PORPHYRIN AND CHLOROPHYLL METABOLISM Ferritin-Fe Transferrin-Fe 1.16.1.2 Uroporphyrin I **♣o**°Fe K13624... 4,5-Dioxopentanoate Coproporphyrin I o' EW15_0680 Uroporphyrinogen 🎾 Apoferritin Apotransferrin Coproporphyrinogen I Uroporphyrin III Coproporphyrin III Fe-coproporphyrin III EW15_0623 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 EW15_0306 EW15_0592 **PO** K07145 K00230 K08101 Protoporphyrin IX Protoheme Porphobilinogen Hydroxymethyl-Copropor phyrinogen III HemN HemG (Heme) bilane CysG EW15_2253 Protopor-K00510... Biliverdin phyrinogen IX EW15_0531 EW15_0580 EW15_0833 HemL (Anaerobic pathway) (3Z)-Phycocyanobilin (Aerobic pathway) EW15_2115 EW15_0381 CysG Siroheme <u>CysG</u> Sirohydrochlorin ▼Precomin 2 **PH**eme O **-►**© Peroxidase K21796 K00643 K02302... K02302... <u>_____</u> EW15_0530 EW15_0753 ്**്**41Glutamate-CbiK Mg-protoporphyrin IX 🎙 **►**⊙ Myoglobin EW15_2114 EW15_2113 1-semialdehyde °**©**°Co-sirohydrochlorin °THeme A 15,16-Dihydro-EW15_0753 K00214... (3Z)-Phycoerythrobilin **₽**0 bilîverdin EW15_0855 EW15_0257 EW15_0455 EW15_0455 HemA CbiL CobI Cytochrome a K08100 Glycine O Co-factor 3 Ni-sirohydro-catoo K01764 °ФРтесотіп ЗА ▼ Mg-protoporphyrin IX ©°13-monomethyl ester \mathcal{L} Glutamyl $_{\circ}$ tRNA(Glú) Cytochrome c K02229 CobG D-Urobilinogen **▶***** (Aerobic (Anaerobic **PO** Catalase pathway) ்**ூ**©o-precomin 3 ်**္တာPrecorrin** 3B pathway) EW15_1572 EW15_056 D-Urobilin Bilirubin Bilirubin EW15_2020 K21479 EW15_2020 CbiH CobJ K04034 EW15_0910 β-diglucuronide Ni-sirohydro- thlorin chlorin ▼ Co-precomin 4 Ò Hemoglobin Oxyhemoglobin L-Glutamate 00002 °♥Precorrin 4 **FO** I-Urobilinogen Zn-Bacterioa,c-diamide EW15_0554 EW15_0554 CobM chlorophyll a CbiF I-Urobilin ° ∰13¹-Hydroxy-Mg-protoporphyrin IX 13-monomethyl ester °ФРтесотіп 5 K21610.. 🍄 Co-precomin 5A Alanine, aspartate and K04034 EW15_0910 glutamate metabolism EW15_2020 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 EW15_0036 CbiD 12-Ethyl-8-isobutyl-3-vinyl-bacteriochlorophyllide <u>d</u> K04034 EW15_0910 K21612 °**O**°Co-precorrin 6A °**♥**Precorrin 6A K13603 K19073 EW15_0601 CbiJ EW15_0601 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 EW15_1744 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 K13602 K00218 K00218 EW15_0638.. EW15_2200 CbiC EW15_2200 CobH K13603 K13605 **₽**0° K21058 ∘**%**Hydrogenobyrinate ං**්** Cobyrinate Glycine, threonine Bacterio-Bacterio-8-Ethyl-12-methyl-3-vinyl-bacteriochlorophyllide d metabolism chlorophyllide d chlorophyll d EW15_1572 CbiA EW15_1572 CobB Geranylgeranyl-bacteriochlorophyllide b Hydrogenobyrinate Bacterio-3-Hydroxyethyl-chlorophyllide a chlorophyllide b **-**10043 EW15_1020 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 chlorophyll a cob(I)yrinate a,c diamide K11333... **₽**0 04 Pheophorbide a Chlorophyllide a CobA BtuR CobO K19073 K13071 **▶**©² Red chlorophyll catabolite Divinyl-Adenosyl cobyrinate a,c diamide chlorophyllide a K13600 K13600 CbiP EW15_1671 CobQ K13544 K13545 Chloro-Adenosyl cobyrinate hexaamide K13606 (R)-1-Aminophyllide b propan-2-ol 7-Hydroxy-chlorophyllide a K08099 K08099 EW15_1794 CbiB CobD CbiZPyro-pheophorbide a cobinamide Column protein α EW15_0511 EW15_0511 Primary fluorescent chlorophyll catabolite 7-Hydroxy-chlorophyl<u>l a</u> EW15_0338... __CO____ (R)-1-Amino-propan-2-yl phosphate CobU EW15_1035 CobP Cobinamide L-Threonine ^{⊆©7}Chlorophyll b K18010 04 phosphate Adenosyl cobinamide phosphate Divinyl-Chlorophyll a Ó EW15_1794 chloróphyll a EW15_1035 CobP Cyanocob(III)alamin L-Threonine CobU ō CobU α-Ribazole-5'-P α-Ribazole Adenosine-GDP-cobinamide Riboflavin Pheophytins K02226 metabolism 1.16.1.6 Dimethyl- CobT benzimidazole EW15_0364 CobC CobS EW15_0338.. C00944 1.16.1.4 K21682 Aquacob(III)alamin Vitamin B12 Vitamin B12s Vitamin B12r coenzyme 00860 6/15/17 (c) Kanehisa Laboratories