**Ex-situ conservation and exploration of Polar cyanobacteria in the BCCM/ULC Collection**

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The BCCM/ULC public collection funded by the Belgian Science Policy Office since 2011 aims

to gather a representative portion of the polar cyanobacterial diversity with different ecological

origins (limnetic microbial mats, soil crusts, cryoconites, endoliths, etc.). It makes it available for

researchers to study the taxonomy, evolution, adaptations to harsh environmental conditions, and

genomic make-up. It presently includes 174 cyanobacterial strains, with more than half being of

polar origin (catalogue: <http://bccm.belspo.be/catalogues/ulc-catalogue-search>).

The morphological identification shows that the strains belong to the orders Synechococcales,

Oscillatoriales, Pleurocapsales, Chroococcidiopsidales and Nostocales. The large diversity is also

supported by the phylogenetic analyses based on the 16S rRNA sequences. This broad distribution

makes the BCCM/ULC collection particularly interesting for phylogenomic studies. As an

example, to better understand the survival strategies of an Antarctic cyanobacterium, we have

determined the genome sequence of the axenic strain *Phormidesmis priestleyi* ULC007 by High

Throughput Sequencing and investigated the abundance of genes in targeted functional categories

based on the RAST subsystems technology.

In addition, cyanobacteria produce a range of secondary metabolites (e.g. alkaloides, cyclic and

linear peptides, polyketides) with different bioactive potential. Bioassays have shown antifungal

activities of the cell extracts of strains *Plectolyngbya hodgsonii* ULC009 and *Phormidium*

*priestleyi* ULC026. Due to the geographic isolation and the strong environmental stressors of the

habitat, the exploration of these metabolites in Antarctic cyanobacterial strains seems promising

for biotechnology or biomedical applications.

BCCM/ULC obtained an ISO 9001:2015 certification for public and safe deposits, and for

distribution of living strains and genomic DNA. The BCCM policy continuously aims to guarantee

a safe fit-for-use microbiological material and data compliant with the rules on access and

utilization of the Nagoya Protocol. In addition, BCCM/ULC provides, to clients from academia &

industry, a service of morphological identification and molecular characterization, along with other

scientific services as tailor-made trainings and collaborations.