Supplement of

The composition of endolithic communities in gypcrete is determined by the specific microhabitat architecture

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Table S1: Cyanobacterial strains isolated from cryptoendolithic, chasmoendolithic and hypoendolithic microhabitats of gypcrete from MTQ.

| Microhabitat   | Strain code | Taxonomical Assignment       |
|----------------|-------------|------------------------------|
| Cryptoendolithic | UAM807      | *Gloeocapsopsis* sp.         |
|                | UAM808      | *Chroococcidiopsis* sp.      |
|                | UAM801      | *Chroococcidiopsis* sp.      |
| Chasmoendolithic | UAM805      | *Chroococcidiopsis* sp.      |
|                | UAM806      | *Gloeocapsopsis* sp.         |
|                | UAM800      | *Chroococcidiopsis* sp.      |
| Hypoendolithic  | UAM802      | *Chroococcidiopsis* sp.      |
|                | UAM803      | *Gloeocapsa* sp.             |
|                | UAM804      | *Gloeocapsa* sp.             |
|                | UAM809      | *Chroococcidiopsis* sp.      |
|                | UAM810      | *Chroococcidiopsis* sp.      |
|                | UAM811      | *Chroococcidiopsis* sp.      |
Table S2: Taxonomical assignment of cyanobacterial OTUs by BLASTn to sequences belonging to uncultured and cultured material.

| OTU    | Uncultured cyanobacterium clone/Alchichic_AQ2_1_1C_10/Clone IGW2-36 | Accession Number | Identity (%) | Environment                          | Accession Number | Identity (%) | Environment                      |
|--------|----------------------------------------------------------------------|------------------|--------------|--------------------------------------|------------------|--------------|----------------------------------|
| OTU18  | Uncultured cyanobacterium clone 332-12                               | KT453633         | 99           | Sublacustrine thermal vents Yellowstone Lake | DQ914866         | 99           | China quartz hypoliths            |
| OTU11  | Uncultured cyanobacterium clone FWS-B15                              | KC437357         | 100          | Hot Spring                          | AP018254         | 100          |                                   |
| OTU854 | Uncultured Gloeocapsa sp. clone HL4SH30                              | LN880050         | 97           | shoots of Haloxylon in high salinity | MG822744         | 97           |                                   |
| OTU9   | Uncultured cyanobacterium clone Alchichic_AQ2_1_1C_10               | JN825312         | 99           | microbialites from Alchichica alkaline lake | LC325265         | 99           | blackened part of a surface of a building |
| OTU497 | Uncultured *Chroococcidiopsis* sp. clone AT4A-8-EC03                 | KC311895         | 95           | soil Atacama Desert                 | JF810071         | 94           | Antarctica: University Valle      |
| OTU420 | Uncultured *Chroococcidiopsis* sp. clone IGW2-36                     | KP238411         | 98           | volcanic rock ignimbrite, Atacama Desert, Lomas de Tilocalar | KY303728         | 97           | Hypolith quartz Taklimankan desert, Xingjiang |
| OTU1   | Uncultured *Chroococcidiopsis* sp. clone AT4A-8-EC03                 | KC311895         | 98           | soil Atacama Desert                 | DQ914863         | 96           | quartz hypoliths China            |
| OTU4   | Uncultured cyanobacterium clone IG2D-37                              | KP238398         | 98           | volcanic rock ignimbrite, Atacama Desert, Lomas de Tilocalar | JF810071         | 99           | Antarctica: University Valle      |
| OTU1772| Uncultured cyanobacterium clone IGW2-36                              | KP238411         | 96           | volcanic rock ignimbrite, Atacama Desert, Lomas de Tilocalar | KY303728         | 96           | Hypolith quartz Taklimankan desert, Xingjiang |
| OTU98  | Uncultured cyanobacterium clone AY6_21                               | FJ891051         | 99           | quartz, Yungay, Atacama Desert      | KY303729         | 95           | Hypolith quartz Taklimankan desert, Xingjiang |
| OTU8   | Uncultured cyanobacterium clone AY6_17                               | FJ891047         | 99           | quartz, Yungay, Atacama Desert      | DQ914863         | 97           | quartz hypoliths China            |
| OTU112 | Uncultured bacterium clone BJ201305-46                               | KX507829         | 100          | rain water                          | DQ914863         | 97           | quartz hypoliths China            |
| OTU  | Uncultured bacterium clone  | Accession | Similarity | Location | Species                  | Accession | Similarity | Location Details |
|------|----------------------------|-----------|------------|----------|--------------------------|-----------|------------|------------------|
| OTU2 | Uncultured bacterium clone LSS_Cyano_OTU5 | KP728185 | 95         | sinkhole lake | *Aphanocapsa muscicola* 5N-04 | FR798920 | 94         | fountain made of Sierra Elvira Stone, gray semi-dry patina on a water jet Spain: Granada, Generalife, Patio de la Sultana |
| OTU5 | Uncultured cyanobacterium clone 3GA1-12_K89 | JX127189 | 99         | stone of castle wall Germany | *Synechococcus* sp. CIBNOR 42 | AY274622 | 99         | cyanobacterial bloom in the Urias estuary (Mazatlan, Sinaloa, Mexico) during a fish mortality event in spring 1999 |
| OTU7 | Uncultured bacterium clone Atacama-colB11 | EF071511 | 100        | Atacama Desert | *Chroococcidiopsis* sp. A789-2 | JF810071 | 94         | Antarctica: University Valley |

Video S1: CT-Scan film of a colonized piece of gypcrete. 3D spatial distribution of pores (orange colour) and external view of the rock (grey colour) on lateral, front and top views of gypcrete. Porous micromorphology is capillary-shaped in vertical position due to gravity movement direction of water. [https://doi.org/10.5446/50209](https://doi.org/10.5446/50209)