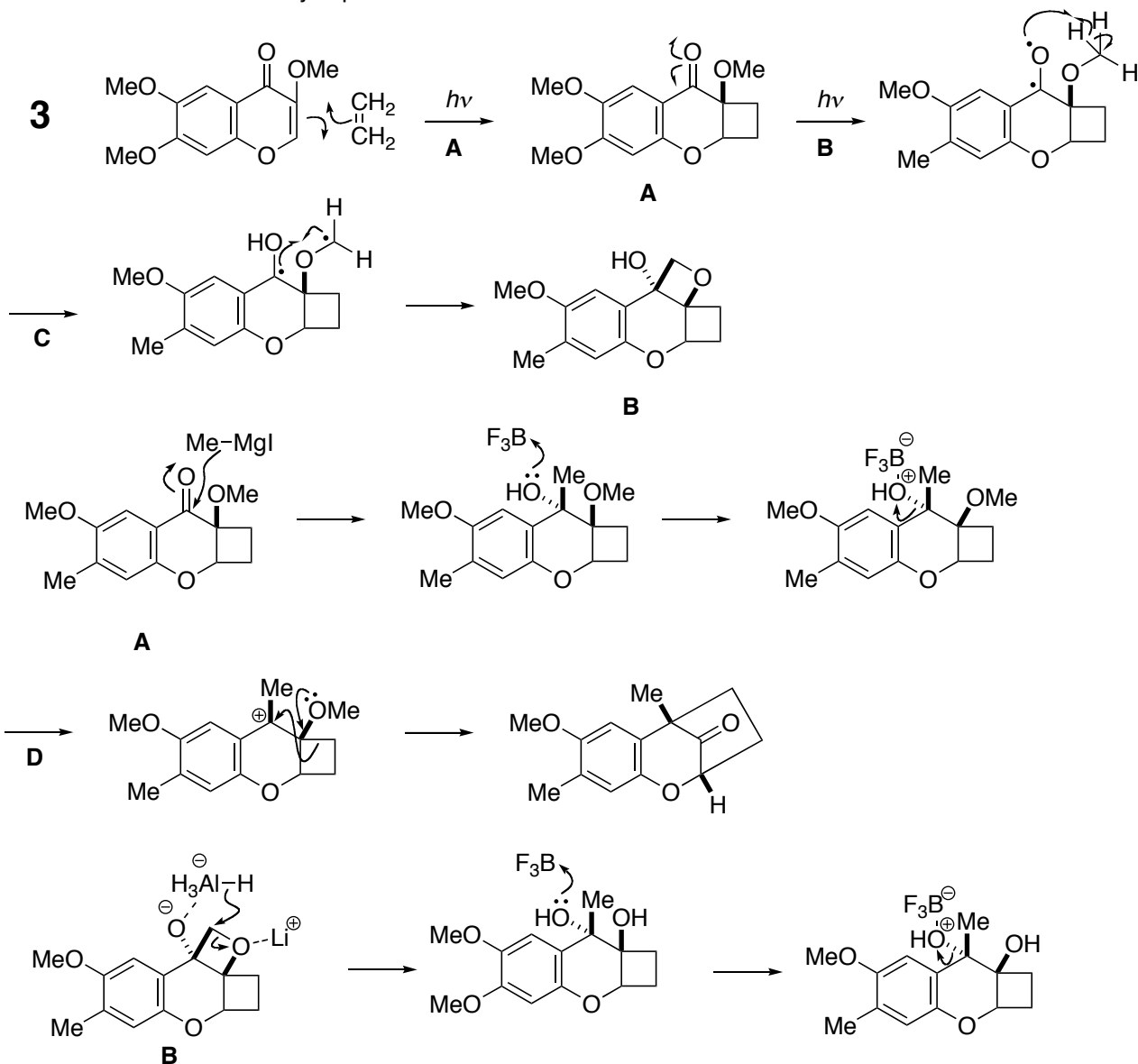
A: to avoid repulsion between the alkyl chain and hydrogen atom on indole. For stereochemistry, see: D. W. C. MacMillan *et al.*, *J. Am. Chem. Soc.* **2005**, *127*, 3240. **B:** Corey-Chaykovsky Reaction. **C:** Wittig reaction. **D:** Nucleophilic attack by Ni to form π -allyl complex.

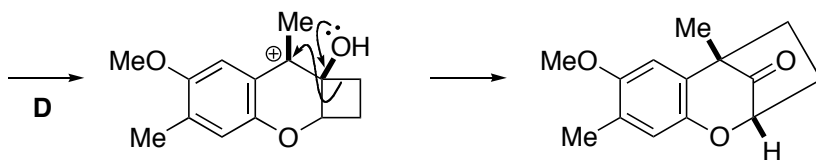




Grigg, R. *et al. Tetrahedron Lett.* **1998**, *39*, 435.

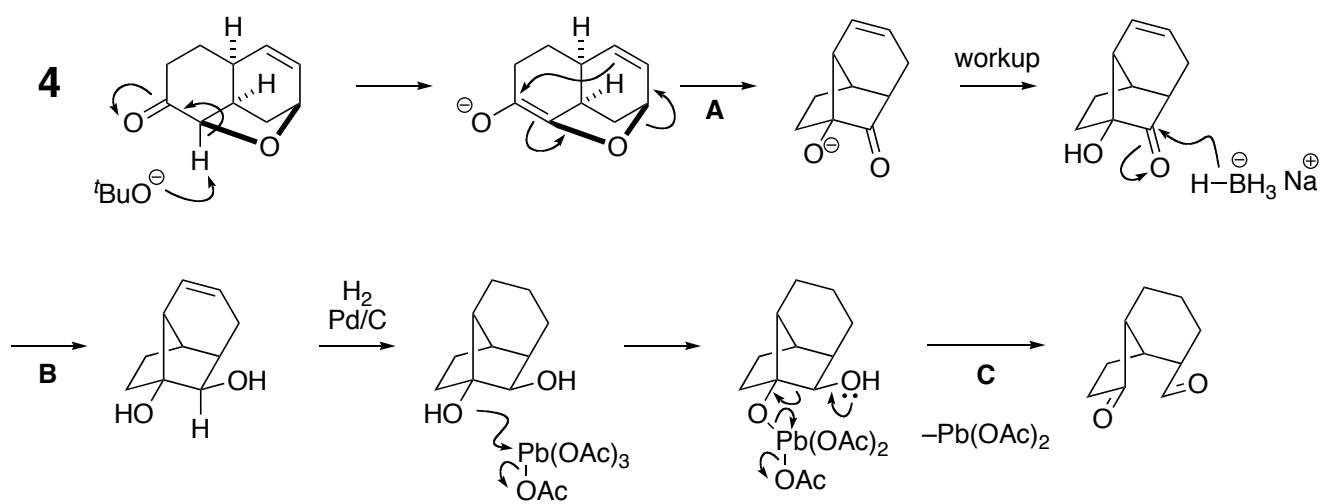
A: Isomerization of triple bond to form allene. **B**: Intramolecular Heck reaction. **C**: π -allyl complex formation. **D**: Intermolecular 1,3-dipolar reaction. A double bond in norbornene is more reactive than usual one. **E**: Retro Diels-Alder reaction to eliminate cyclopentadiene.





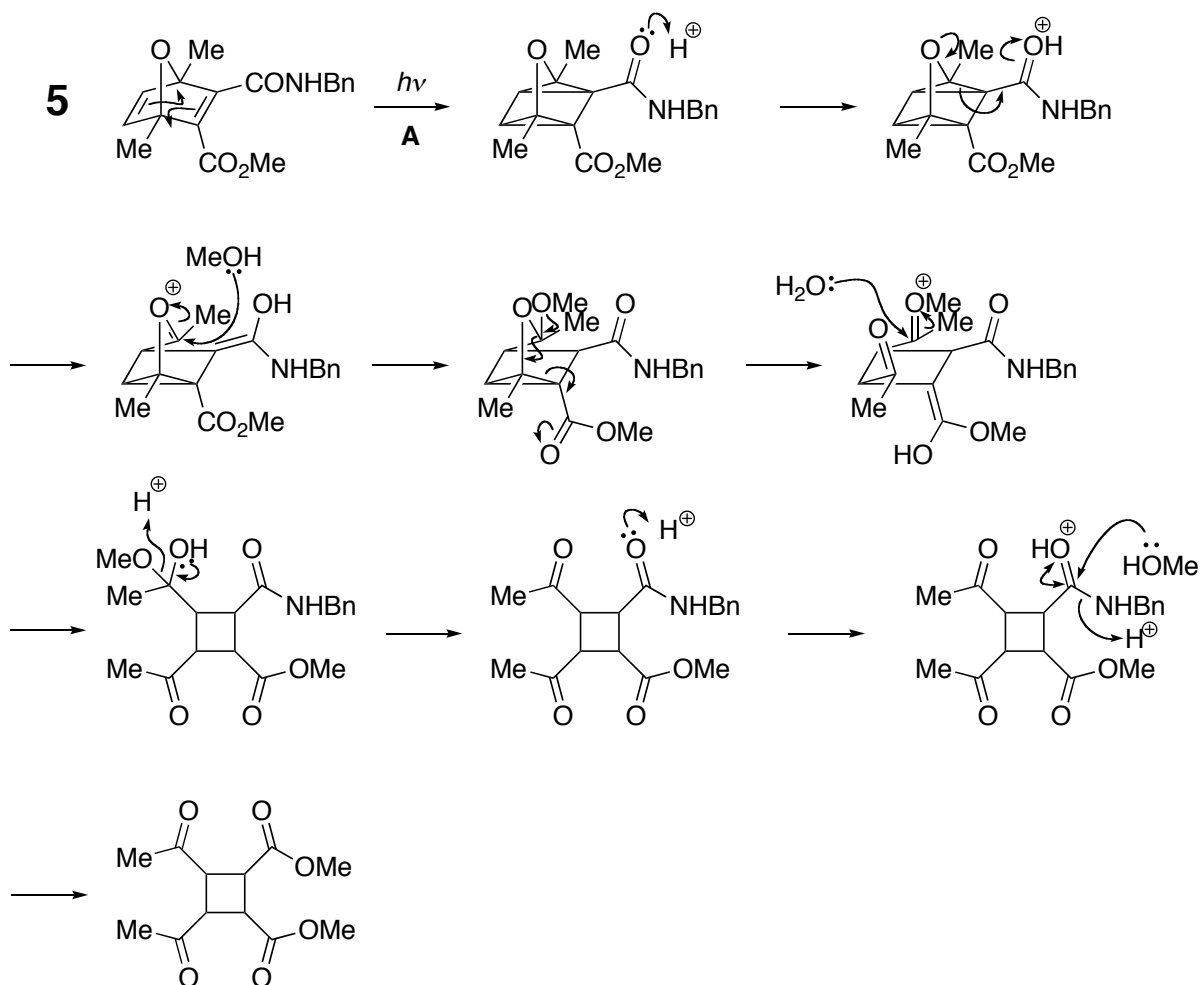
Venkateswaran, R. V. *et al. Tetrahedron Lett.* **2004**, 45, 983.

A: [2+2] photocyclization. **B:** Generation of a triplet diradical. **C:** Abstraction of a hydrogen atom. **D:** Formation of carbocation induced by Lewis-acid. The cation is stabilized by the oxygen atom at *ortho* position.



Hopkins, P. B. *et al. Tetrahedron Lett.* **1988**, 29, 4229.

A: Oxy-Cope rearrangement. **B:** Reduction from less hindered face. **C:** Oxidation with lead(IV) tetraacetate (LTA), followed by generation of lead(II) diacetate.



A: [2+2] photocyclic reaction.

Barran, P. S. *et al. Angew. Chem. Int. Ed.* **2006**, 45, 249.