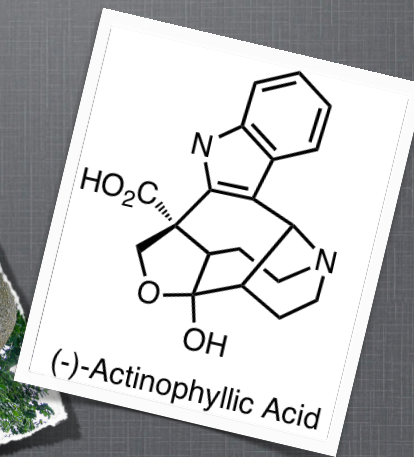


ACTINOPHYLLIC ACID

Mulzer Group Denksport - 20th may 2010



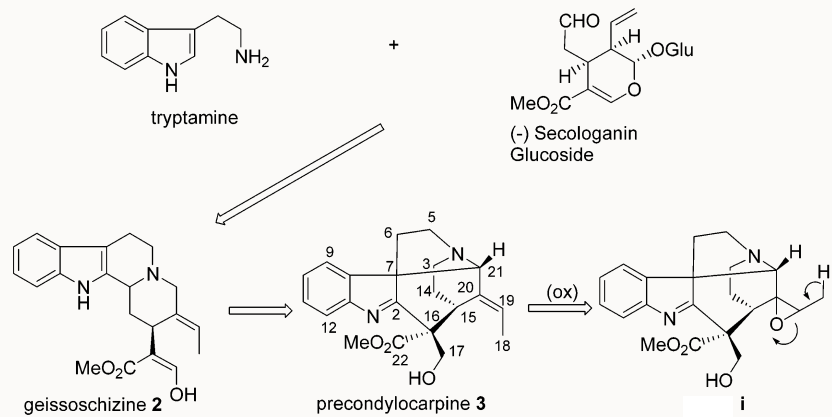
by Harald Weinstabl

FACTS ABOUT ACTINOPHYLLIC ACID

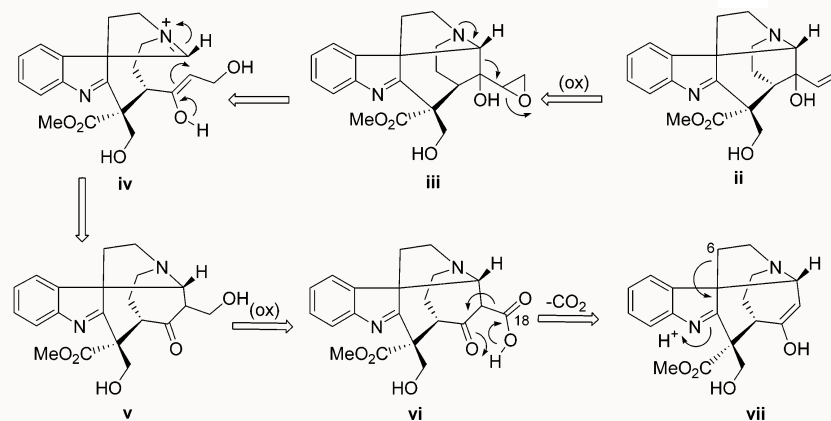
- Isolated by **Anthony R. Carroll** et al. [*J. Org. Chem.* 2005, 70, 1096-1099]
- Isolated by a **Bioassay-guided** fractionation of the aqueous extract of the **leaves** of *Alstonia actinophylla* (White Cheeswood)
- Coupled enzyme assay:** zinc-dependent Carboxypeptidase U (CPU)/ hippuricase for selective detection of thrombin-activatable fibrinolysis inhibitors (TAFIa; *anti-thrombosis*)
- Potent inhibitor:** $IC_{50}=0.84\mu\text{M}$
- Structure elucidation:**
 - optical rotation: $[\alpha]_D=-29^\circ$
 - 2D NMR
 - HRES-IMS: $m/z=341.1502$ ($\text{C}_{19}\text{H}_{20}\text{N}_2\text{O}_4$)
 - IR: 3407 (OH), 2928 (CH), 1706 (CO) [cm^{-1}]
- Unique skeleton**
[2,3,6,7,9,13c-hexahydro-1H-1,7,8-(methanetrioxymethano)-pyrrolo[1',2':1,2]azocino[4,3-b]indole-8(5H)-carboxylic acid]



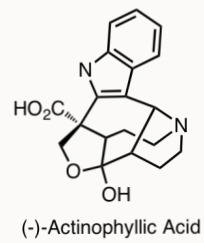
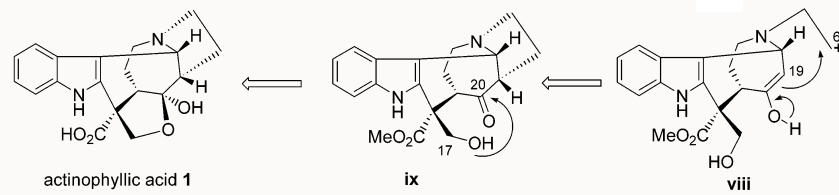
PROPOSED BIOSYNTHESIS








PROPOSED BIOSYNTHESIS



PROPOSED BIOSYNTHESIS

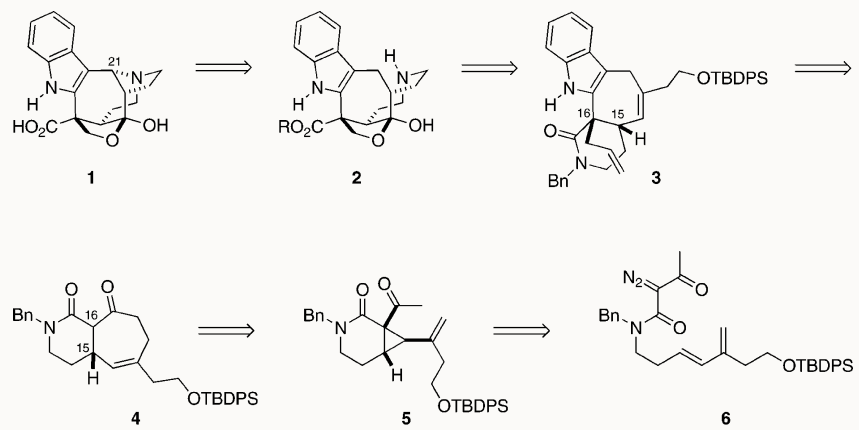


PUBLICATIONS CONCERNING ACTINOPHYLLIC ACID

-  Isolation by Carroll et al. [*J. Org. Chem.* **2005**, *70*, 1096-1099]
-  Racemic Synthesis by Larry Overman et al. [*J. AM. CHEM. SOC.* **2008**, *130*, 7568-7569]
-  Progress Toward the Synthesis ... by John Wood [*Org. Lett.*, *Vol. 11*, *No. 20*, **2009**]
-  Absolute configuration by Larry Overman et al. [*J. Nat. Prod.* **2009**, *72*, 430-432]
by means of optical rotation and electronic circular dichroism of its Methyl ester
-  Optically active Synthesis by Larry Overman et al. [*J. AM. CHEM. SOC.* **2010**, *132*, 4894-4906]

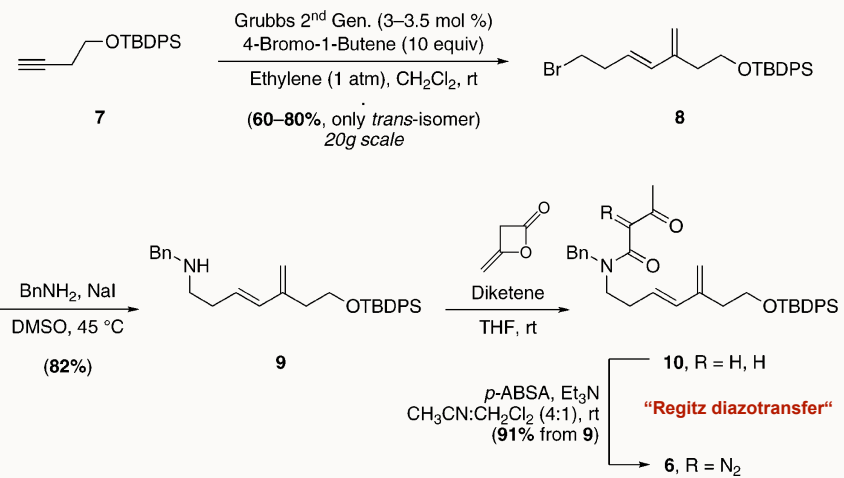
WOOD'S APPROACH

[*Org. Lett.*, Vol. 11, No. 20, 2009]



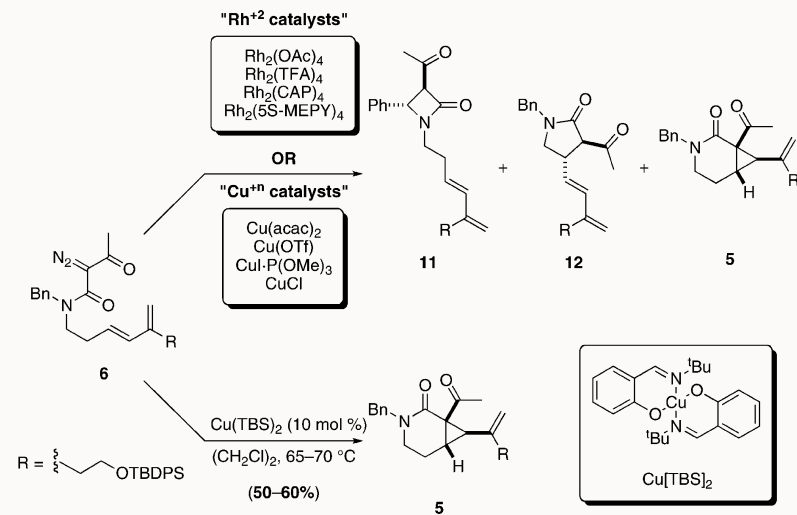
WOOD'S APPROACH

[*Org. Lett.*, Vol. 11, No. 20, 2009]



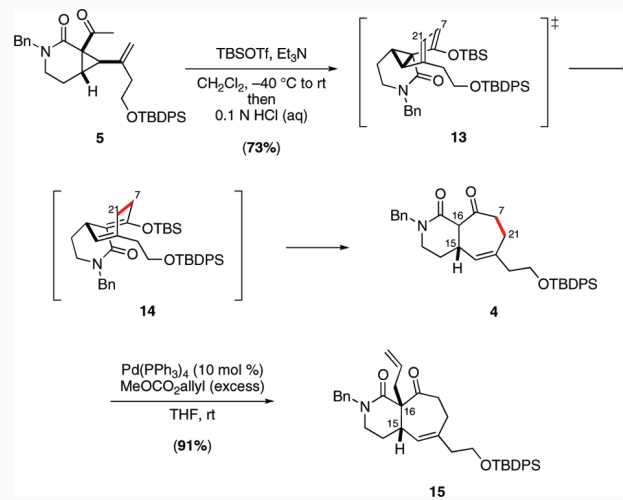
WOOD'S APPROACH

[Org. Lett., Vol. 11, No. 20, 2009]



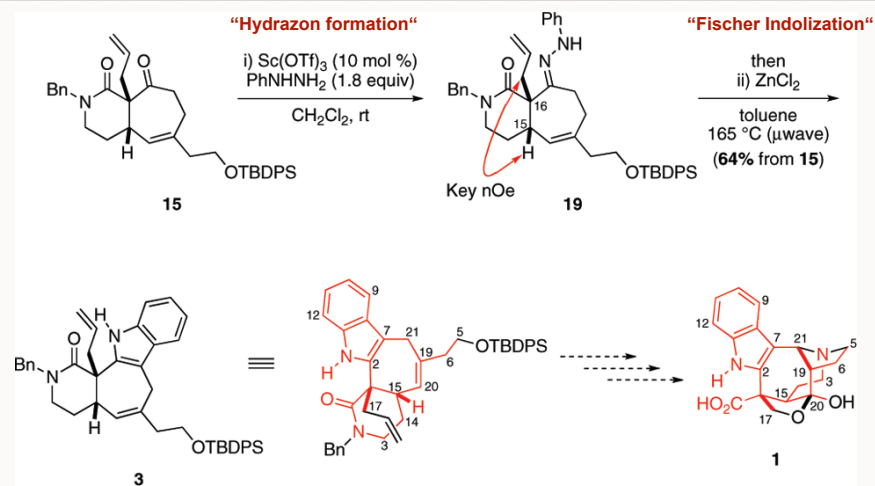
WOOD'S APPROACH

[*Org. Lett.*, Vol. 11, No. 20, 2009]



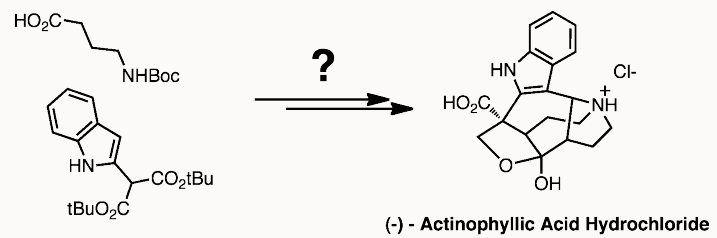
WOOD'S APPROACH

[*Org. Lett.*, Vol. 11, No. 20, 2009]

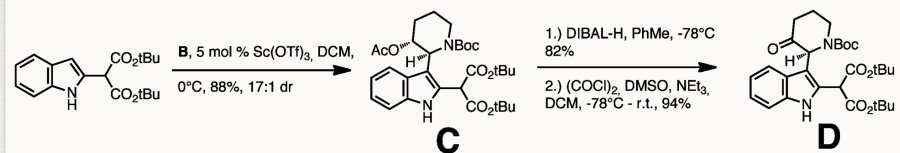
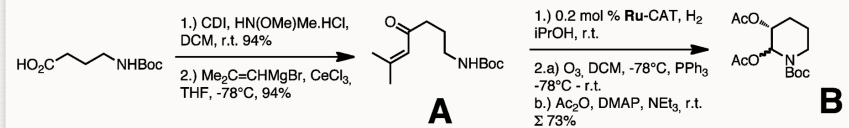


OVERMAN APPROACH

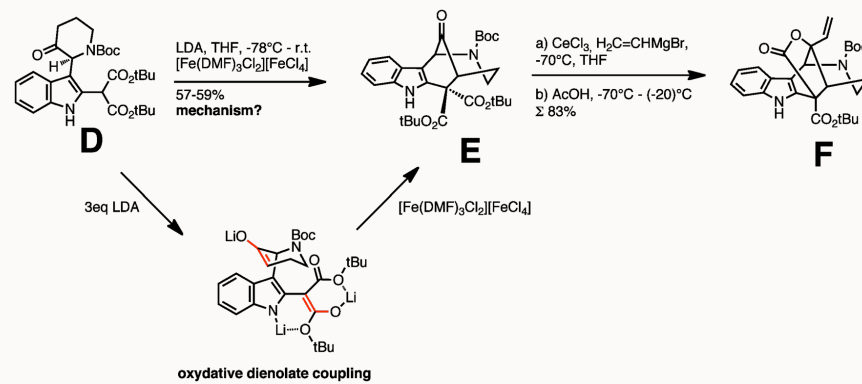
[*J. AM. CHEM. SOC.* 2010, 132, 4894–4906]



DENKSPORT - SOLUTION



DENKSPORT - SOLUTION



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