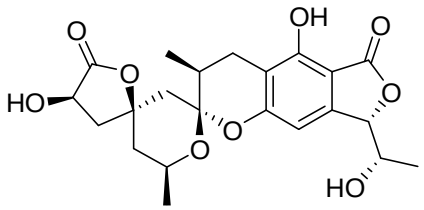
# Gravel-Ward Synthetic Challenge #4
# August 17, 2011

## Total Synthesis of Virgatolide A




Virgatolide A

The goal of this 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 Virgatolide A. This benzannulated spiroketal was isolated from the endophytic fungus *Pestalotopsis virgatulai* (Che *et al. Org. Lett.* **2011**, *13*, 2670-2673). Its structure and relative configuration was determined by NMR and MS methods, and confirmed by X-ray crystallography. The absolute configuration was assigned based on a comparison of its CD spectrum with that of the related natural product pestaphthalide A (Che *et al. J. Nat. Prod.* **2008**, *71*, 615-618). In order to confirm the assigned absolute configuration, an enantioselective total synthesis of the natural product is desired.

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 stereoselectivity must be addressed. 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.

Team #1: Moji, Karen, Steven
Team #2: Pouyan, Azadeh, Leon, Sida
Team #3: Thano, Jackey, Myron

Your last task (and the most difficult one based on last year's experience) will be to choose a team name.

Good luck!