## PORPHYRIN AND CHLOROPHYLL METABOLISM Ferritin-Fe Transferrin-Fe 1.16.1.2 Uroporphyrin I K13624... **°O**°Fe 4,5-Dioxopentanoate Coproporphyrin I Uroporphyrinogen 🍄 Apoferritin Apotransferrin Coproporphyrinogen I Uroporphyrin III Coproporphyrin III Fe-coproporphyrin III 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 **PO** K07145 K00230 K08101 Protoporphynin IX Protoheme Porphobilinogen Hydroxymethyl-Copropor phyrinogen III HemN HemG (Heme) bilane cysG Protopor-K00510... Biliverdin phyrinogen IX hemL HemL рсуА (Anaerobic pathway) (3Z)-Phycocyanobilin (Aerobic pathway) ho1 Siroheme <u>CysG</u> Sirohydrochlorin CysG ▼Precomin 2 **PH**eme O **→O** Peroxidase K21796 K00643 K02302... CON-K02302... ctaA P9301\_06731 ്**്**41Glutamate-CbiK Mg-protoporphyrin IX 🎙 **►**⊙ Myoglobin 1-semialdehyde °THeme A °**©**°Co-sirohydrochlorin 15,16-Dihydro-P9301\_06731 K00214... (3Z)-Phycoerythrobilin **₽**0° biliverdin cobl\_cbiL cobl\_cbiL HemA CbiL CobI Cytochrome a K08100 Glycine O Co-factor 3 Ni-sirohydro-catoo K01764 °ФРтесотіп ЗА ♥ Mg-protoporphyrin IX ॐ13-monomethyl ester \_Glutamyl<sub>c</sub> tRNA(Glú) Cytochrome c K02229 CobG D-Urobilinogen **▶**\*\*\* (Aerobic (Anaerobic **PO** Catalase pathway) ം**ര**©o-precomin 3 pathway) ေတ်Precomin 3B cobB D-Urobilin Bilirubin Bilirubin K21479 cobJ cobJ CbiH CobJ K04034 pniL34 β-diglucuronide Co-precomin 4 Ni-sirohydro- † chlorin chlorin Ò Oxyhemoglobin Hemoglobin L-Glutamate 000028 °©Precomin 4 **FO** I-Urobilinogen Zn-Bacterioa,c-diamide cobM cobM chlorophyll a CbiF CobMI-Urobilin ° ∰13¹-Hydroxy-Mg-protoporphyrin IX 13-monométhyl ester K21610.. °©Precorrin 5 🍄 Co-precomin 5A Alanine, aspartate and K04034 pniL34 glutamate metabolism cobJ CbiG **FO** L-Stercobilinogen L-Stercobilin al 3<sup>1</sup>-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 pniL34 K21612 °Co-precomin 6A °**♥**Precorrin 6A K13603 K19073 CbiJ CobK Divinylproto- 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 cobL 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 P9301\_05681 P9301\_05681 CbiC CobH K13603 K13605 **₽**0° K21058 ∘**%**Hydrogenobyrinate ං**්** Cobyrinate Glycine, threonine Bacterio-Bacterio-8-Ethyl-12-methyl-3-vinylmetabolism chlorophyllide d chlorophyll d CbiA CobB bacteriochlorophýllide d Geranylgeranyl-bacteriochlorophyllide b Bacterio-Hydrogenobyrinate a,c diamide 3-Hydroxyethyl-chlorophyllide a chlorophyllide b cobN 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 BtuR P9301\_02681... CobO K19073 K13071 **▶**©<sup>2</sup> Red chlorophyll catabolite Divinyl-Adenosyl cobyrinate chlorophyllide a K13600 K13600 cobQ CobQ CbiP K13544 K13545 Chloro-K13606 (R)-1-Amino-Adenosyl cobyrinate hexaamide phyllide b propan-2-ol 7-Hydroxy-chlorophyllide a \_\_ **(\$©**⁰⁴ K08099 K08099 CbiB cbiB CobD CbiZီ Pyro-pheophorbide a protein α chIG chIG Primary fluorescent chlorophyll catabolite Adenosyl cobinamide 7-Hydroxy-chlorophyl<u>l a</u> 9301\_02681... \_C(5)74 (R)-1-Amino-propan-2-yl phosphate CobU cobU CobP Cobinamide L-Threonine <sup>⊆©7</sup>Chlorophyll b K18010 O# phosphate Adenosyl cobinamide Divinyl-Chlorophyll a Ó phosphate chloróphyll a L-Threonine CobP Cyanocob(III)alamin cobU CobU Ò CobU α-Ribazole-5'-P α-Ribazole Adenosine-GDP-cobinamide Riboflavin Pheophytins K02226 1.16.1.6 metabolism P9301\_02931 Dimethyl- CobT benzimidazole CobC P9301\_02681. C00944 1.16.1.4 K21682 Aquacob(III)alamin Vitamin B12 Vitamin B12s Vitamin B12r coenzyme 00860 6/15/17 (c) Kanehisa Laboratories