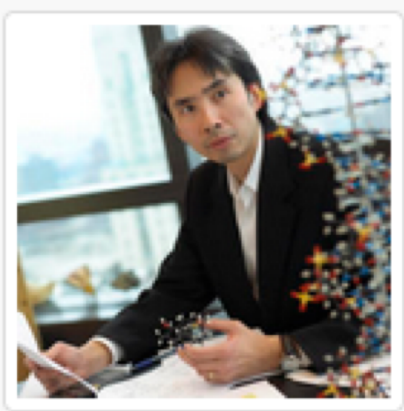
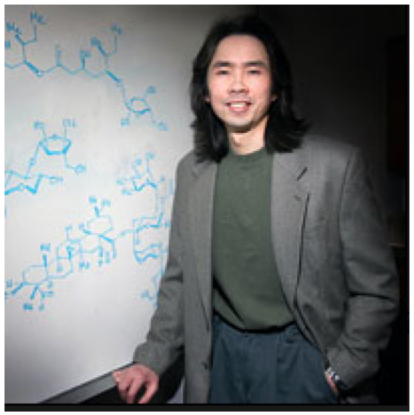
The Syntheses of David Gin





Born: May 16th, 1967 in Ashcroft, British Columbia

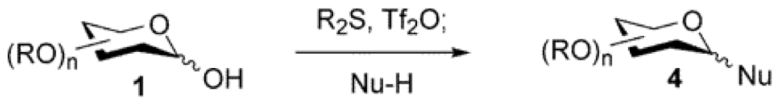
B.Sc.: University of British Columbia, 1989
Advisor: Tom Money

Ph.D.: Caltech, 1989-1994
Advisor: Andrew Myers

Postdoc: Harvard University 1994-1996
Advisor: E. J. Corey

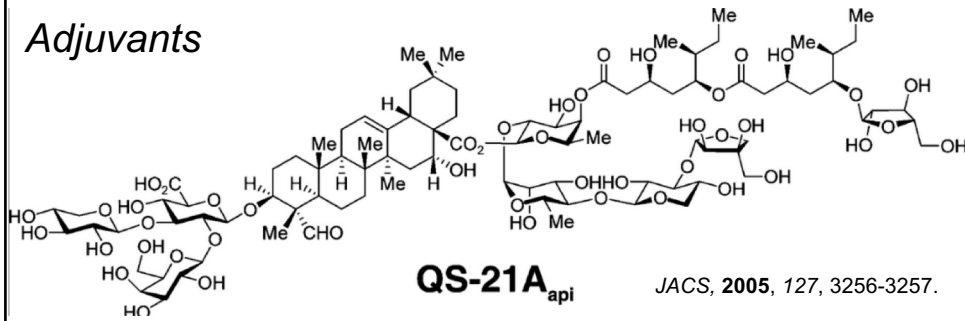
Independent: UIUC, 1996-2006
Sloan-Kettering Institute 2006-2011

Glycoslyation



JACS, **2001**, *123*, 8766-8772.

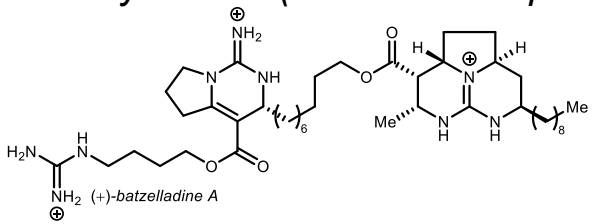
Adjuvants



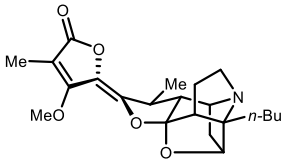
QS-21A$_{api}$

JACS, **2005**, *127*, 3256-3257.

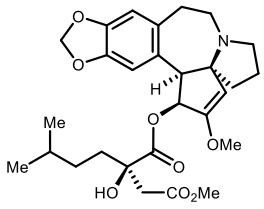
Total Synthesis (Focus of this presentation)



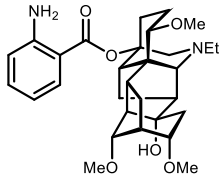
(+)-batzelladine A



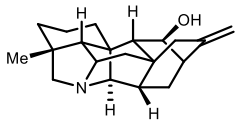
(+)-isostemofoline



( )-deoxyharringtonine



(+)-neofinaconitine

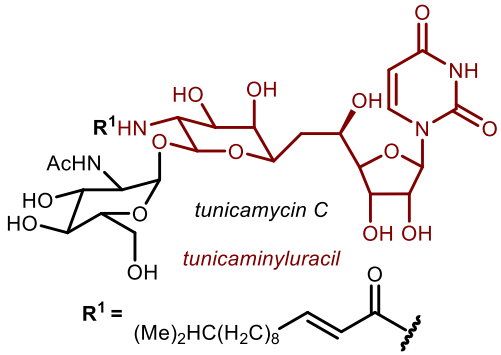


(+)-nominene

The Syntheses of David Gin

Isaac Falk

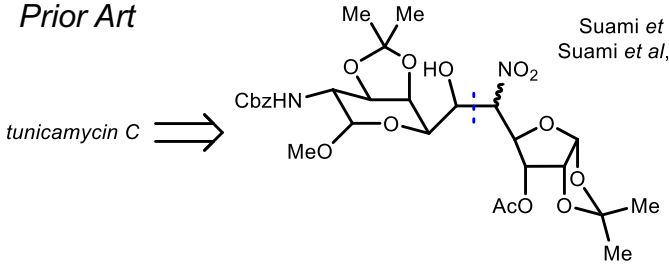
PhD Work (Advisor: Andrew Myers)



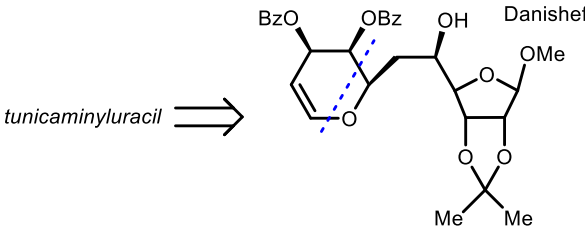
Undecose core

Challenging trehalose α,β-linkage

Prior Art

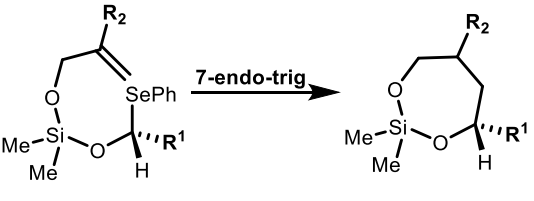


Suami *et al*, *Chem. Lett.* **1983**, 819-822.
Suami *et al*, *Carb. Res.*, **1985**, 143, *85-96.*

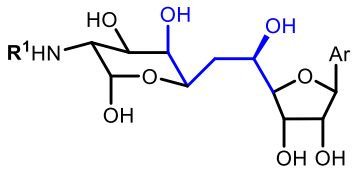


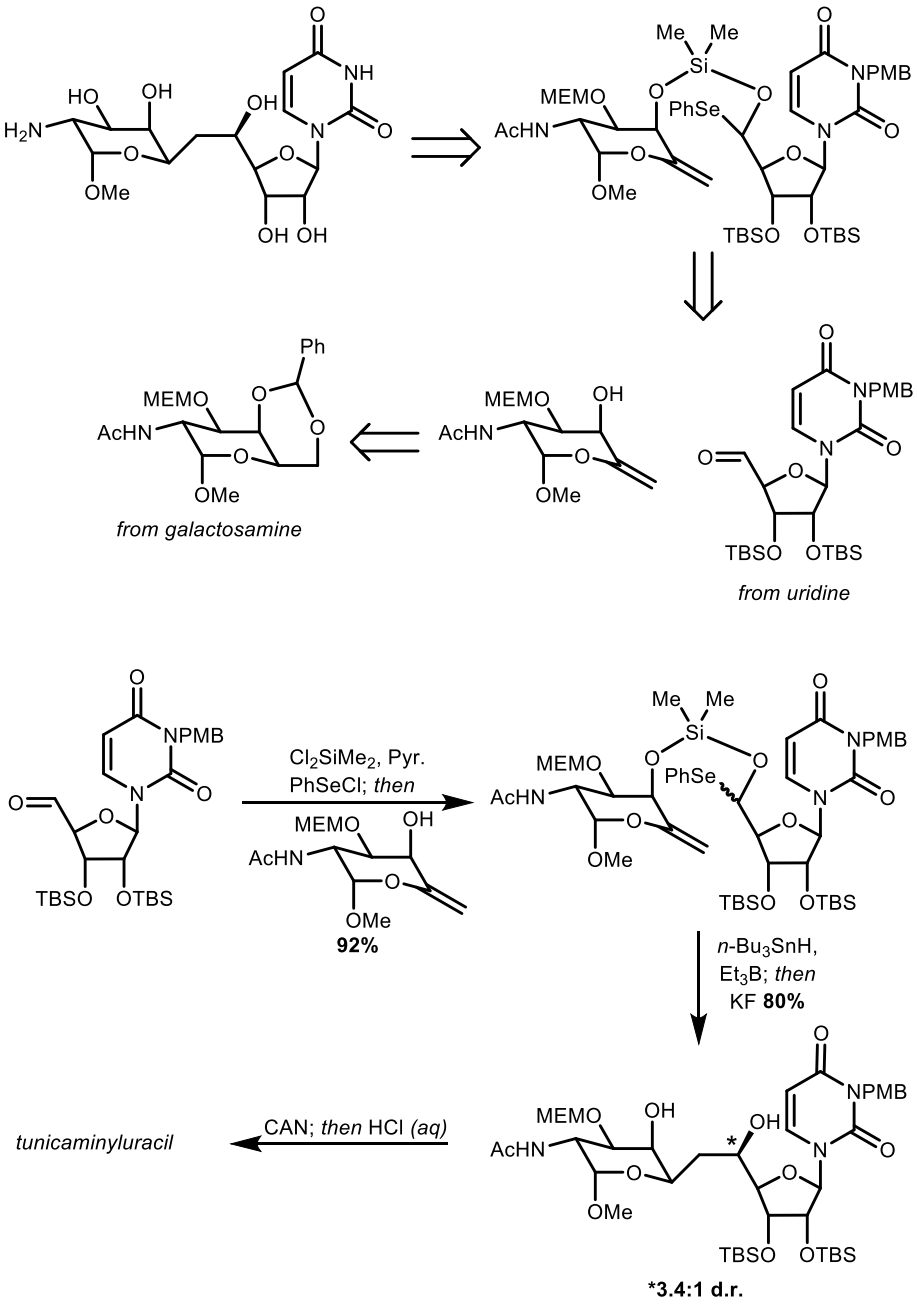
Danishefsky *et al*, *JACS*, **1985,** *107*, 7761-7762.

Synthesis of tunicaminyluracil



JACS, **1991,** *113*, 9661-9663.



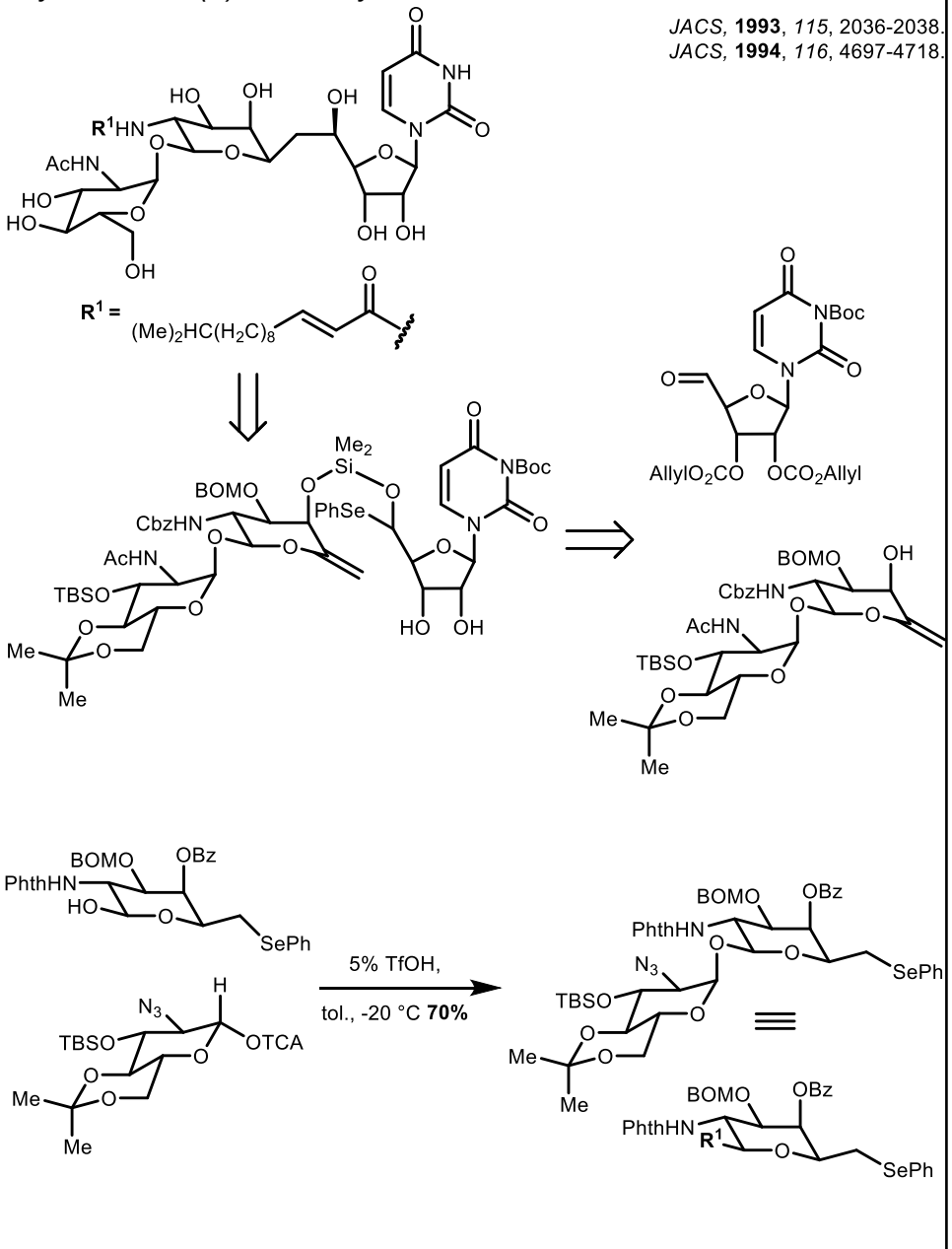


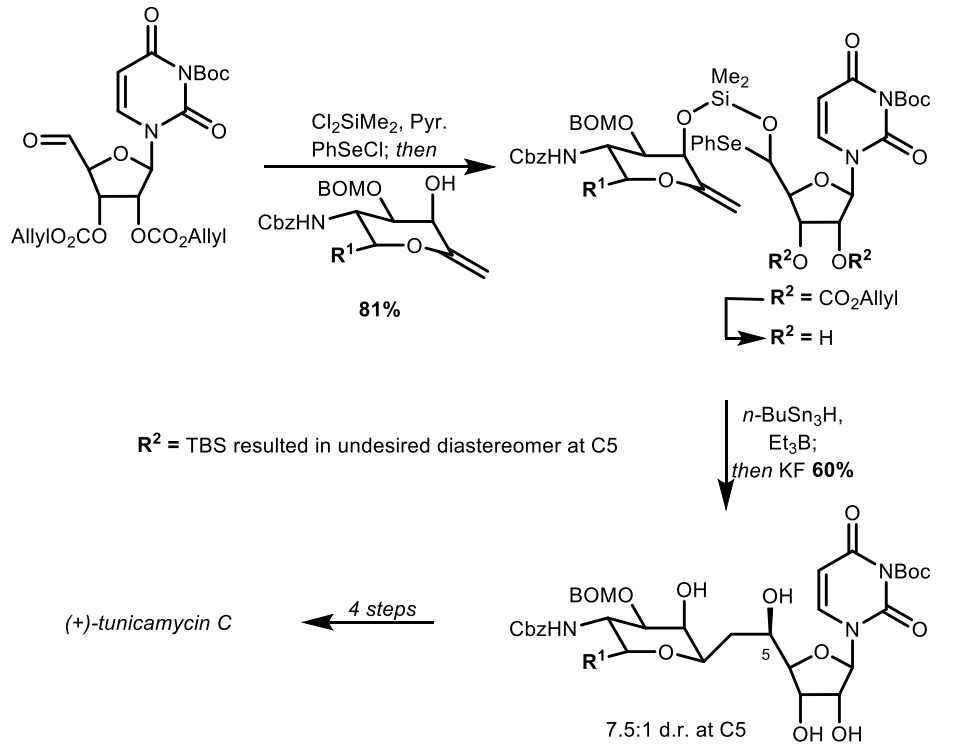
The Syntheses of David Gin

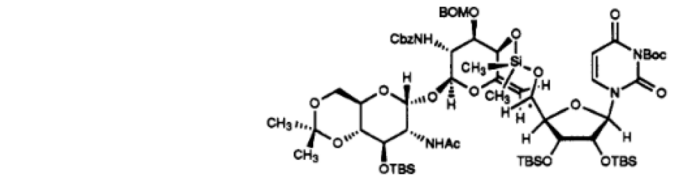
Isaac Falk

Synthesis of (+)-tunicamycin C

JACS, **1993**, *115*, 2036-2038.
JACS, **1994**, *116*, 4697-4718.

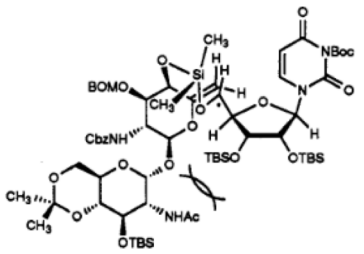






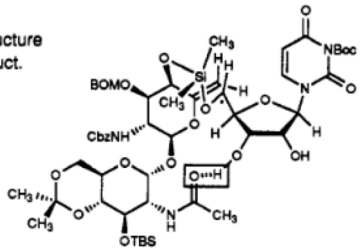
62

Hypothetical transition structure leading to undesired product. (Observed).



63

Hypothetical transition structure leading to desired product. (Not observed).



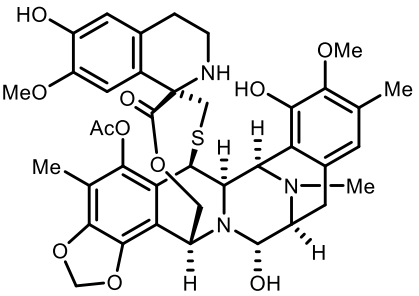
64

The Syntheses of David Gin

Isaac Falk

Postdoc Work (Advisor: E. J. Corey)

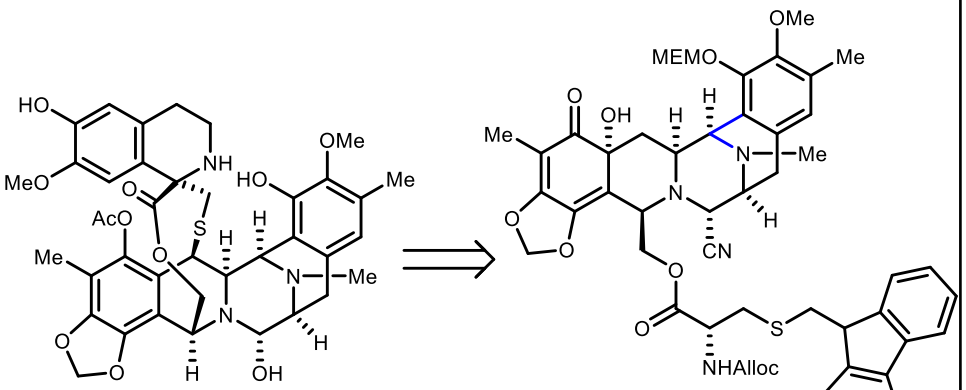
JACS, **1996**, *118*, 9202-9203.



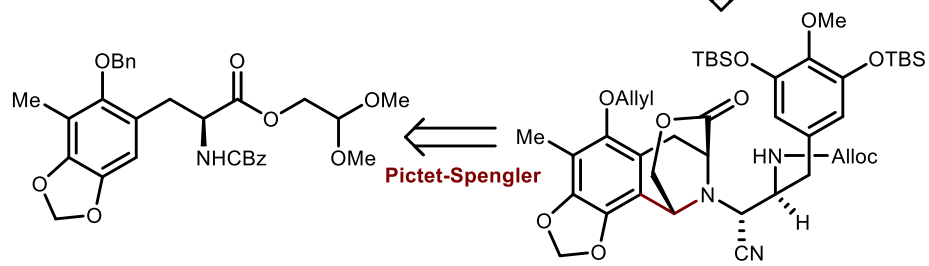
ecteinascidin 743

First reported total synthesis

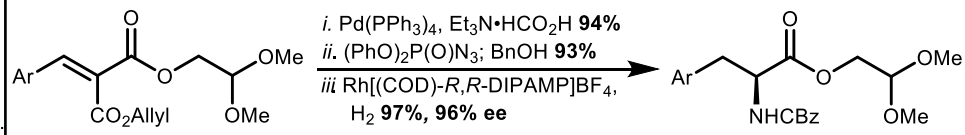
Commercial antitumor (Yondelis)

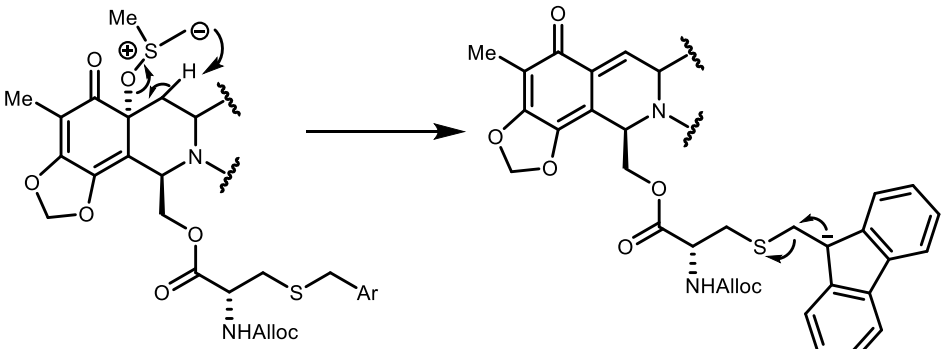


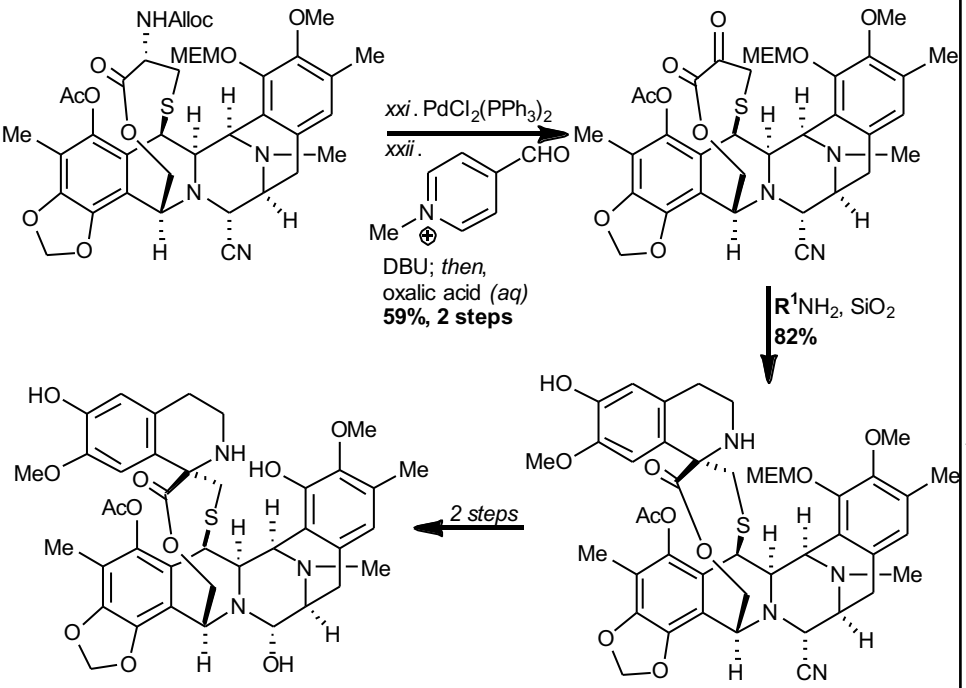
Pictet-Spengler



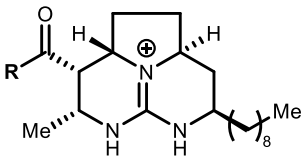
Pictet-Spengler



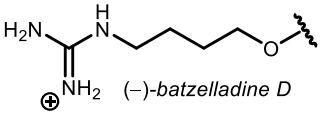




Independent Career: Guanidinum Alkaloids

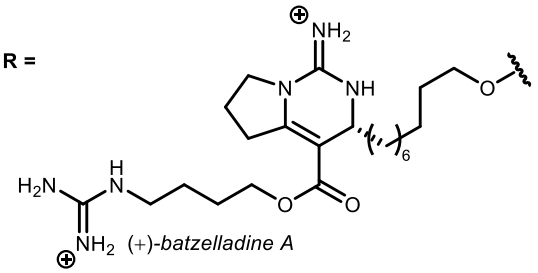


R =



(–)-*batzelladine D*

R =

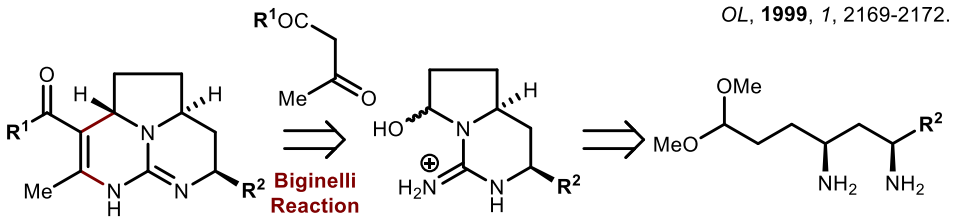


(+)-*batzelladine A*

Prior Art

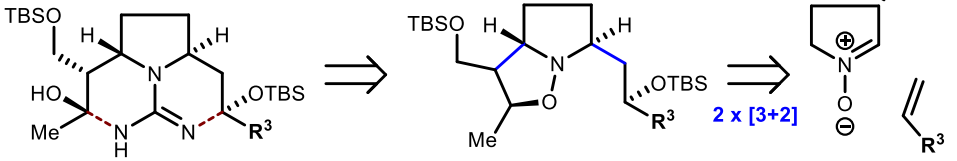
Overman et al

JOC, **1999**, *64*, 1512-1519.
OL, **1999**, *1*, 2169-2172.



Nagasawa et al

OL, **2002**, *4*, 2921-2924.
ACIE, **2004**, *43*, 1559-1562.

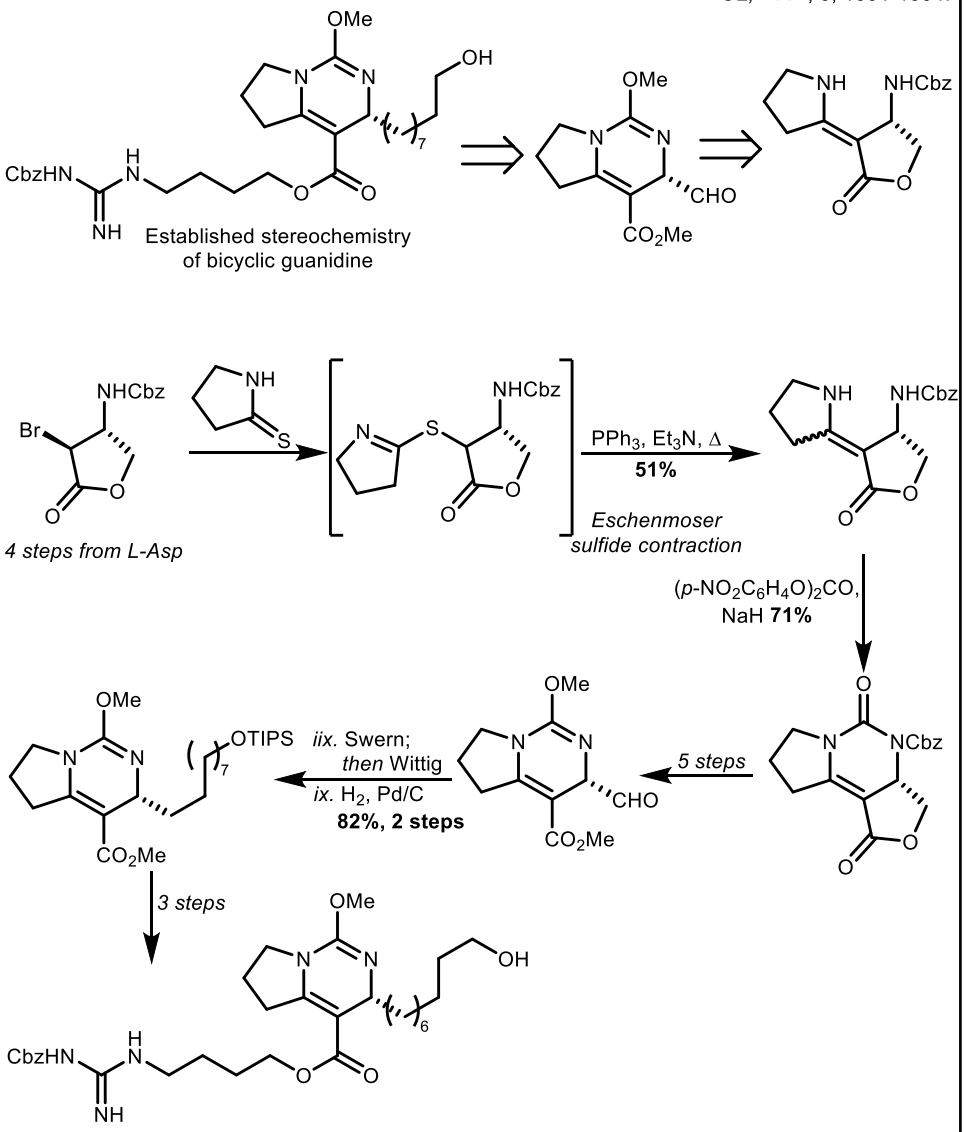


The Syntheses of David Gin

Isaac Falk

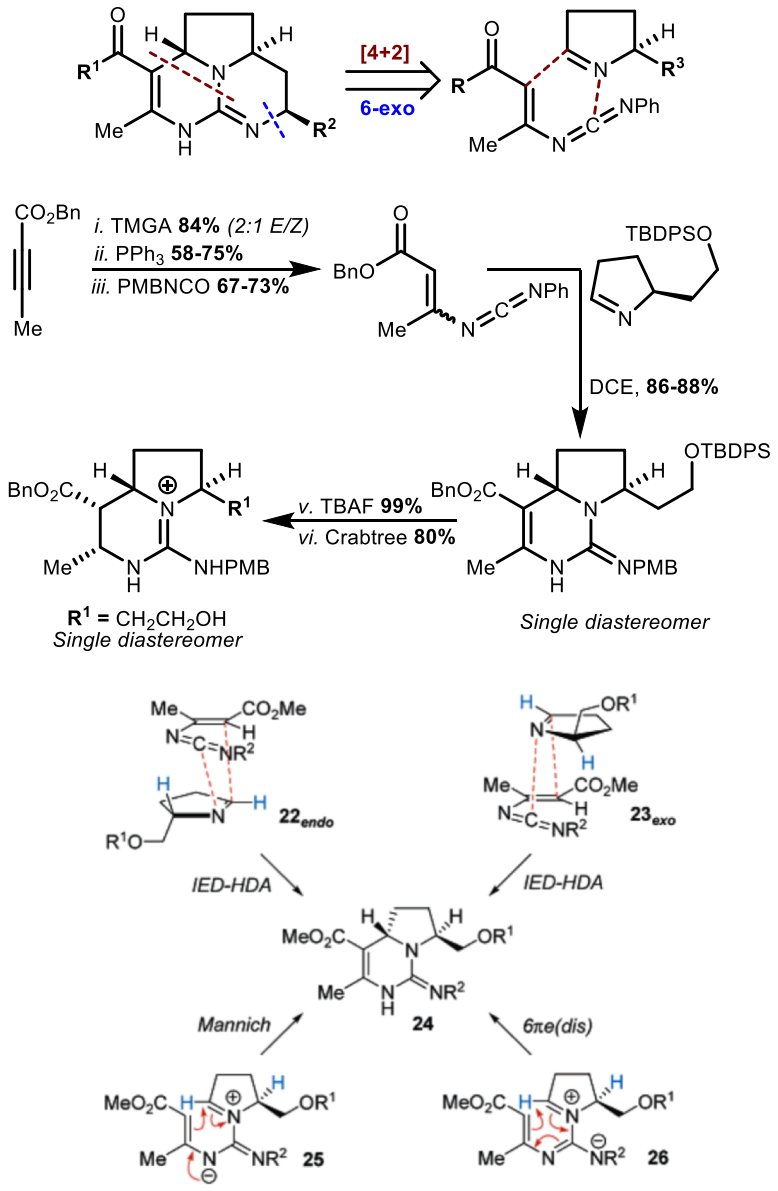
Toward the bicyclic fragment of (+)-batzelladine A

OL, **2001**, *3*, 1551-1554.



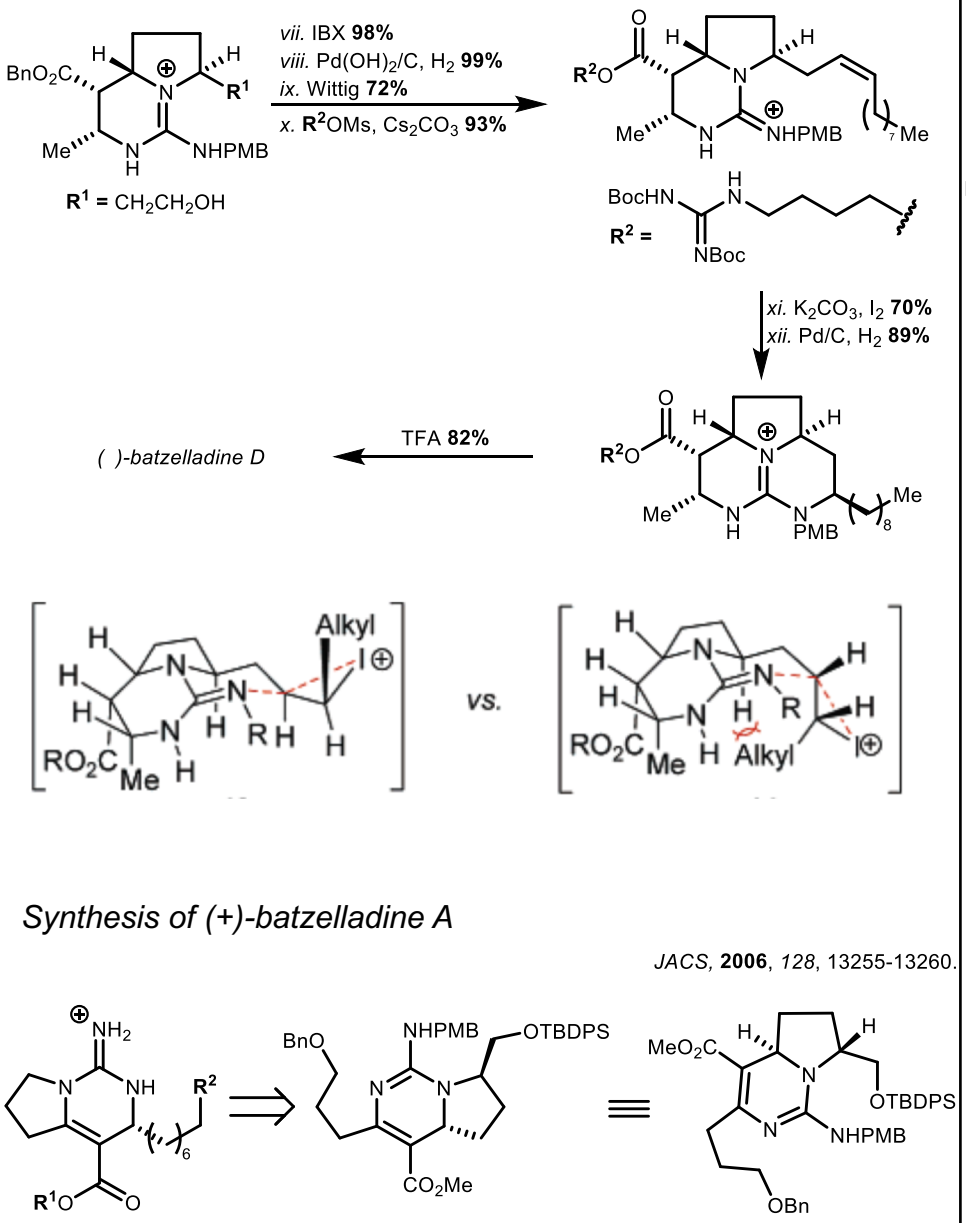
Synthesis of (–)-batzelladine D

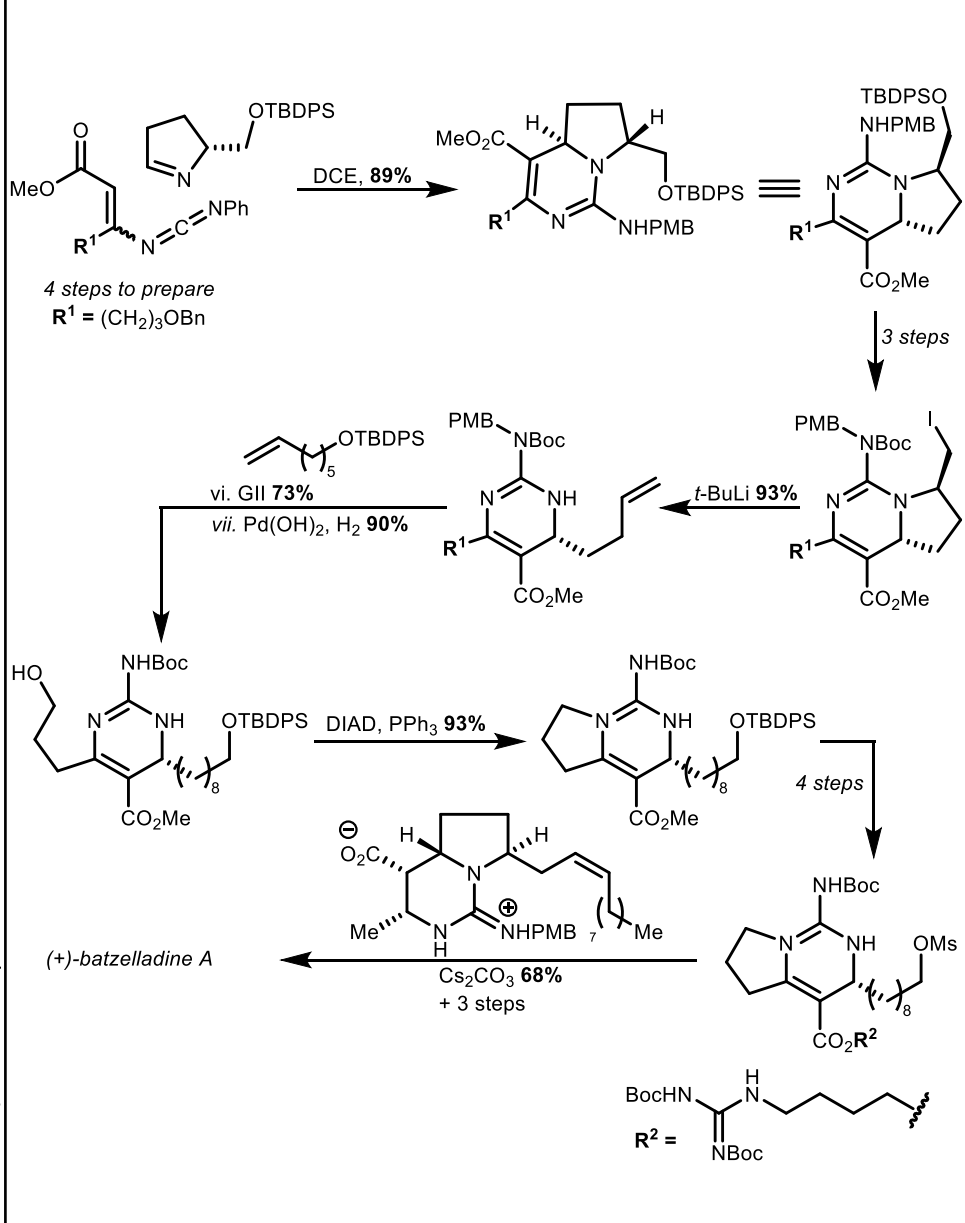
JACS, **2005**, *127*, 6924-6925.
JACS, **2006**, *128*, 13255-13260.



The Syntheses of David Gin

Isaac Falk



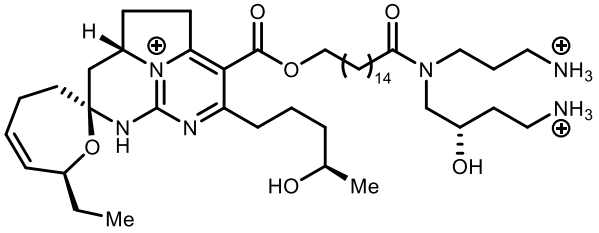


Synthesis of (+)-batzelladine A

JACS, **2006**, *128*, 13255-13260.

The Syntheses of David Gin

Isaac Falk

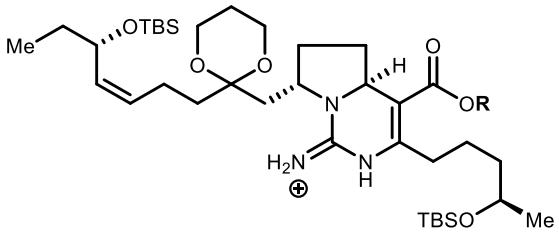


( )-crambidine

Prior Art

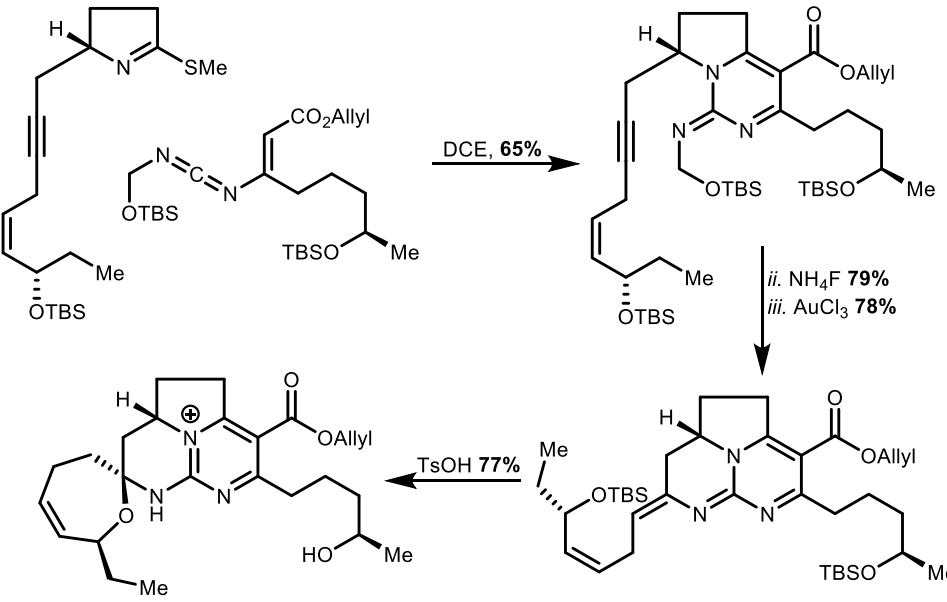
JACS, **2005**, *127*, 15652-15658.

Overman et al

( )-crambidine ⟹ (Biginelli) 

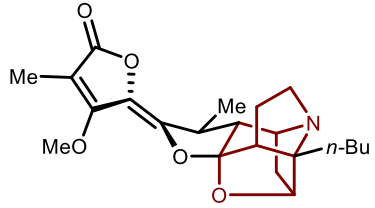
Synthesis of (–)-crambidine

JACS, **2010**, *132*, 1802-1803.



3 steps to ( )-crambidine

Independent Career: Azomethine Ylides



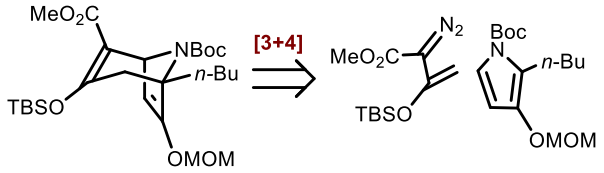
(+)-isostemofoline

azatricyclo[5.3.0.0^{4,8}]decane core

Prior Art

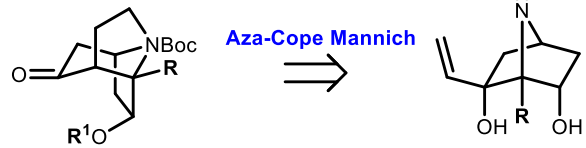
Kende et al

JACS, **1999**, *121*, 7431-7432.

( )-isostemofoline ⟹ 

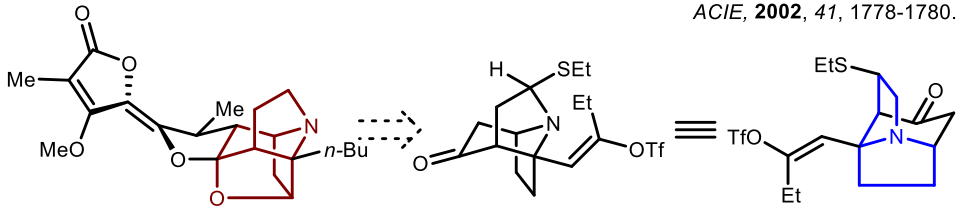
Overman et al

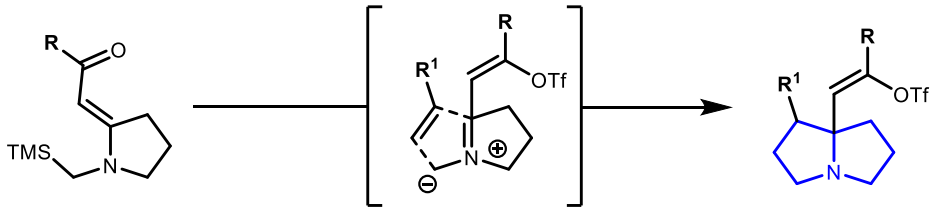
JACS, **2003**, *125*, 15284-15285.

( )-isostemofoline ⟹ 

Towards the bridged pyrrolizidine core of (+)-isostemofoline

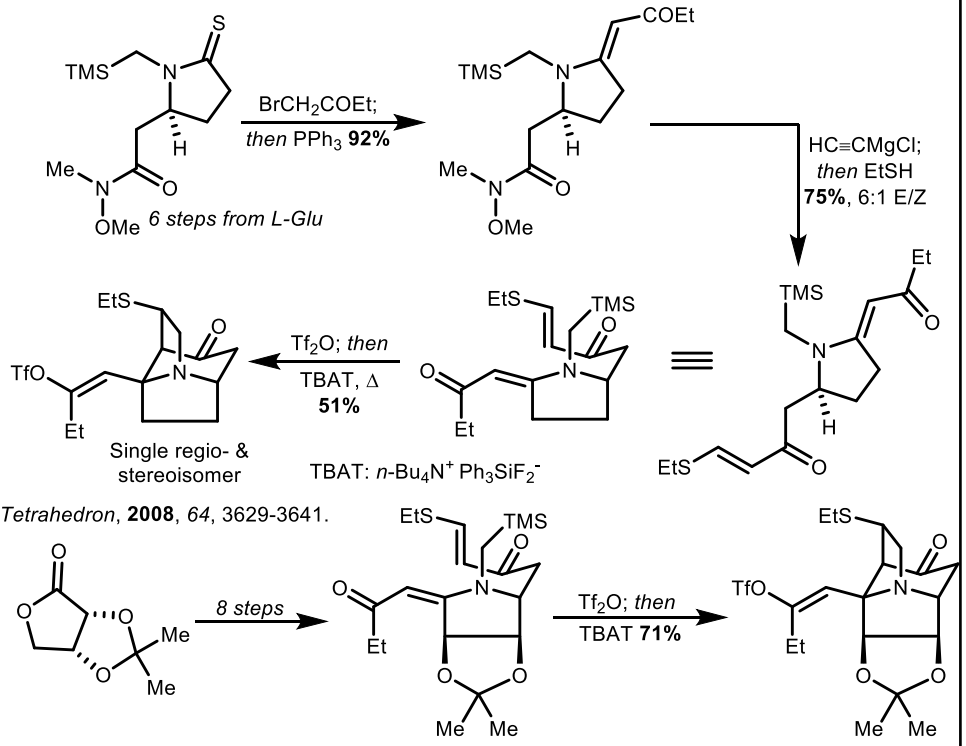
ACIE, **2002**, *41*, 1778-1780.



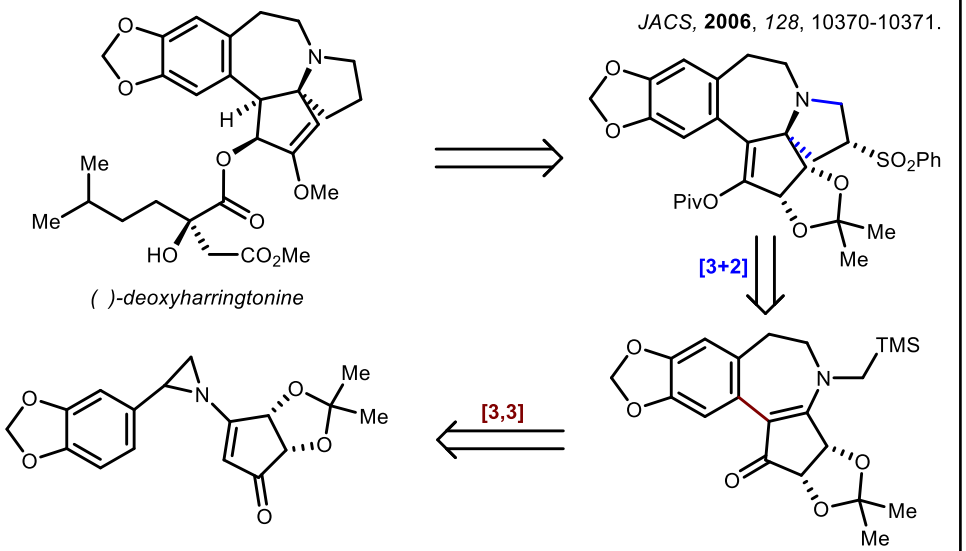


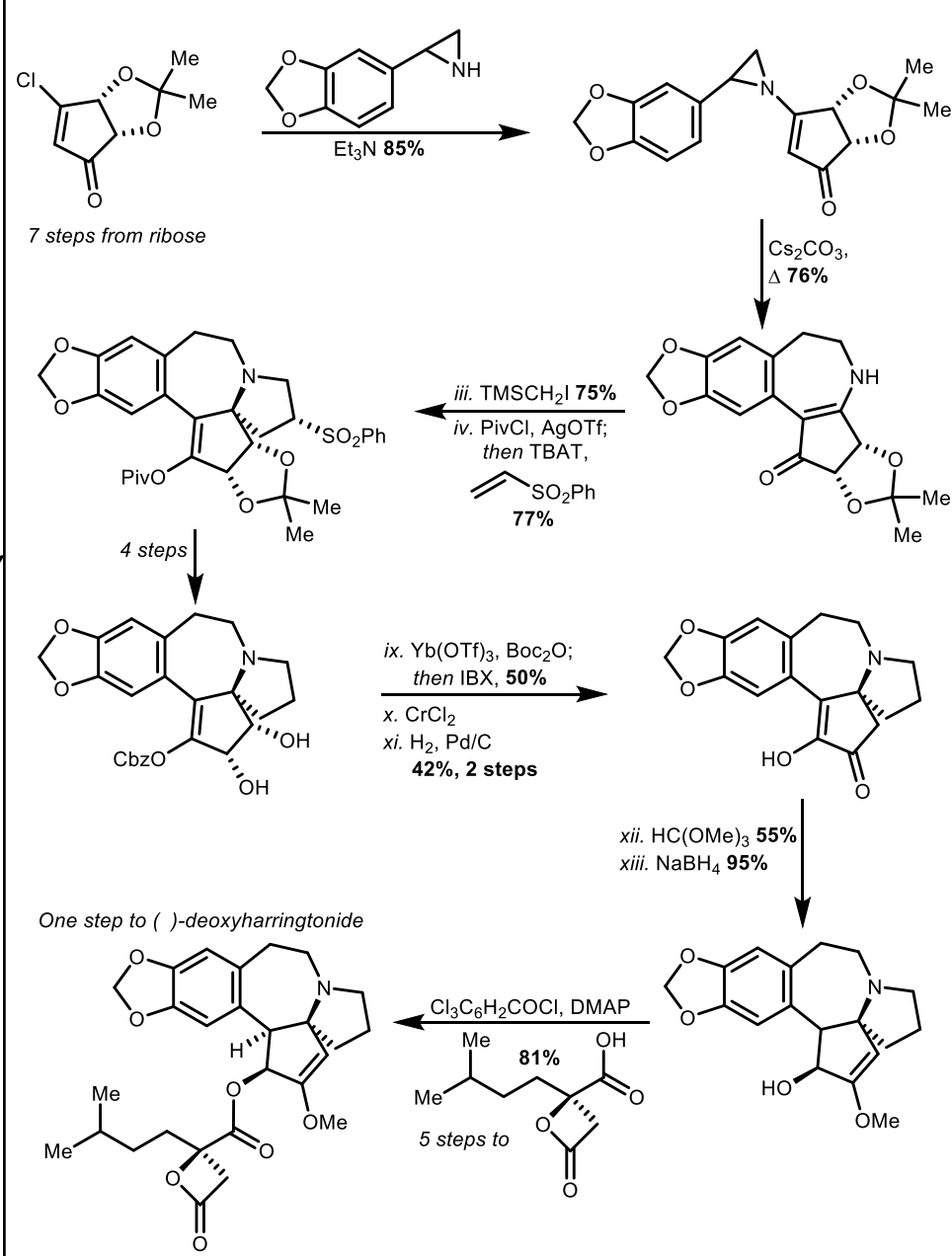
The Syntheses of David Gin

Isaac Falk



Synthesis of (–)-deoxyharrintonine

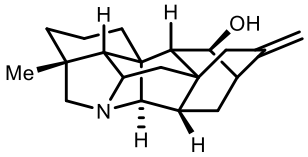




The Syntheses of David Gin

Isaac Falk

Independent Career: Hetisines and Hetidines

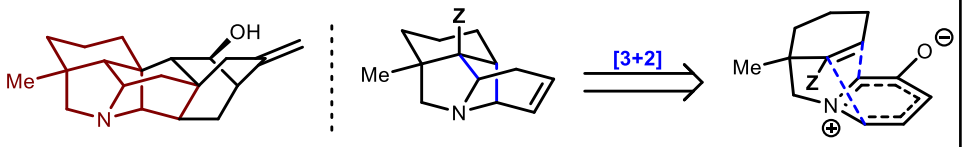


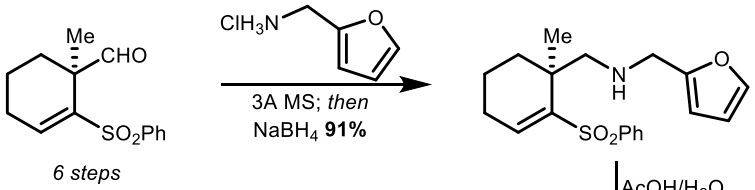
(+)-nominene

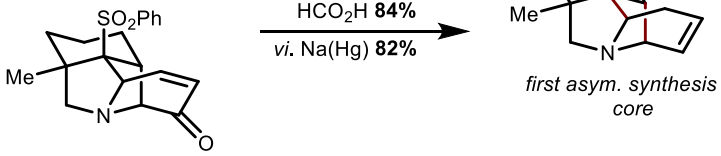
Previous synthesis by Muratake and Natsume required 40 steps to (±)-nominene
ACIE, **2004**, *43*, 4646-4649.

Synthesis of the hetisine aza-tricyclo core

OL, **2005**, *7*, 3323-3325.



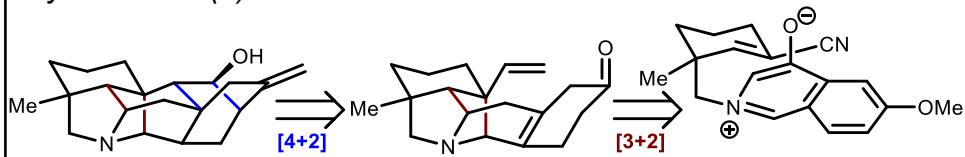


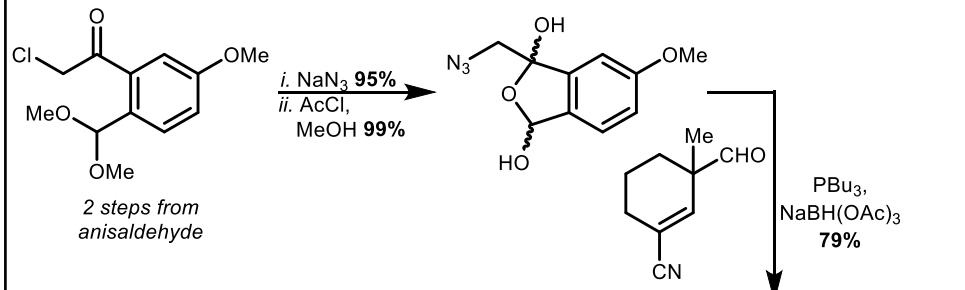


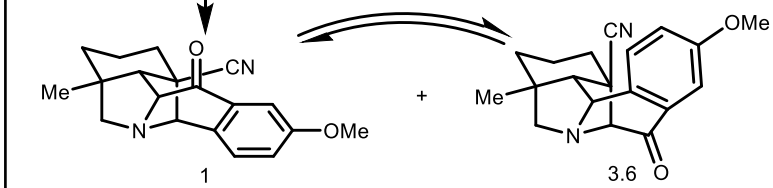
first asym. synthesis of core

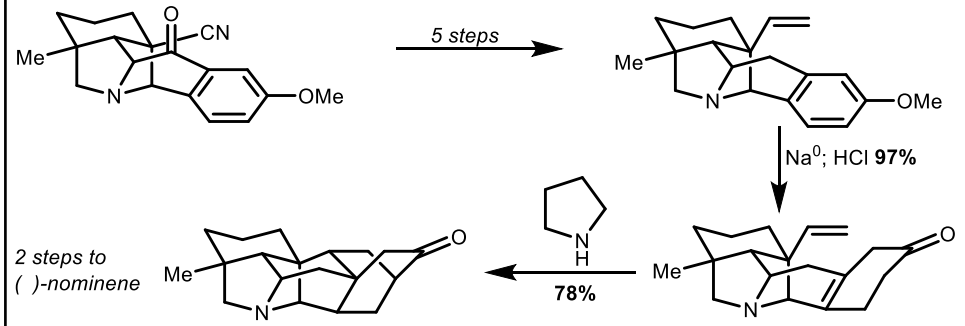
Synthesis of (±)-nominene

JACS, **2006**, *128*, 8734-8735.







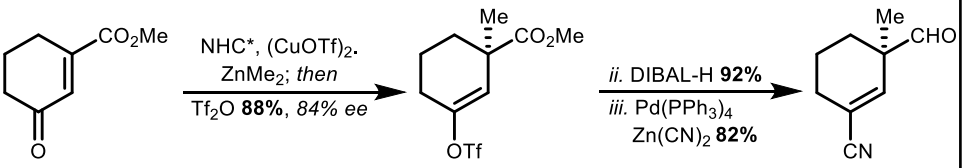


The Syntheses of David Gin

Isaac Falk

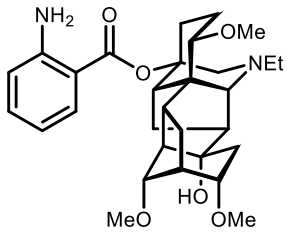
Synthesis of (+)-nominene

Chem. Eur. J., **2008**, *14*, 1654-1665.

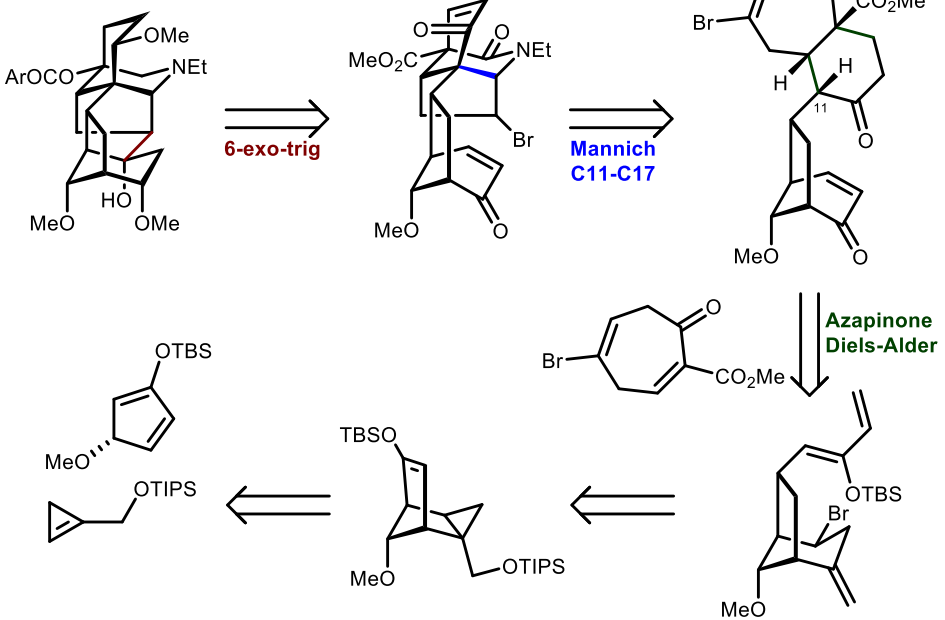


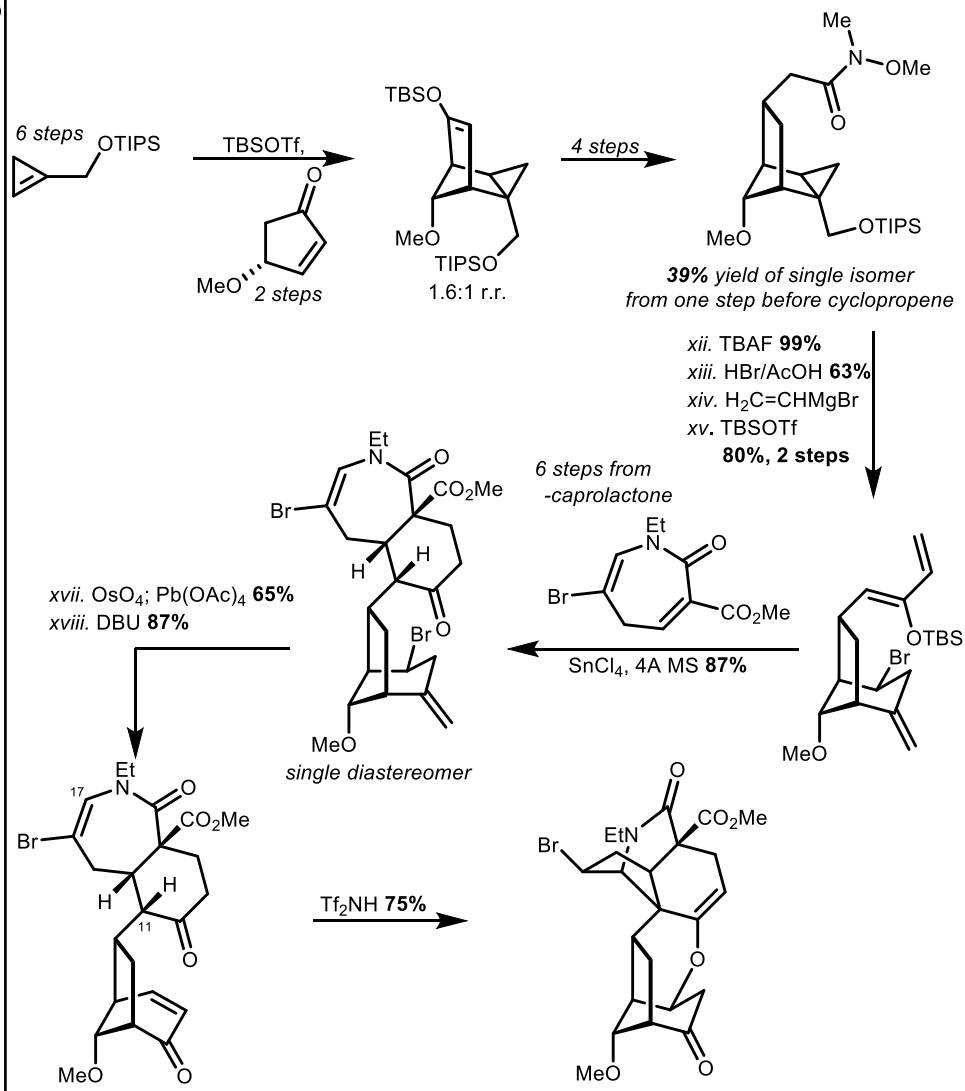
Synthesis of (+)-neofinaconitine

JACS, **2013**, *135*, 14313-14320.



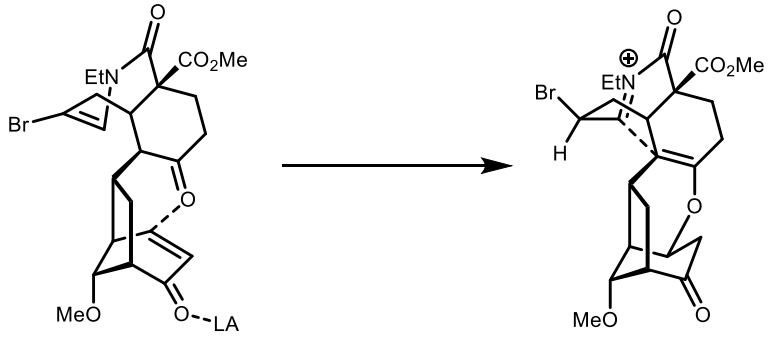
(+)-neofinaconitine

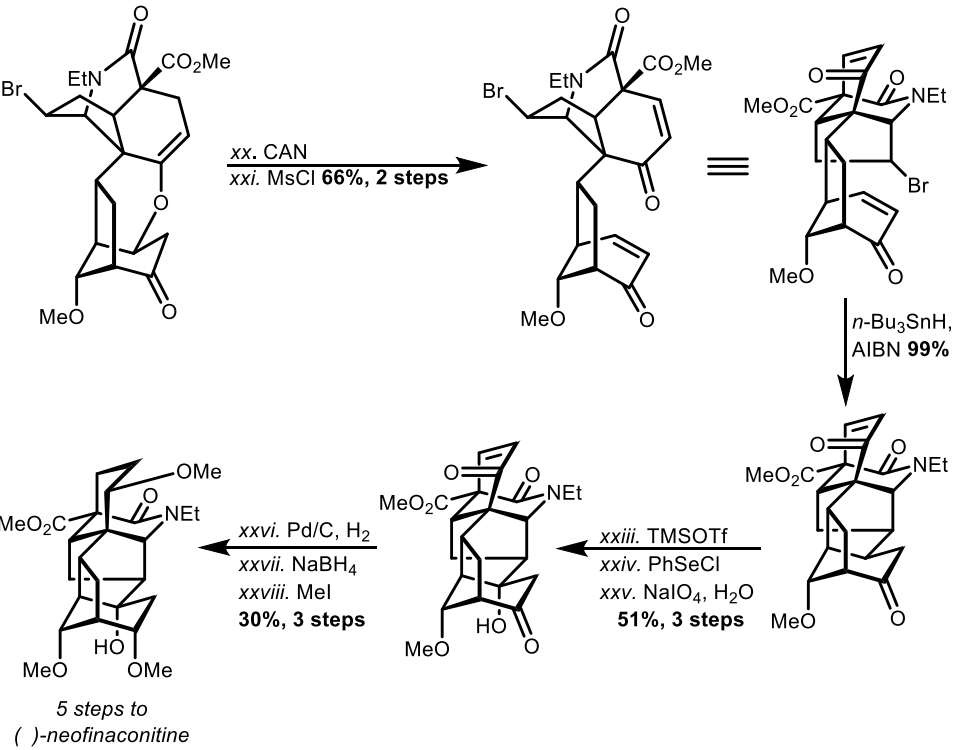




The Syntheses of David Gin

Isaac Falk





Not Discussed

Synthesis of (+)-pyrenolide *ACIE,* **2001**, *40*, 1128-1130.

Study towards palau'amine *ACIE,* **2008**, *47*, 6821-6824.

Anything relating to adjuvants

DISCLAIMER: The prior arts discussed were a small collection of specific examples and were in no way meant to be comprehensive