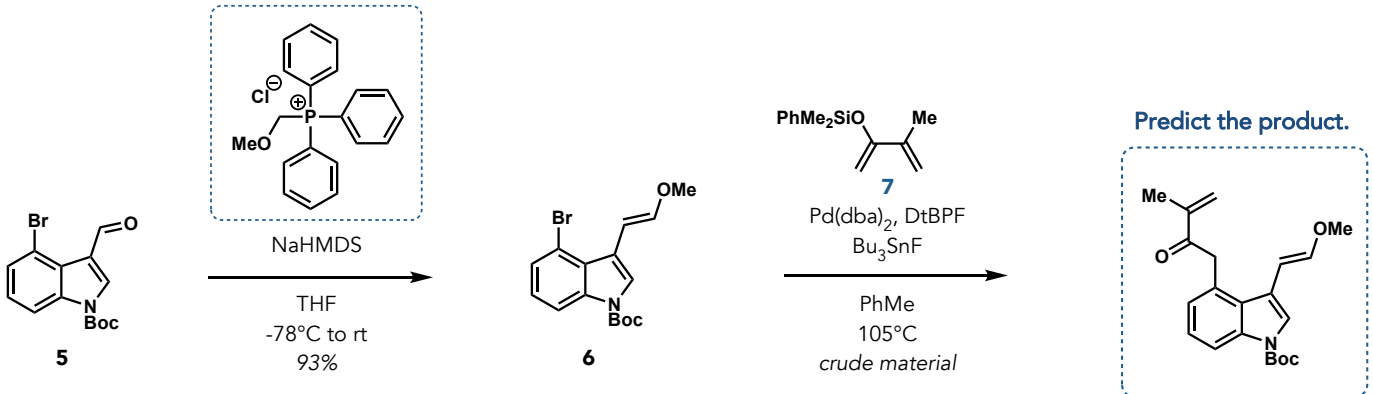
Kinetically Controlled aza-Michael/Epimerization Cascade Enables a Scalable Total Synthesis of Putative (+)-Fumigaclavine F

Adrian O. Dukes, Pathum M. Weerawarna, and Richard B. Silverman

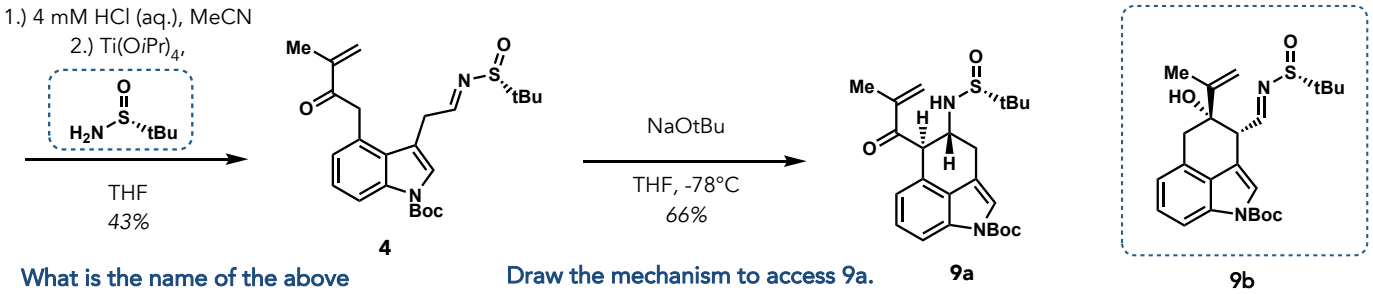
Org. Lett. 2025, 27, 10174−10179

Draw the missing reagent.



BONUS: Undergrads, what named reaction is this?

Wittig-Levine



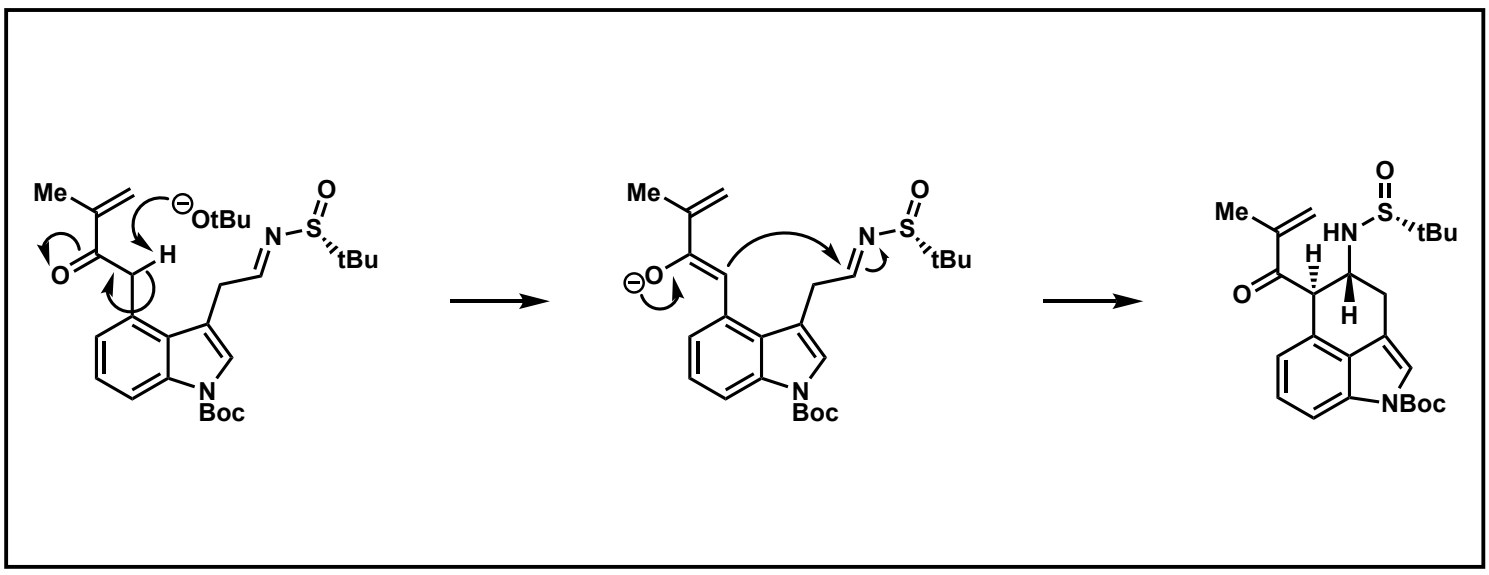
What is the name of the above reagent? Include the proper enantiomeric assignment.

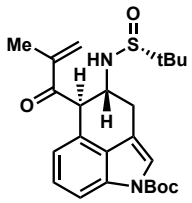
(R)-Ellman's Sulfinamide

Draw the mechanism to access 9a.

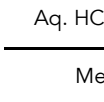
When using KHMDS and KOtBu, the paper reports a mixture of 9a and another cyclohexane product 9b. What is the structure of 9b? (HINT: Draw the mechanism to access 9a first.)

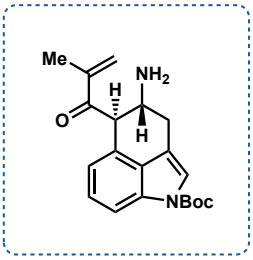
Mechanism to access 9a.



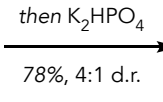


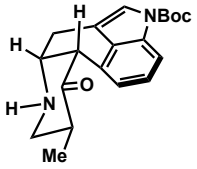
9a



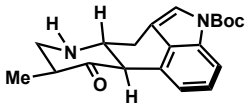


Draw the intermediate.





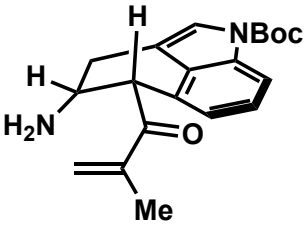
3a



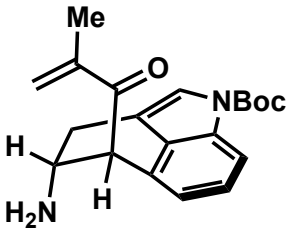
3b

Utilizing the previously drawn intermediate, draw stereochemical models to justify the conformations of 3a and 3b. Why is 3a the favored product?

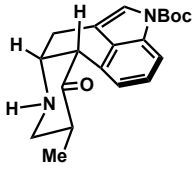
Stereochemical models for 3a and 3b.



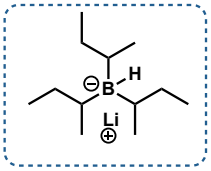
3a



3b

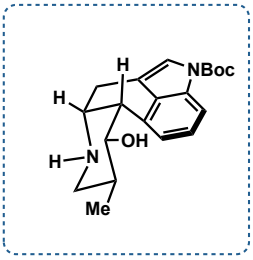


3a

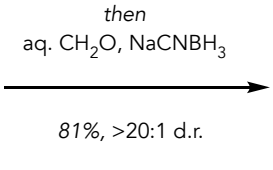


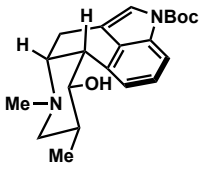
What is the name of the above reagent?

L-Selectride



Draw the intermediate.

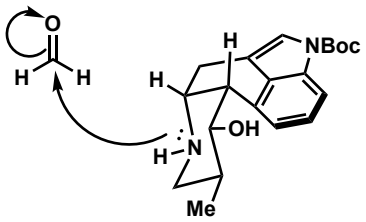


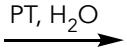


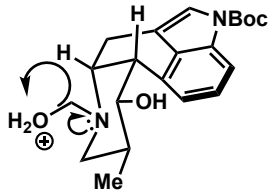
12

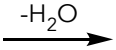
Draw the mechanism to access 12.

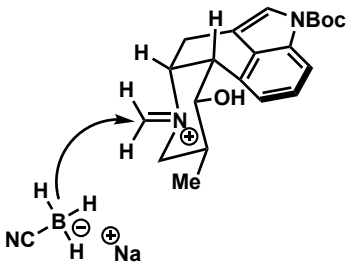
Mechanism to access 12.

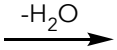


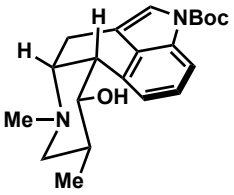




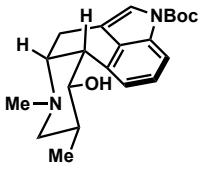








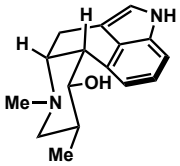
12



12

HFIP

reflux

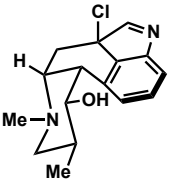


Draw the intermediate.

then

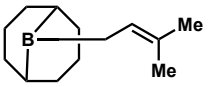
$tBuOCl, NEt_3$

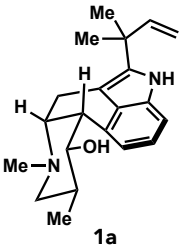
THF



Draw the intermediate.

then





1a

Draw the transition state of the reverse-prenylation product.

Transition state to 1a.

