Table S2. Bacteria present in Organic Lake water column from November 2008 sampling.

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| --- | --- | --- | --- | --- |
| Phylum (% domain) | Class (%phylum) | Genera (%class) | Pphysiological feaures | References |
| Bacteroidetes (18.0) | Flavobacteria (89.0) | *Psychroflexus* (74.1)  unclassified Flavobacteriales (19.2)  *Brumimicrobium* (5.6)  *Owenweeksia* (0.7)  *Stenothermobacter* (0.2)  *Persicivirga* (0.1) | strict heterotrophic aerobes, ox+cat+, degrade algal ulvan  facultative anaerobe, fermentative metabolism |  |
| Sphingobacteria (4.5) | *Lewinella* (51.7)  E6ac02 (42.0)  Ns11-12\_marine\_gp (3.3)  Wchb1-69 (3.0) |  |  |
| Cytophagia (4.3) | Ml602j-37 (77.0)  unclassified Cytophagales (9.1)  *Cyclobacterium* (8.5)  *Marivirga* (5.4) |  |  |
| Vc2.1\_bac22 (0.8) | Vc2.1\_bac22 (100) |  |  |
| Sb-1 (0.7) | Sb-1 (100) |  |  |
| Proteobacteria (54.2) | Gammaproteobacteria (68.8) | *Marinobacter* (64.0)  unclassified Gammaproteobacteria (9.9)  unclassified Alteromonadales (9.5)  *Saccharospirillim* (7.0)  *Halomonas* (4.4)  *Psychromonas* (2.3)  *Glaciecola* (0.8)  *Pseudomonas* (0.3)  *Thiomicrospira* (0.3)  *Thermomonas* (0.2)  unclassified Enterobacteriales (0.1)  Bps-ck174 (0.1)  *Leucothrix* (0.1)  *Modicisalibacter* (0.1)  *Thiorhodovibrio* (0.1)  *Pseudospirillum* (0.1) | Nitrate or DMSO reducing, Can also oxidise iron. |  |
| Alphaproteobacteria (28.5) | *Roseovarius* (76.1)  unclassified Rhodobacterales (13.4)  *Loktanella* (5.7)  *Albimonas* (1.5)  TK34 (0.5)  *Phaeobacter* (0.5)  unclassified Alphaproteobacteria (0.3)  *Sphingomonas* (0.2)  *Octadecabacter* (0.2)  Db1-14 (0.2)  *Oceanicaulis* (0.2)  *Sulfitobacter* (0.2)  unclassified Rhodospirillales (0.2)  *Roseibaca* (0.2) | Heterotrophic but can produce bacteriochlorophyll A, autotroph? | (Labrenz 1999) |
| Epsilonproteobacteria (1.5) | *Sulfurimonas* (75.5)  *Sulfurospirillum* (8.1)  *Arcobacter* (7.0)  Br36 (6.4) |  |  |
| Deltaproteobacteria (1.1) | *Desulfotignum* (38.4)  *Desulfopila* (19.7)  unclassified Bdellovibrionales (12.6)  *Peredibacter* (8.5)  *Bacteriovorax* (8.5)  *Desulfosalsimonas* (4.4)  *Desulfobacterium* (3.9)  *Desulfuromonas* (3.9) |  |  |
| Cyanobacteria (12.8) |  |  |  |  |
| Actinobacteria (1.4) | Actinobacteria | unclassified Micrococcales  “*Candidatus* Aquiluna”  *Demequina* |  |  |
| Firmicutes (0.8) | Clostridia | *Halanaerobium*  unclassified Clostridiales  unclassified Halanaerobiales  *Fusibacter*  *Fastidiosipila* |  |  |
| Bacilli | unclassified Bacillales  *Paraliobacillus* |  |  |
| Lentisphaerae (0.1) | Lentisphaeria | Wchb1-41  unclassified Victivallales  R76-b128 |  |  |
| Spirochaetes (0.2) | Spirochaetes | *Spirochaeta*  unclassified spirochaetales |  |  |
| Verrucomicrobia (0.8) | Verrucomicrobiae | unclassified Verrucomicrobiales  Rubritalea |  |  |
| Opitutae | unclassified Puniceicoccales  marine Puniceicoccales |  |  |
| Chlamydiae (0.03) | Chlamydiae | unclassified chlamydiales |  |  |
| candidate divisions | RF3 (5.3) | FJ231138 Laguna Lejía (57.7)  FM210971 Lake Shangmatala (22.5)  AF142888 Ekho Lake (14.8)  DQ909718 Hydrothermal vent (2.7)  HM973420 oil reservoir (1.1)  AB546068 oil well head (0.5)  GU196243 anaerobic digester (0.5) | Originally cloned from bovine rumen fluid sample |  |
| OD1 (3.0) | DQ521564 Lake Vida (36)  JN454910 Hypersaline mat (5.7)  EU050865 Artic Sediment (4.6)  JF743552 Marine sediments (3.4)  GU197432 Endosymbionts (3.4)  JN408878 soil rhizosphere (2.3)  JN440560 hypersaline mat (2.3)  AY862782 Lake Tebenquiche (2.3)  AF419697 hydrothermal sediment (2.3)  HM481393.1 contaminated water (2.3)  JN441150.1 hypersaline mat (2.3)  JN447858 hypersaline mat (2.3) | Obsidian pool derived |  |
| TM7 (0.2) |  |  |  |
| SR1 (0.07) |  |  |  |
| Bd1-5 (0.07) |  |  |  |
| Bhi80-139 (0.06) |  |  |  |