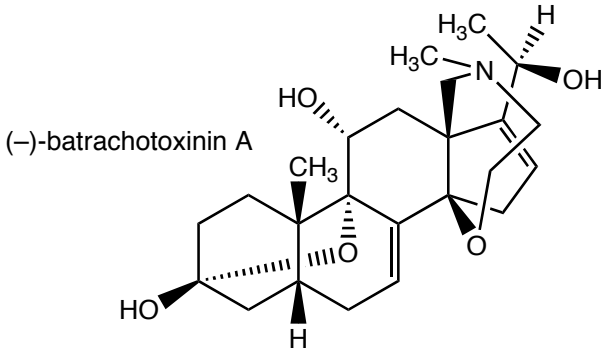
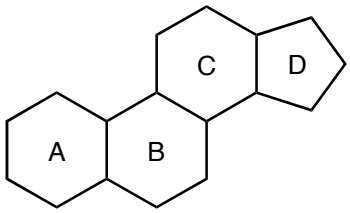
Chemistry 310
Prof. B. Hanson

Study Question 3

Batrachotoxinin A is a substance isolated from the feathers of birds in the genus *Pitohui* from Papua New Guinea. It serves as a defensive material, killing insects in the bird's feathers. The structure is given below; note it's resemblance to the steriod framework.



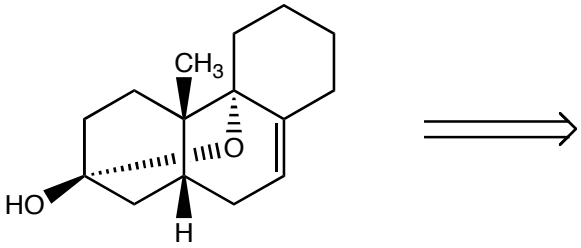


steroid framework

a. Batrachotoxinin A contains a hemi-acetal. Circle it.

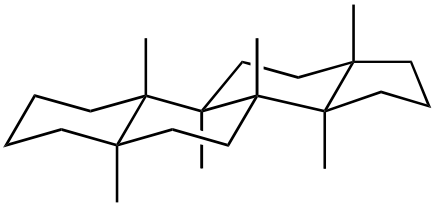
A simplified version of the molecule is shown below for further questions.

b. Undo the hemi-acetal, showing the hidden functional groups.

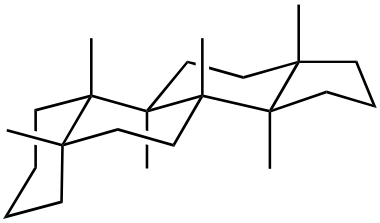


c. Draw a mechanism for the formation of the hemi-acetal from the hidden functional groups.

d. Steroid molecules typically have one of the two overall stereochemistries shown below.



all ring junctions trans



A–B ring junction cis; others trans

Using these schemes as a guide, draw the simplified version of Batrachotoxinin A showing the 3-D shape of the molecule in perspective. First draw the basic framework, then connect the functional groups as they are in the simplified molecule. Then, consider the energetics of what you have drawn – are the bond lengths reasonable? What can you do to improve the structure?