

B10. Introducing the BCCM/ULC public collection of cyanobacteria and its research activities.

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Cyanobacteria represent an ancient group of morphologically diverse photosynthetic bacteria. They were the first photosynthetic bacteria producing oxygen and their long evolutionary history enabled them to colonize a wide range of habitats, as long as there was liquid water, light, air and minerals.

The BCCM/ULC public culture collection, funded by the Belgian Science Policy Office since 2011, currently hosts more than 500 cyanobacterial strains, of which approximately 140 derive from polar, subpolar, and alpine environments, followed by tropical and subtropical biotopes as well as the mediterranean region. In addition, strains of Belgian origin (lakes, soils) are also included in our public catalogue. The aim of the collection is to preserve the deposited biological material, distribute it to interested parties for fundamental and applied research, valorise it by performing research and provide services and training linked to the isolation, preservation, and identification of Cyanobacteria as well as training on new bioinformatic tools. An ISO 9001 certificate covers the public deposition & distribution of strains, as part of a multi-site certification for the BCCM consortium.

All deposited strains are studied by applying a polyphasic approach workflow, which includes a combination of morphological (microscopy), molecular (16S rRNA gene and ITS region) and ecological data. As part of an ongoing effort to discover new molecules with potential pharmaceutical applications, the strains will be evaluated for their antibacterial and/or antifungal activities.

Furthermore, whole-genome sequencing and comparative genomics are also applied to study interesting morphotypes, bioactive metabolite-producing strains, and to understand the basis of adaptations to extreme conditions. Lastly, the collection has developed a series of containerized bioinformatics workflows that align with the open science practices.

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