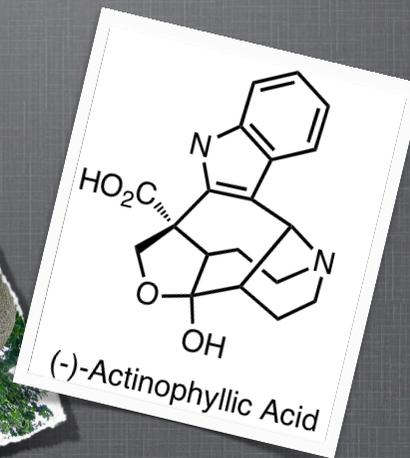


# ACTINOPHYLLIC ACID

Mulzer Group Denksport - 20th may 2010



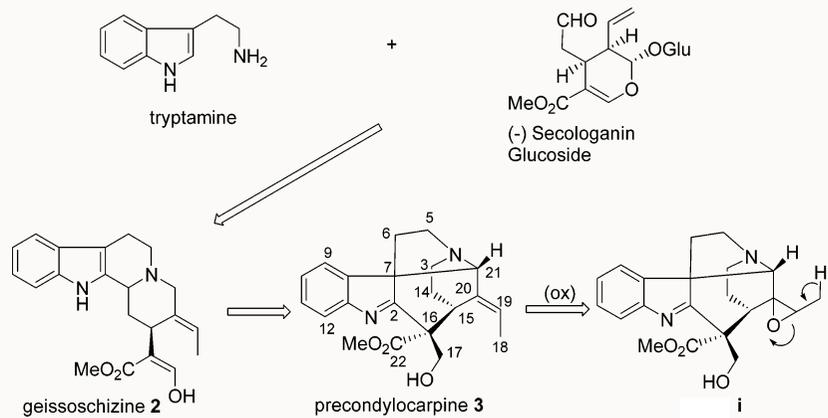
by Harald Weinstabl

# FACTS ABOUT ACTINOPHYLLIC ACID

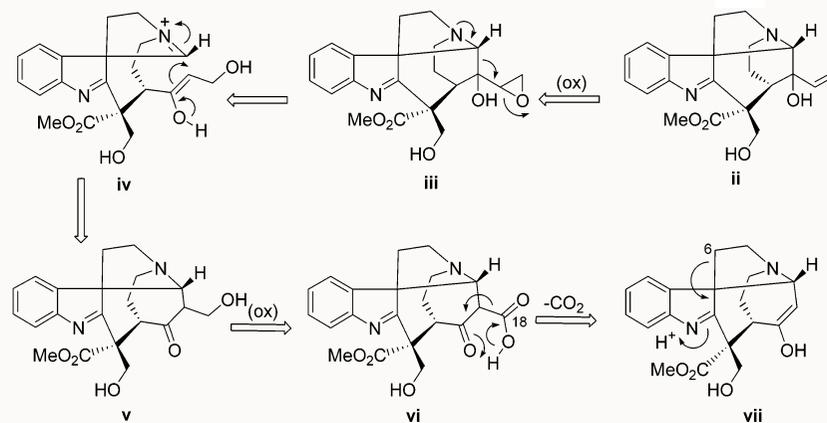
- Isolated by **Anthony R. Carroll** et al. [*J. Org. Chem.* 2005, 70, 1096-1099]
- Isolated by a **Bioassay-guided** fractionation of the aqueous extract of the **leaves** of *Alstonia actinophylla* (White Cheeswood)
- **Coupled enzyme assay:** zinc-dependent Carboxypeptidase U (CPU)/ hippuricase for selective detection of thrombin-activatable fibrinolysis inhibitors (TAFIa; *anti-thrombosis*)
- **Potent inhibitor:** IC<sub>50</sub>=0.84 μM
- **Structure elucidation:**
  - optical rotation: [α]<sub>D</sub>=-29°
  - 2D NMR
  - HRES-IMS: m/z=341.1502 (C<sub>19</sub>H<sub>20</sub>N<sub>2</sub>O<sub>4</sub>)
  - IR: 3407 (OH), 2928 (CH), 1706 (CO) [cm<sup>-1</sup>]
- **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]



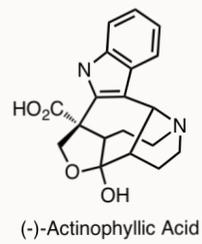
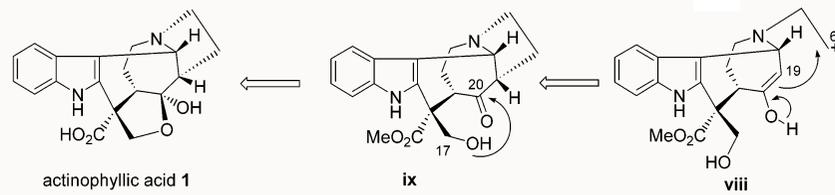
# PROPOSED BIOSYNTHESIS



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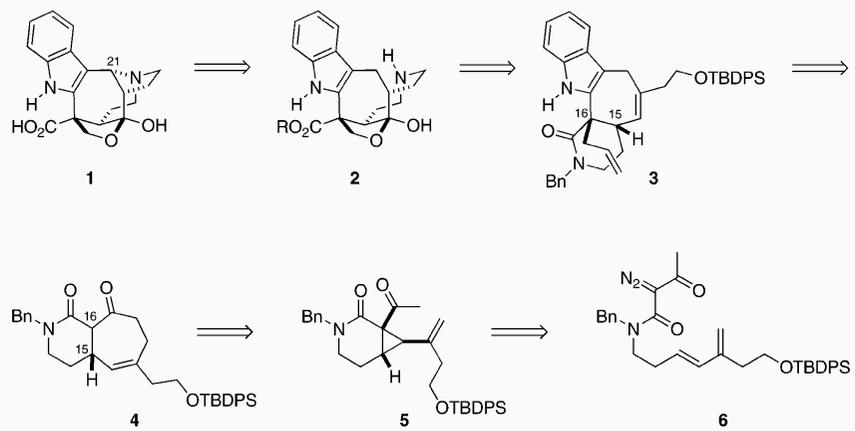


# PUBLICATIONS CONCERNING ACTINOPHYLLIC ACID

- 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]

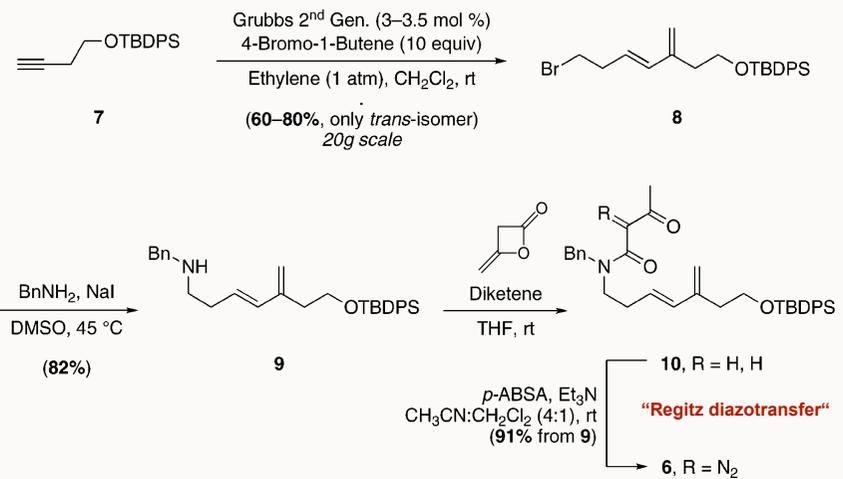
# WOOD'S APPROACH

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



# WOOD'S APPROACH

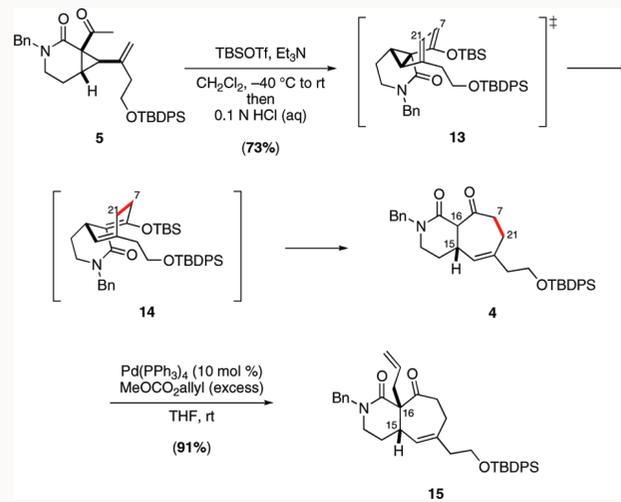
[*Org. Lett.*, Vol. 11, No. 20, 2009]





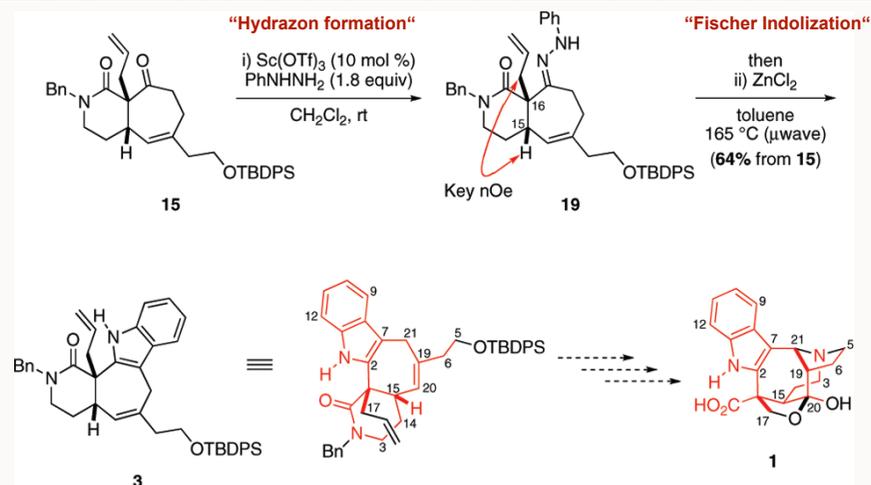
# WOOD'S APPROACH

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



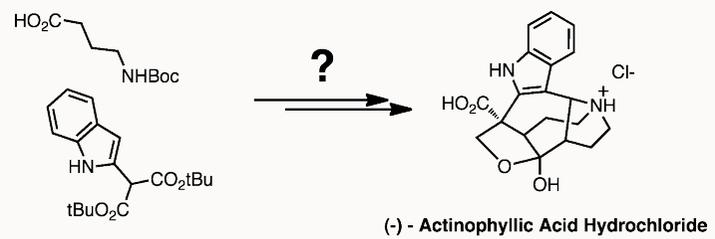
# WOOD'S APPROACH

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

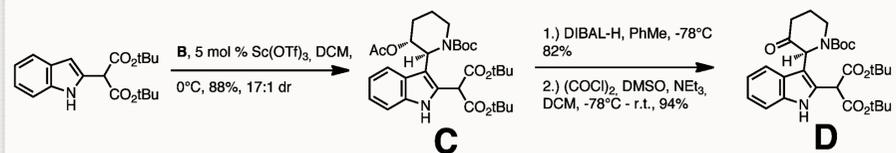
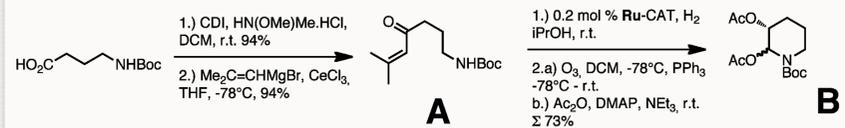


# OVERMAN APPROACH

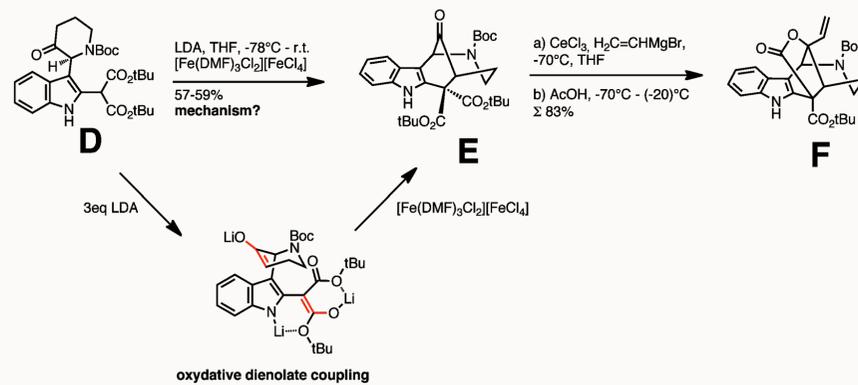
[*J. AM. CHEM. SOC.* 2010, 132, 4894–4906]



# DENKSPORT - SOLUTION



# DENKSPORT - SOLUTION



# DENKSPORT - SOLUTION

