## CAROTENOID BIOSYNTHESIS Terpenoid backbone biosynthesis 3,4-Dehydro-rhodopin Anhydro-rhodovibrin Hydroxy-spirilloxanthin 2-Keto-2,2'-Diketo-4,4'-Diapo-4,4'-Diapo-neurosporene 4,4'-Diapo-Rhodovibrin Spirilloxanthin spirilloxanthin spirilloxanthin Presqualene-PP Famesyl-PP phytoene lycopene Rhodopinal glucoside K09845 K09844 K10209 K10209 **-197**97 Geranyl-Normal-K10210 K10210 3,4-Dihydro-anhydrorhodovibrin geranyîl-PP 3',4'-Dihydro-rhodovibrin spirilloxanthin pathway Diapocarotene biosynthesis Tetrahydro-Unusualspirilloxanthin pathway K09846 spirilloxanthin C10044 K10212 Rhodopinal Rhodopin Staphyloxanthin 4,4'-Diapo-4,4'-Diapo-Glycosyl-4,4'-diapo-்**ு** Prephytoene-PP K09844 neurosporenoate neurosporenic acid lycopenedial ε-Carotene δ-Carotene K06444 K06444 **-**6-6276 Lutein biosynthesis α-Carotene Zeinoxanthin 9,9'-Di-cis-ζ-Carotene 7,9,9'-tricis-Neurosporene 7,9,7',9'-tetra-cis-Lycopene 9,15,9'-tricis-ζ-Carotene\_\_ 15,9'-dicis-Phytofluene K06443 📂 🖾 Lutein (2S,2'S)-Oscillol ►⊙ (2S,2'S)-Oscillol 2,2'-di(α-L-fucoside) 0 α-Cryptoxanthin 3,4-Didehydro-Neurosporene Phytofluene ζ-Carotene β-Apo-4'-carotena<u>l</u> Torulene lycopene K15745 Phytoene<sup>co</sup> K17841 K17842 K17819 **▶°©**7Neurosporaxanthin K10027 Lycopene R.g.-Keto I Thiothece-474 Neurosporaxanthin biosynthesis K02293 **PO** Okenone CrtY K14605.. K17841 Okenone pathway Chlorobactene R.g.-Keto III Thermo-Zeaxanthin y-Carotene Nostoxanthin biszeaxanthin diglucoside Isorenieratene Retinol metabolism °**©**⁴Capsanthin Capsorubin C13969 C16943 K09844 K09844 Spheroidene CrtY CrtY Thermo-K14596 K14593 K14593 påthway cryptoxanthin K14605... K17841 1'-Hydroxy-torulene Caloxanthin Thermo-₹.1'-Hydroxyβ-Isorenieratene Low-lighit condition \_\_\_Hydroxy-Hydroxy- of chlorobactene zeaxanthin C13995 y-carotene Strigolactone ABC-rings neurosporene 3,4-Dihydro-V iolaxanthin Anthera-K14597 K14597 spheroidene β-Zeacarotene $^{\circ}$ $\mathfrak{P}^{\circ}$ Zeaxanthin xanthin K15746 $\beta\text{-}Cryptoxanthin$ β-Carotene † 1'-Hydroxy-ුල් y-carotene Demethylglucoside glucoside spheroidene High-lighit condition = K06443 CrtY K09836 K09836 K09836 K09836 Neoxanthir K14598 K14598 Xanthophyll cycle °**ॐ**9-cis-β-Carotene K09846 9'-cis-C13917 C1364 3-Hydroxy-Neoxanthin K17912 echinenone ( Hydroxy-chlorobactene 1'-Hydroxy-C16391 V iolaxanthir Echinenone & **▶**♥ Adonixanthin K14594 Hydroxy-spheroidene y-carotene 7,8-Dihydro-2-cis-10'-Apo-β-carotenal Abscisie elcohol glucoside ester glucoside ester β-carotene C1**994** K09844 ~⇔Spheroidene 3'-Hydroxy-Abscisic aldehyde echinenone K15746 Abscisa (2'S)-Deoxymyxol<sup>®</sup> 2'-α-L-fucoside (2'S)-Deoxymyxol <sup>©</sup> 2'-(2,4-di-O-methyl-Xanthoxin °**ॐ**°Carlacto<u>ne</u> K09847 K09847 Xanthoxic acid K09836 K09836 K09836 K09836 0 α-L-fucoside) Asta-Abscisic acid biosynthesis **⊳**δπ5-Deoxyxanthin (3R,2'S)-Myxol $_{\rm c}$ 2'- $\alpha$ -L-fucoside Phoenicoxanthin strigol Canthaxanthin (3R,2'S)-Myxol 2'-(2,4-di-O-methyl-α-L-fucoside) Dihydroxy-phaseic acid 8'-Hydroxy-abscisate C O K09844 1.14.13.-Phaseic acid K09836 Spheroidenone Hydroxy-Astaxanthin biosynthesis **`** spheroidenone Astaxanthin C1**39**42 Ŏ Abscisic acid Myxol diester (3S,2'S)-4-Ketomyxol Strigol 2'-α-L-fucoside biósynthesis glucose ester