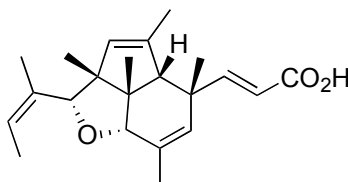


Gravel-Ward-Majewski Synthetic Challenge #2

August 25, 2009

Total Synthesis of Indoxamycin A



Indoxamycin A

The purpose of the Synthetic Challenge is to improve and practice your skills in synthetic planning. These skills are an important aspect of any career in organic chemistry and are invaluable during the interview process. It is intended to be a friendly competition between teams consisting of members of different groups.

The goal of this Challenge is to develop and defend a synthetic strategy for the total synthesis of Indoxamycin A, a tricyclic polyketide isolated from Actinomycete strain NPS-643, which was in turn obtained from a marine sediment sample collected near Kochi Harbor, Japan (Sato *et al. J. Org. Chem.* **2009**, *74*, 5502-5509). Its structure was determined by a combination of spectroscopic and chemical methods. The absolute configuration was assigned using the modified Mosher's method. An enantioselective synthesis of this natural product is desirable, as it would confirm both the structure and the absolute stereochemistry.

Your presentation should consist of a brief retrosynthetic analysis explaining the reasons behind important disconnections, followed by a synthetic plan which details the reagents used and possible protecting groups. As would be the case for a real research proposal, issues of chemo- and diastereoselectivity must be addressed. Extra brownie points will be awarded for a synthesis that also allows access to other indoxamycins and/or analogues. Your synthesis should possess a good balance between originality and feasibility. In this regard, it would be beneficial to briefly show some precedent for the most difficult/uncertain steps in the sequence. Each team's synthesis should take ~30-45 minutes to present.

While this Challenge is not mandatory, both undergraduate and graduate students are encouraged to participate. Students from other groups are also welcome. For this second edition of the Challenge, you are free to form your own teams, provided these rules are followed:

- 1) Maximum of 4 members per team
- 2) Members from at least two different research groups

As soon as your team is formed, please provide the list of members as well as a team name (!) to Dr. Gravel.