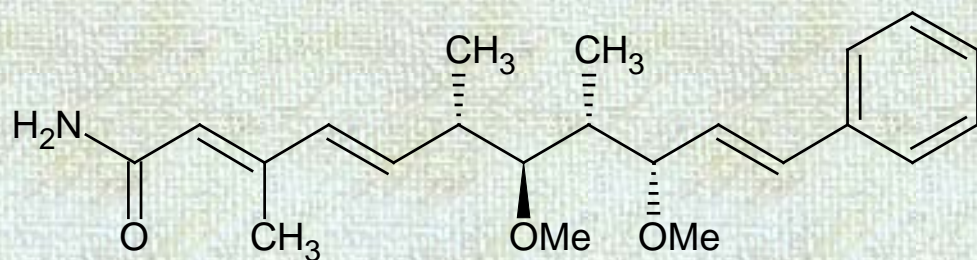
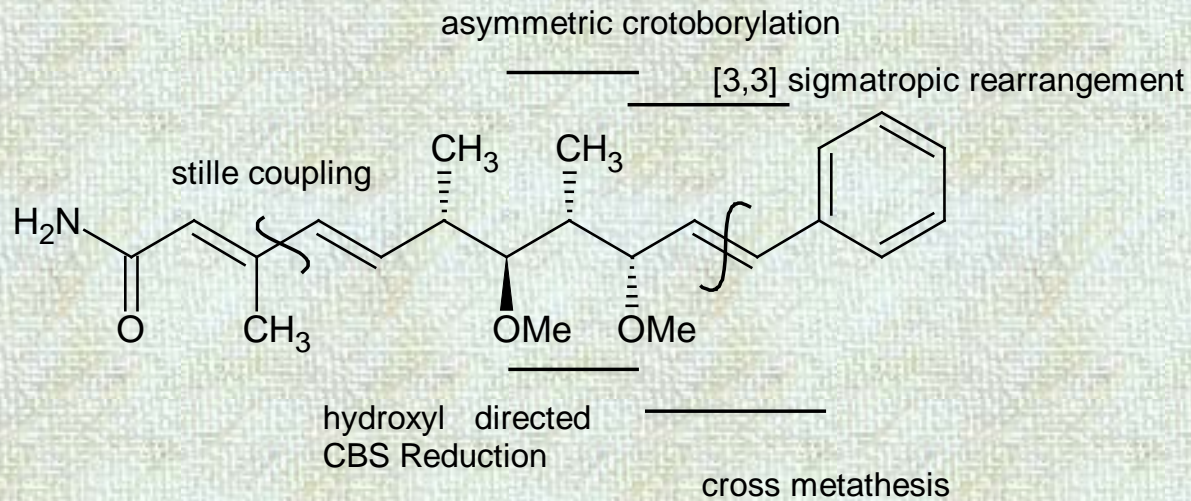


'Step-Economic Synthesis of (+)-Crocacin C: A Concise Crotylboronation / [3,3]-Sigmatropic Rearrangement Approach'

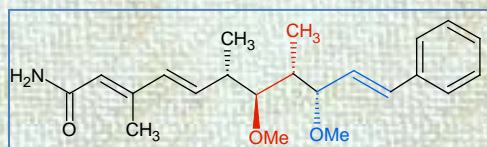
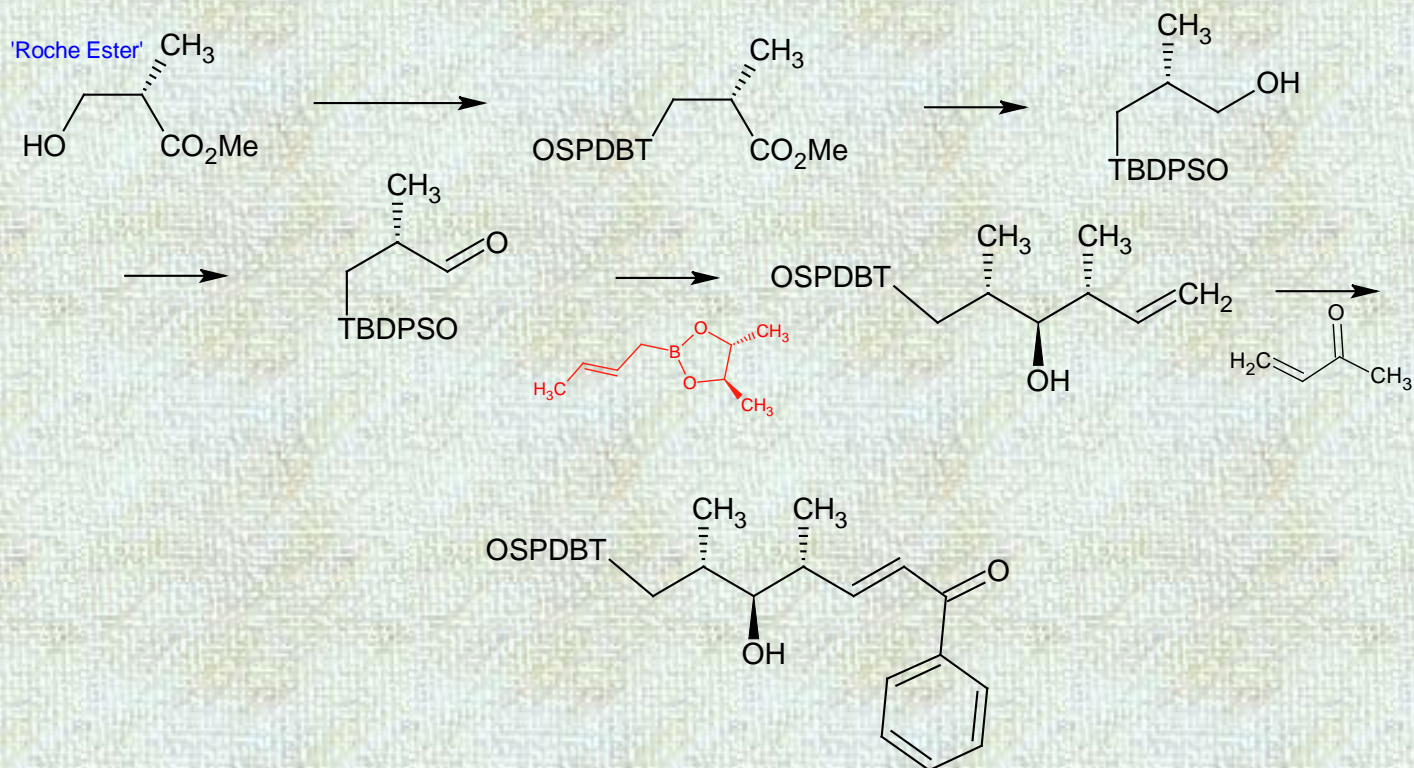


Pasqua, A.; Ferrari, F.; Hamman, C.; Crawford, J.; Marquez,
R. *J. Org. Chem* 2012, **77** 6989-6997

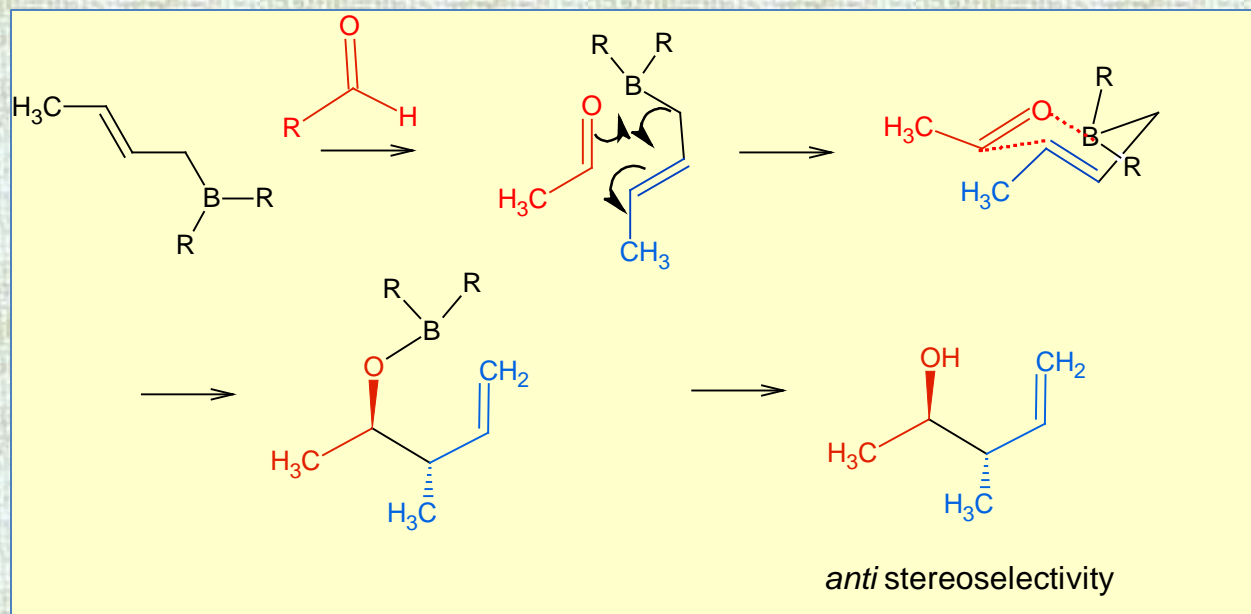
Retrosynthetic Logic



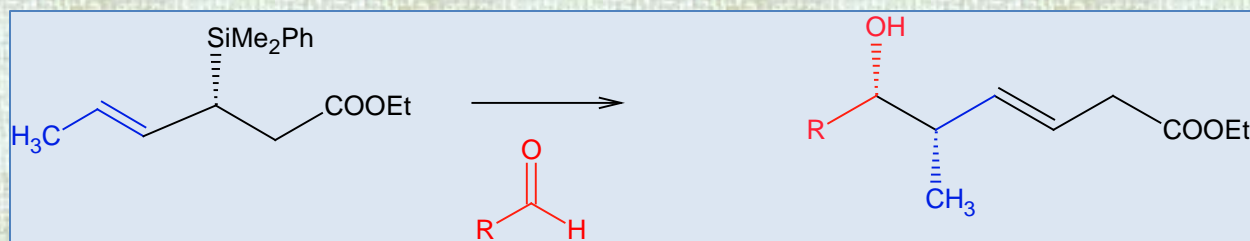
Crotoborylation / cross metathesis



A word about Crotylborylation / allyl transfer methods



The allyl group may be asymmetrically transferred to carbon if borane contains chiral substituents (ipc)

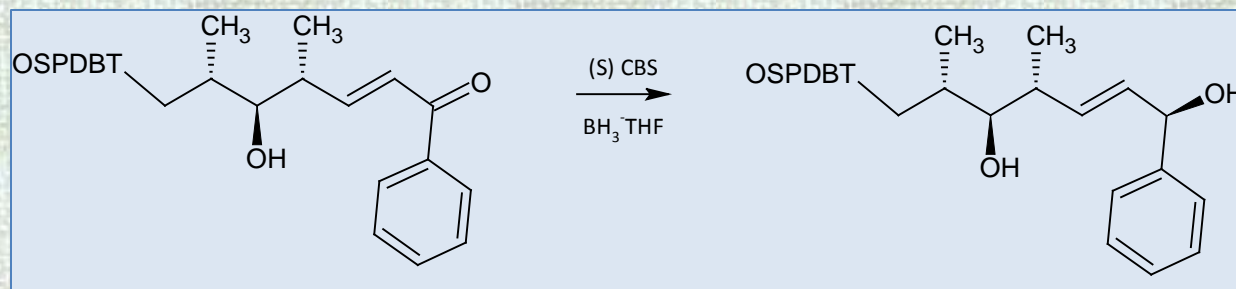


Allyl silanes can be used similarly- but provide *syn*-diastereoselectivity!

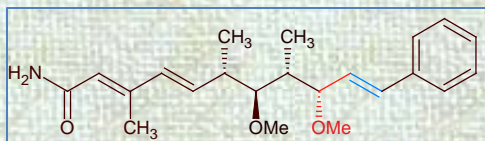
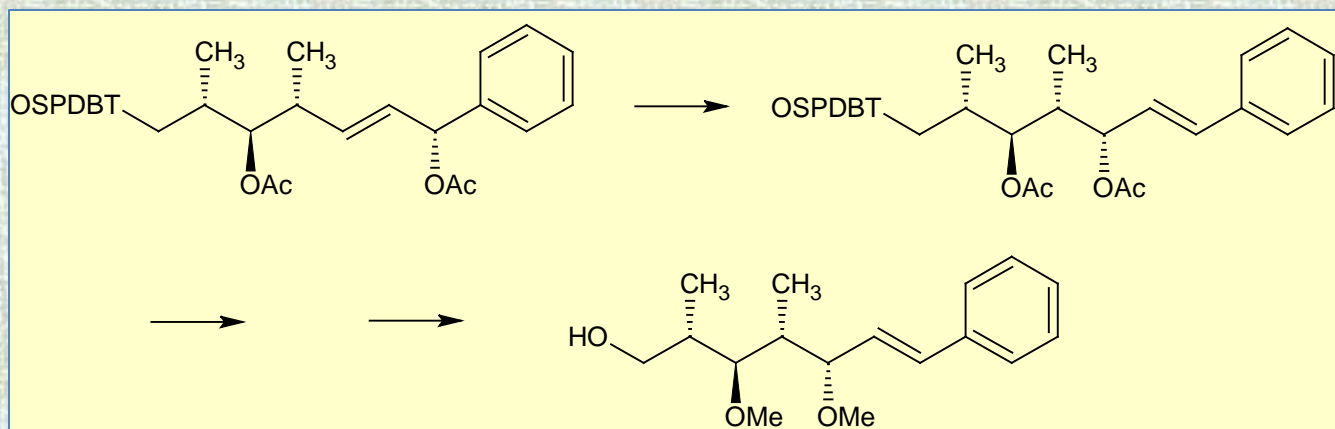
'assisted' CBS reduction / [3,3] sigmatropic rearrangement steps

If the free alcohol is functionalized as -OR, -OAc enantioselectivity is poor.

Evidence for long-range CBS assistance?

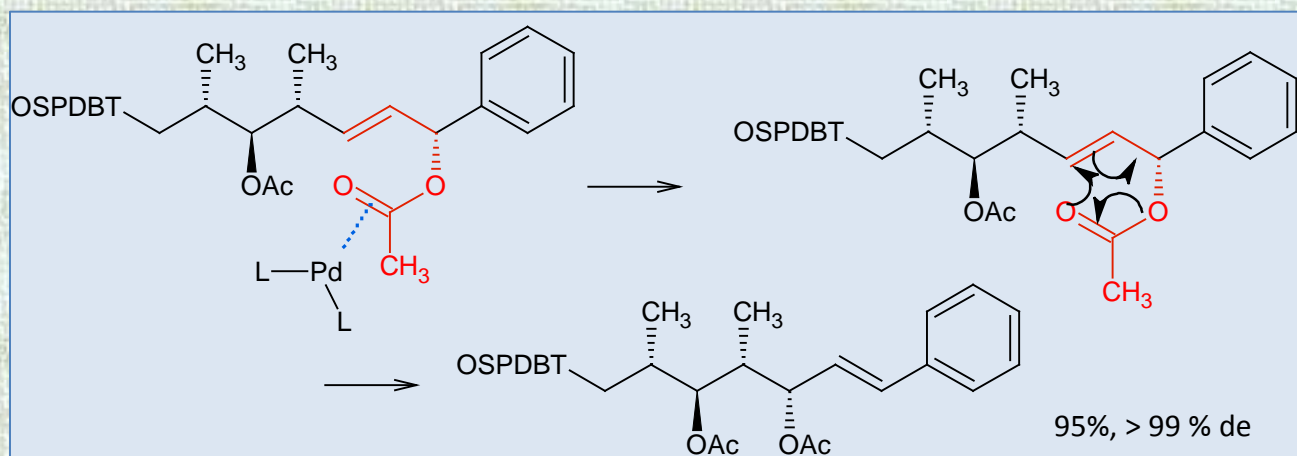
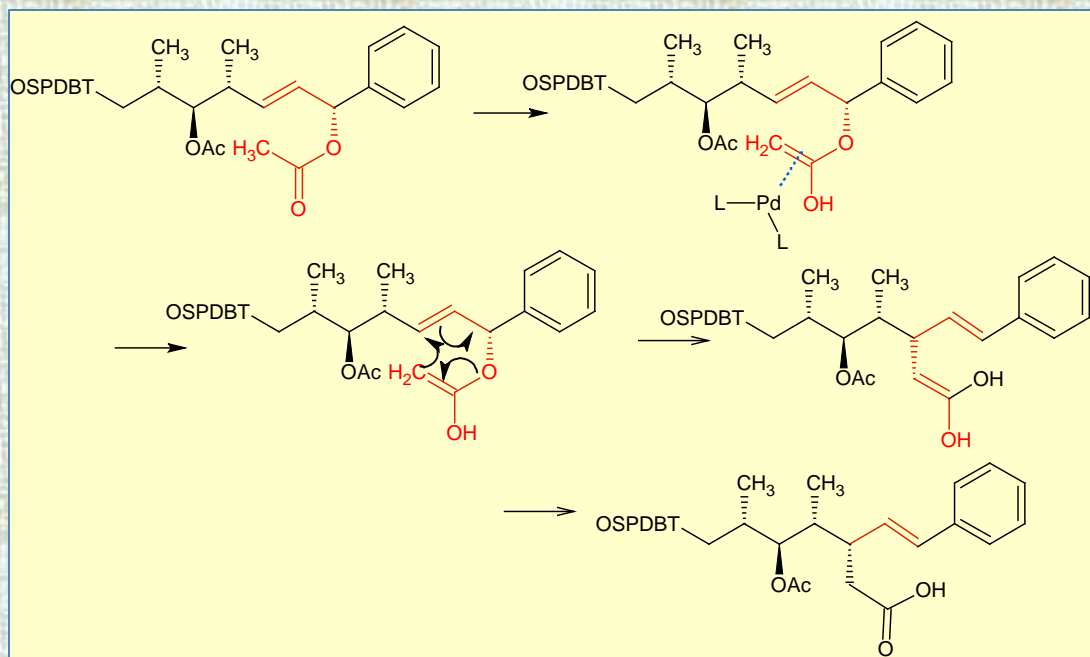


**Pd-mediated
[3,3]
Sigmatropic
rearrangement**



How does the [3,3] Sigmatropic Rearrangement proceed?

Somehow, I would have thought this Pd-mediated rearrangement would have resulted in a different product.....

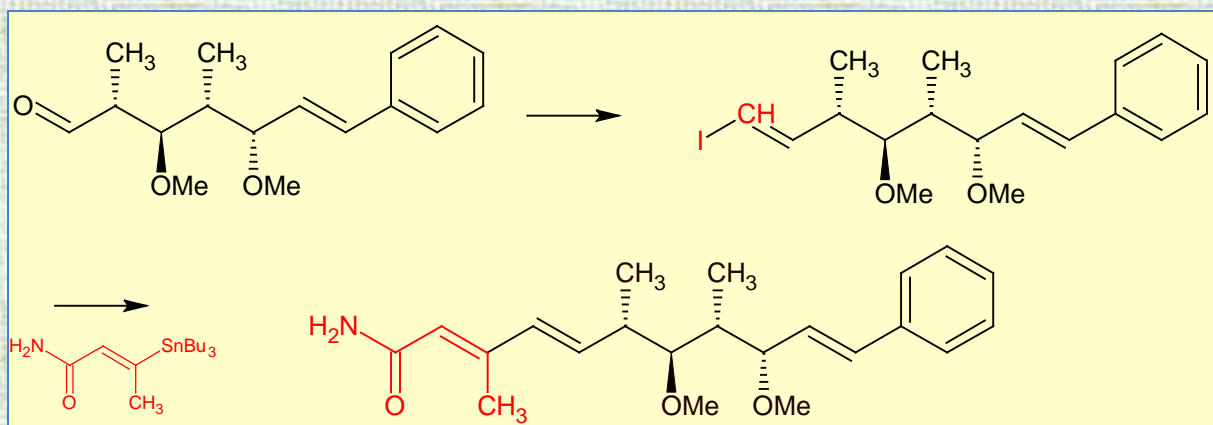
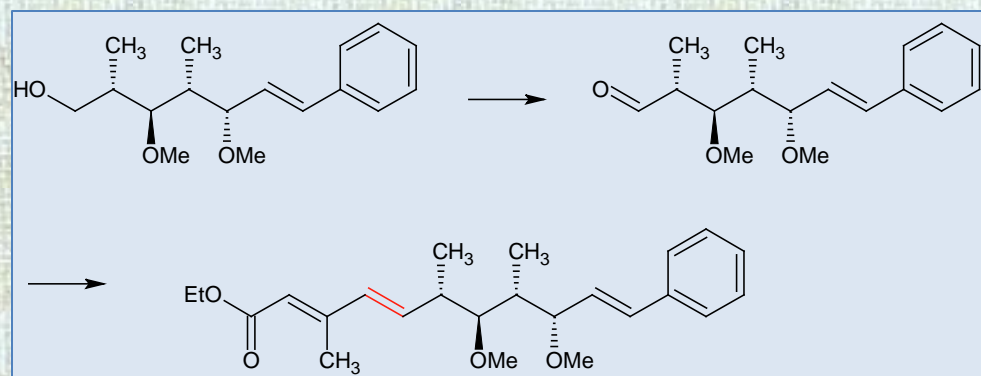


Does it follow this pathway? Does Pd simply play a role as a Lewis acid catalyst?

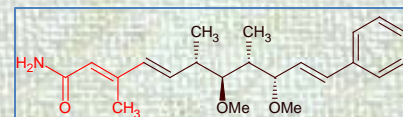
Endgame: Olefination

The stereoelaborated backbone then required a final olefination reaction to produce Crocacin C, after amidation.

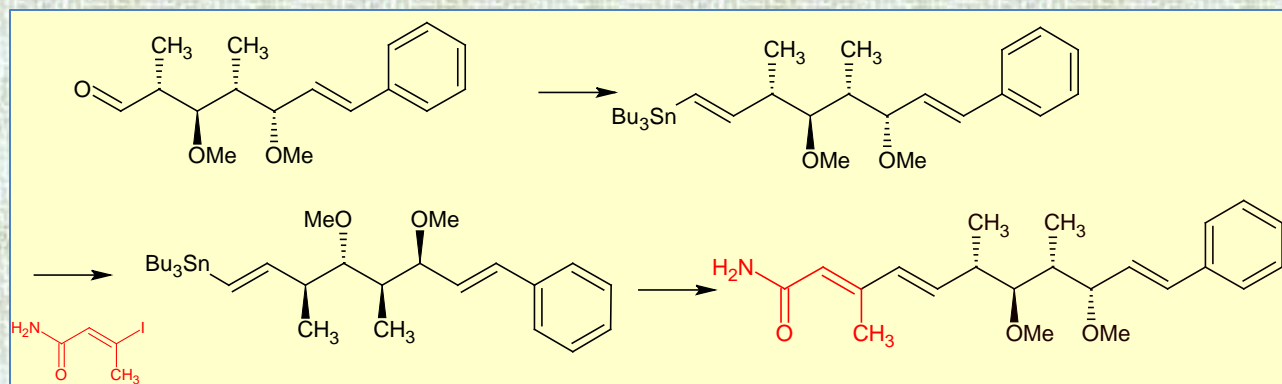
An HWE olefination reaction worked – but the ester won't hydrolyze without decomposition ☹️



A first attempt at Stille coupling didn't work well.

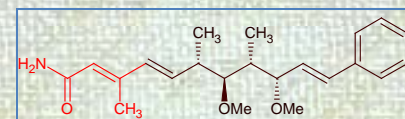
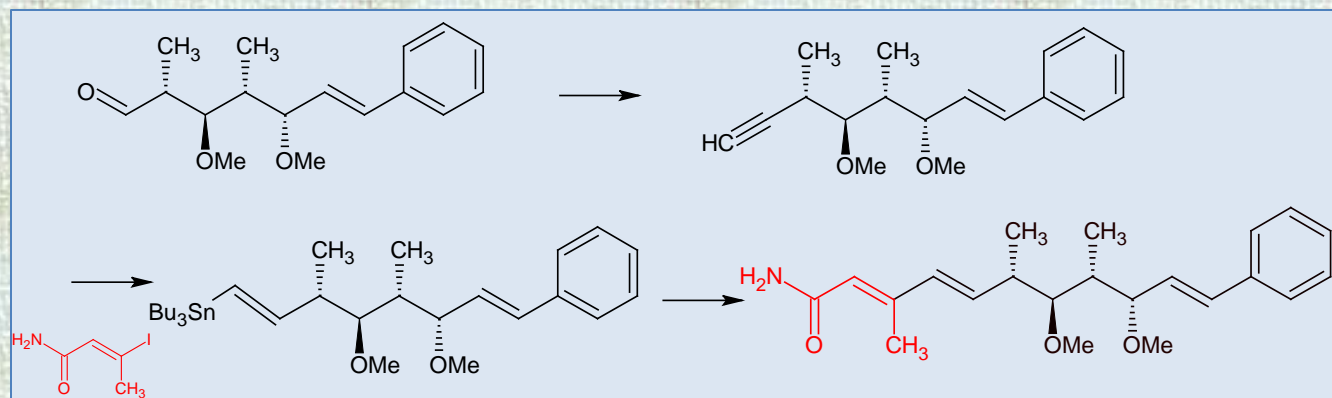


Endgame: Olefination



A 'reverse' Stille reaction worked – but wasn't scalable (microwave conditions?)

Modification of the Stille reaction produced a 20% overall yield of Crocacin C.



The material shown in this presentation represents a review of the paper referenced in the opening slide. It was chosen by the reviewer as a recent publication from the chemical literature which appealed to his interests and for no other reason. The presentation you are reading was assembled for the purposes of self education and is being shared as a service to others.

There are almost certainly errors contained in these slides which are the fault of the reviewer (A.S. McKim) and not the responsibility of the publishing scientists.