HOKKAIDO UNIVERSITY

Title	The logic of biologically active small molecules : amazing ability of microorganisms
Author(s)	Ubukata, Makoto
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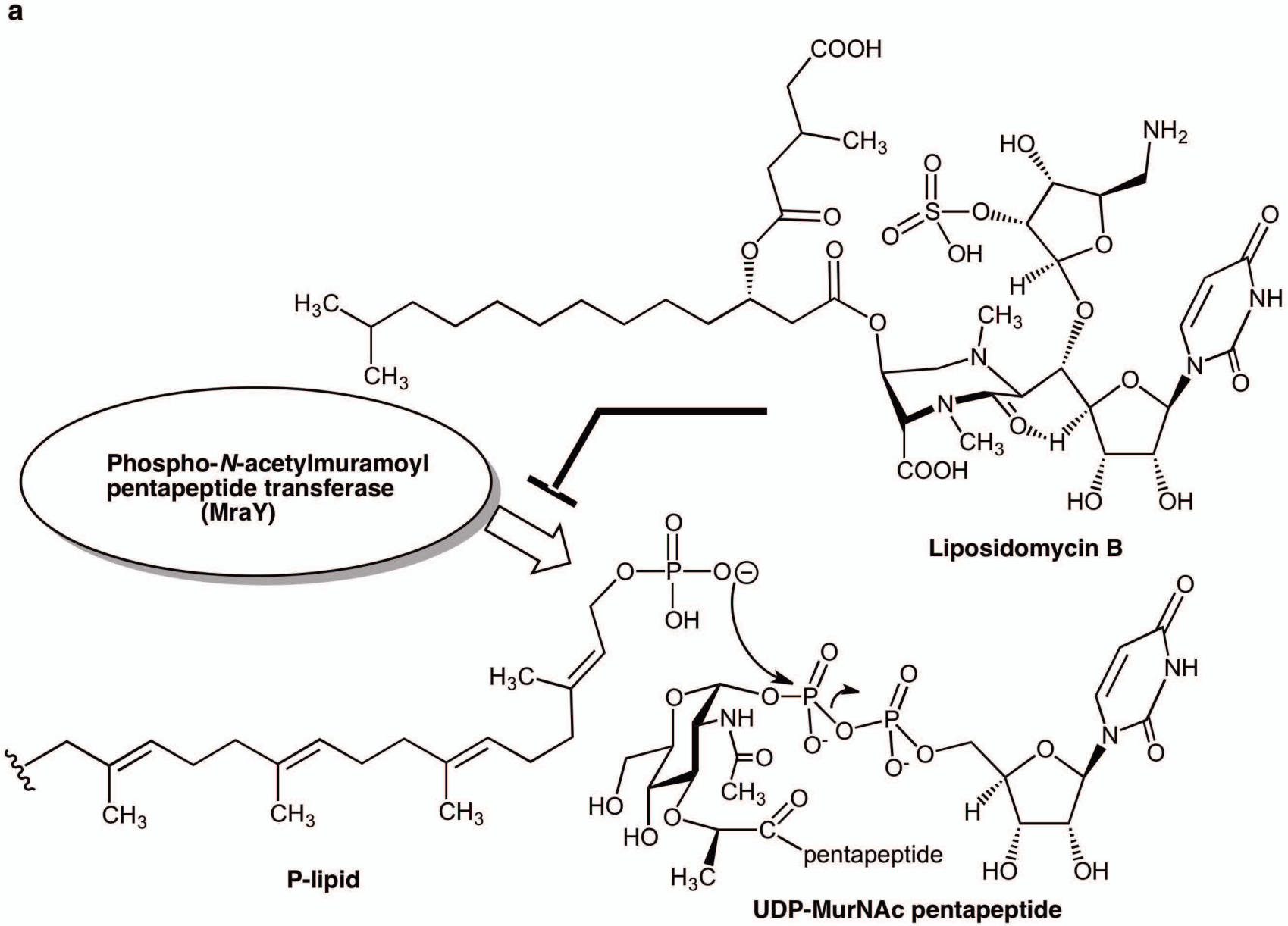
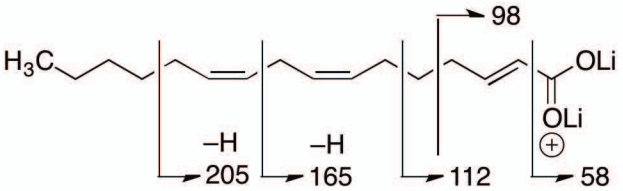

a
Phospho-N-acetylmuramoyl pentapeptide transferase (MraY)
Liposidomycin B
P-lipid
UDP-MurNAc pentapeptide
pentapeptide

b

Determination of diene double bond positions in the lipid moiety of liposidomycin A by *in situ* Charge-Remote Fragmentation



Collision-induced dissociation of the dilithiated ion, *m/z* 263

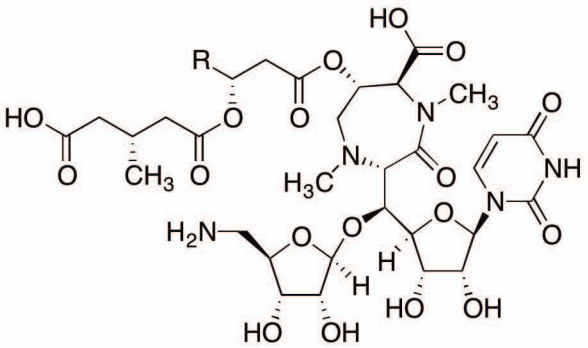
1) 35 mM LiOH, 5h, 37 °C, then 0.25 M NH_4OAc

2) Speed-Vac, H_2O, glycerol, then FAB-MS/MS

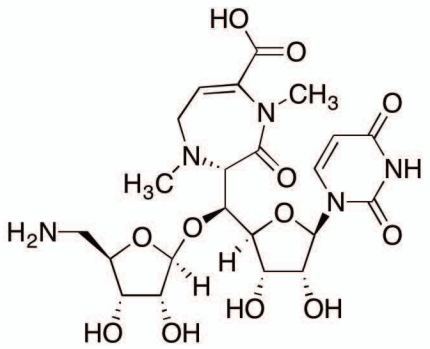
Liposidomycin A: R =

Liposidomycin B: R =

Liposidomycin C: R =

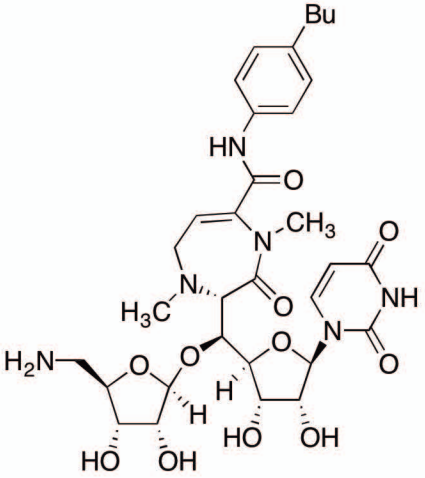


35 mM NaOH, 4h, 37 °C



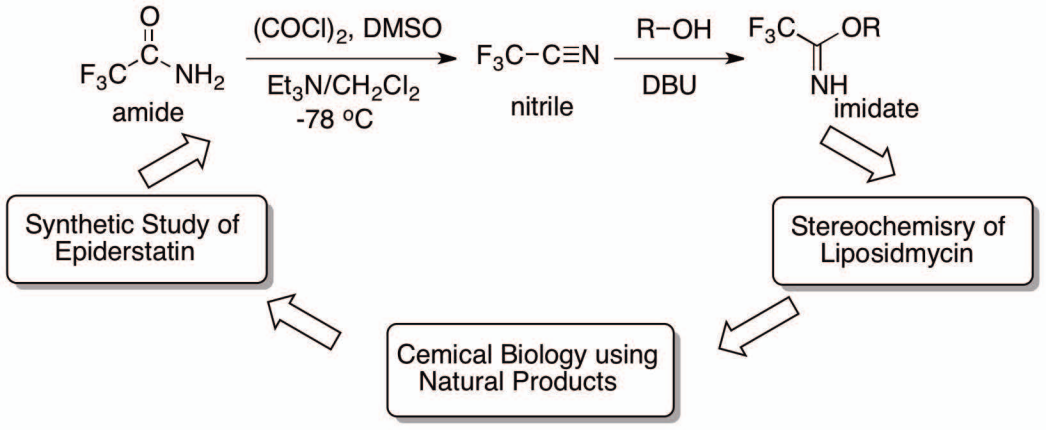
Anhydrodeacylliposidomycin

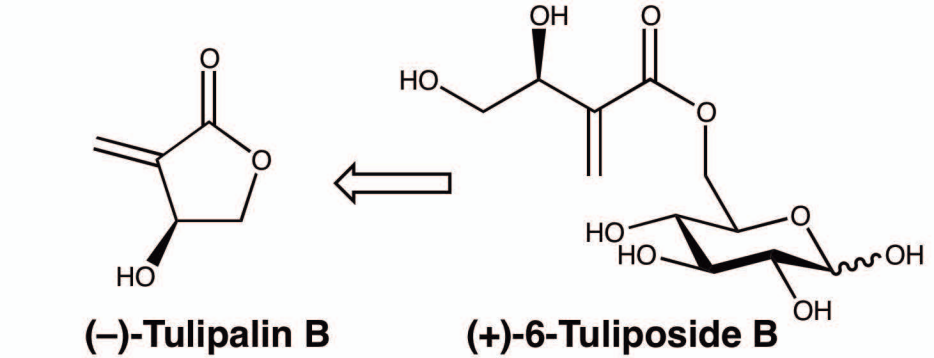
Ref. 26



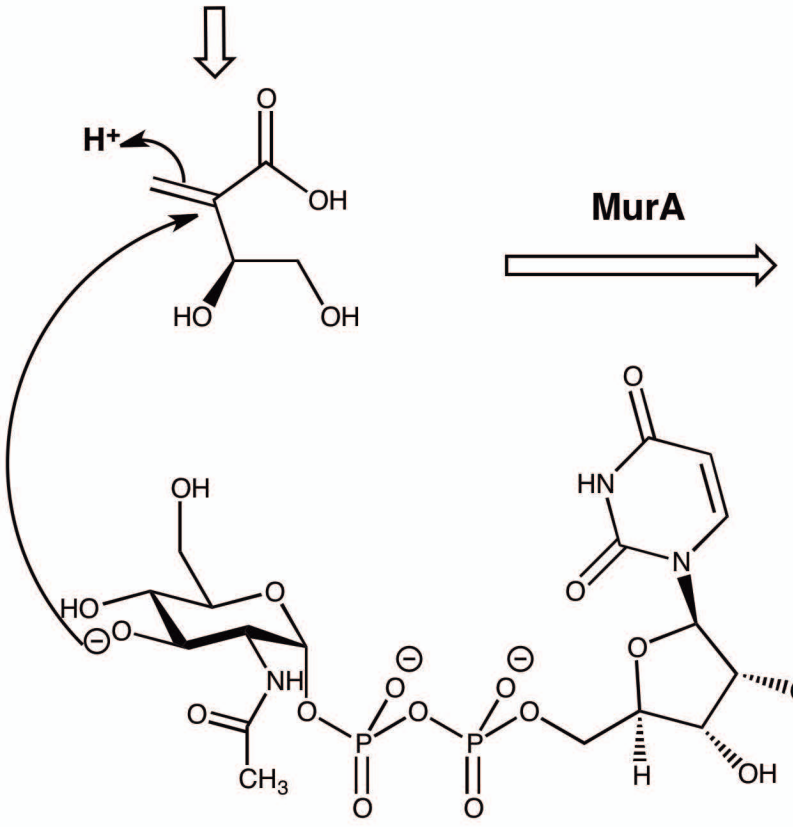
CPZEN-45

Therapeutic option for *M. tuberculosis* in a dormant state


amide
(COCl)2, DMSO
Et3N/CH2Cl2
-78 °C
nitrile
R−OH
DBU
imidate
Synthetic Study of Epiderstatin
Stereochemisry of Liposidmycin
Cemical Biology using Natural Products

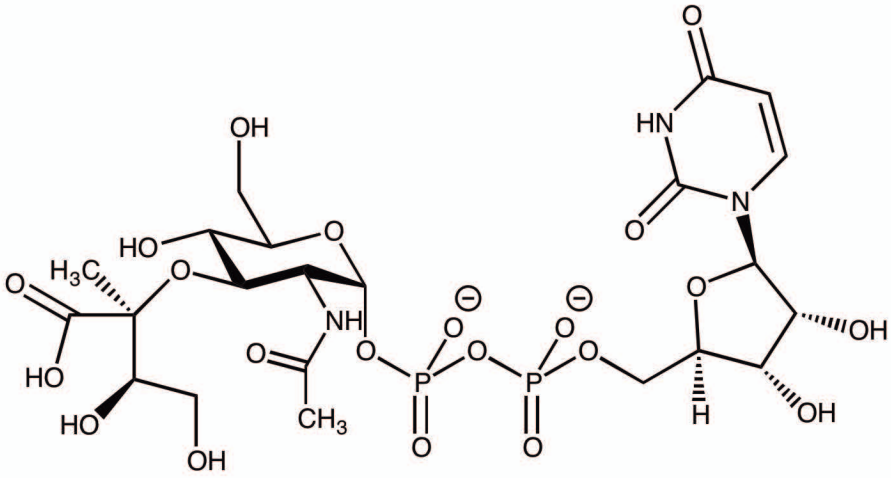


(–)-Tulipalin B **(+)-6-Tuliposide B**

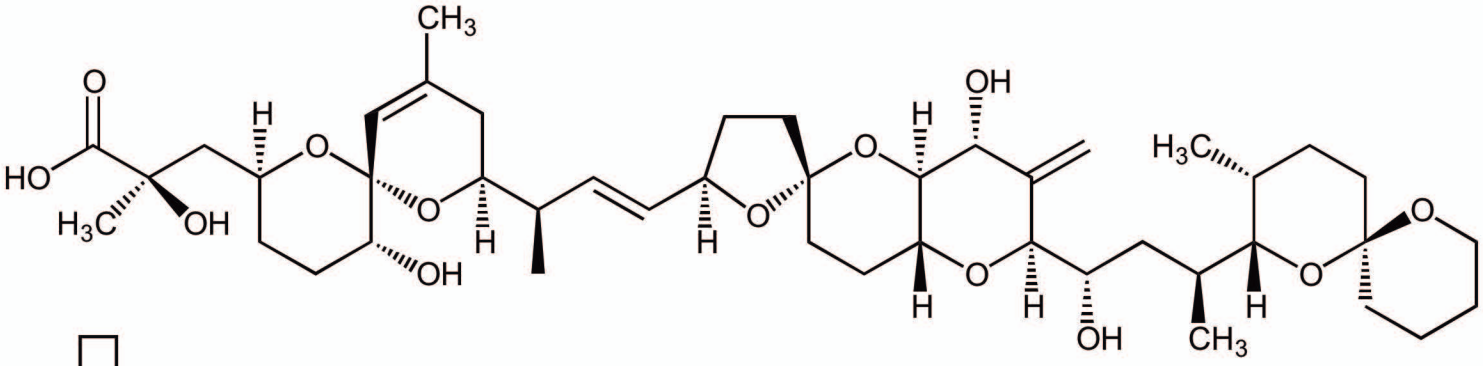


UDP-GlucNAc

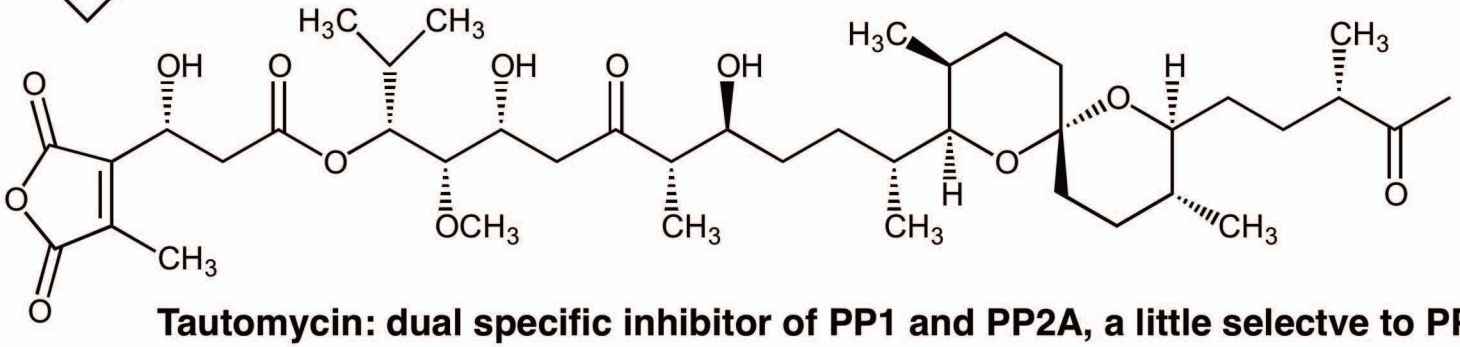
MurA



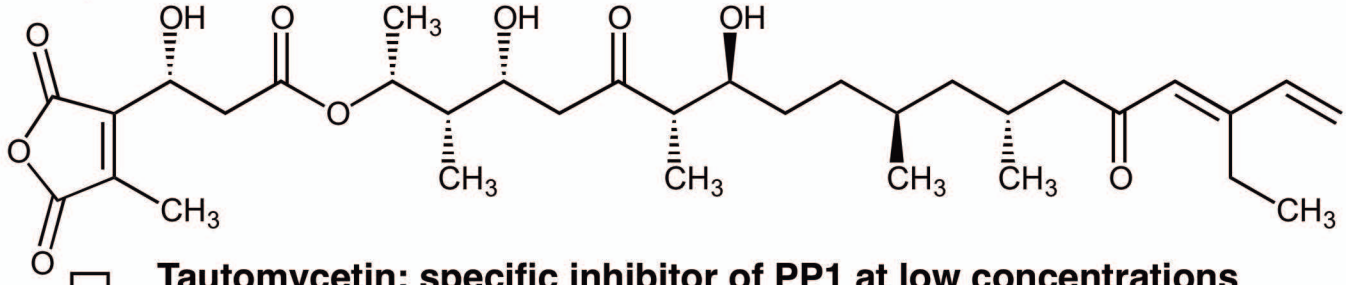
Putative UDP-GlcNAc-tulipalin B adduct inhibits the grwoth of MurA-overexpressing *E. coli* which shows resitance to fosfomycin.



Okadaic acid: specific inhibitor of PP2A at low concentrations

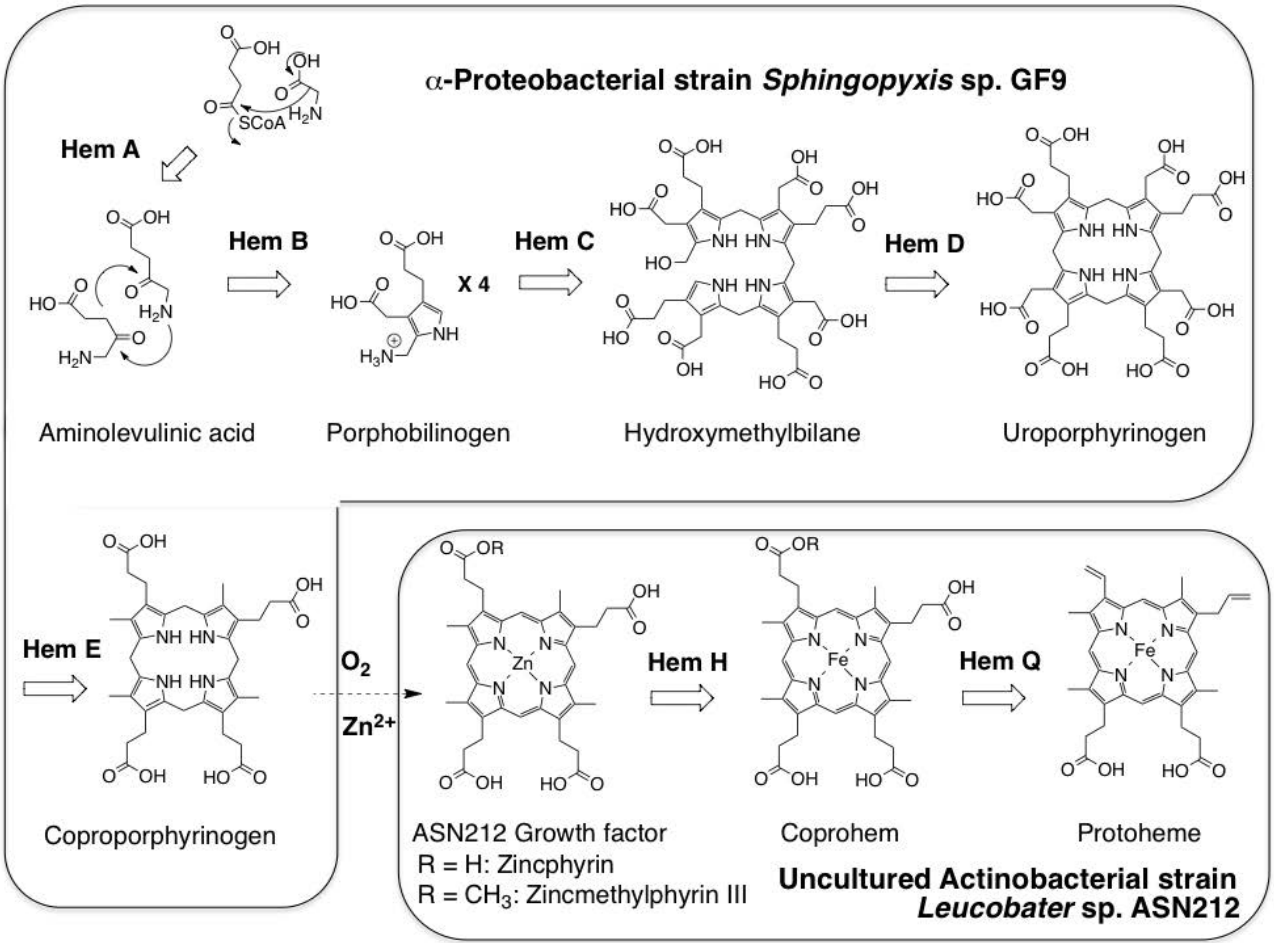


Tautomycin: dual specific inhibitor of PP1 and PP2A, a little selectve to PP1



Tautomycetin: specific inhibitor of PP1 at low concentrations

Development of PP1-targeted therapeutics


α-Proteobacterial strain Sphingopyxis sp. GF9
Hem A
Hem B
X 4
Hem C
Hem D
Aminolevulinic acid
Porphobilinogen
Hydroxymethylbilane
Uroporphyrinogen
Hem E
O2
Zn2+
Hem H
Hem Q
Coproporphyrinogen
ASN212 Growth factor
R = H: Zincphyrin
R = CH3: Zincmethylphyrin III
Coprohem
Protoheme
Uncultured Actinobacterial strain
Leucobater sp. ASN212