## PORPHYRIN AND CHLOROPHYLL METABOLISM Ferritin-Fe Transferrin-Fe 1.16.1.2 Uroporphyrin I **♣o**°Fe K13624... 4,5-Dioxopentanoate Coproporphyrin I <sup>ე</sup> Uroporphyrinogen 🎾 Apoferritin Apotransferrin Coproporphyrinogen I Uroporphyrin III Coproporphyrin III Fe-coproporphyrin III EW15\_0623 2.6.1.43 spontaneous Uropor-HemD phyrinogen III HemE HemY HemF 5-Amino-HemH HemB HemC 5-Oxo-δ-bilirubin levulinate 🛡 K00231 EW15\_0306 EW15\_0592 K07145 **PO** (3Z)-Phytochromobilin K00230 Protoporphyrin IX Protoheme Porphobilinogen Hydroxymethyl-Copropor K08101 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 Siroheme <u>CysG</u> Sirohydrochlorin CysG ▼Precomin 2 ФHeme О **→**O Peroxidase K00643 CON-EW15\_0530 EW15\_0753 CbiK CbiX ്**്**41Glutamate-Mg-protoporphyrin IX **►**○ Myoglobin 1-semialdehyde (3Z)-Phycoerythrobilin 15,16-Dihydro-்**ு**Co-sirohydrochlorin ංලිHeme A EW15\_0753 K00214... biliverdin **₽**0° EW15\_0257 EW15\_0455 EW15\_0455 HemA CbiL CobI Cytochrome a K08100 Glycine O Co-factor 3 K01764 Ni-sirohydro-catoo °ФРтесотіп ЗА ▼ Mg-protoporphyrin IX ©°13-monomethyl ester \_Glutamyl<sub>c</sub> tRNA(Glú) Cytochrome c K02229 CobG D-Urobilinogen **₩**084 (Aerobic (Anaerobic **PO** Catalase pathway) ்**ூ**©o-precomin 3 ©Precomin 3B pathway) EW15\_1572 EW15\_05 D-Urobilin Bilirubin Bilirubin EW15\_2020 EW15\_2020 CbiH CobJ K04034 EW15\_0910 β-diglucuronide Ni-sirohydro- thlorin chlorin ▼Co-precomin 4 Ò Oxyhemoglobin Hemoglobin L-Glutamate C00028 °🌣 Precomin 4 FO I-Urobilinogen Zn-Bacterioa,c-diamide EW15\_0554 EW15\_0554 CobM chlorophyll a CbiF I-Urobilin ୍ରତ୍ୟ3<sup>1</sup>-Hydroxy-Mg-protoporphyrin IX 13-monomethyl ester K21610.. °**©**Precorrin 5 🍄 Co-precorrin 5A Alanine, aspartate and K04034 EW15\_0910 glutamate metabolism EW15\_2020 CbiG **FO** L-Stercobilinogen L-Stercobilin c. 43¹-Oxo-Mg-protoporphyrin IX 13-monomethyl ester CobF 15,17<sup>3</sup>-Seco-F 430-17<sup>3</sup>-acid ♥ °♥³Co-precorrin 5B CbiD 12-Ethyl-8-isobutyl-3-vinyl-bacteriochlorophyllide <u>d</u> K04034 EW15\_0910 K21612 °**Ç**°2Co-precomin 6A. °🍄 Precomin 6A K13603 K19073 EW15\_0601 CbiJ CobK Divinylproto-**≠**©°Protochlorophyllide K13601 Ó °**Ò**"Co-precorrin 6B °♥Precorrin 6B K04036 Coenzyme F430 12-Ethyl-8-propyl-3-vinyl-bacteriochlorophyllide d K13603 CbiT EW15\_1744 🗘 Co-precomin 7 Bacterio-K13601 chlorophyllide c K03399 CbiE 8,12-Diethyl-3-vinyl-K13605 **PO** K13603 bacteriochlorophyllide d Bacterio-°**⊙**•Co-precomin 8X °**⊙**Precomin 8X chlorophyll c K13604 K13602 K00218 EW15\_0638.. K00218 EW15\_2200 CbiC EW15\_2200 CobH K13603 K13605 **₽**0° K21058 °Ф°Соbyrinate °**⊘**Hydrogenobyrinate 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 a,c diamide Bacterio-3-Hydroxyethyl-chlorophyllide a chlorophyllide b **-**10343 EW15\_1020 CobNST Cob(II)yrinate a,c diamide Bacterio-chlorophyll b K11336 **₽**054 K11333... 3-Hydroxyethyl-bacteriochlorophyllide a **₽©** K11337 3-Vinylbacterio-chlorophyllide a Bacterio-pheophytins K13786 Bacterio-Geranylgeranyl-bacteriochlorophyllide a Bacteriochlorophyllide a Cob(I)yrinate a,c diamide chlorophyll a K11333... **₽**O 04 Pheophorbide a Chlorophyllide a CobA EW15\_0338... CobO K19073 K13071 **→**©<sup>2</sup> Red chlorophyll catabolite Divinyl-Adenosyl cobyrinate chlorophyllide a K13600 K13600 CbiP EW15\_1671 CobQ K13544 K13545 -Chloro-K13606 (R)-1-Amino-Adenosyl cobyrinate hexaamide phyllide b propan-2-ol 7-Hydroxy-chlorophyllide a CobC CobD K08099 K08099 EW15\_1794 CbiB K08260 CbiZPyro-pheophorbide a protein α EW15\_0511 EW15\_0511 cobinamide Col Primary fluorescent chlorophyll catabolite EW15\_0338... 7-Hydroxy-chlorophyl<u>l a</u> \_\_CO\_\_\_\_\_ (R)-1-Amino-propan-2-yl phosphate CobU EW15\_1035 CobP Cobinamide L-Threonine <sup>\_</sup>©്7Chlorophyll b K18010 04 phosphate Adenosyl cobinamide phosphate Divinyl-Ó EW15\_1794 Chlorophyll a chloróphyll a EW15\_1035 CobP Cyanocob(III)alamin L-Threonine CobU CobU α-Ribazole-5'-P α-Ribazole Adenosine-GDP-cobinamide Riboflavin Pheophytins K02226 metabolism 1.16.1.6 Dimethyl- CobT benzimidazole EW15\_0364 CobC CobV EW15\_0338.. C00944 1.16.1.4 1.16.1.5 Aquacob(III)alamin Vitamin B12 Vitamin B12s Vitamin B12r coenzyme 00860 4/26/17 (c) Kanehisa Laboratories