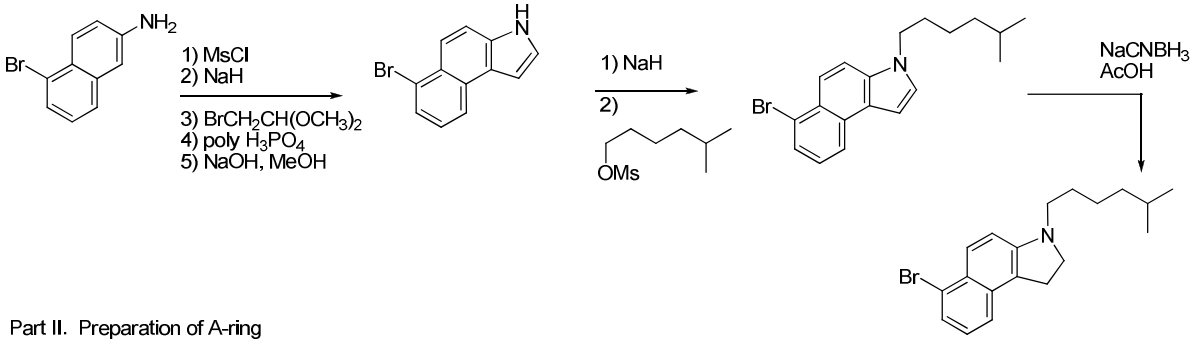
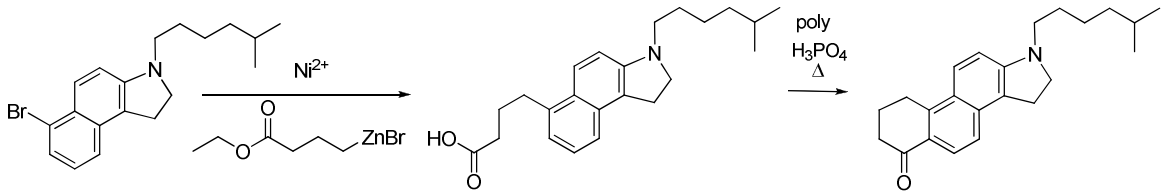
Cholesterol Models. Recent studies suggest that human serum albumin (HSA) is involved in shuttling cholesterol between cells and lipoproteins. Two specific regions within HSA were suggested as the binding sites for cholesterol. The goal of this project is use fluorescent analogs of cholesterol to elucidate the cholesterol binding sites and their affinities with HSA. Because the known fluorescent cholesterol analogs are not appropriate for binding studies with HSA, we will synthesize three classes of new derivatives. We will characterize the affect of fatty acids and drugs upon cholesterol binding and evaluate how well the fluorescent analogs model cholesterol through the consistency of their fluorescent behavior and through biochemical assays with cholesterol oxidase and LCFA esterase.

Part I. Preparation of D-ring



Part II. Preparation of A-ring



Participants will be exposed to the mechanics of academic research as well as to an interesting area of chemistry. In addition, you will develop skills in synthetic chemistry, distillation, analytical techniques (GC/MS), and spectroscopic characterization (NMR).

Recent Publications

1. Meghan F. Moynihan, Joseph W. Tucker and Christopher J. Abelt, "Primary Alkyl Bromides from Dimethylthiocarbamates," *Synthesis* **2008**, 3565-3568.

2. Renata Everett, Jillian Hamilton and Christopher Abelt, "Preparation of 5-Bromo-2-naphthol: The Use of a Sulfonic Acid as a Protecting and Activating Group," *Molbank* **2009**, M602.

3. Renata K. Everett, Hong-An Ashley Nguyen, Christopher J. Abelt "Does PRODAN Possess an O-TICT Excited State? Synthesis and Properties of Two Constrained Derivatives," *J. Phys. Chem. A* **2010**, *114*, 4946–4950.

Support: NIH. Number of undergraduates I am able to support: 3