Dr. Gordon W. Gribble

Born: July 28, 1941 San Francisco, CA

Education:

A.A. San Francisco City College, 1961
B.S. University of California at Berkeley, 1963
Ph.D. University of Oregon, 1967
Advisor: Lloyd J. Dolby
Post - doc: UCLA, 1967-68
Advisor: Frank A. L. Anet

Academic Positions:

1968-1974 Assistant Professor of Chemistry, Dartmouth College
1974-1980 Associate Professor of Chemistry, Dartmouth College
1977-1978 Visiting Associate, California Institute of Technology
1980- Professor of Chemistry, Dartmouth College
1988-1991 Chair, Department of Chemistry, Dartmouth College
1991-1992 Visiting Professor of Chemistry, University of Hawaii

Career Stats:

42 years of teaching experience
325 research publications
46 graduate students (Ph.D. and M.A.) supervised
190 papers presented at meetings
29 postdoctoral research associates supervised
289 invited seminars
>140 undergraduate research assistants
49 books reviewed for 11 journals/publishers
65 review articles and book chapters
810 manuscripts refereed for 71 different journals
185 research proposals refereed for 20 agencies
3 books/monographs

Hobbies: Winemaking and Scuba Diving

Professor Gribble's basement winemaking lab

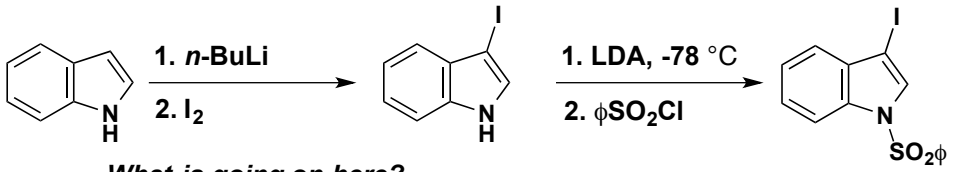
Professional Societies:
American Chemical Society
International Society of Heterocyclic Chemistry
American Wine Society (Certified Wine Judge)

Research Interests:
Synthesis of Biologically Active Natural Products
Heterocyclic Chemistry
Organic Synthetic Methodology
New Indole Chemistry
Anticancer Drug Design
Chemopreventive Synthetic and Natural Triterpenoids
Natural Organohalogen Compounds
New Antimalarial Compounds

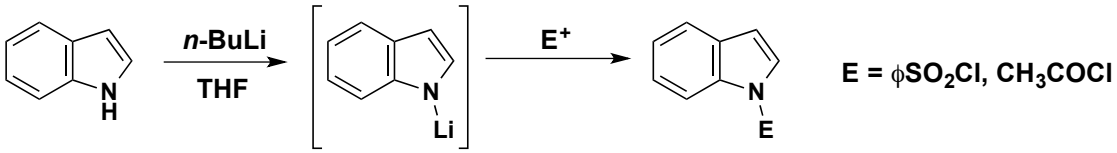
Lithiation of Indole: Like a Boss!

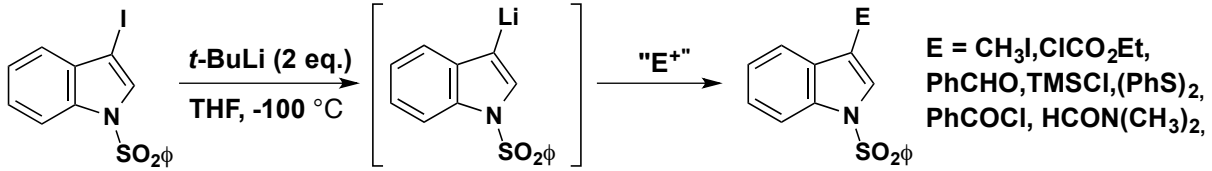
JOC, 47, 5, 1982, 757-761 *120 Citations*

Generation and Reactions of 3-Lithio-1-(phenysulfonyl)indole

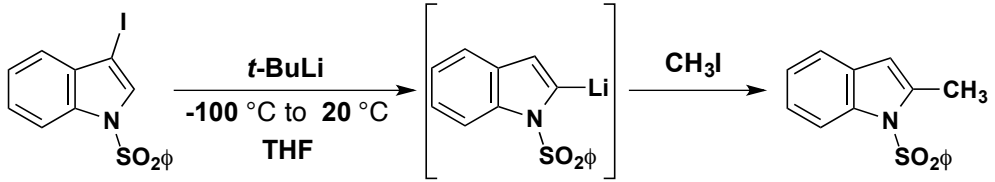


What is going on here?

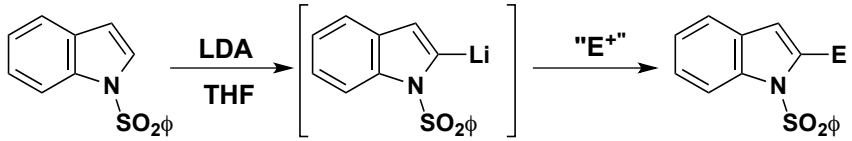




light yellow color



What is going on here?



Inverse-addition apparatus

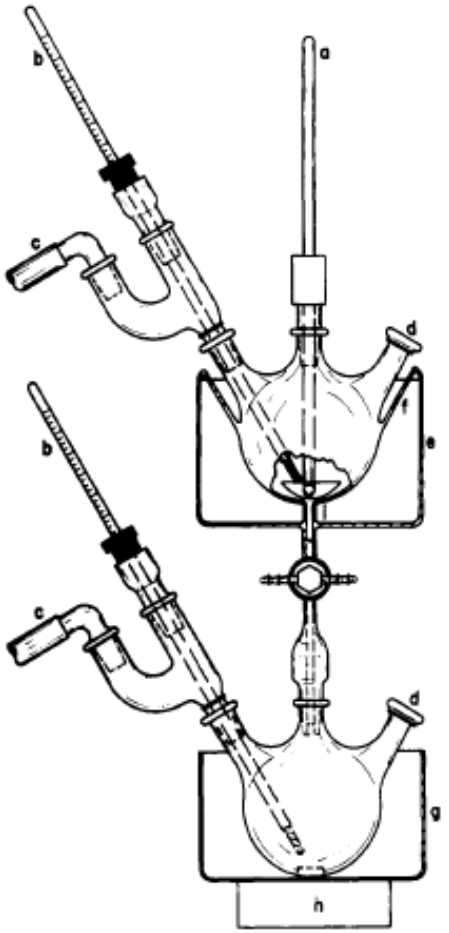
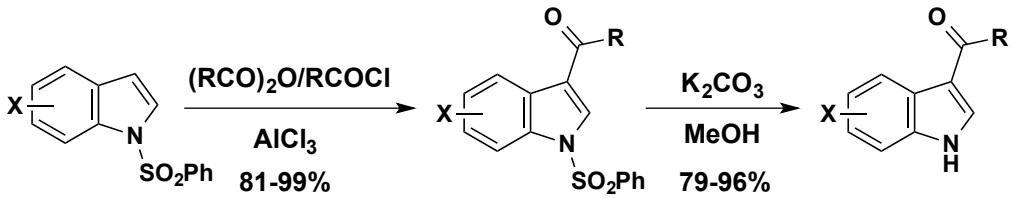
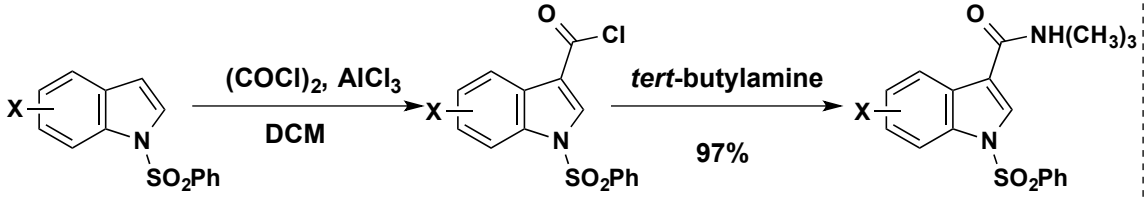


Figure 1. This inverse-addition apparatus is used to prepare air-sensitive intermediates at low temperatures in the top reaction flask (permanently attached to bath e by glass rods f). The solution of intermediate can then be added through orifice i, at a rate controlled by the Teflon stopcock, to the contents of the lower reaction flask cooled (or heated) in bath g. The flasks are equipped with thermometers (b), inert gas inlets (c), rubber septa (d), and mechanical (a) and magnetic (h) stirrers. That part of the stem connecting the top bath with the stopcock can be cooled by wrapping it with copper wire leading back into the top cooling (dry ice/acetone or liquid nitrogen) bath.

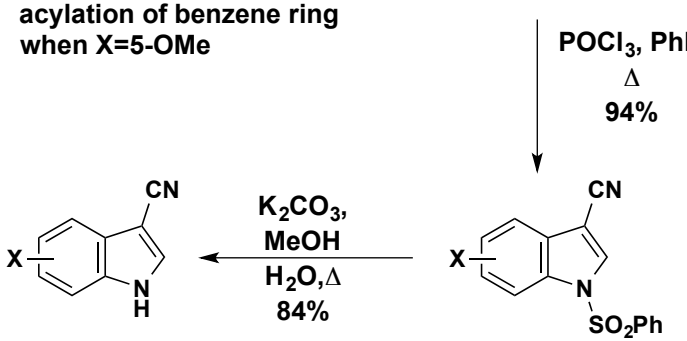
JOC, 50, 26, 1985, 5451-5457. *111 Citations*

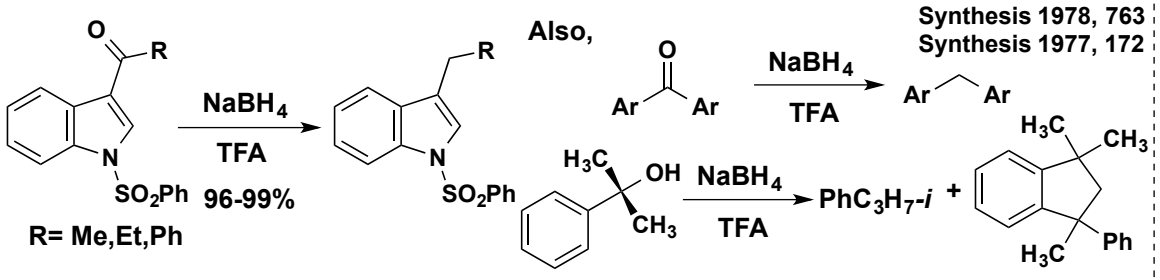
Topic: Acylation of Indoles and Ellipticine

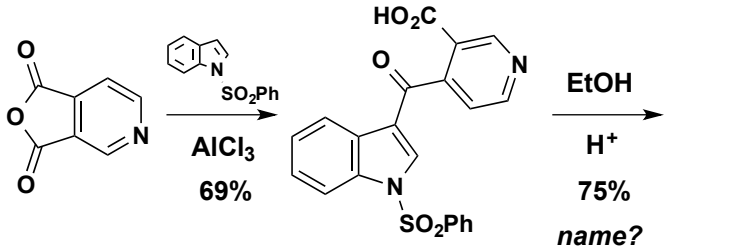


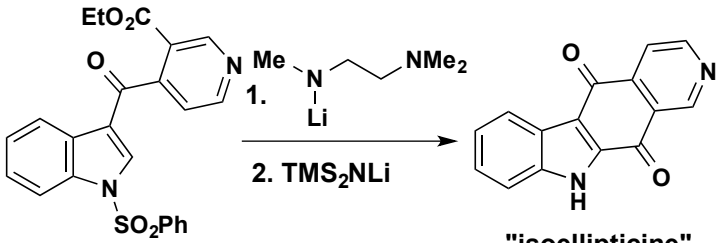


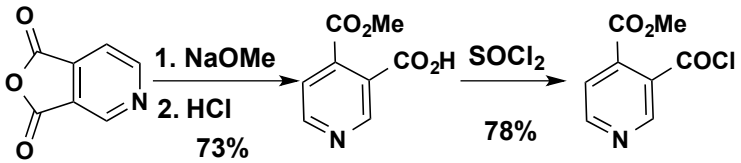
acylation of benzene ring
when X=5-OMe

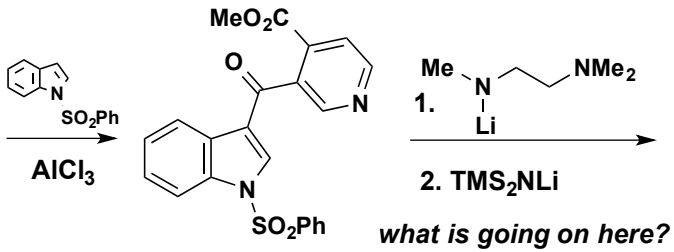


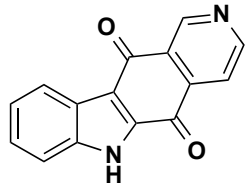


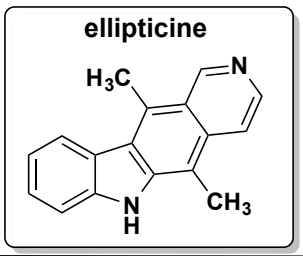






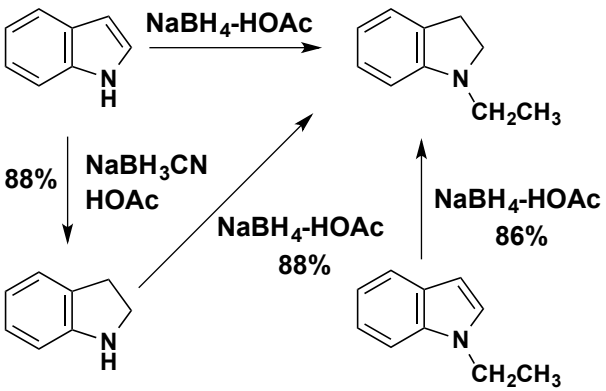






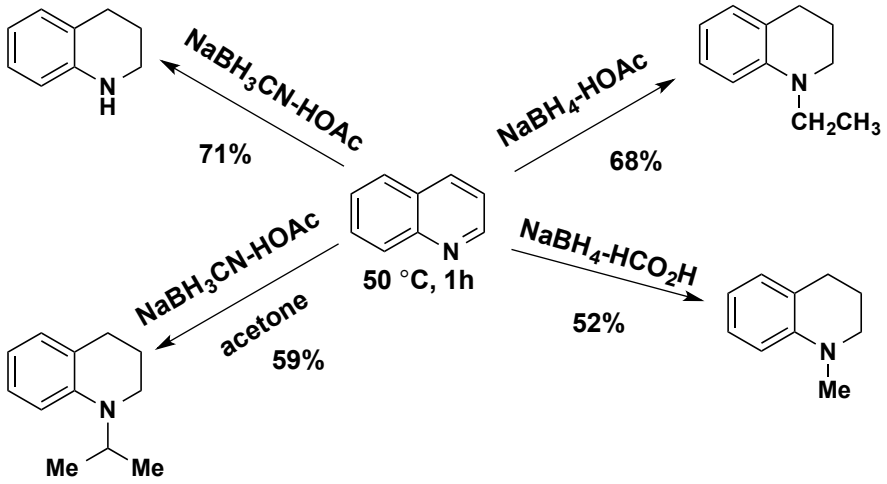
Gribble....Breakin' it Down!!

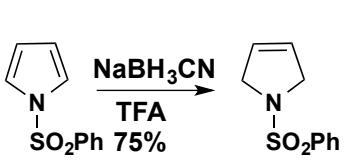
JACS 96, 25, 1974, 7812-7814 *94 citations*

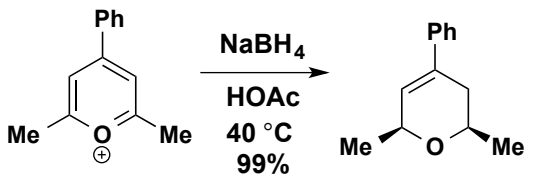


name?

Chem. Soc. Rev. 27, 1998, 395-404.

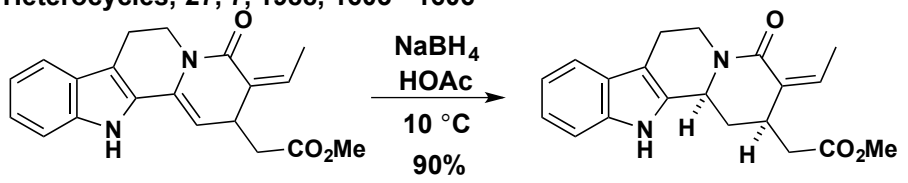






Examples in Total Synthesis

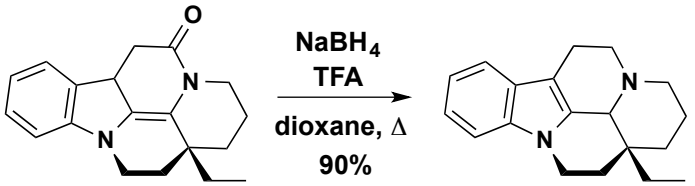
Heterocycles, 27, 7, 1988, 1603 - 1606



+ trans (1:1)

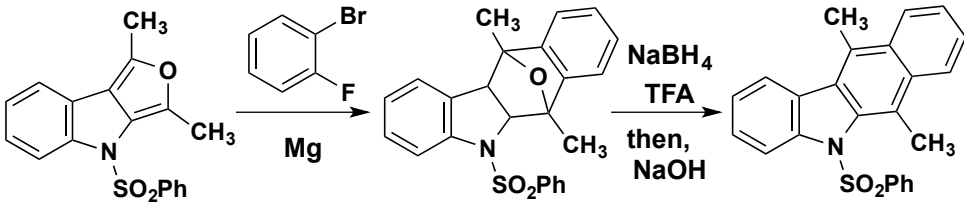
key intermediate for geissoschizine, isositsirikine, and (±) - 16 - epiisositsirikine

Tet. Lett., 37, 1996, 335 - 338



epi- 16, 17 -dihydroburnameine

Chem. Soc. Rev. 27, 1998, 395-404.



Gribble Reduction Summary

$NaBH_4$-RCO_2H

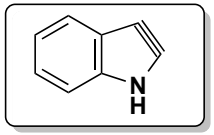
Amine alkylation, Indole reduction, Aryl carbinol reduction, selective aldehyde reduction, Quinoline, isoquinoline reduction, Arene alkylation, Amide and nitrile reduction, Acetal-ketal reductive cleavage, oxime reduction and N-alkylation, β-hydroxyketone reduction

FYI: OPRD, 2006, 10, 1062

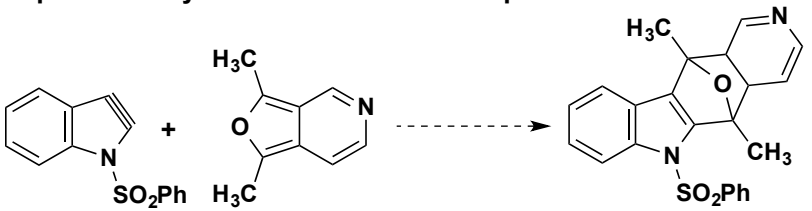
Arynes and Indolyne: Neil.....this one's for you!!

Heterocycles, 1992, 34, 2095

The elusive 2,3-Indolyne

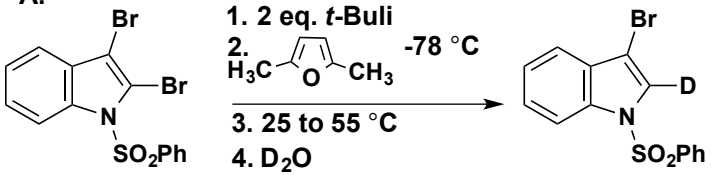


A possible key intermediate toward ellipticine



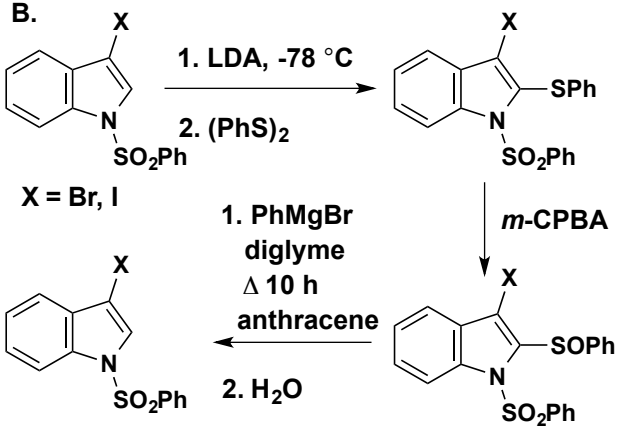
Gribble's attempts to generate 2,3-Indolyne

A.

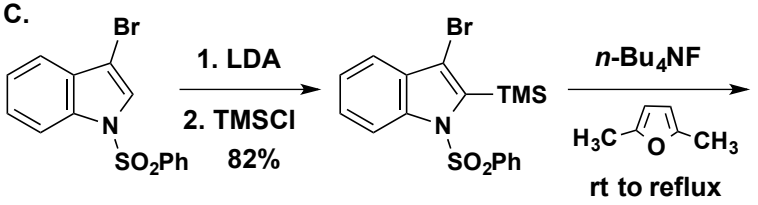


*** Elimination of LiBr is 20X faster than LiCl**
- LiI is ~100X faster

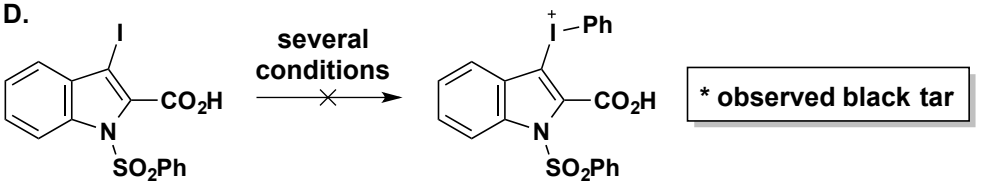
B.



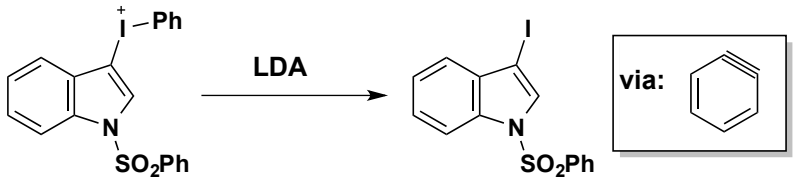
C.



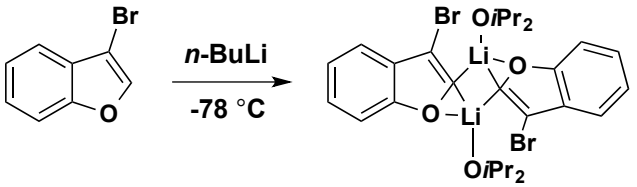
D.



E.

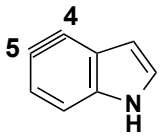


Perhaps an explanation: ACIEE 1991, 30, 1455.

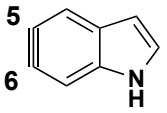


***a distorted *trans*-dimer and not conductive to elimination of LiBr**

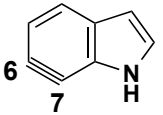
Indolynes that can be prepared: JACS, 2010, 132, 17933



4,5-Indolyne

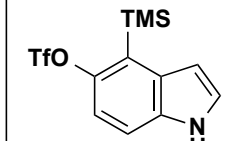


5,6-Indolyne



6,7-Indolyne

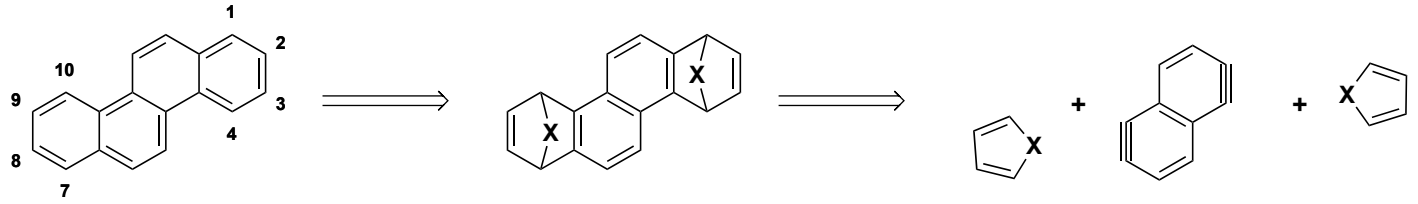
***via*:**

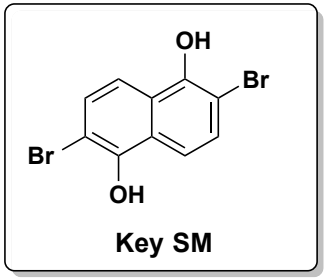


But Gribble is Still a Chemistry Jock!

JOC, 1985, 48, 1682

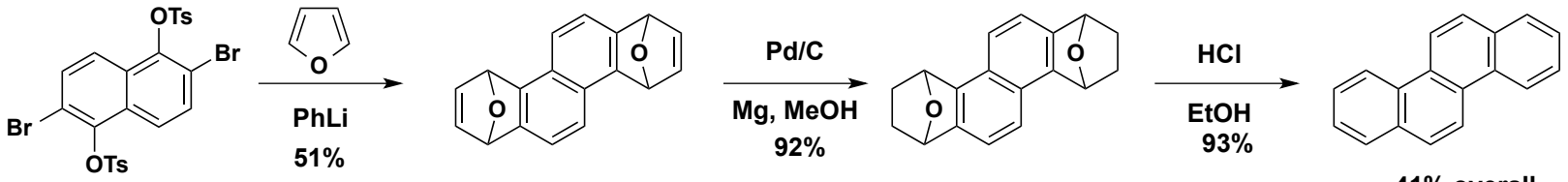
Chrysene - carcinogenic



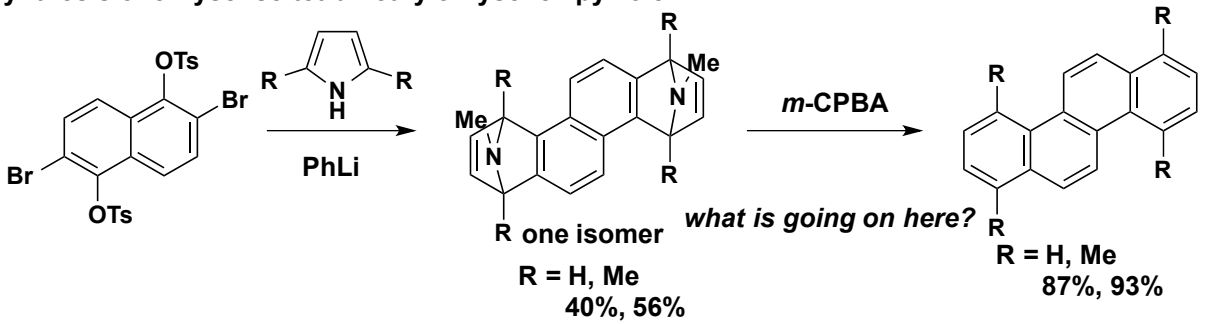


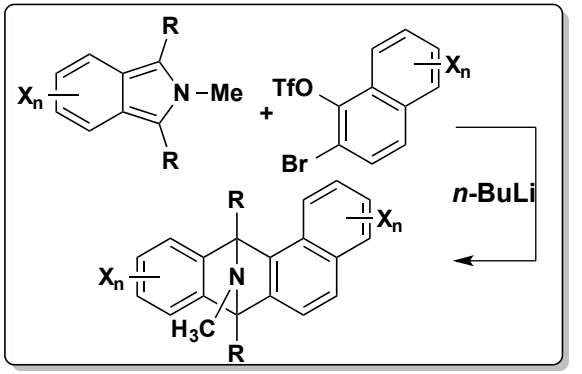
polyaromatic hydrocarbons - present in tobacco smoke, spinach, smoked ham

Synthesis of Chrysene - furan

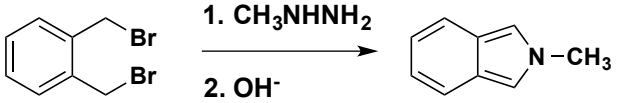


Synthesis of chrysense tetramethylchrysene - pyrrole

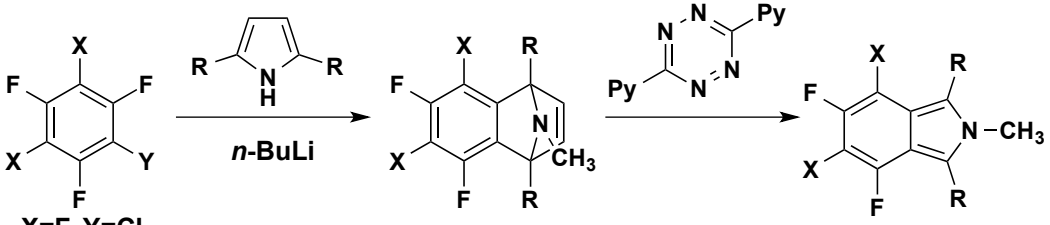




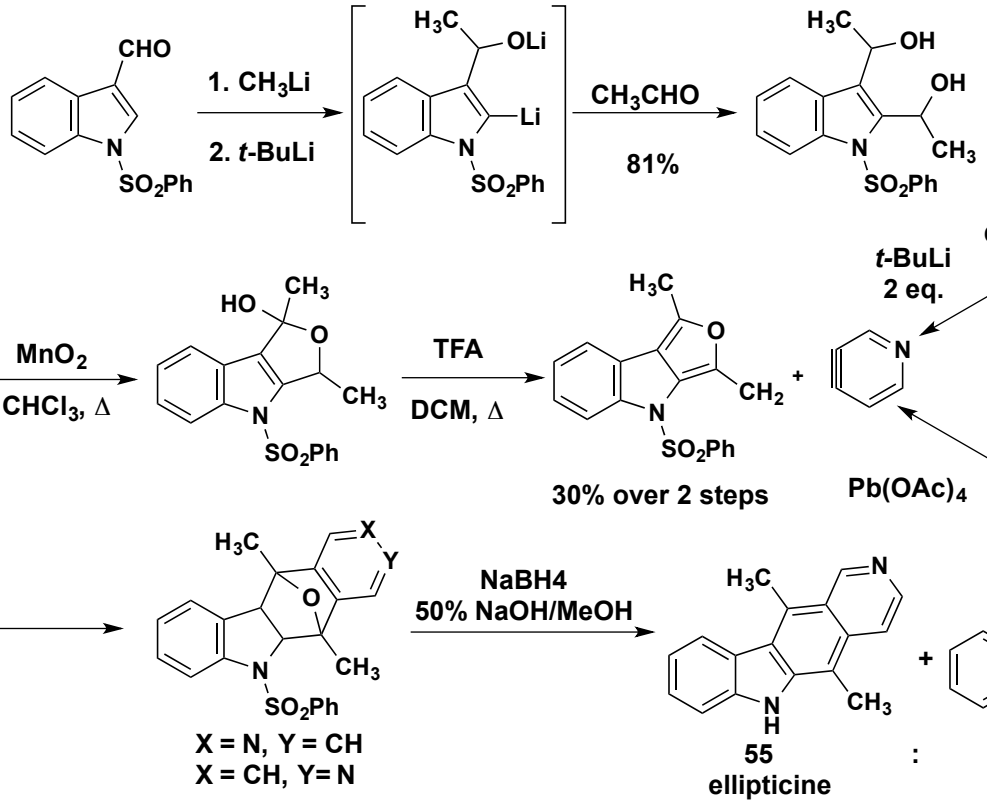
Other Cool Stuff

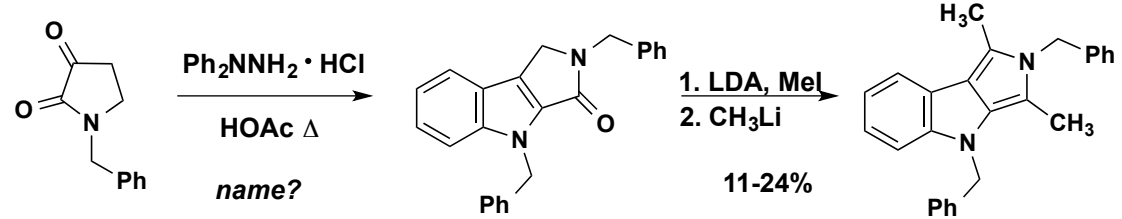


name this heterocycle!

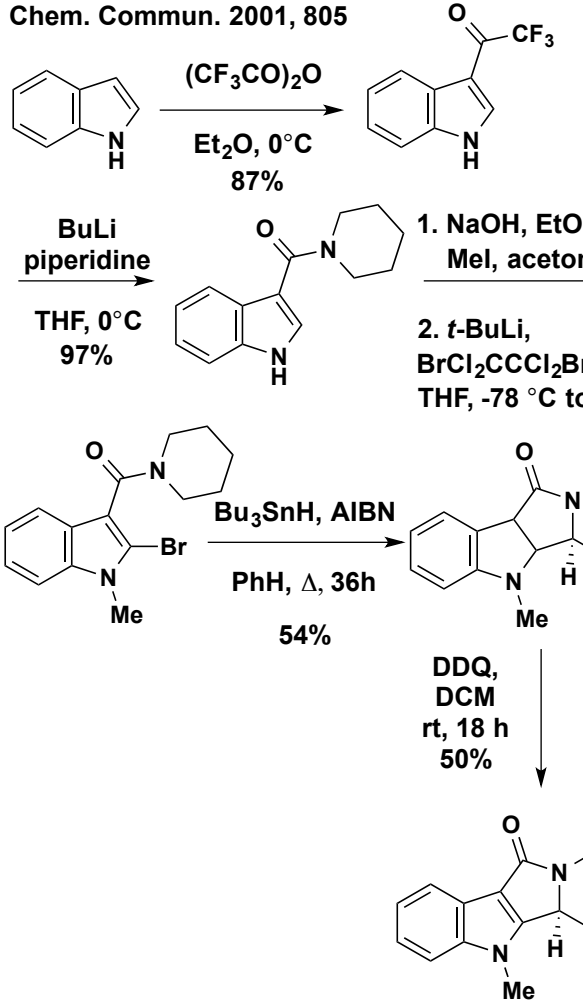


Synlett, 1991, 289

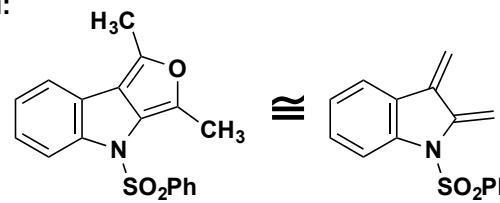




Chem. Commun. 2001, 805

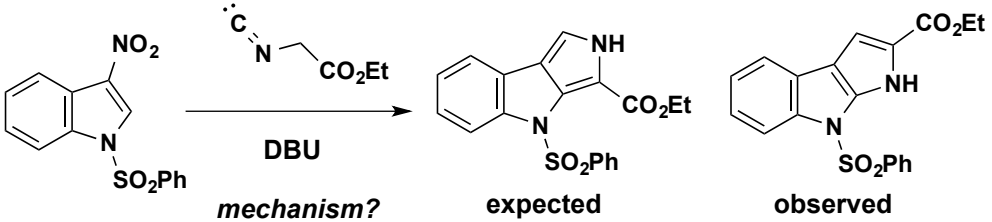


FYI:

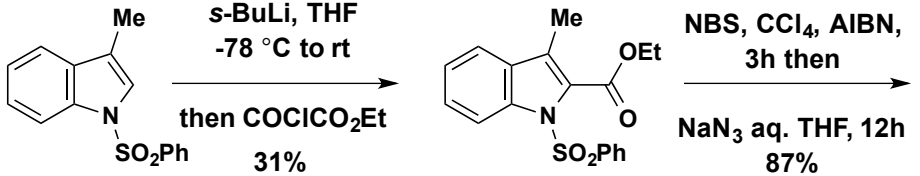


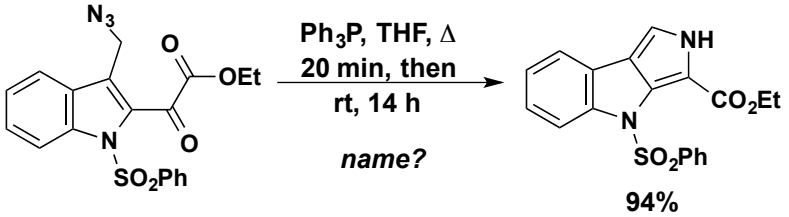
Not So Accelerated Serendipity

Chem. Commun. 1996, 1909

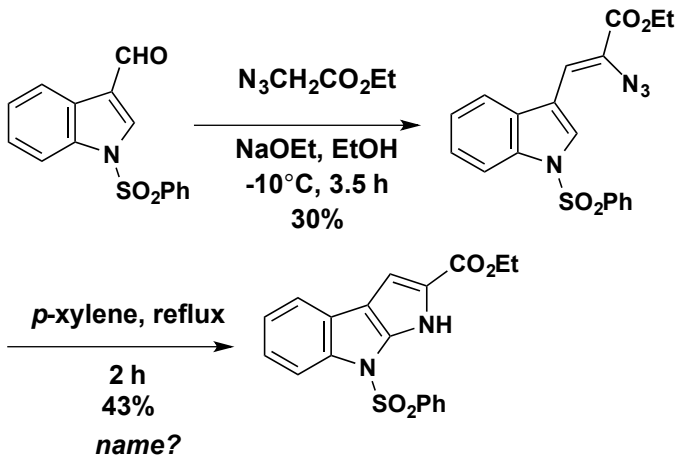


Synthesis of expected

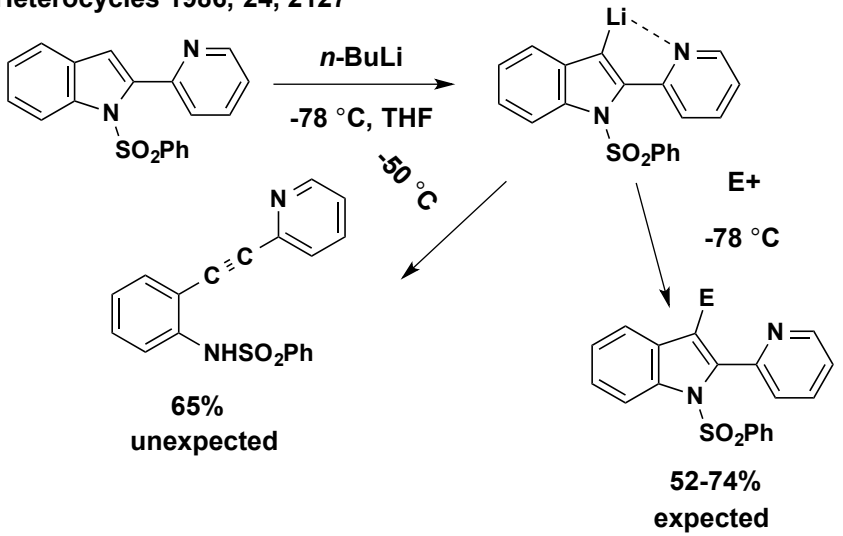




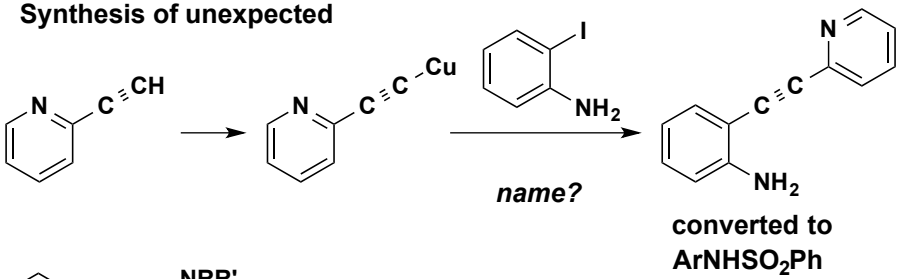
Synthesis of isomer (observed)

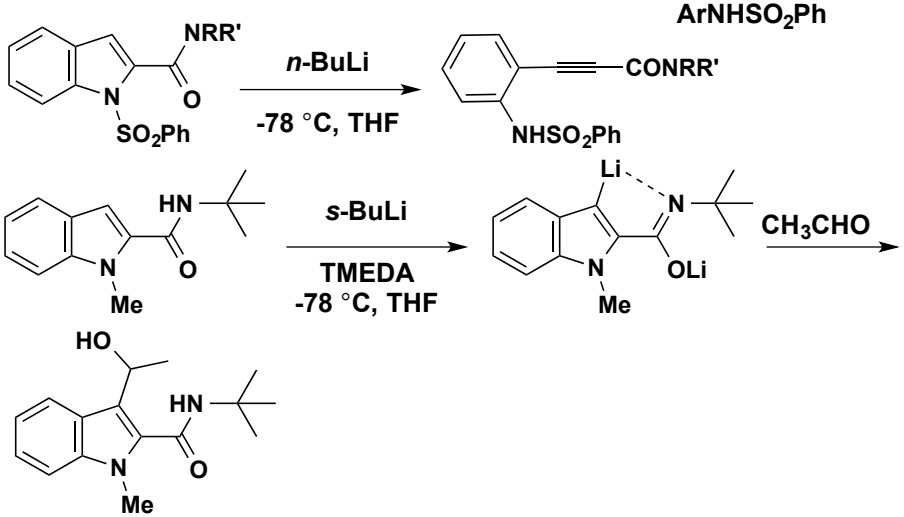


Heterocycles 1986, 24, 2127



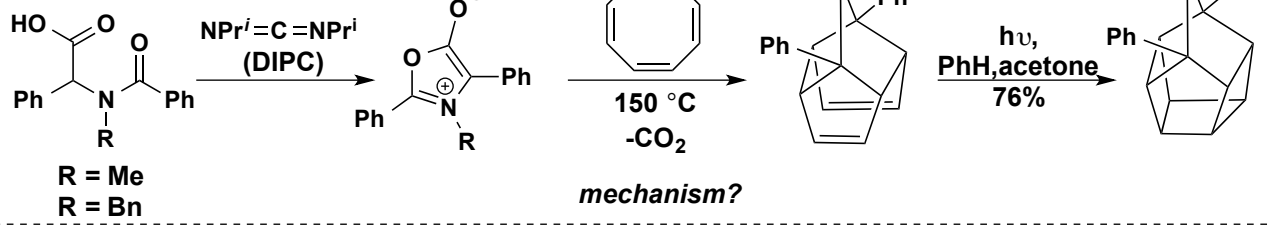
Synthesis of unexpected



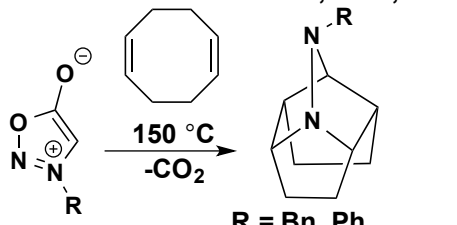


Münchnones: The Heterocyclic Dessert

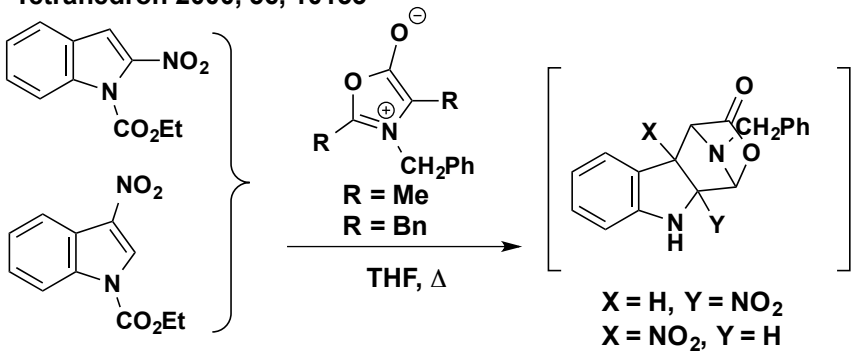
Chem., Commun., 1997, 993



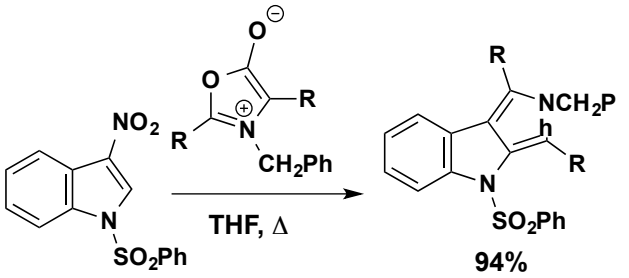
FYI: J. Chem. Soc. Chem. Comm., 1970, 760



Tetrahedron 2000, 56, 10133

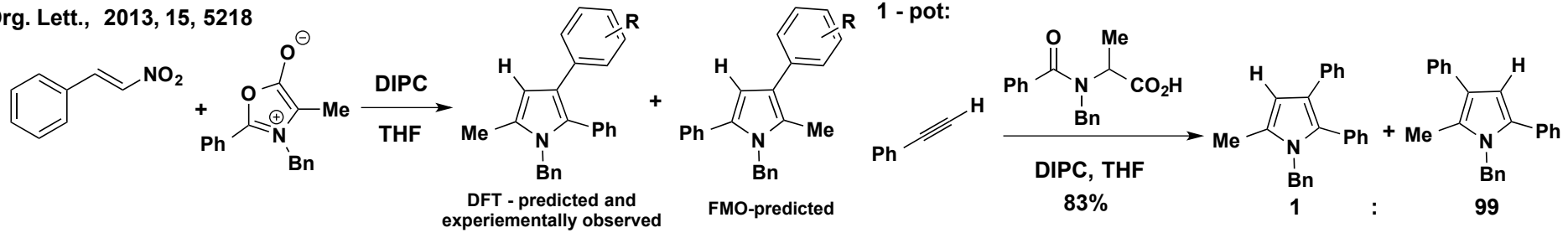


Regiochemistry is oppositie to FMO predictions

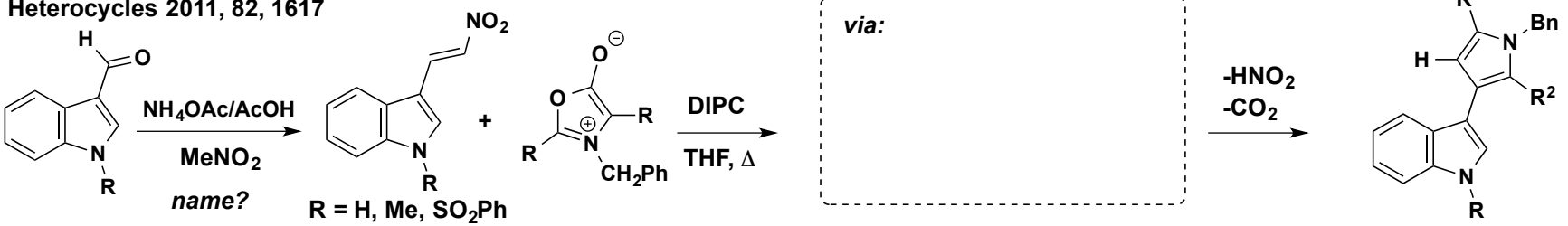


*EWG on indole nitrogen is needed

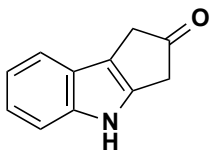
Org. Lett., 2013, 15, 5218



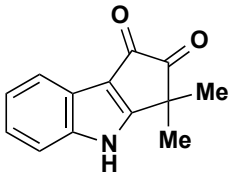
Heterocycles 2011, 82, 1617



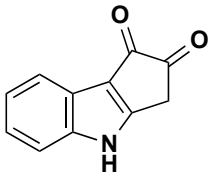
Gribble's Street Cred. - Natural Products Made



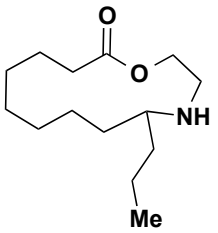
Bruceolline D



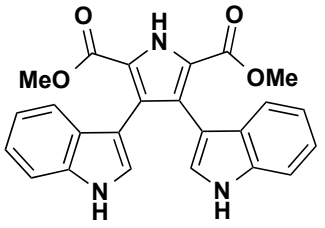
Bruceolline E



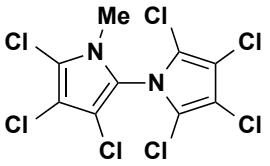
Bruceolline J



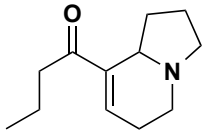
an Azamacrolide Allomone



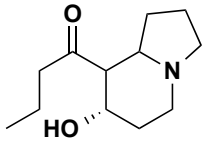
Lycogarubin C



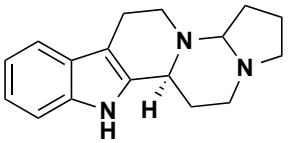
Heptachloro-1'-methyl-1,2'-bipyrrole



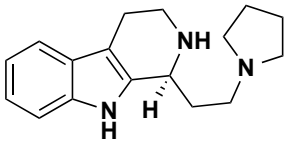
(±) - Elaeokanine A



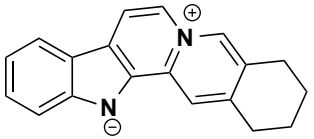
(±) - Elaeokanine C



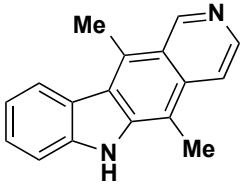
(±) - Elaeocarpidine



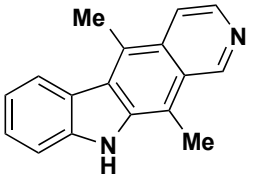
(±) - Tarennine



Semperivine



ellipticine



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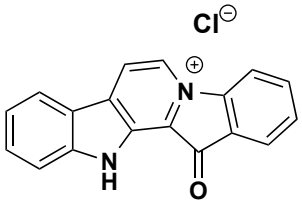
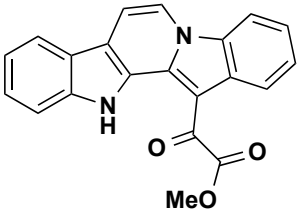
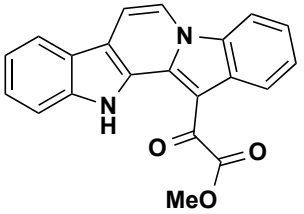


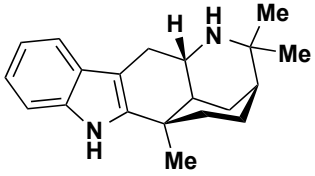
Fascaplysin



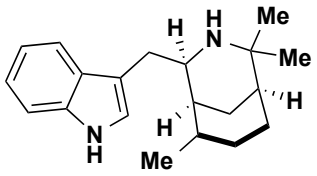
Homofascaplysin B



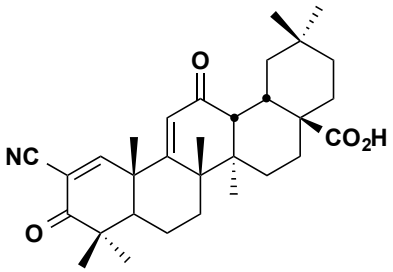
Homofascaplysin c



(+) - Aristoteline



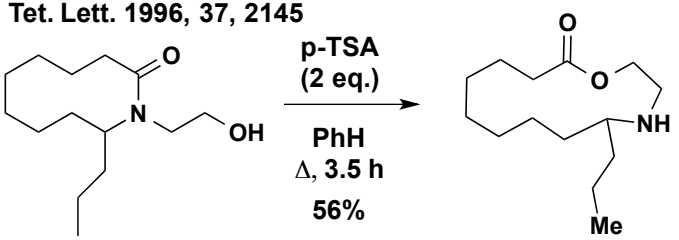
(-) - Hobartine



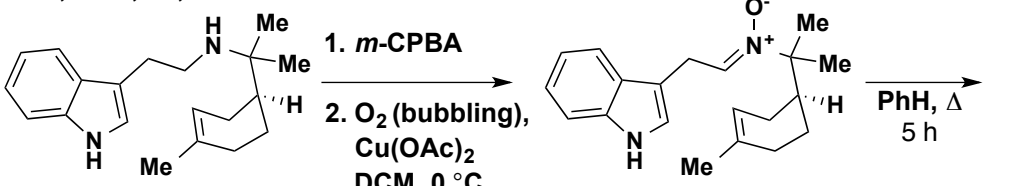
TP-151 (CDDO)

Curtain Call: Gribble Magic

Tet. Lett. 1996, 37, 2145



JOC, 1985, 50, 5900



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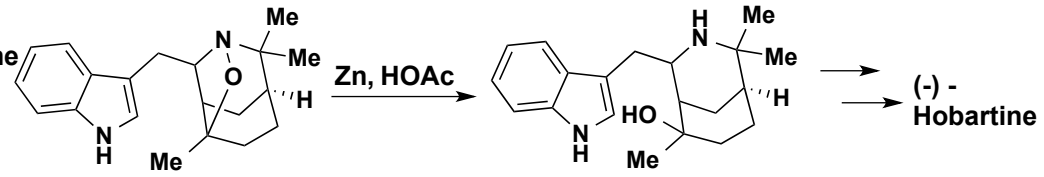
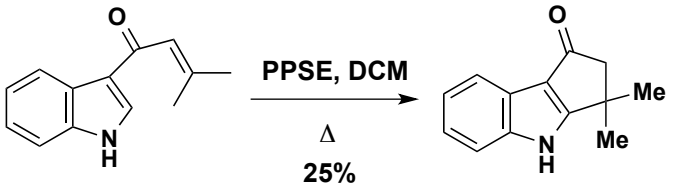
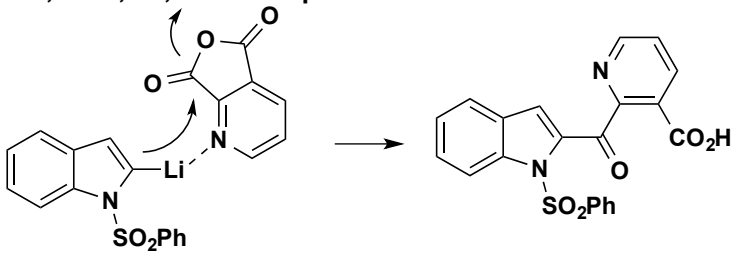


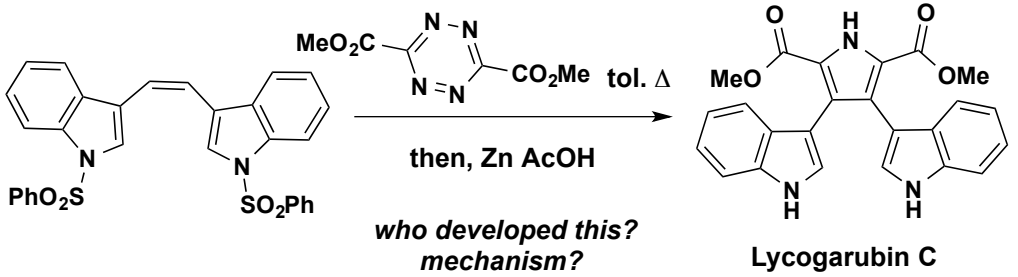
Tet. Lett. 2011, 52, 6772 (Bruceolline)



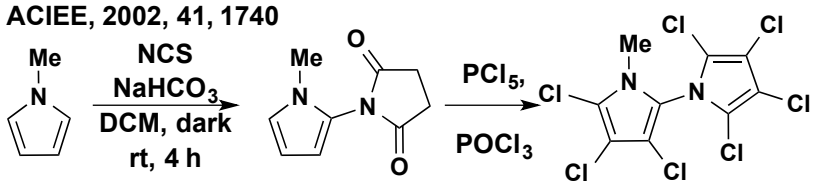
JOC, 1989, 54, 3264 - Ellipticine studies



Tet. Lett. 2011, 52, 6772 (Bruceolline)



ACIEE, 2002, 41, 1740



JOC, 1988, 53, 3164