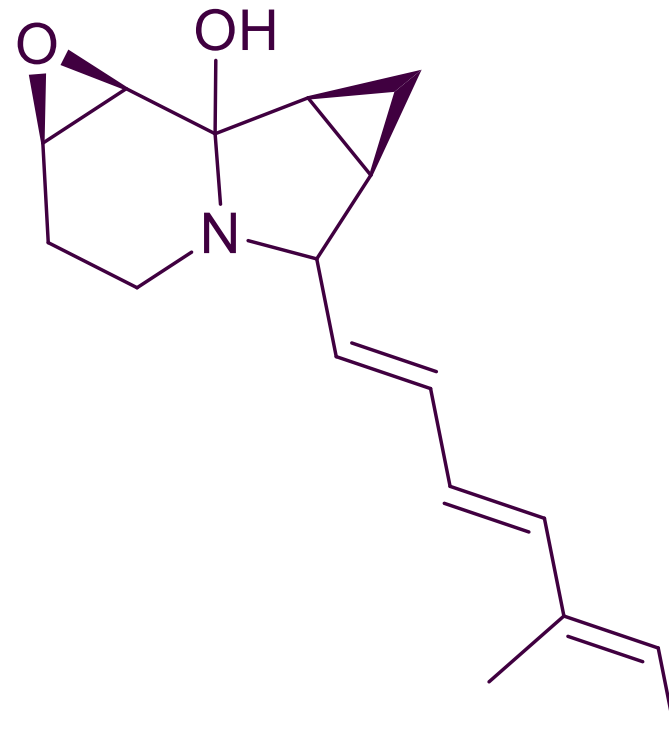


# Total Synthesis of Indolizomycin

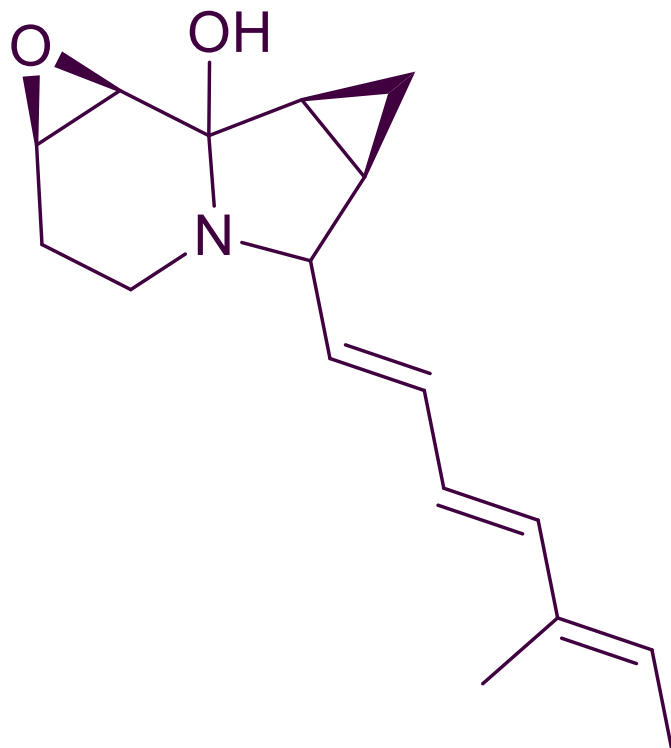
**Presented by: Keyvan Pedrood**

**Instructor: Prof. Robert Maleczka**



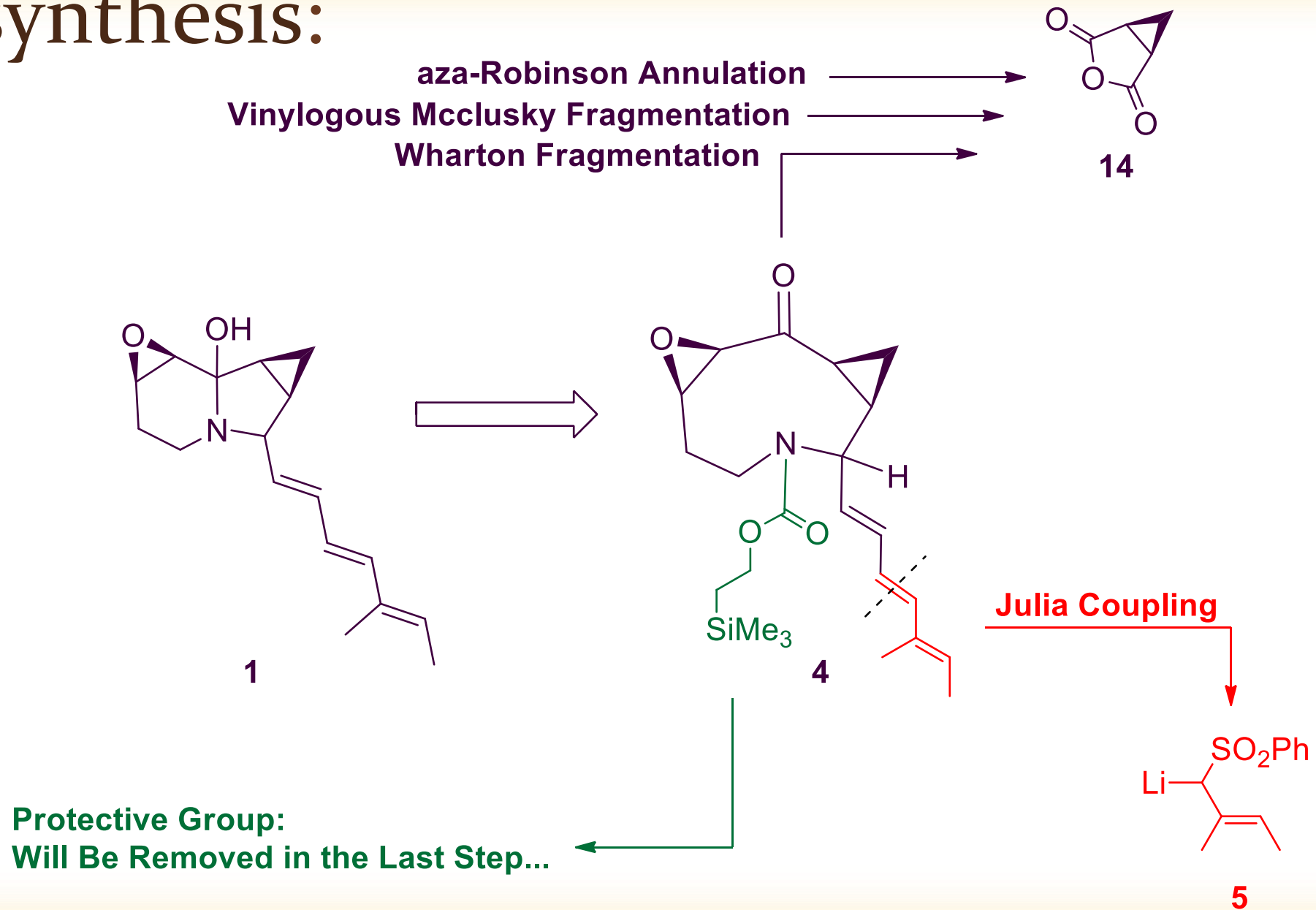
**Spring 2022**

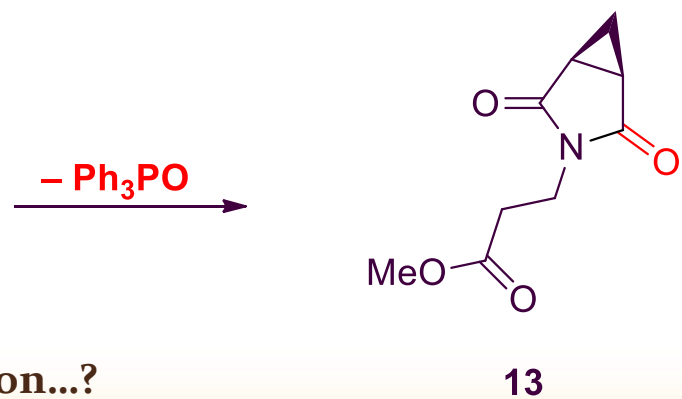
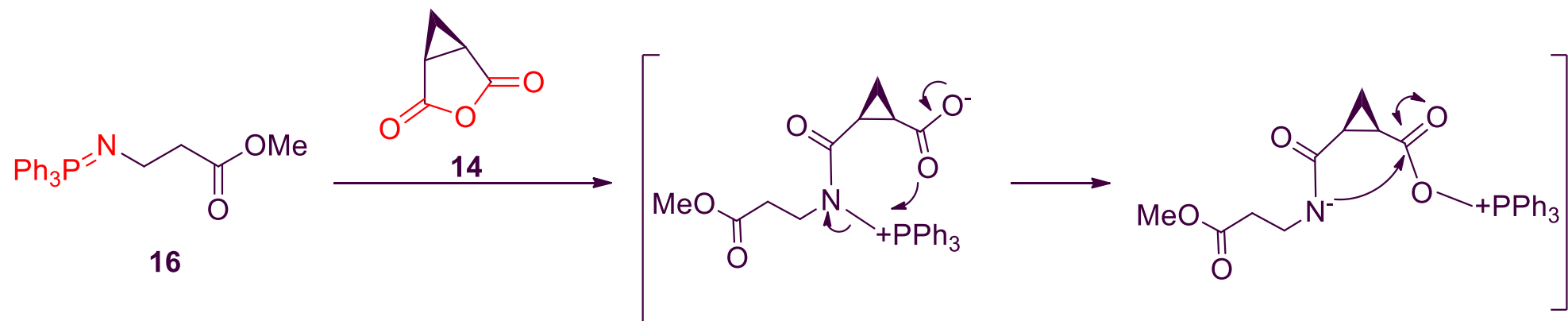
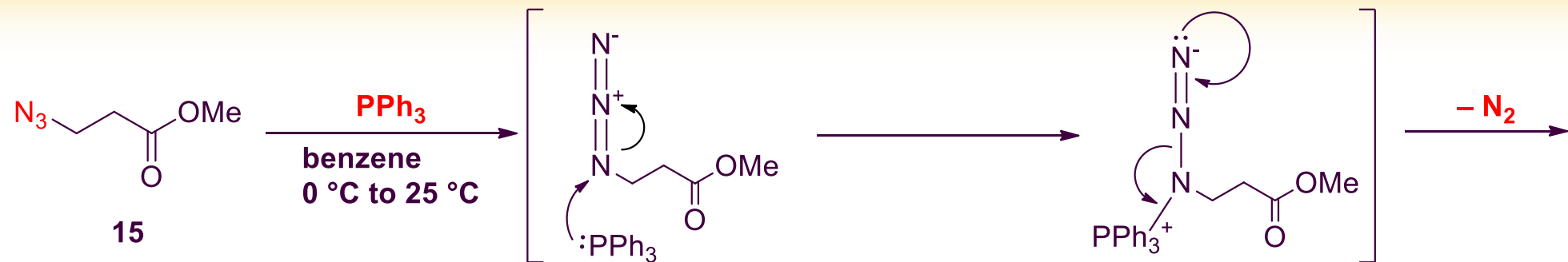
# Indolizomycin



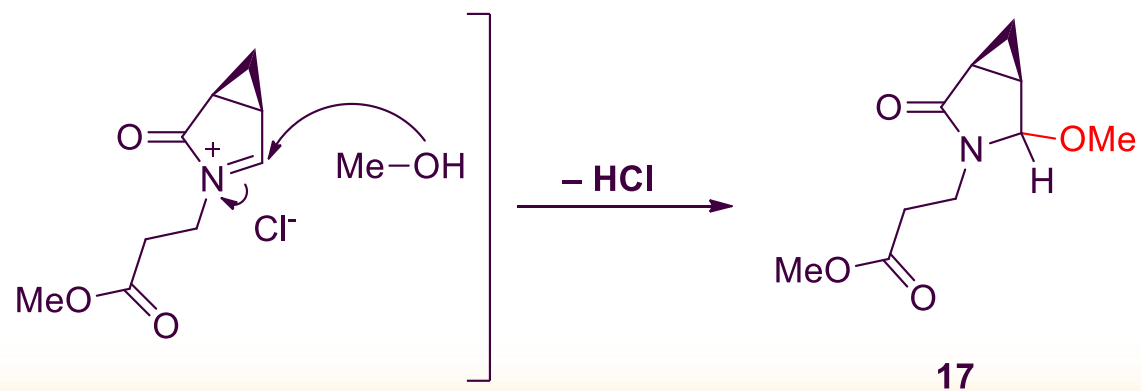
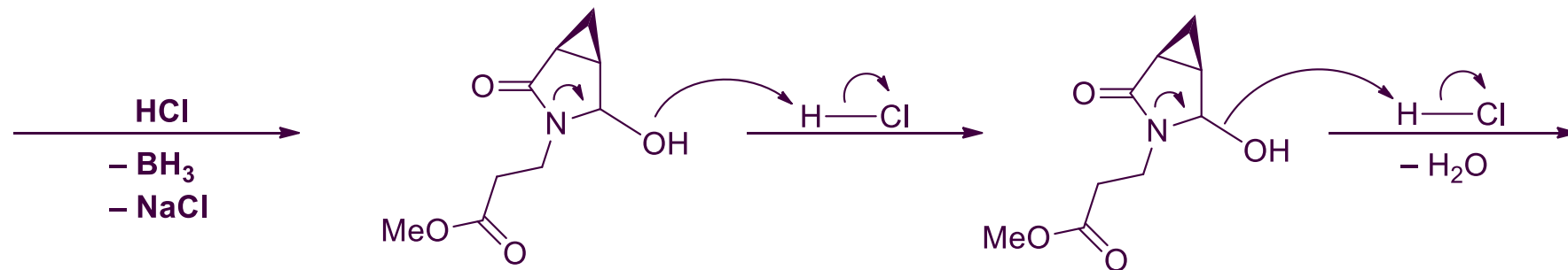
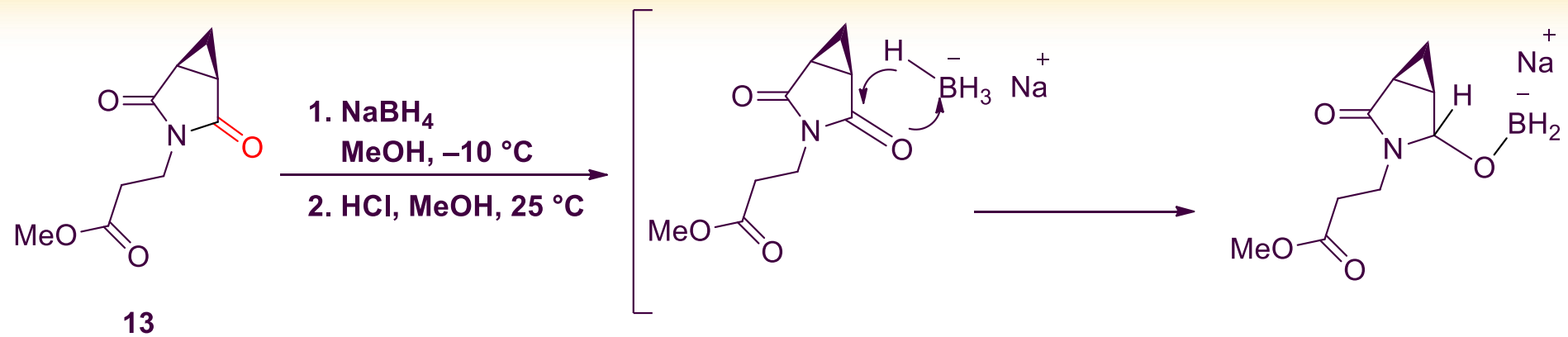
- A biologically active cyclopropyl-fused pyrrolidine with remarkable antibiotic activity.
- This compound is produced by a microorganism called SK2-52.
- Total Synthesis of Indolizomycin was proposed by Prof. Samuel J. Danishefsky in 1990.

# Retrosynthesis:

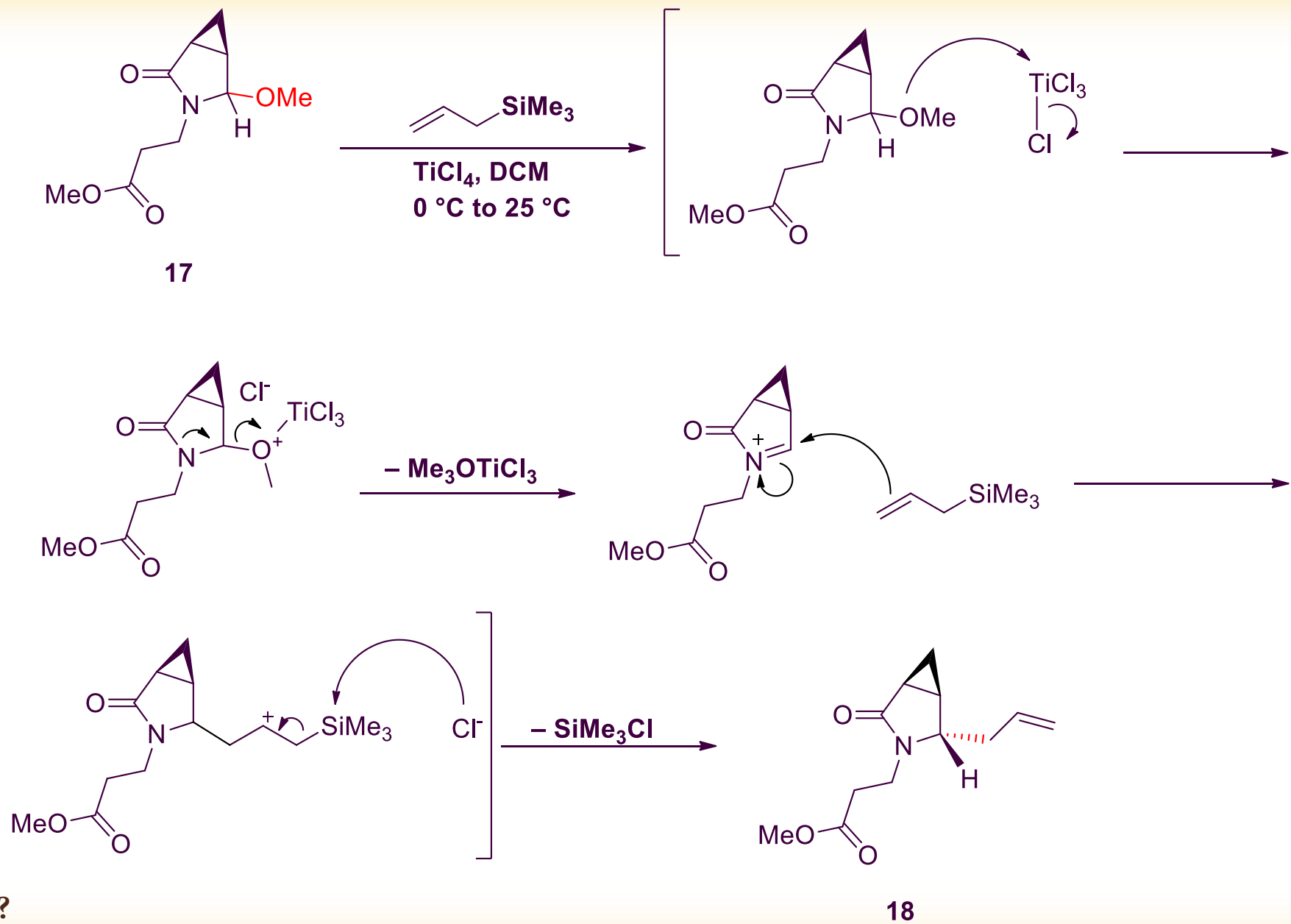




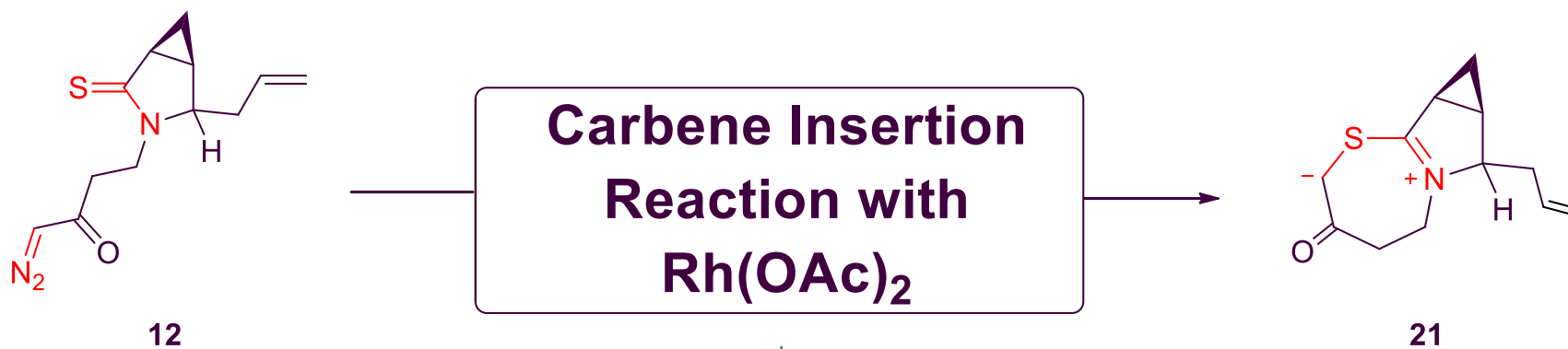
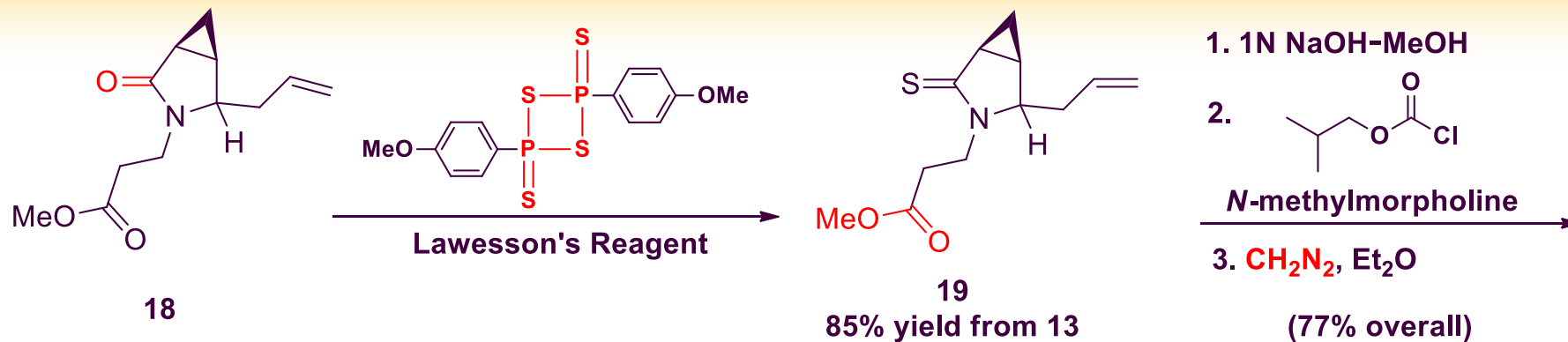
Any Question...?



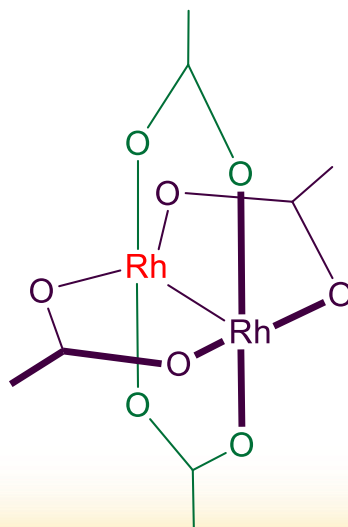
Any Question...?



Any Question...?



$\text{Rh}_2(\text{OAc})_4$

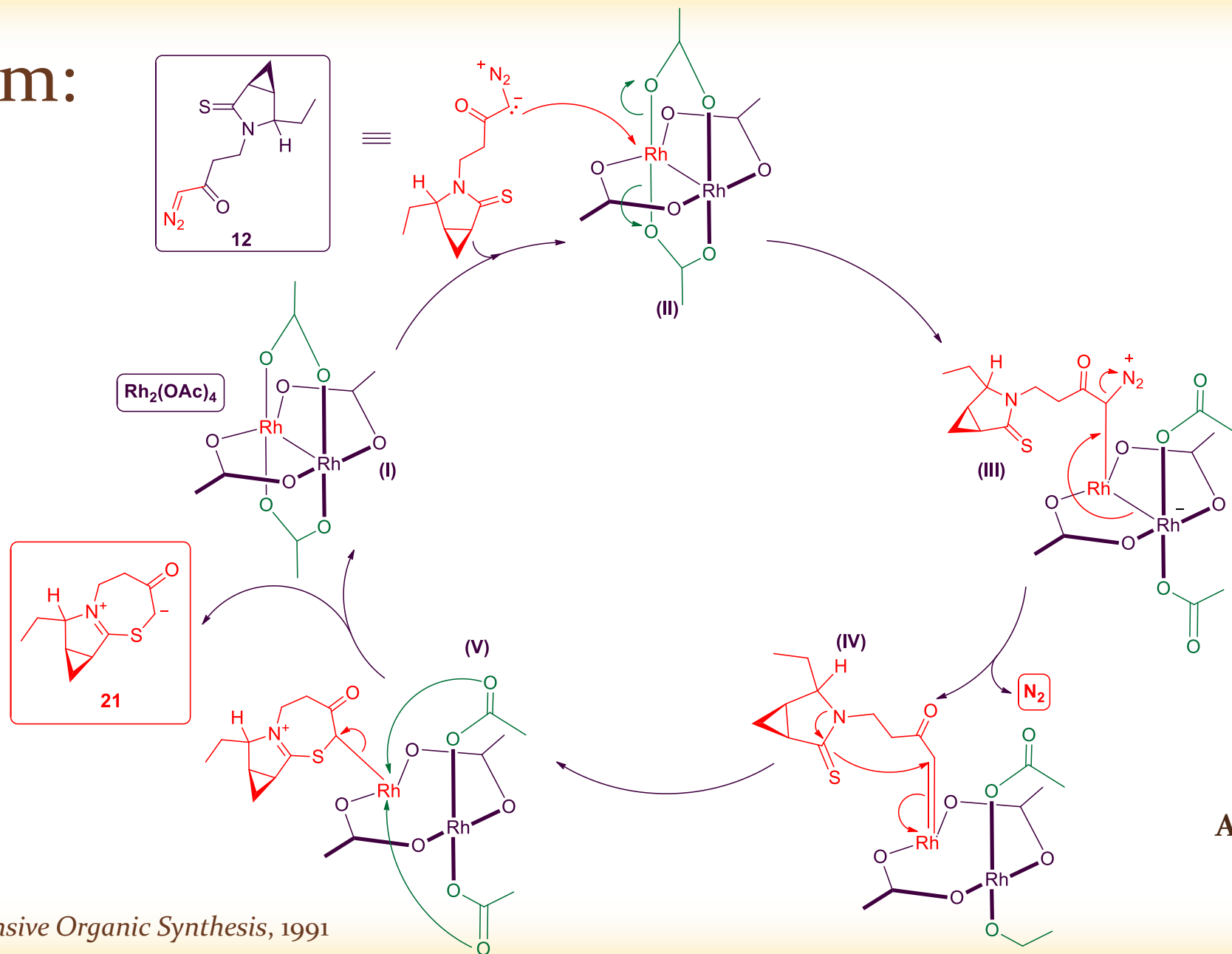


Mechanism???

Any Question...?

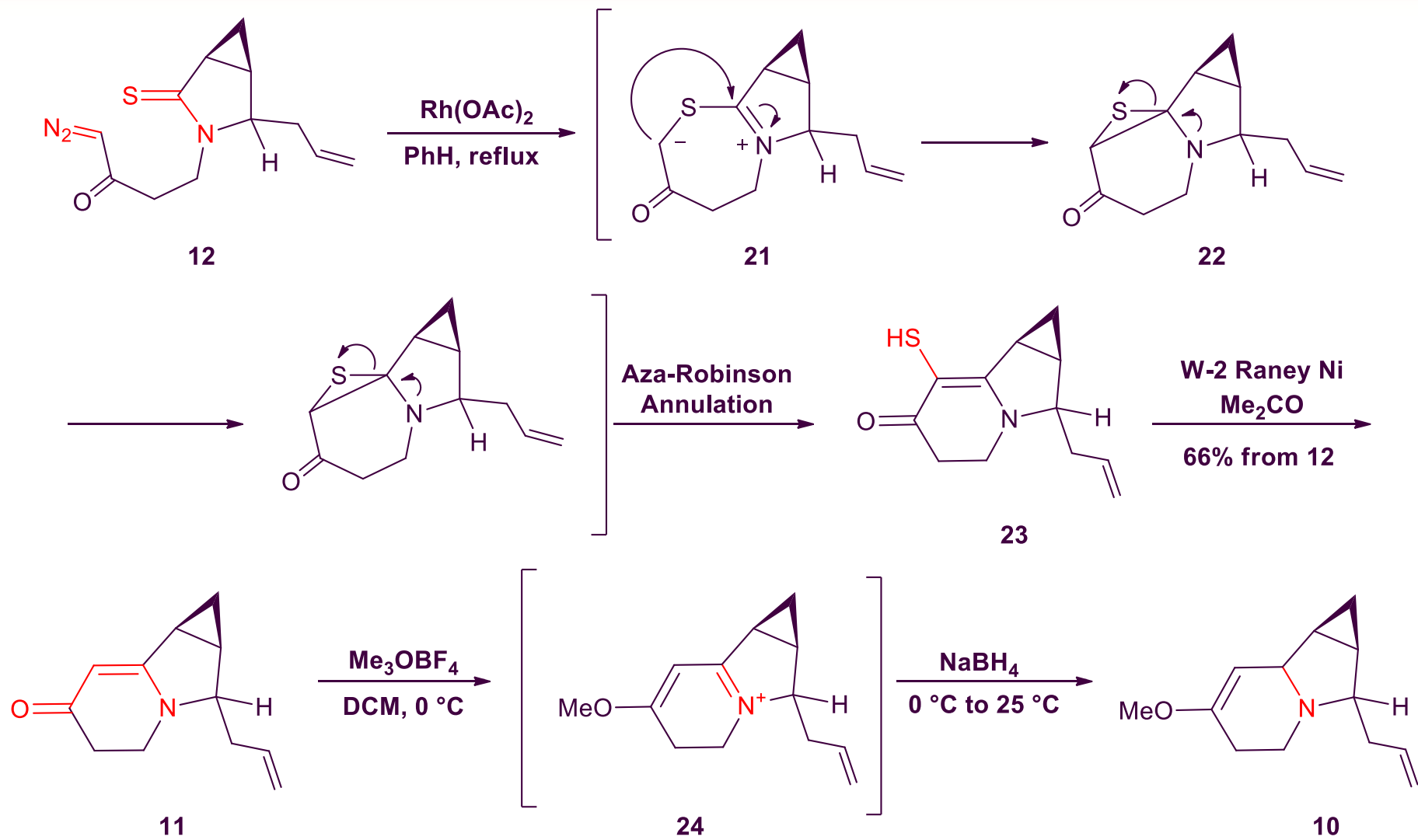
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# Mechanism:



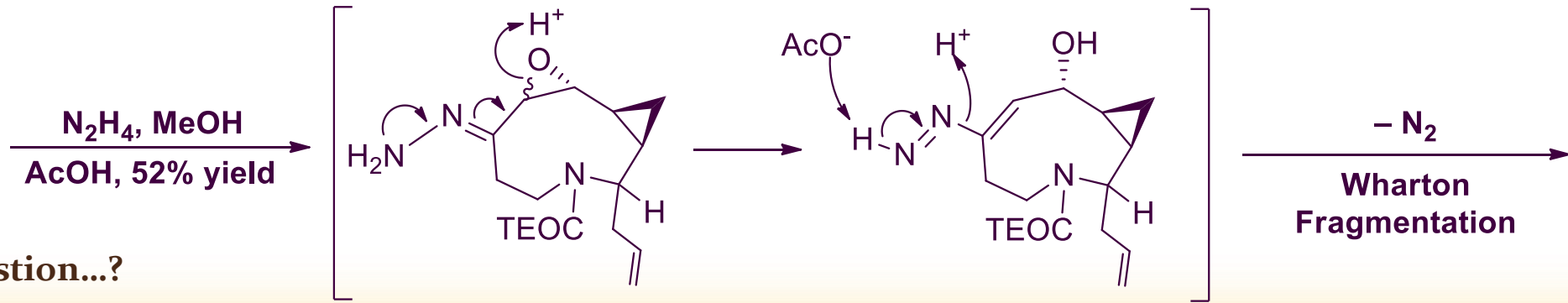
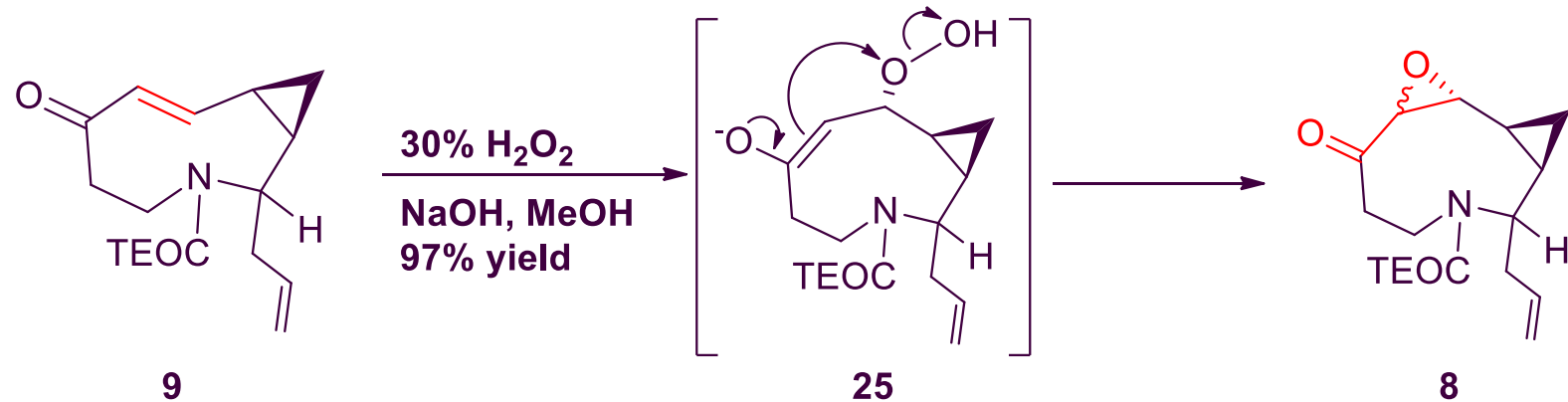
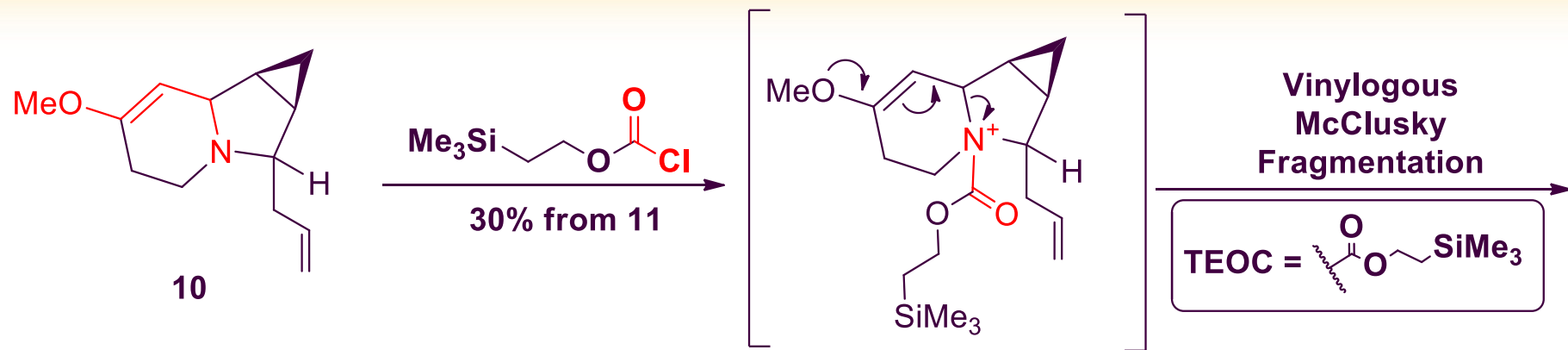
Any Question...?



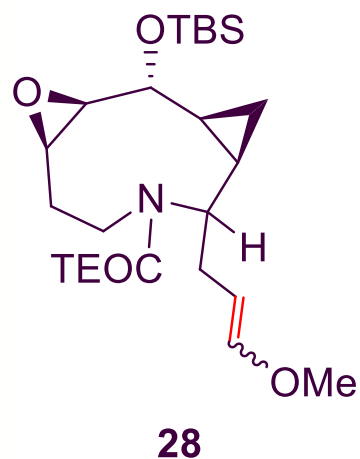
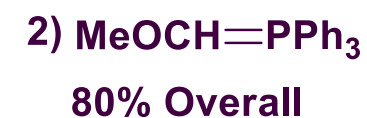
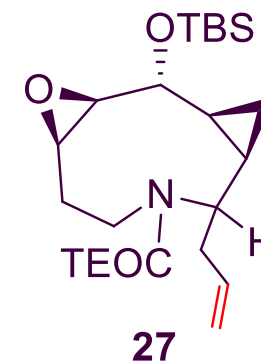
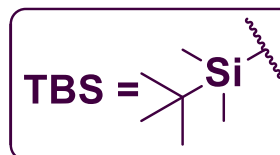
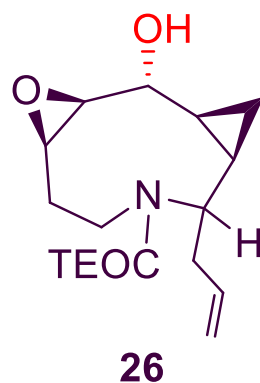
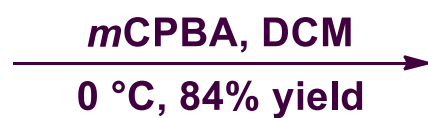
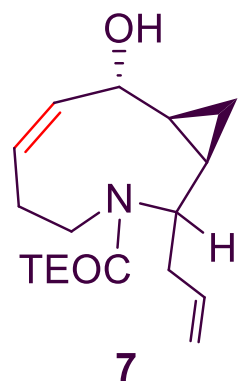


## Any Question...?

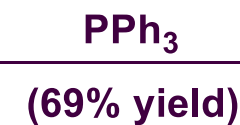
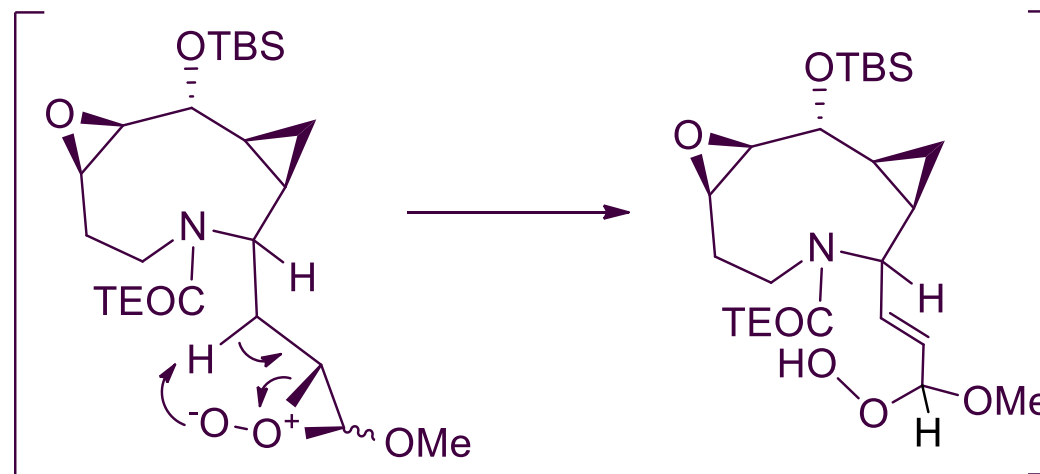
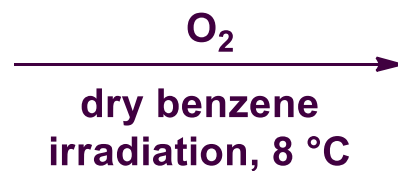
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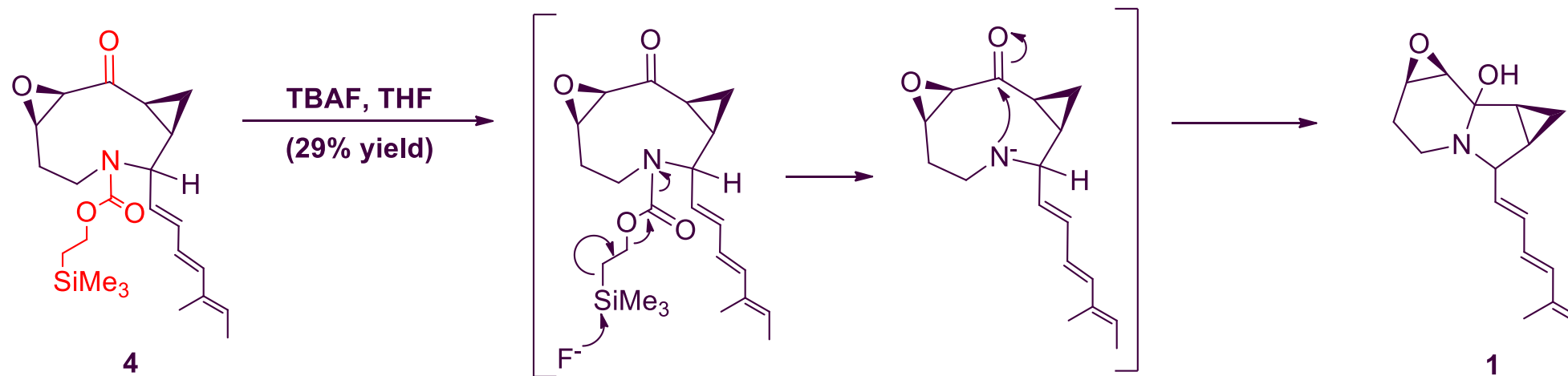
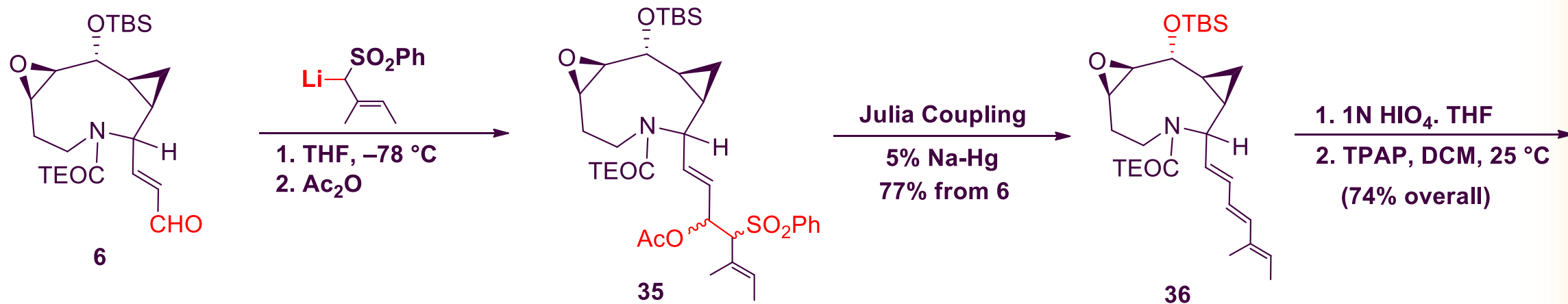
Any Question...?



3:2 mixture of olefin  
stereoisomers



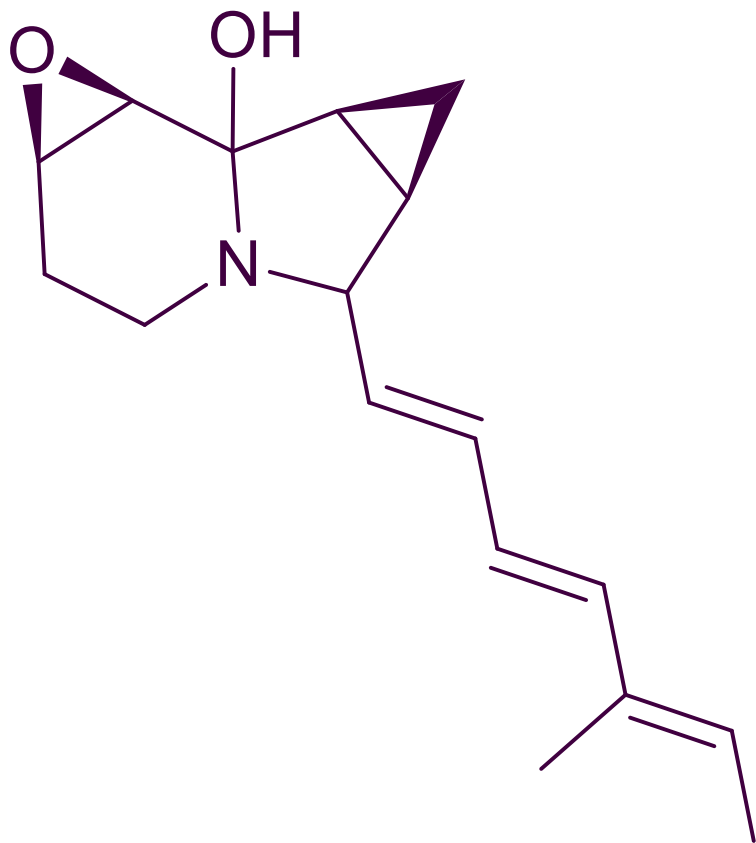
Any Question...?



Any Question...?

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# Conclusion:



- A number of important name reactions were used to synthesize Indolizomycin including aza-Robinson Annulation, McCluskey Fragmentation, Wharton Fragmentation, Julia Coupling, Wittig reaction, and Staudinger Reaction.
- Total Synthesis of Indolizomycin by Prof. Samuel J. Danishefsky was, in fact, a masterpiece in contemporary organic synthesis.