PORPHYRIN AND CHLOROPHYLL METABOLISM Ferritin-Fe Transferrin-Fe 1.16.1.2 Uroporphyrin I **Po**°Fe K13624... 4,5-Dioxopentanoate Coproporphyrin I o' PMT_0445 Uroporphyrinogen 🎾 Apoferitin Apotransferrin Coproporphyrinogen I Uroporphyrin III Coproporphyrin III Fe-coproporphyrin III PMT_1240 2.6.1.43 spontaneous K00435 Uropor-HemD phyrinogen III HemE HemY HemF 5-Amino-HemH HemB HemC 5-Oxo-δ-bilirubin levulinate 🛡 K00231 (3Z)-Phytochromobilin PMT_1547 PMT_1273 **PO** K07145 K00230 K08101 Protoporphyrin IX Protoheme Porphobilinogen Hydroxymethyl-Copropor phyrinogen III HemN HemG (Heme) bilane CysG PMT_2237 Protopor-K00510... Biliverdin phyrinogen IX PMT_1339 PMT_1296 PMT_0590 HemL (Anaerobic pathway) (3Z)-Phycocyanobilin (Aerobic pathway) PMT_1685 PMT_0815. Siroheme <u>CysG</u> Sirohydrochlorin CysG ▼Precomin 2 **PH**eme O **-►**© Peroxidase K21796 K00643 K02302... K02302... <u>_____</u> PMT_1340 PMT_0901 ്**്**41Glutamate-CbiK Mg-protoporphyrin IX **►**⊙ Myoglobin 1-semialdehyde °**©**°Co-sirohydrochlorin °THeme A 15,16-Dihydro-PMT_0901 K00214... (3Z)-Phycoerythrobilin **₽**0 bilîverdin PMT_0567 PMT_2040 PMT_0198 PMT_0198 HemA CbiL CobI Cytochrome a K08100 Glycine O Co-factor 3 Ni-sirohydro-catoo K01764 °ФРтесотіп ЗА ▼ Mg-protoporphyrin IX ©°13-monomethyl ester _Glutamyl_c tRNA(Glú) Cytochrome c K02229 CobG D-Urobilinogen **▶***** (Aerobic (Anaerobic **PO** Catalase pathway) ்**ூ**©o-precomin 3 ်**္တာPrecorrin** 3B pathway) PMT_1104 PMT_1308 D-Urobilin Bilirubin Bilirubin PMT_1772 K21479 PMT_1772 CbiH CobJ K04034 PMT_2196 β-diglucuronide Ni-sirohydro- thlorin chlorin ▼ Co-precomin 4 Ò Hemoglobin Oxyhemoglobin L-Glutamate 000028 °♥Precorrin 4 **FO** I-Urobilinogen Zn-Bacterioa,c-diamide PMT_1325 PMT_1325 CobMchlorophyll a CbiF I-Urobilin ° ∰13¹-Hydroxy-Mg-protoporphyrin IX 13-monomethyl ester °ФРтесотіп 5 K21610.. 🍄 Co-precomin 5A Alanine, aspartate and K04034 PMT_2196 glutamate metabolism PMT_1772 CbiG **FO** L-Stercobilinogen L-Stercobilin 13¹-Oxo-Mg-protoporphyrin IX 13-monomethyl ester CobF 15,17³-Seco-F 430-17³-acid ♥ °**©**°Co-precomin 5B PMT_0044 CbiD 12-Ethyl-8-isobutyl-3-vinyl-bacteriochlorophyllide <u>d</u> K04034 PMT_2196 K21612 °**O**°Co-precomin 6A °**♥**Precorrin 6A K13603 K19073 CbiJ PMT_1264 CobK Divinylproto- Od chlorophyllide | [K21231 **▶**©Protochlorophyllide K13601 Ó °**Ò**"Co-precorrin 6B °♥Precorrin 6B K04036 Coenzyme F430 12-Ethyl-8-propyl-3-vinyl-bacteriochlorophyllide d K13603 K02191 CbiT PMT_0370 O Co-precomin 7 Bacterio-K13601 chlorophyllide c K03399 CbiE 8,12-Diethyl-3-vinyl-K13605 **PO** K13603 bacteriochlorophyllide d Bacterio-°**©**•Co-precorrin 8X °**⊙**Precomin 8X chlorophyll c K13604 PMT_0480. PMT_0480. PMT_1215... PMT_0075 CbiC PMT_0075 CobH K13603 K13605 **₽**0° K21058 ∘**%**Hydrogenobyrinate ං**්** Cobyrinate Glycine, threonine Bacterio-Bacterio-8-Ethyl-12-methyl-3-vinyl-bacteriochlorophyllide d metabolism chlorophyllide d chlorophyll d PMT_1104 CbiA PMT_1104 CobB Geranylgeranyl-bacteriochlorophyllide b Hydrogenobyrinate Bacterio-3-Hydroxyethyl-chlorophyllide a chlorophyllide b PMT_0727 CobNST Cob(II) yrinate a,c diamide Bacterio-chlorophyll b K11336 **₽**054 3-Hydroxyethyl-bacterio<u>chloroph</u>yllide a **₽©⁴** K11337 3-Vinylbacterio-chlorophyllide a Bacterio-pheophytins K13786 Bacterio-Geranylgeranyl-bacteriochlorophyllide a Bacteriochlorophyllide a Cob(I)yrinate a,c diamide chlorophyll a K11333... **₽**0 04 Pheophorbide a Chlorophyllide a CobA PMT_1243... CobO K19073 K13071 **▶**©² Red chlorophyll catabolite Divinyl-Adenosyl cobyrinate a,c diamide chlorophyllide a K13600 K13600 CbiP PMT_1183 CobQ K13544 K13545 Chloro-K13606 (R)-1-Amino-Adenosyl cobyrinate hexaamide phyllide b propan-2-ol 7-Hydroxy-chlorophyllide a K08099 K08099 PMT_0312 CbiB CobD CbiZPyro-pheophorbide a protein α cobinamide PMT_0272 PMT_0272 Primary fluorescent chlorophyll catabolite PMT_1243... 7-Hydroxy-chlorophyl<u>l a</u> _C(5)74 (R)-1-Amino-propan-2-yl phosphate CobU PMT_0749 CobP Cobinamide L-Threonine ^{⊆©7}Chlorophyll b K18010 04 phosphate Adenosyl cobinamide Divinyl-Ó PMT_0312 Chlorophyll a chloróphyll a PMT_0749 CobP Cyanocob(III)alamin L-Threonine CobU Ò CobU α-Ribazole-5'-P α-Ribazole Adenosine-GDP-cobinamide Riboflavin Pheophytins K02226 1.16.1.6 metabolism PMT_1861 Dimethyl- CobT benzimidazole CobC CobV PMT_1243.. C00944 1.16.1.4 K21682 Aquacob(III)alamin Vitamin B12 Vitamin B12s Vitamin B12r coenzyme