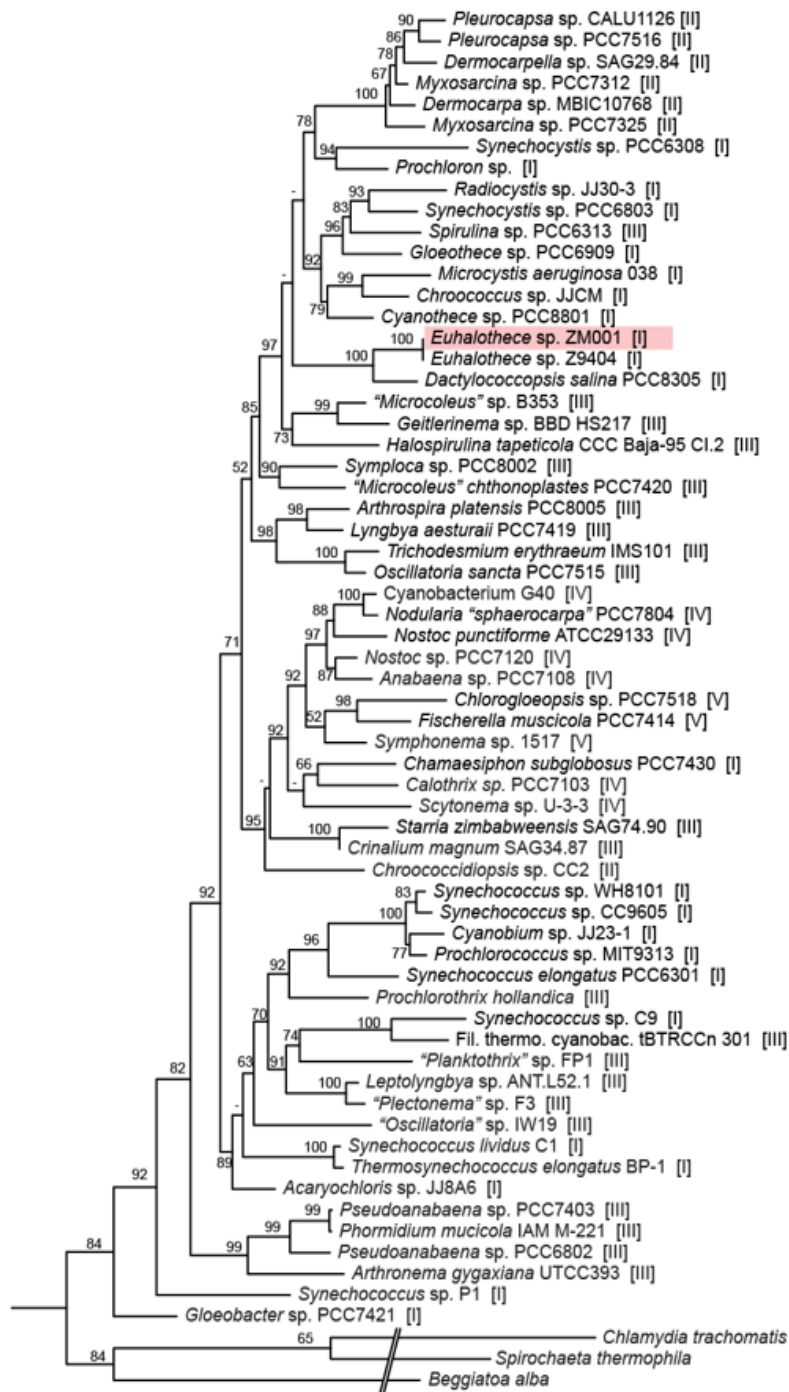
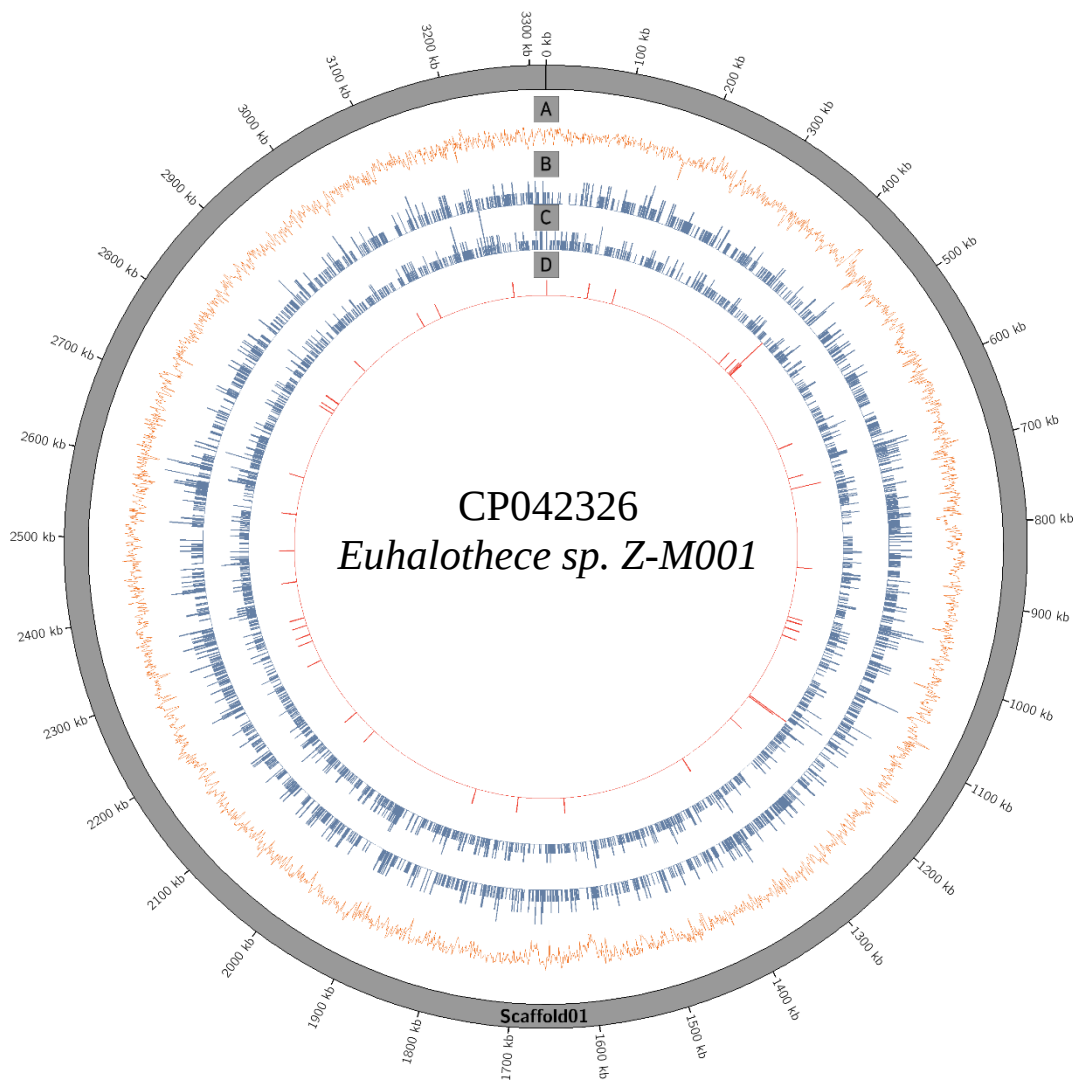




Supplementary Figure S1. Phylogenetic analysis of 65 cyanobacterial species including *Euhalothece* sp. Z-M001. Sequences of 16S rRNA genes from euhalophilic cyanobacteria *Euhalothece* Z-M001, *Euhalothece* sp. Z9404, and *Microcoleus* IPPAS B-353 were added to those of 58 cyanobacteria used previously for phylogenetic construction¹. *Chlamydia trachomatis*, *Spirochaeta thermophila*, and *Beggiatoa alba* were used as outgroups.

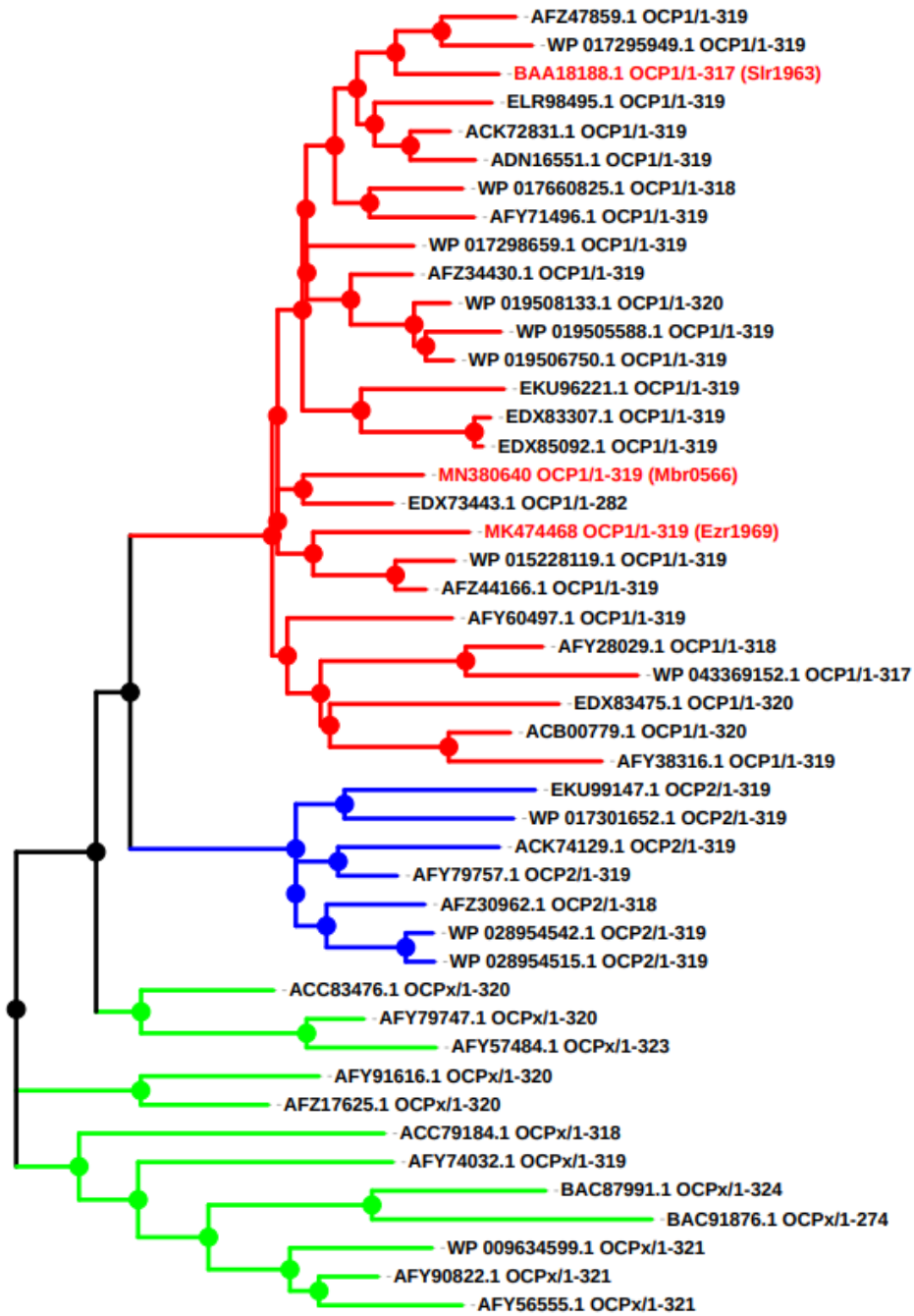


Supplementary Figure S2. Map of the circular chromosome of *Euhalothece* Z-M001.

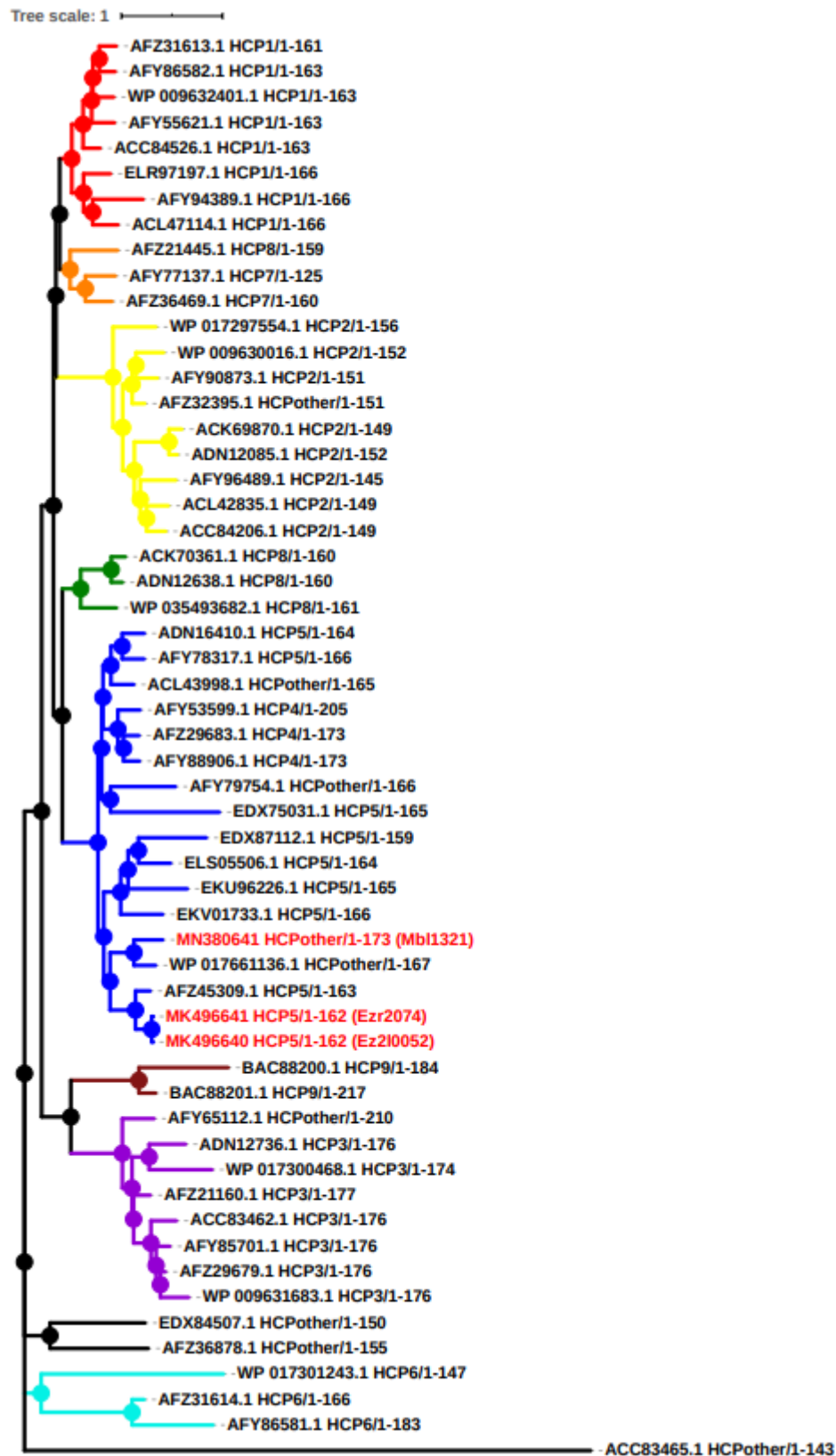
Marked characteristics are shown from outside to the center: GC content (A), CDS on reverse strand (B), CDS on forward strand (C), and tRNA and rRNA (D). The circular genome map was drawn using with the *Circos* program v0.63-4 (<http://circos.ca/>).

A

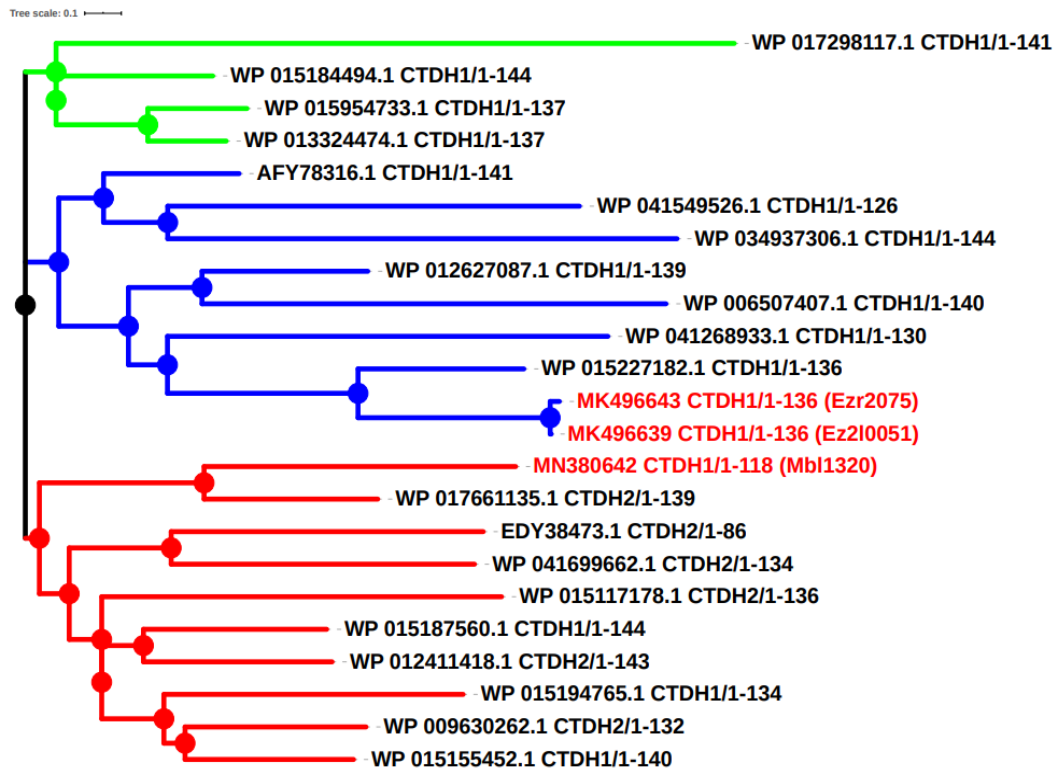
Tree scale: 0.1



B



C



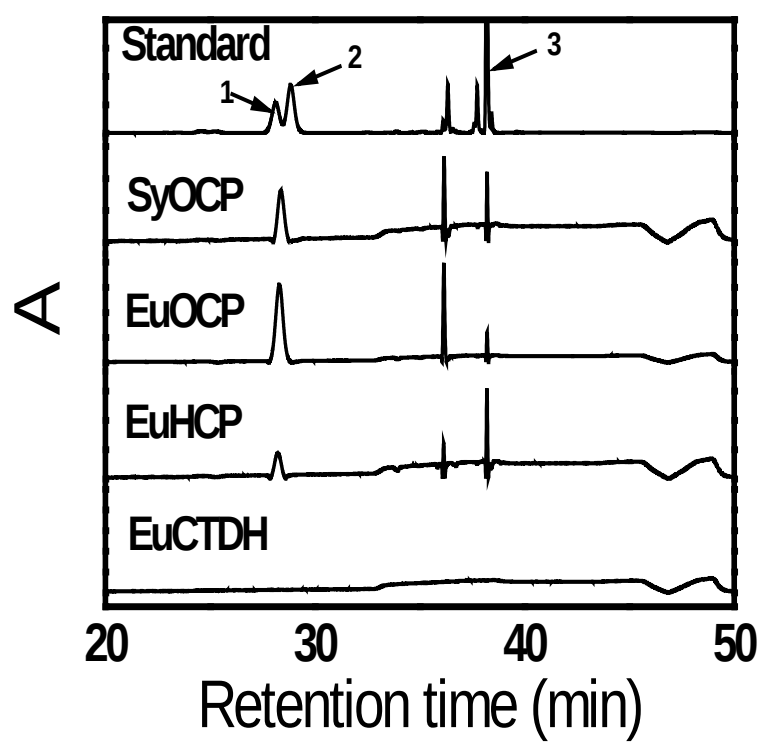
Supplementary Figure S3. Phylogenetic tree of OCP, HCP, and CTDH.

(A) Phylogenetic tree of OCPs. OCPs from *Euhalothece* Z-M001 (Ezr1969) and *Microcoleus* B353 (Mbr0566) are colored red, whereas the OCP from *Synechocystis* PCC6803 (Slr1963) is colored blue.

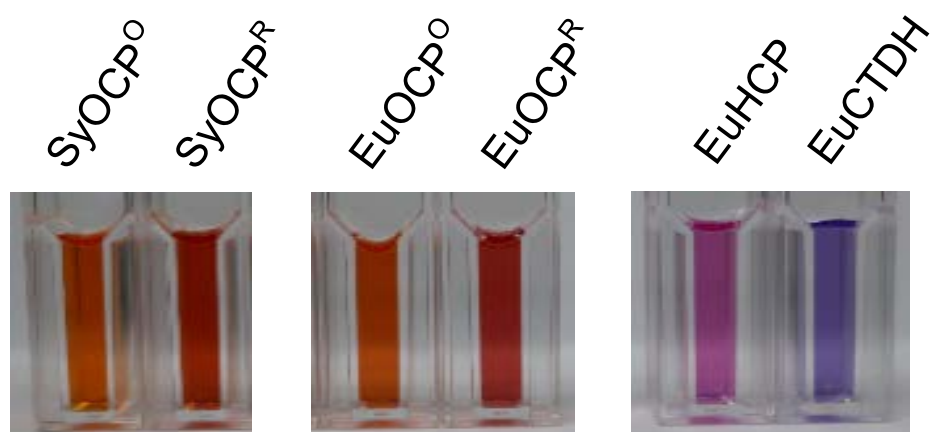
(B) Phylogenetic tree of HCP sequences. HCPs from *Euhalothece* ZM001 (Ezr2074), *Euhalothece* Z9404 (Ez2l0052), and *Microcoleus* B353 (Mbl1321) are indicated in red.

(C) Phylogenetic tree of CTDH sequences. CTDHs from *Euhalothece* Z-M001 (Ezr2075), *Euhalothece* Z9404 (Ez2l0051), and *Microcoleus* B353 (Mbl1320) are indicated in red.

Subclades identified in the phylogenetic trees of OCPs, HCPs, and CTDHs were defined based on previous studies²⁻⁴. In this study, HCP sequences were grouped into five subclades. Protein sequences used in phylogenetic analysis are listed in Supplementary Table S1.



Supplementary Figure S4. HPLC analysis of EuOCP-, EuHCP-, and EuCTDH-bound carotenoids purified from Zea-producing *E. coli*. 1, Zea; 2, Can; 3, β -carotene.



Supplementary Figure S5. Purified OCPs and their paralogs (HCPs and CTDHs) isolated from Can-producing *E. coli*.

Sy, *Synechocystis*; Eu, *Euhalothece*. Orange indicates OCPs before exposure to light (OCP⁰), and red lines represent OCPs after exposure to light (OCP^R). EuHCP and EuCTDH were non-responsive to illumination.