Genus *Cyanobacterium*

Etymology

[Cy.a.no.bac.te'ri.um] **Gr. masc. n.** *kyanos*, a blue dye; **Gr. neut. n.** *bakterion*, a small rod; **N.L. neut. n.** *Cyanobacterium*, a small blue-green rod

Nomenclatural type

Species *Cyanobacterium stanieri*[T]

Description

Oren et al., 2022:

Unicellular cyanobacteria that reproduce by transverse binary fission in a single plane. Cells are widely oval to rod-like curved. Cell width is 1.7–4.5 µm and cell length is 2.5–7 (rarely up to 12 µm). Morphologically similar to *Synechococcus* and *Cyanobium* but differing by larger mean cell dimensions and in the arrangement of the thylakoids which align in more or less parallel planes and pass throughout the entire cell. They also differ in mean DNA base composition.

The range of DNA G+C content 37.5–38.7 mol%. The type species is *Cyanobacterium stanieri* Rippka and Cohen-Bazire.

The genes encoding proteins involved in carotenoid biosynthesis identified in the four genome sequences available for *Cyanobacterium* are in support of a pathway permitting the synthesis of β-carotene, zeaxanthin and myxoxanthophylls, as well as for the absence of echinenone as reported for strain PCC 7202. In contrast, the lack of a *crtL*(e) ortholog is in conflict with the presence of α-carotene as the major carotenoid. The genome of *C. stanieri* strain PCC 7202, like those of the other three strains of this genus, also encodes two proteins (CruE and CruH) involved in the biosynthesis of synechoxanthin. Therefore, althoufh not previously reported, these representatives of *Cyanobacterium* may under appropriate growth conditions synthesize this aromatic carotenoid.

In agreement with physiological and biochemical analyses, genes (*nifD, nifK* and *nifH*) encoding nitrogenase subunits, and *cpeA* and *cpeB* encoding the α- and *β*-subunits of C-phycoerythrin are lacking in the four genomes analysed. The lack of *gvpA* and *gvpC* coding for the gas vesicle structural proteins is in agreement with the absence of these structures that have so far never been observed in members of the genus *Cyanobacterium* as emended here.

Classification

Bacteria » *Cyanobacteriota* » *Cyanophyceae* » *Chroococcales* » *Geminocystaceae* » *Cyanobacterium*

References

Effective publication: Rippka, Cohen-Bazire, 1983 [1]
Emendavit: Oren et al., 2022 [2]
Assigned taxonomically: Oren et al., 2022 [2]

Registry URL

https://seqco.de/i:33325

References

1. Rippka, Cohen-Bazire (1983). The cyanobacteriales: A legitimate order based on the type strain Cyanobacterium stanieri?. *Annales de l'Institut Pasteur / Microbiologie*. DOI:10.1016/s0769-2609(83)80094-5
2. Oren et al. (2022). Validation of the names Cyanobacterium and Cyanobacterium stanieri, and proposal of Cyanobacteriota phyl. nov. *International Journal of Systematic and Evolutionary Microbiology*. DOI:10.1099/ijsem.0.005528