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| Phylum | Class | Genus | Physiological features and notes |
| Bacteroidetes | Flavobacteria | *Psychroflexus*  unclassified *Flavobacteriales*  *Brumimicrobium*  *Owenweeksia*  *Stenothermobacter*  *Persicivirga* | Psy: Obligately aerobic heterotrophs capable of degrading high molecular weight carbon sources, likely capable of proteorhodopsin mediated photoheterotrophy. |
| Sphingobacteria | *Lewinella*  E6aC02  Ns11-12\_marine\_gp  WCHB1-69 | Lew: Obligately aerobic heterotrophs capable of degrading high molecular weight carbon sources, putative xanthorhodopsin mediated photoheterotrophy  E6aC02 is an uncultured clade associated with marine and hypersaline environments, particularly mats and anaerobic sediments. Organic Lake 16s distribution suggests anaerobic metabolism  Ns11-12\_marine\_gp: 200+ sequences, marine origin  WCHB1-69: Large group 600+ seqs |
| Cytophagia | Ml602j-37  unclassified *Cytophagales*  *Cyclobacterium*  *Marivirga* | Ml602j-37 (Order incertae sedis III): >100 environmental clones including marine |
| VC2.1\_bac22 | VC2.1\_bac22 | 417 environmental clones |
| SB-1 | SB-1 | 219 environmental clones |
| Proteobacteria | Gammaproteobacteria | *Marinobacter*  unclassified Gammaproteobacteria unclassified Alteromonadales  *Saccharospirillim*  *Halomonas*  *Psychromonas*  *Glaciecola*  unclassified *Oceanospirillales Pseudomonas*  *Thiomicrospira*  *Thermomonas*  unclassified Enterobacteriales  Bps-ck174  *Modicisalibacter*  *Leucothrix*  *Thiorhodovibrio*  *Pseudospirillum* | Facultative anaerobic heterotroph capable of nitrate or DMSO respiration preferring labile substrates and hydrocarbons, chemolithoautotrophic growth supported by oxidation of iron and manganese, some species capable of symbiotic relationship with dinoflagellates such as *Gymnodinium*, putative DMSP lysis capability, putative rhodopsin mediated photoheterotrophy |
| Alphaproteobacteria | *Roseovarius*  unclassified *Rhodobacterales*  *Loktanella*  *Albimonas*  TK34  *Phaeobacter*  unclassified *Alphaproteobacteria* *Sphingomonas*  *Octadecabacter*  Db1-14  *Oceanicaulis*  *Sulfitobacter*  unclassified Rhodospirillales  *Roseibaca* | Heterotrophic aerobes, capable of aerobic anoxygenic phototrophy, CO oxidation supporting lithoheterotrophy, DMSP lysis, some species symbionts of microalgae, putative rhodopsin mediated photoheterotrophy |
| Epsilonproteobacteria | *Sulfurimonas*  *Sulfurospirillum*  *Arcobacter*  Br36 | Sulfur-oxidizing chemolithoautotrophic or mixotrophic, may also oxidize hydrogen, reduced sulfur compounds or organic acids.  *Arcobacter* is diazatrophic NB. RTCA C-fix. |
| Deltaproteobacteria | *Desulfotignum*  *Desulfopila*  unclassified *Bdellovibrionales*  *Peredibacter*  *Bacteriovorax*  *Desulfosalsimonas*  *Desulfobacterium*  *Desulfuromonas* |  |
| Cyanobacteria | Chloroplast | *Dunaliella* chloroplast  unclassified chloroplast  diatom chloroplast  unclassified *Cyanobacteria* |  |
| Actinobacteria | Actinobacteria | “*Candidatus* Aquiluna”  unclassified Micrococcales  *Demequina* |  |
| Firmicutes | Clostridia | *Halanaerobium*  unclassified *Clostridiales*  unclassified *Halanaerobiales*  *Fusibacter*  *Fastidiosipila* |  |
| Bacilli | unclassified *Bacillales*  *Paraliobacillus* |  |
| Lentisphaerae | Lentisphaeria | Wchb1-41  unclassified Victivallales  R76-b128 |  |
| Spirochaetes | Spirochaetes | *Spirochaeta*  unclassified *Spirochaetales* |  |
| Verrucomicrobia | Verrucomicrobiae | unclassified *Verrucomicrobiales*  *Rubritalea* |  |
| Opitutae | unclassified *Puniceicoccales*  marine *Puniceicoccales* |  |
| Chlamydiae | Chlamydiae | unclassified *Chlamydiales* |  |
| candidate divisions | RF3 | FJ231138 Laguna Lejía  FM210971 Lake Shangmatala  AF142888 Ekho Lake  DQ909718 Hydrothermal vent  HM973420 oil reservoir AB546068 oil well head  GU196243 anaerobic digester | Originally cloned from bovine rumen fluid sample |
| OD1 | DQ521564 Lake Vida  JN454910 hypersaline mat  EU050865 Artic sediment JF743552 marine sediments  GU197432 endosymbionts  JN408878 soil rhizosphere  JN440560 hypersaline mat  AY862782 Lake Tebenquiche  AF419697 hydrothermal sediment  HM481393 contaminated water  JN441150 hypersaline mat  JN447858 hypersaline mat | Obsidian pool derived |
| TM7 |  |  |
| SR1 |  |  |
| Bd1-5 |  |  |
| Bhi80-139 |  |  |
| Euryarchaeota | Halobacteria | Deep\_sea\_hydrothermal\_vent\_gp\_6(dhveg-6) | Obligate aerobic heterotrophs. |
| Viridiplantae | *Chlorophyta* | unclassified *Chlorophyceae* unclassified *Chlorophyta*  *Dunaliella* | Photosynthetic |
| Stramenopiles | Bacillariophyta | *Cylindrotheca*  *Chaetoceros* | Photosynthetic |
| Dictyochophyceae | unclassified *Dictyochophyceae*  unclassified *Pedinellales* | Photosynthetic, possibly mixotrophic by phagotrophy |
| unclassfied Stramenopiles | unclassified *Stramenopiles* |  |
| Metazoa | Arthropoda | unclassified *Hexapoda* |  |
| Fungi | Neocallimastigomycota | *Neocallimastix*  unclassified *Neocallimatigomycetes* | Heterotrophic |
|  | Dikarya | unclassified *Ascomycota*  *Aspergillus*  *Aureobasidium*  *Cordyceps*  *Penicillum*  *Verticillum*  *Cryptococcus*  unclassified *Basidiomycota* | Heterotrophic |
| Alveolata | Dinophyceae | unclassified *Dinophyceae*  *Karlodinium*  unclassified *Gymnodiniales* | Photosynthetic, possibly mixotrophic by phagotrophy |
| Ciliophora | *Euplotes*  *Tunicothrix* | Heterotrophic phagotrophs |
| Choanoflagellida | Codonosigidae | *Proterospongia*  unclassified *Choanoflagellida* | Heterotrophic phagotrophs |