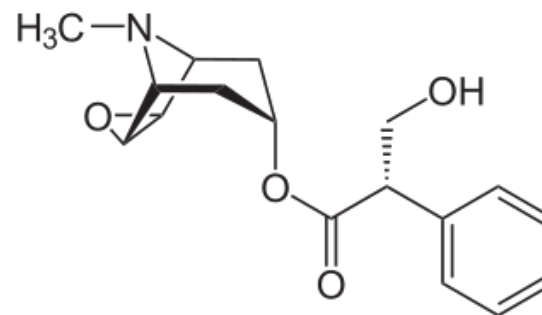


# CHIMICA DELLE SOSTANZE ORGANICHE NATURALI



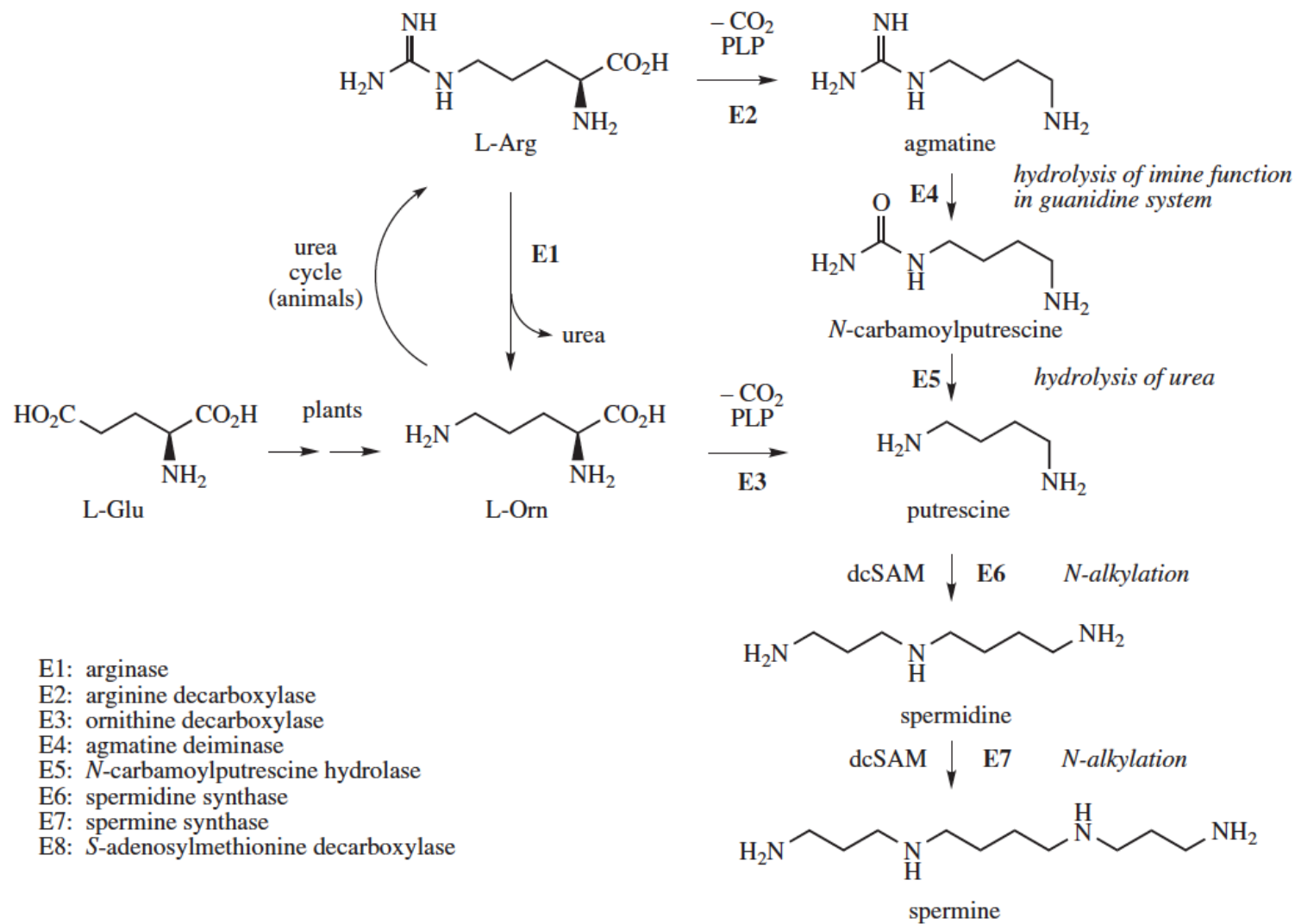
*Datura stramonium*

## GLI ALCALOIDI

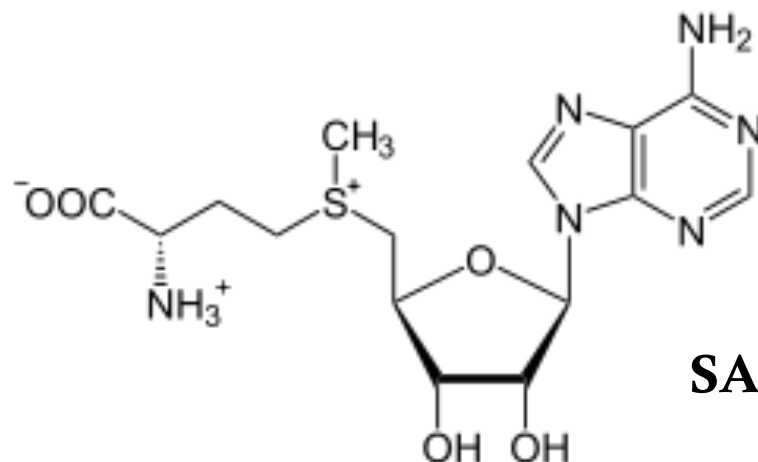
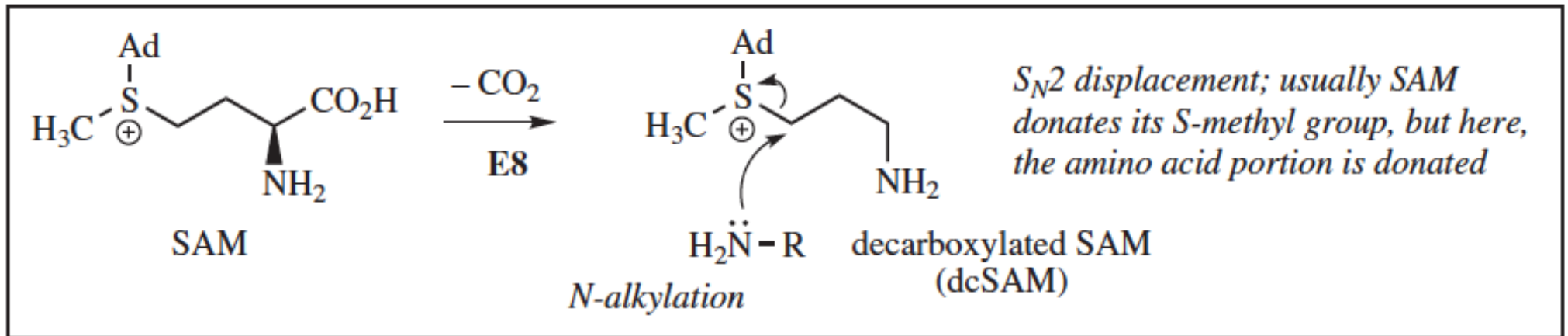


SCOPOLAMINA

# BIOSINTESI SPERMIDINA E SPERMINA

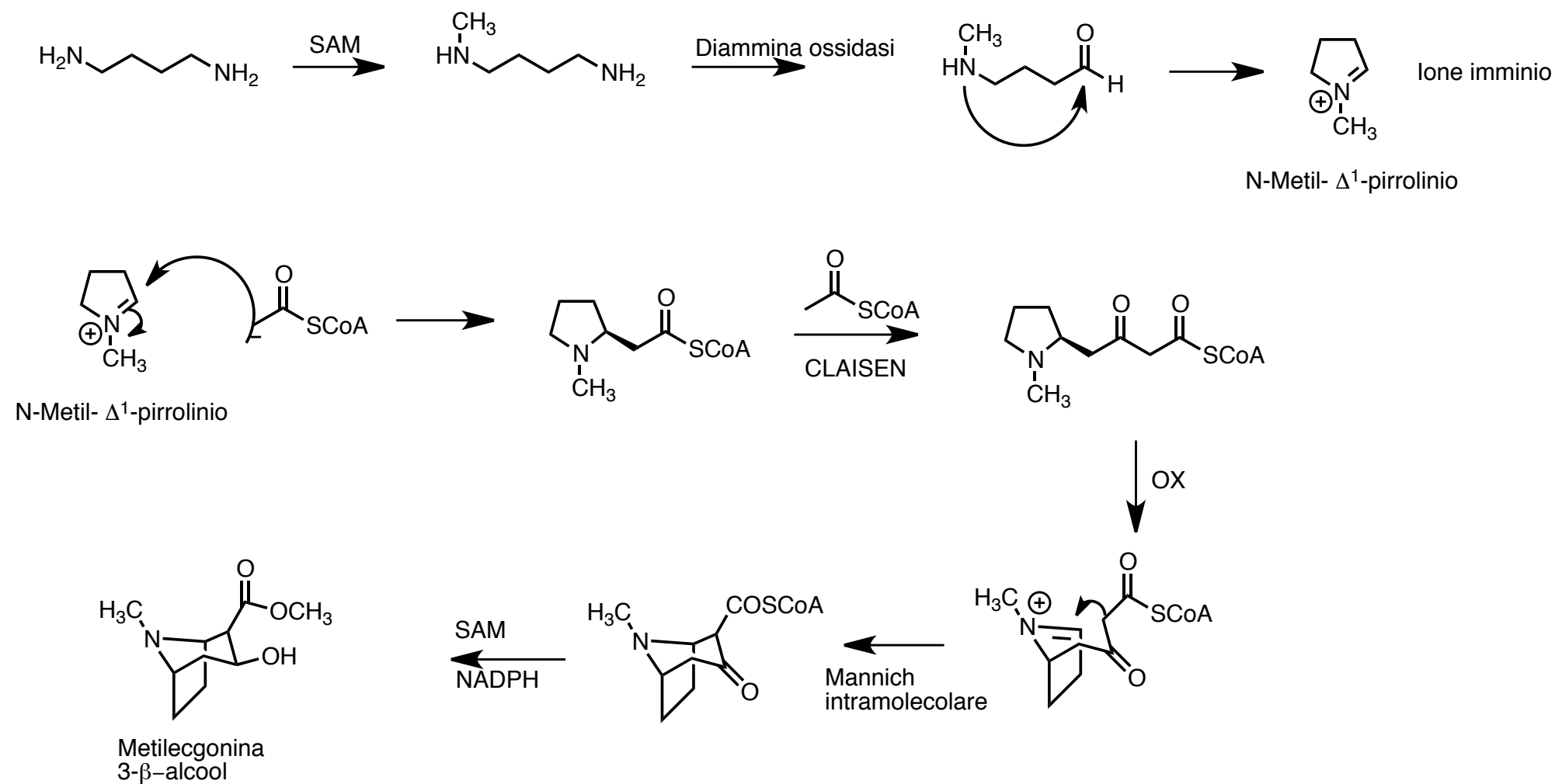


## BIOSINTESI SPERMIDINA E SPERMINA

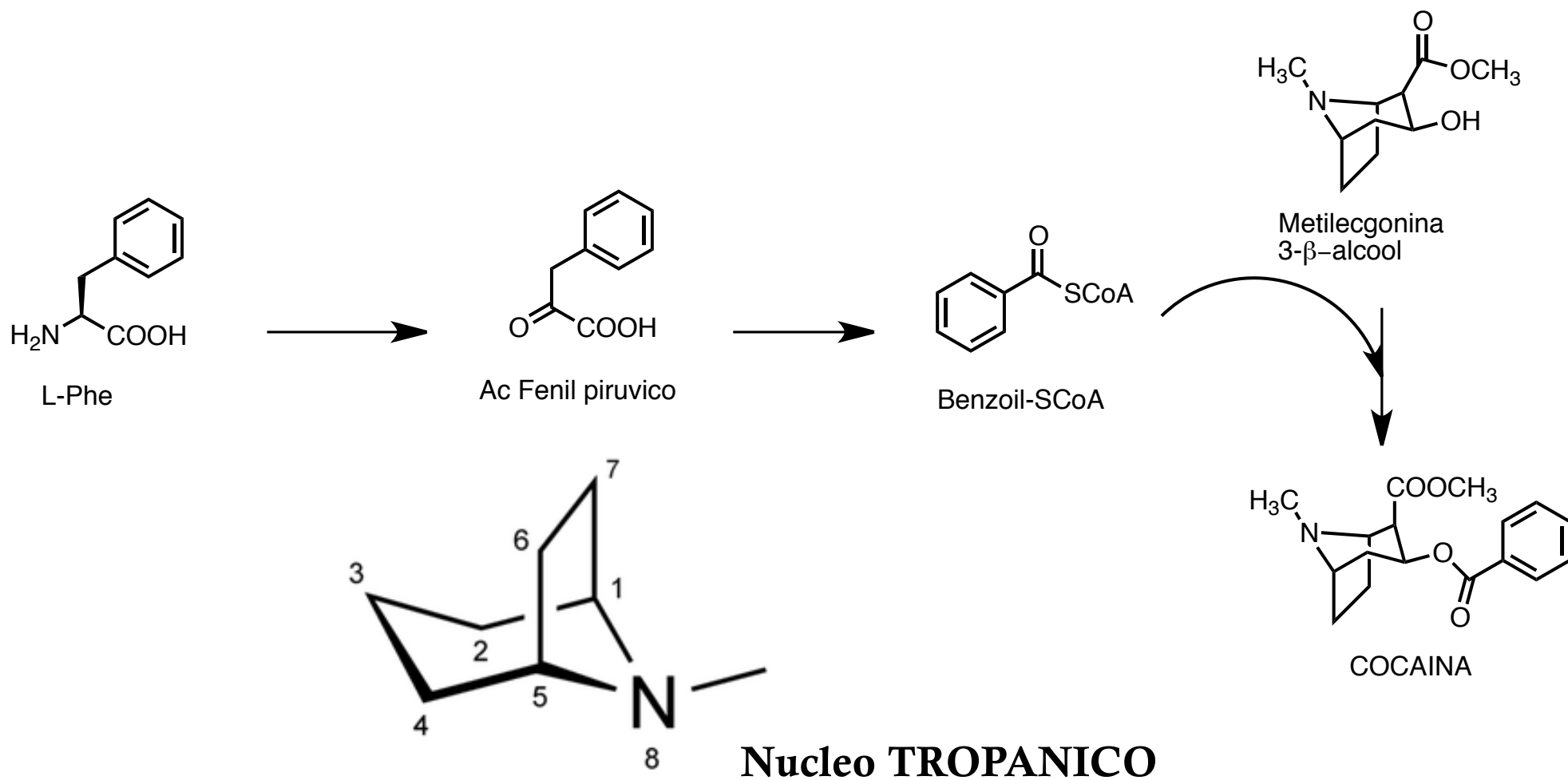


**SAM S-adenosil metionina**

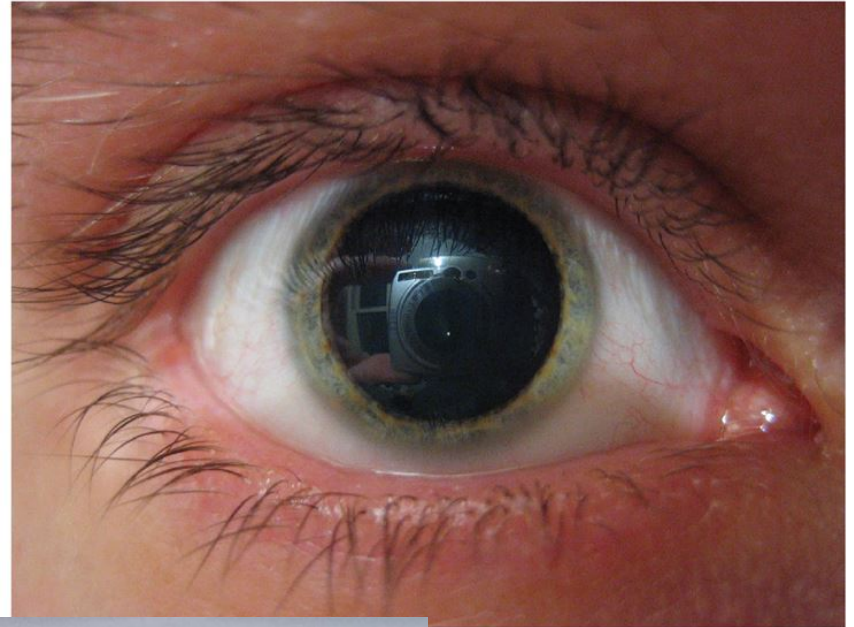
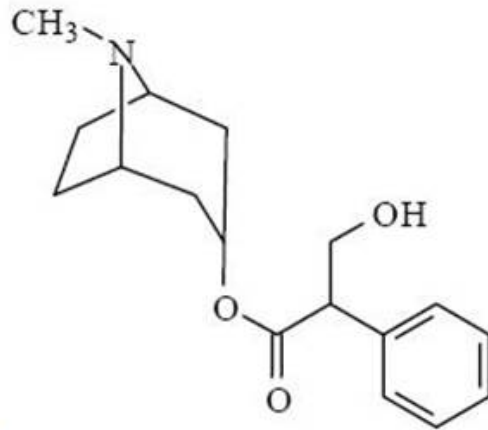
# BIOSINTESI NUCLEI TROPANICI: COCAINA



## BIOSINTESI NUCLEI TROPANICI: COCAINA



## BIOSINTESI NUCLEI TROPANICI: TROPINA

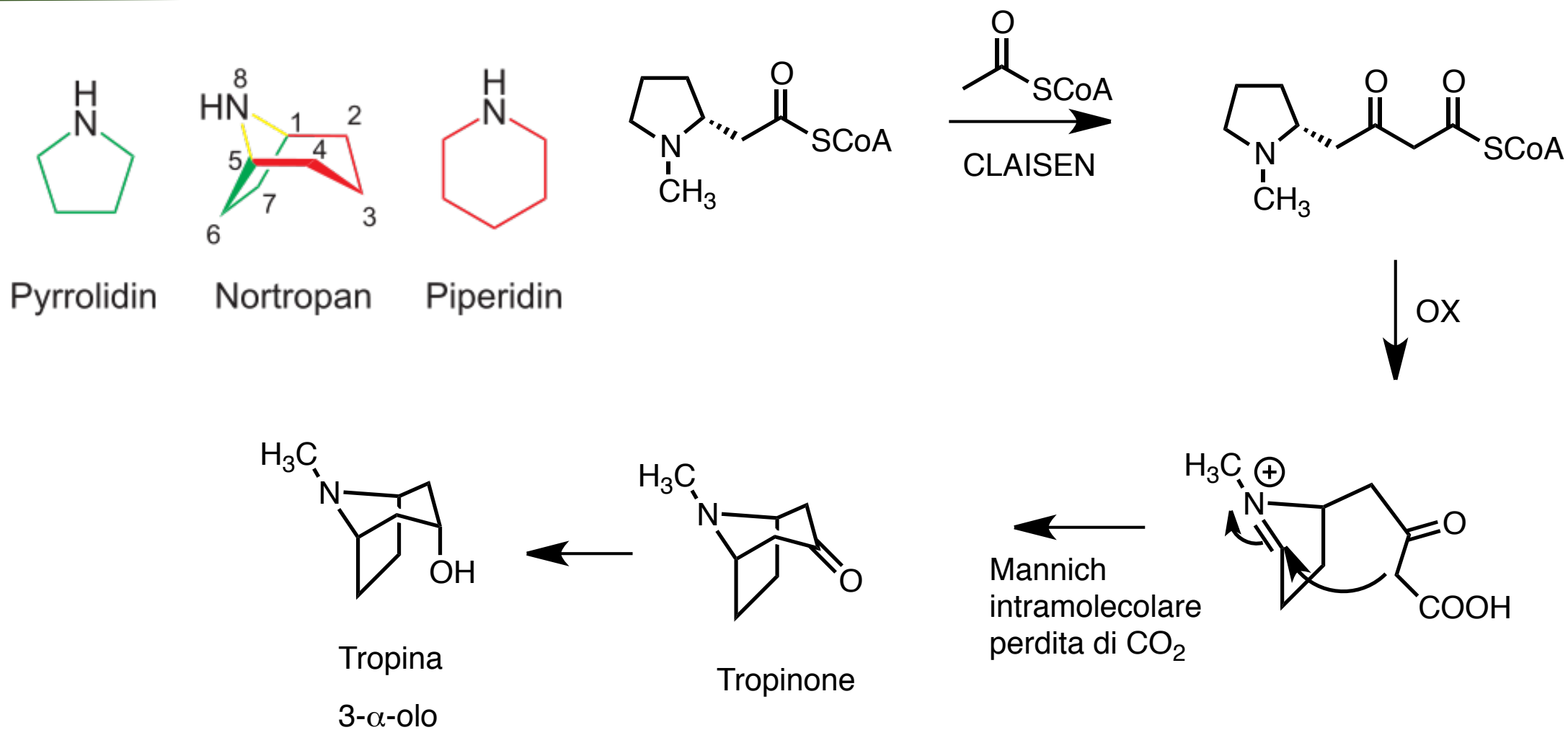


*Atropa belladonna*; Atropina  
o (-) Iosciamina

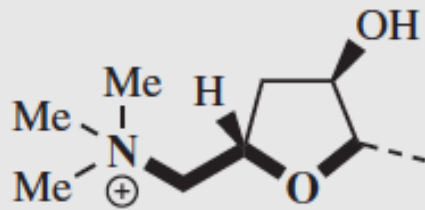




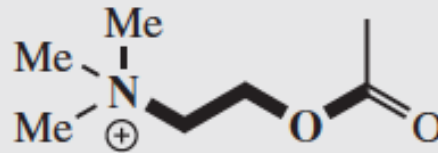
## BIOSINTESI NUCLEI TROPANICI: TROPINA



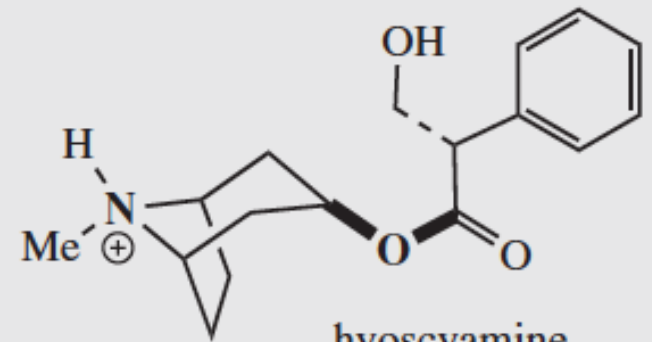
# BIOSINTESI NUCLEI TROPANICI: TROPINA



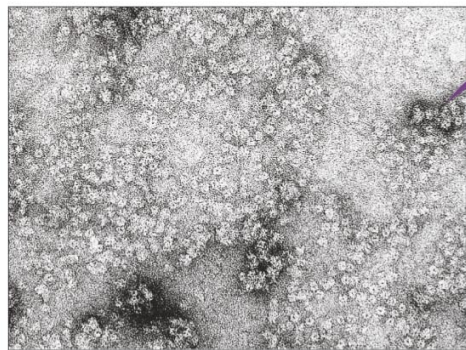
muscarine



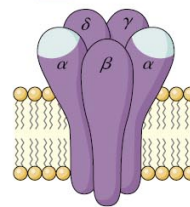
acetylcholine



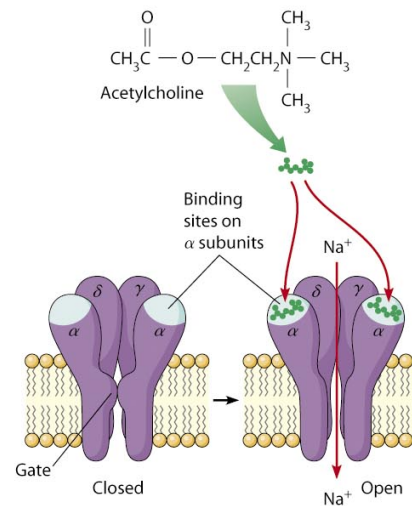
hyoscyamine  
(shown as conjugate acid)



(a) Acetylcholine receptors in  
electroplex membrane



(b) Structure of  
receptor



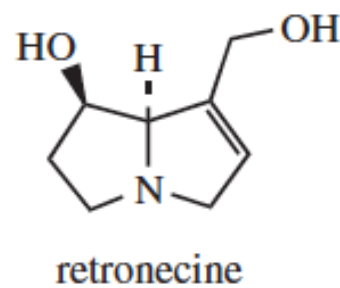
(c) Function of receptor



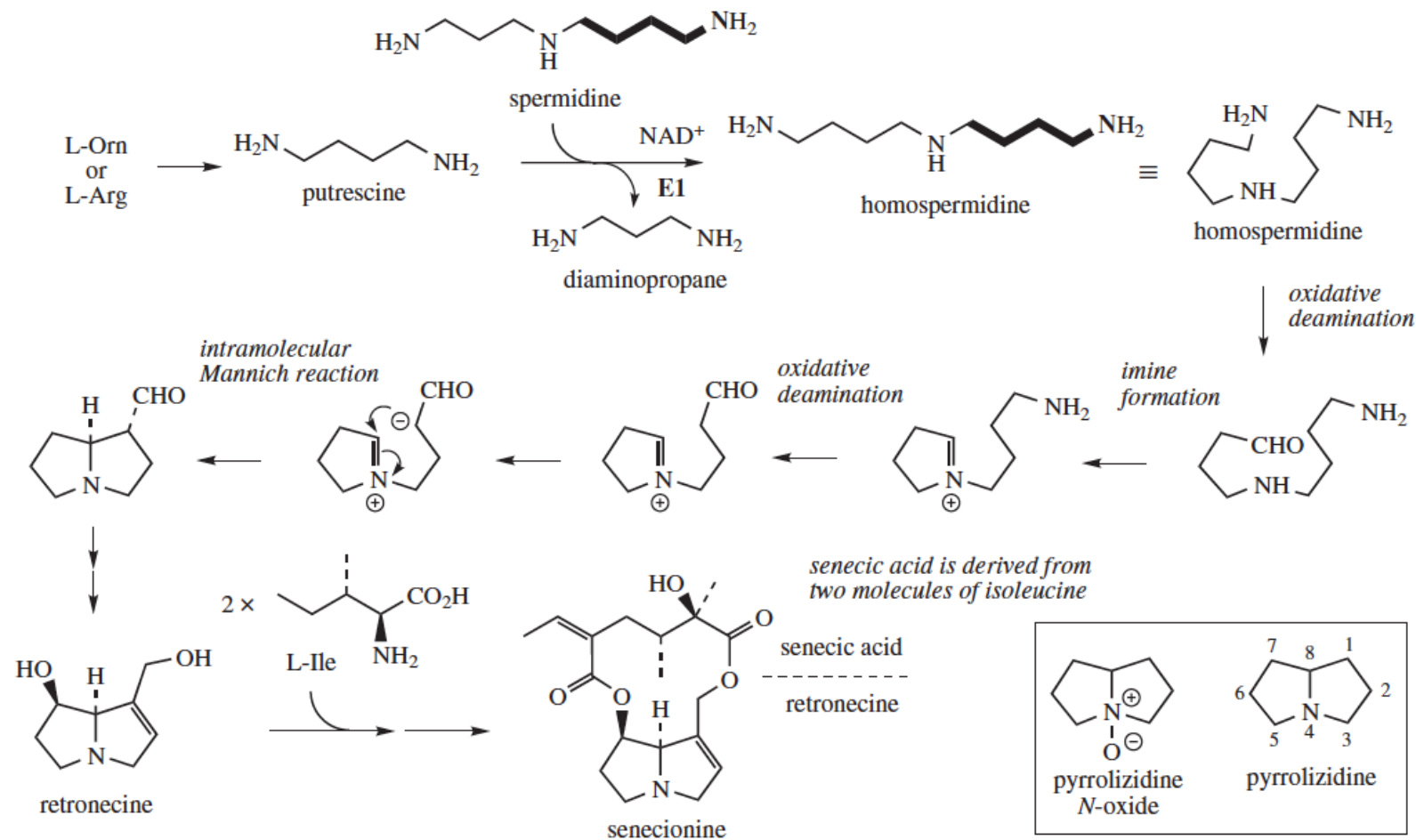
## ALCALOIDI PIRROLIZZIDINICI



BORRAGINE; *Borrago officinalis*

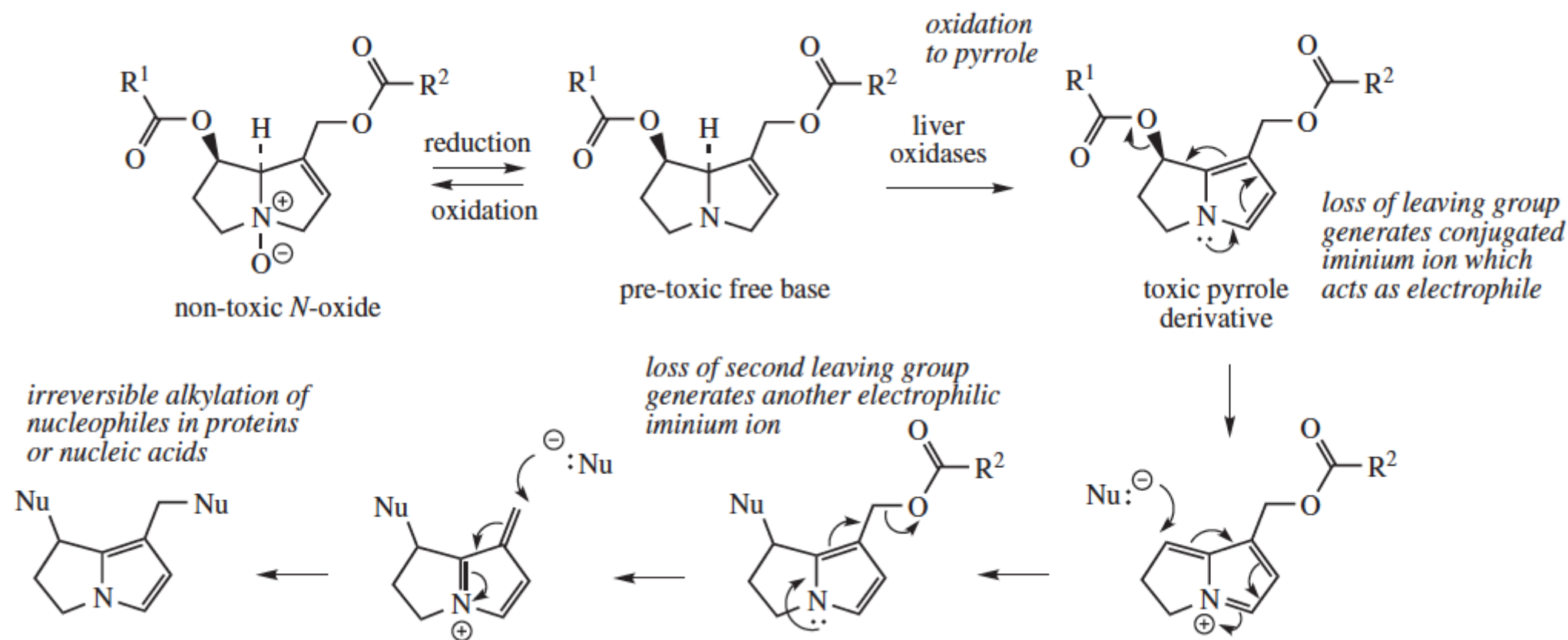


# ALCALOIDI PIRROLIZZIDINICI



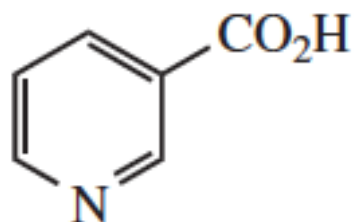
E1: homospermidine synthase

# ALCALOIDI PIRROLIZZIDINICI

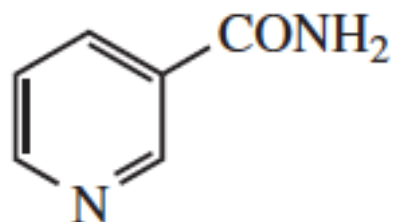


## ALCALOIDI PIRIDINICI: ACIDO NICOTINICO

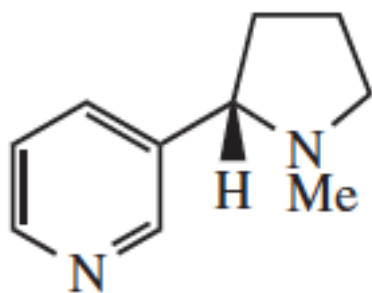
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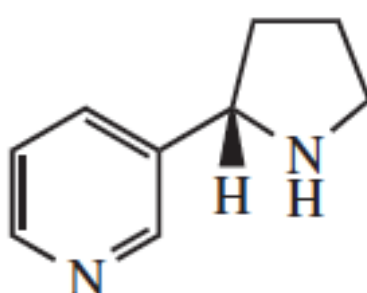
nicotinic acid  
(niacin/vitamin B<sub>3</sub>)



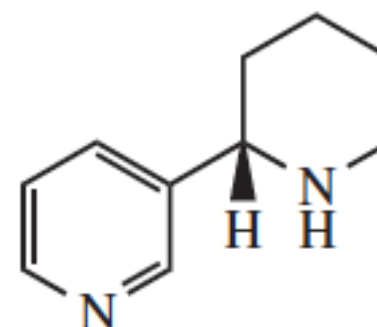
nicotinamide



nicotine

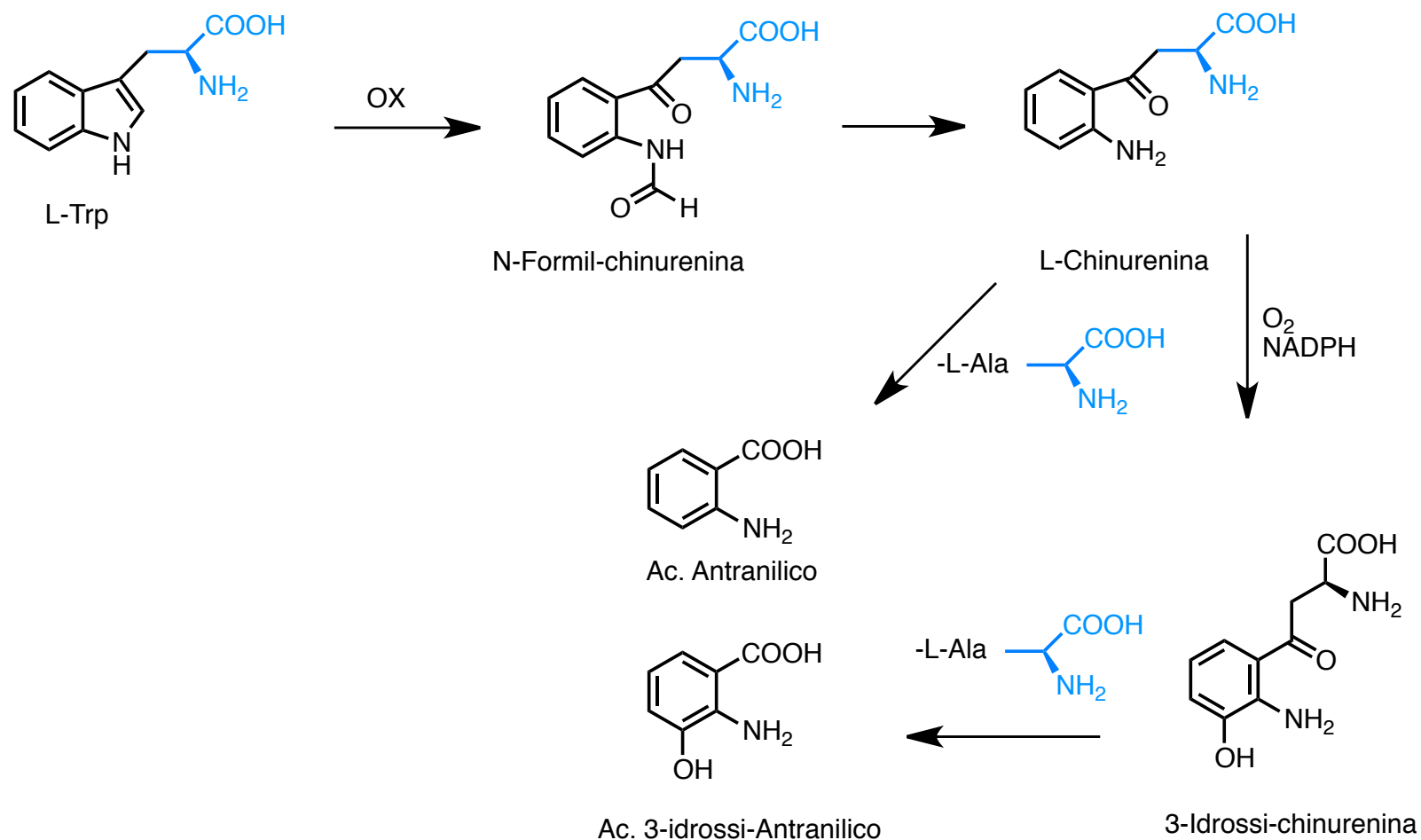


nornicotine

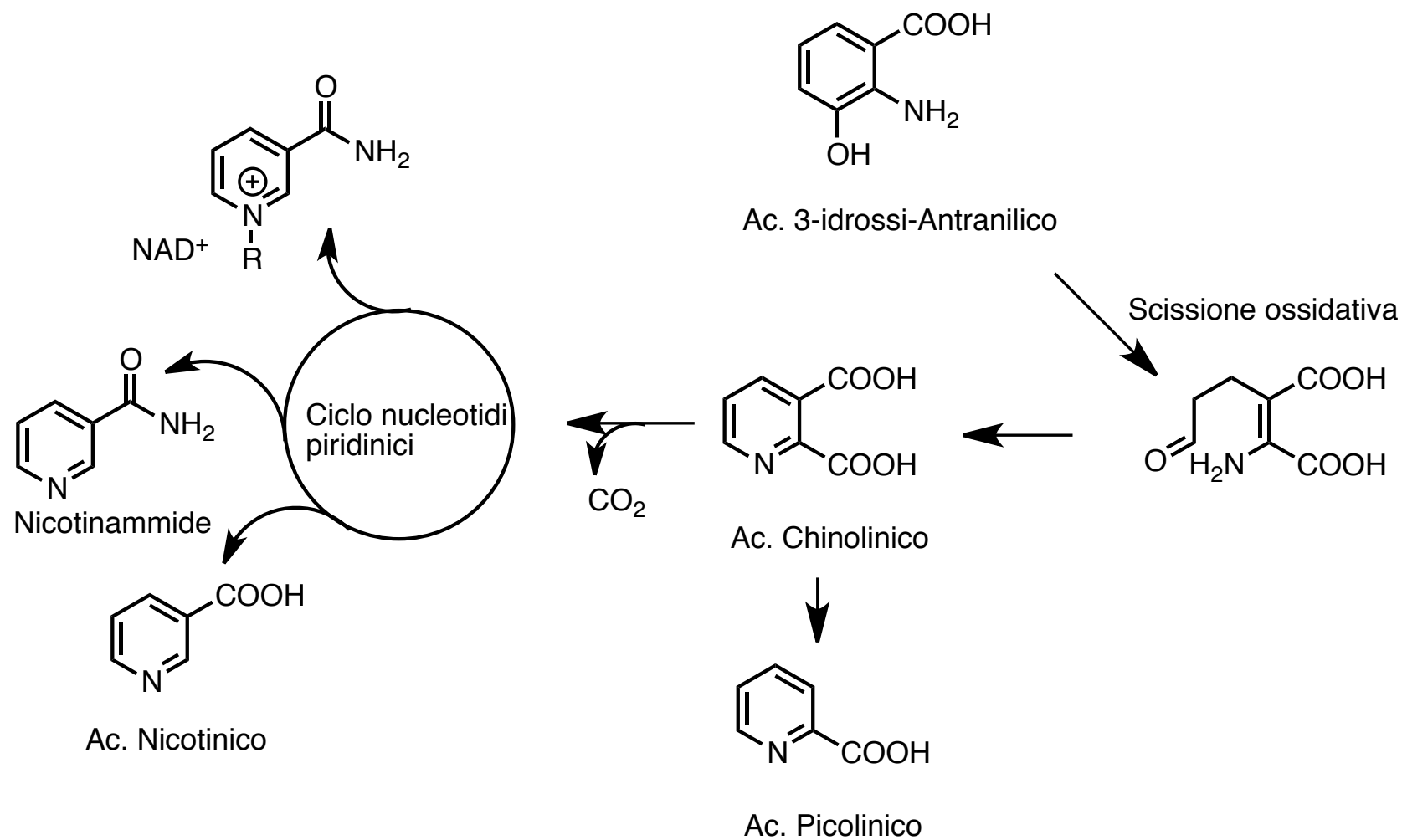


anabasine

## ALCALOIDI PIRIDINICI: BIOSINTESI ACIDO NICOTINICO



# ALCALOIDI PIRIDINICI: ACIDO NICOTINICO



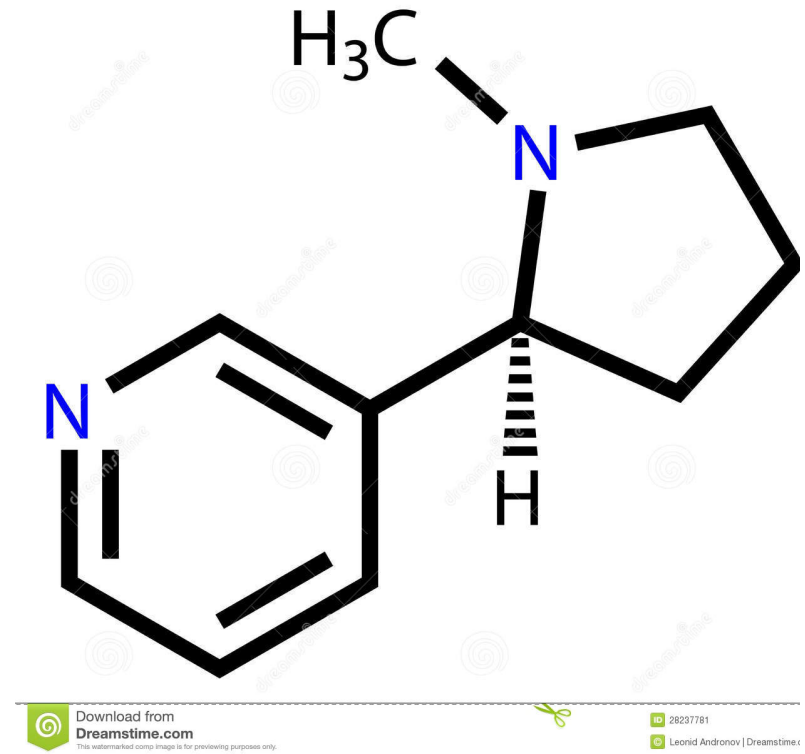


This botanical illustration depicts *Nicotiana glauca* (Gaultheria). The central figure is a flowering branch with a green stem, several large, ovate, green leaves with prominent veins, and a terminal raceme of tubular flowers with pinkish-red lobes. To the left, a large, detailed leaf shows the venation pattern. Below the main branch, several anatomical details are shown: a dissected corolla tube, a pistil with a long style, a stamen, a single seed, and a cross-section of the fruit. A circular library stamp is visible in the bottom left corner, and a purple circular stamp is in the bottom right corner.

56

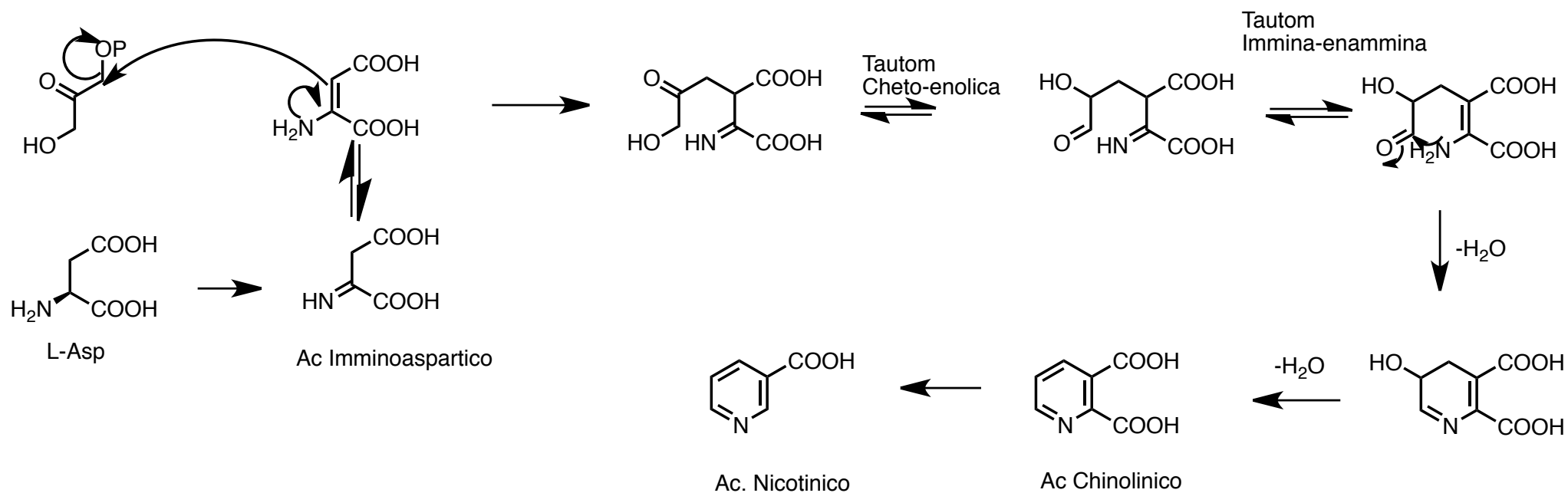
NICOTIANA TABACUM:—LINN.—Blanco.—DC.  
 —VAR.—MACROPHYLLUM:—DONAL.—DC.

Lib. K. Schlegel

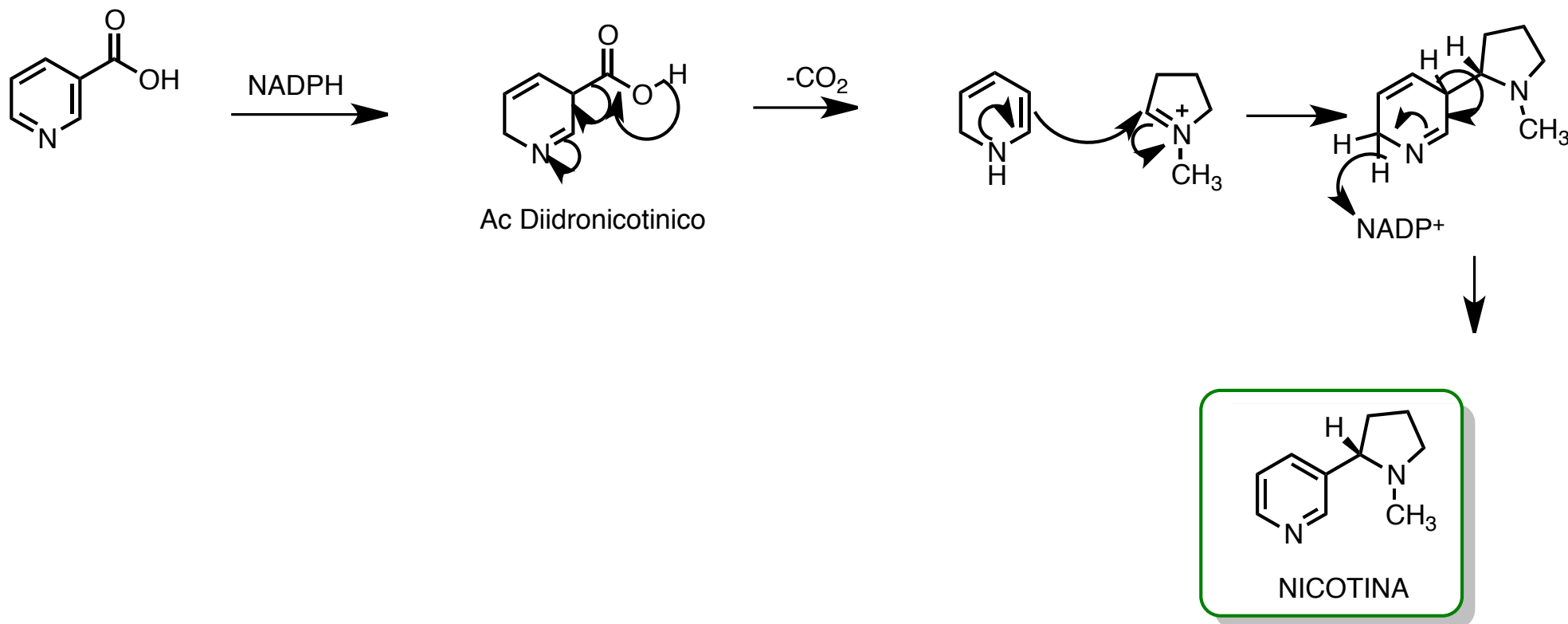


*Nicotiana tabacum*

# ALCALOIDI PIRIDINICI: NICOTINA



## ALCALOIDI PIRIDINICI: NICOTINA



## ALCALOIDI PIRIDINICI: NICOTINA

