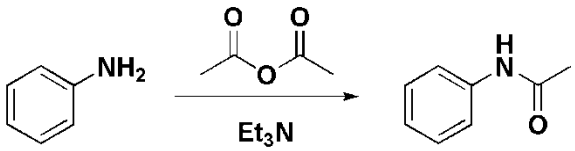
Name (Print)_____

ID#_____

Group #_____

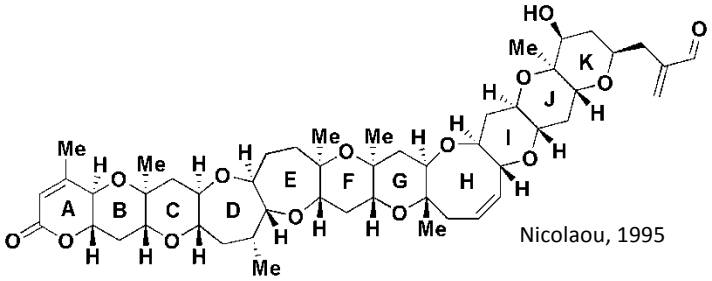
PS #2 – Installing and Cleaving Silyl Ethers, Benzyl Ethers and Amides

Part A) A common amine protecting group is the acetyl (Ac) group. The amide bond can be formed using different reagents. The two most common reagents used are acetic anhydride and acetyl chloride. Show the detailed mechanism (using the good habits you developed last week) for the formation of N-phenylacetamide from aniline using acetic anhydride.



Acetyl groups are cleaved under strongly acidic conditions (conc. HBr). Show the mechanism for acetyl cleavage (aniline will be regenerated… but in what protonation state under these conditions?).

Part B) Brevitoxin B is the marine neurotoxin associated with "red tide" events that periodically devastate coastal ecosystems (only eat shellfish in months with the letter R). The activity of Brevitoxin B arises from its ability to bind to sodium channels in neurons, keeping them open, thereby causing depolarization of the cell membrane. The synthesis of Brevitoxin B was completed in 1995 by Nicolaou. The I,J,K rings were synthesized independently and then condensed with the A-G moiety in 75% yield. As a group, propose a reasonable synthetic route to synthesize B from A. Discuss functional group compatibility and protecting group reactivity (TPS = t-butyldiphenylsilyl, TMS = trimethylsilyl).



Nicolaou, 1995