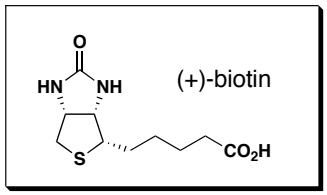
Biosynthesis/ Early Synthesis



-Biotin (or Vitamin H) is the active cofactor of pyruvate carboxylase; responsible for anaplerotic conversion of pyruvate to oxaloacetate; rejuvinates the Krebs Cycle

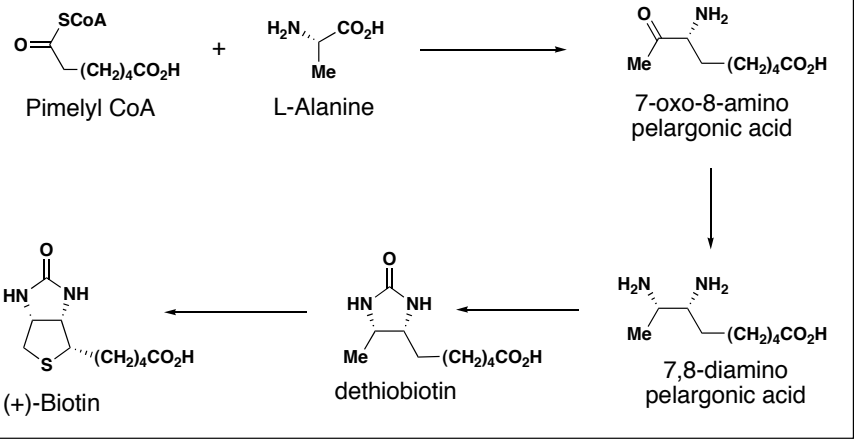
-Important additive to poultry and swine food stocks

-Contained in human diet, but not essential; biosynthetically available from colonic bacteria

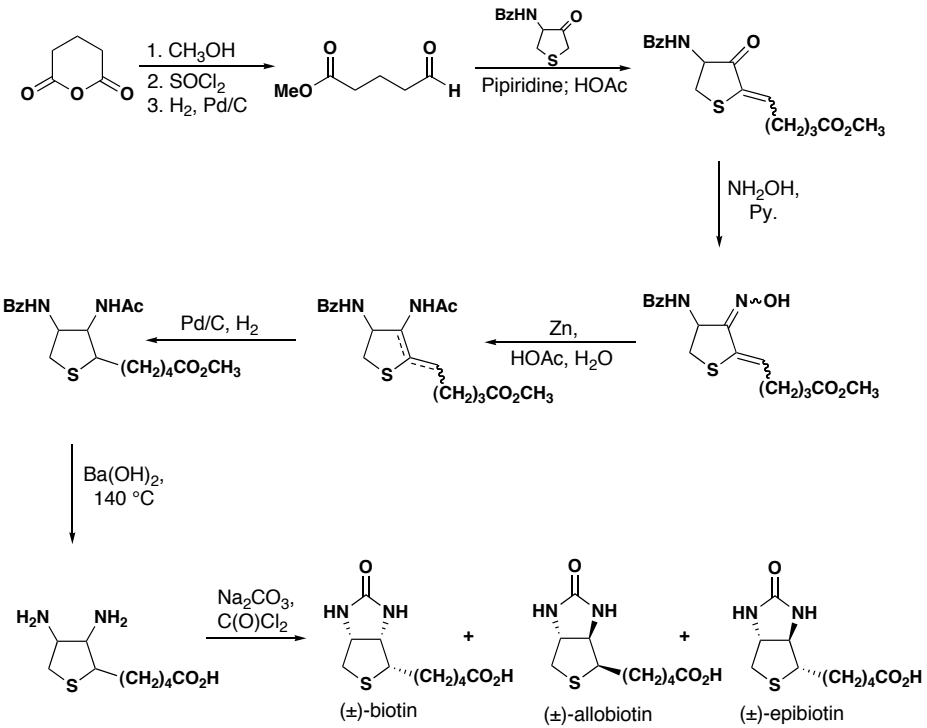
-For a comprehensive review, *see*: De Clerq, P. *Chem. Rev.* **1997**, *6*, 1755.

-For the most recent synthesis, *see*: Seki, M., *et al, Chem. Eur. J.* **2004**, *10,* 6102.

Biosynthetic Pathway



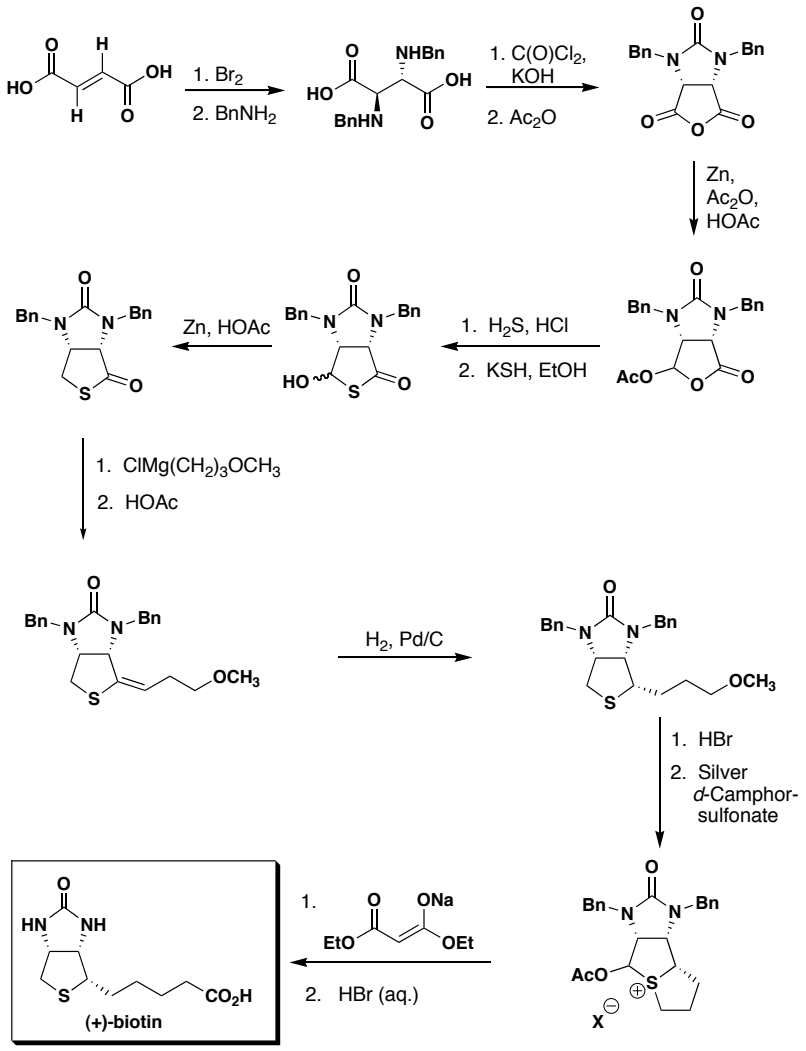
Wolf, Harris
First synthesis of (±)-biotin, 1943



Harris, J. A.; Wolf, D. E.; Mozingo, R.; Folkers, K. *Science* **1943**, *97*, 447.

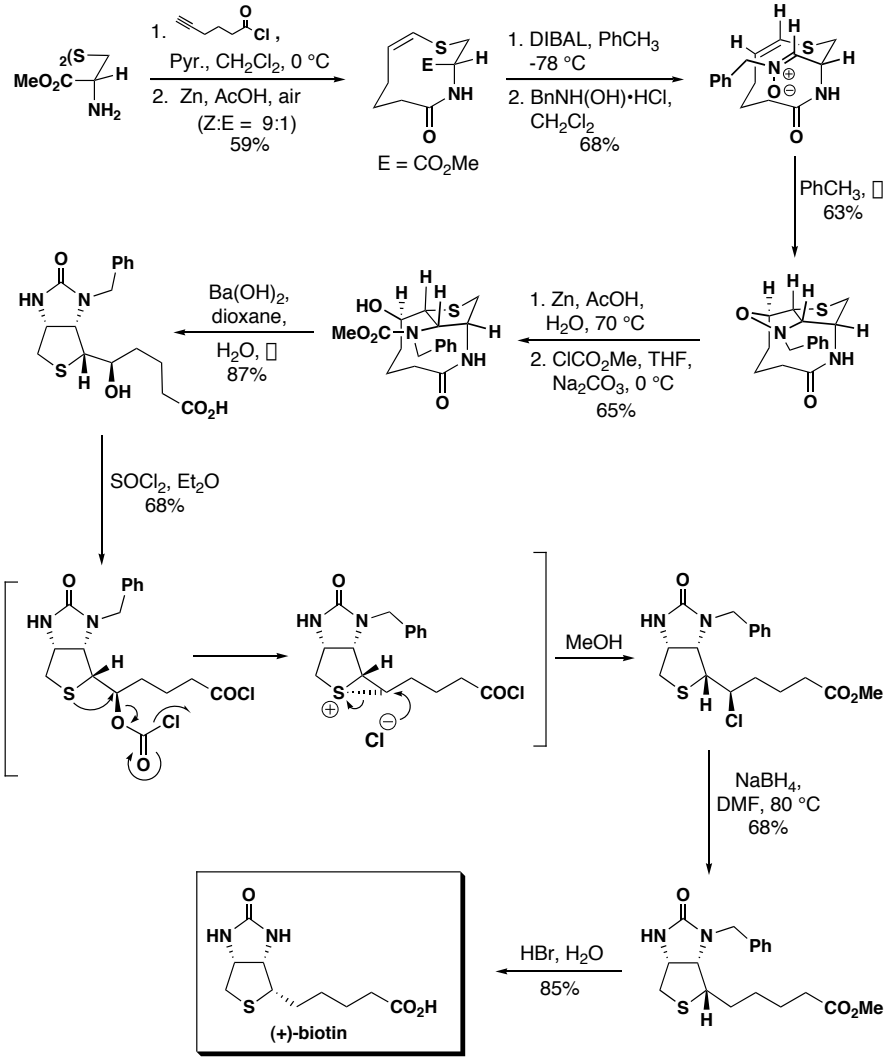
Early-Recent Syntheses

Goldberg, Sternbach
First synthesis of (+)-biotin, 1946



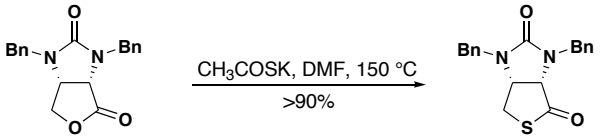
Goldberg, M. W., Sternbach, L. H. US Pat. 2,489,238, Nov. 22, 1949

Hoffmann-La Roche
Synthesis of (+)-biotin, 1982

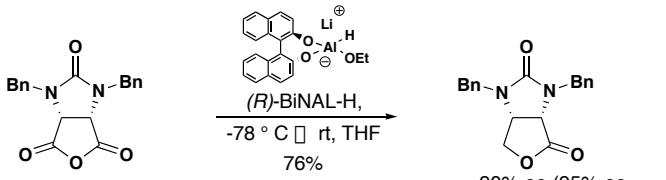


Baggiolini, E. G., et al., *J. Am. Chem. Soc.*, **1982**, *104*, 6460.

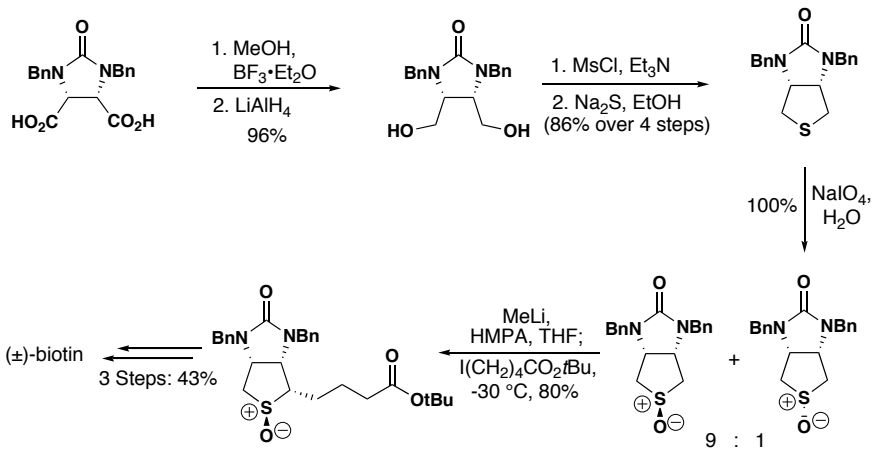
Related Methods and Studies



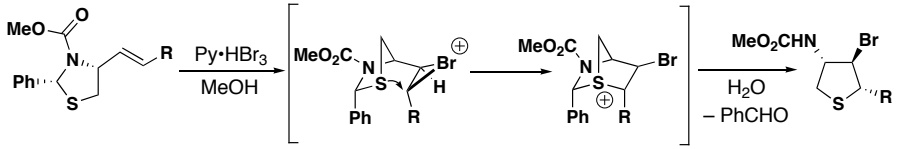
Gerecke, M., *et al*, *Helv. Chim. Acta* **1970**, *53*, 991.



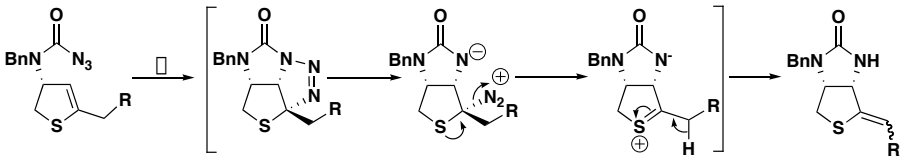
Matsuki., *et al*, *Tetrahedron Lett.* **1993**, *34*, 1167.



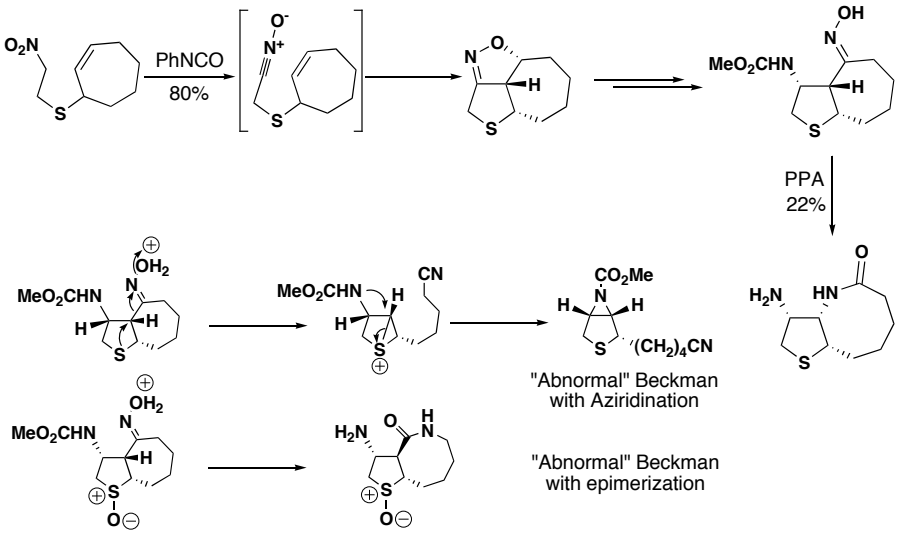
Marquet, A., et al. *Tetrahedron Lett.* **1975**, 827
Marquet, A., et al. *J. Am. Chem. Soc.* **1978**, *100*, 1558.



Confalone, P. N., et al., *J. Am. Chem. Soc.*, 1975, *97*, 5935.



De Clercq, P. J., et al. *J. Org. Chem.* 1994, *35*, 2615.



Confalone, P. N., et al. *J. Am. Chem. Soc.* **1978**, *100*, 6292.