BCCM/ULC: a source of cyanobacterial diversity for taxonomic, genomic and applied research

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OVERVIEW

The **BCCM/ULC** public collection (https://bccm.belspo.be/about-us/bccm-ulc) aims to gather a representative portion of terrestrial, freshwater and marine cyanobacterial strains from different ecosystems with a focus on the polar diversity. The collection's aim is to preserve the deposited biological material, to valorize it by performing research, to provide it to interested users for fundamental and applied research, and to provide services linked to the identification of the Cyanobacteria. An ISO 9001 certification covers the public deposits and distribution processes.

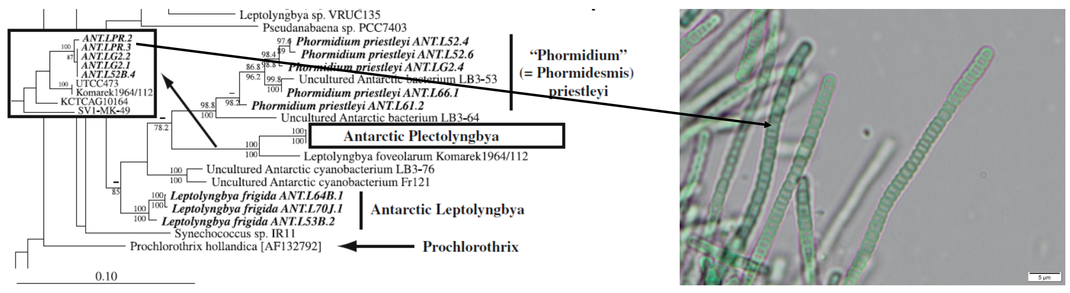
Amongst the 243 strains, several are the reference (or 'type') for newly described taxa, including *Plectolyngbya hodgsonii* ULC009, *Shackletoniella antarctica* ULC037, *Timaviella circinata* ULC401, and *Parakomarekiella sesnandensis* ULC0591.

Whole genomes of ULC strains have also been sequenced. For the **FRIA project BI-HABITAT**, genomes were sequenced and have been assembled, covering Antarctic cyanobacterial strains of different morphotypes.

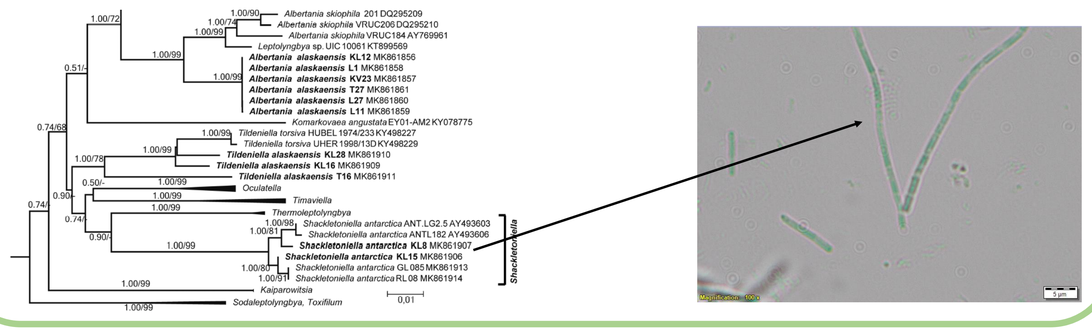
The deposited strains available at **BCCM/ULC** are also potential source of novel secondary compounds.

REFERENCE STRAINS – BCCM/ULC

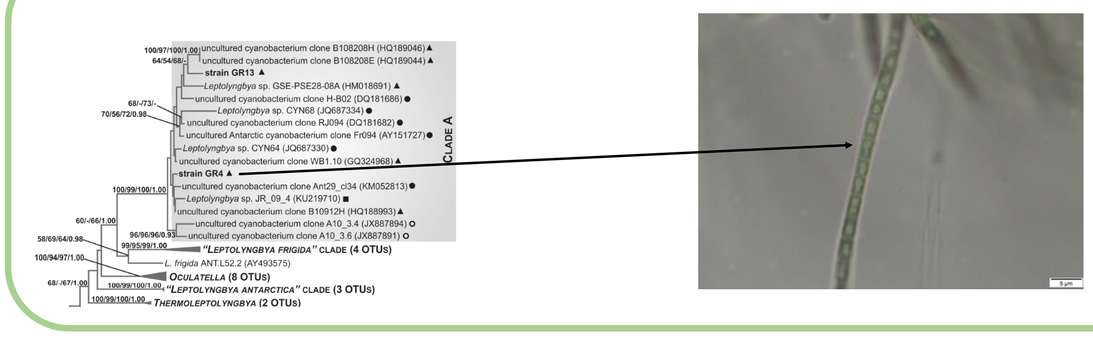
***Plectolyngbya hodgsonii* ULC009^T (Polar origin) - Taton *et al.*, 2011**



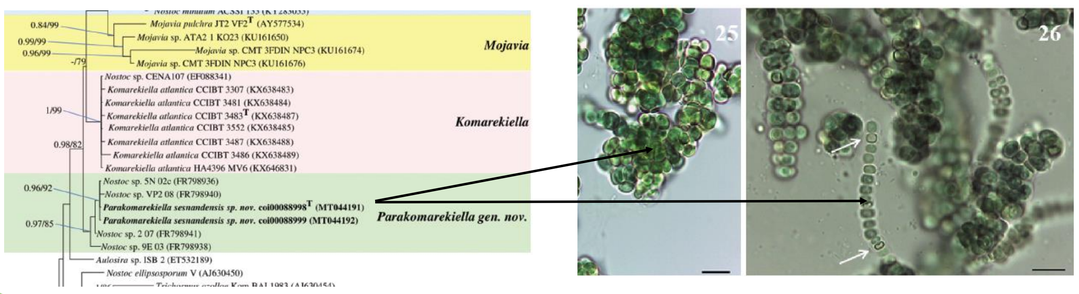
***Shackletoniella antarctica* ULC037^T (Polar origin) - Strunecky *et al.*, 2019**



***Timaviella circinata* ULC401^T (Terrestrial origin) - Sciuto *et al.*, 2017**

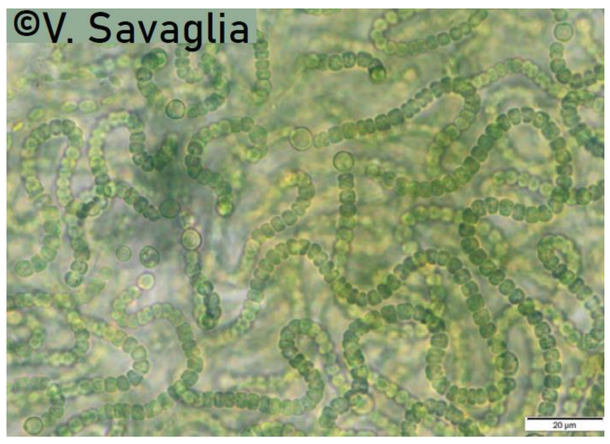


***Parakomarekiella sesnandensis* ULC591^T (Terrestrial origin) - Soares *et al.*, 2020**



GENOMES – ANTARCTIC STRAINS

Comparative genome to unveil resistance mechanisms to extreme condition of non-axenic cyanobacterial strains isolated from Polar terrestrial and aquatic environments.



***Nostoc* sp. ULC180:**

Coverage: 99.04 %, Assembly: ~6.3 Mb.

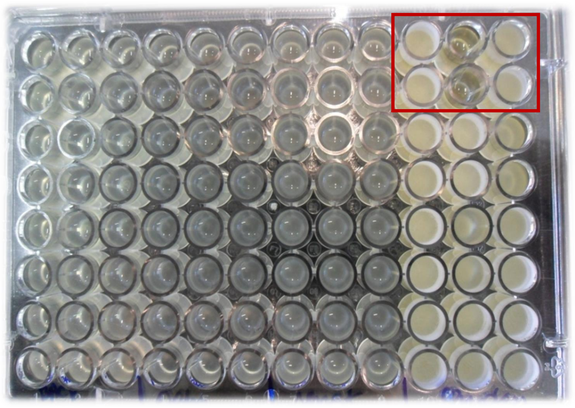
***Phormidium autumnale* (*Microcoleus favosus*) ULC128:**

Coverage: 99.71 %, Assembly: ~7.1 Mb.

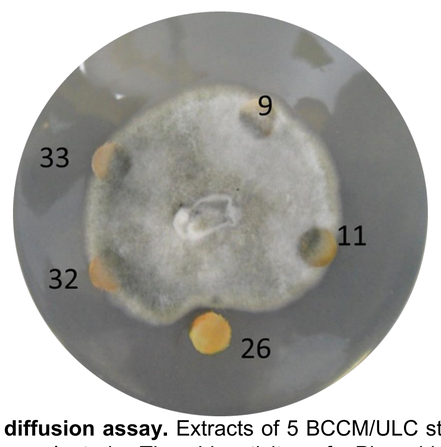
***Nostoc* sp. ULC008:**

Coverage: 98.11 %, Assembly: ~6.1 Mb).

BIOACTIVITY EVALUATION



Bioassay experiment. Picture showing the growth inhibition of *Candida* by the secondary metabolites extracted from *Plectolyngbya hodgsonii* ULC009 (red frame in right upper corner).



Disk diffusion assay. Extracts of 5 BCCM/ULC strains were evaluated. The bioactivity of *Phormidesmis priestleyi* ULC026 against the fungus *Cercospora* sp. is clearly visible (number 26).

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