

16S rRNA gene amplicon sequencing data of the Iron Quadrangle ferruginous caves (Brazil) shows the importance of conserving this singular and threatened geosystem

Short title: 16S rRNA gene amplicon sequencing of ferruginous caves

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Supplementary Table S5. Features of the genera found on the floor, ceiling, and biofilm hanging from the ceiling of cave 2 in Chapada de Canga.

Genus	Point	Metabolism	pH	Respiration	Temperature	Feature	Ref
<i>Acidipila</i>	F+C	Chemo-organotrophic	Acidophilic	Aerobic	Mesophilic		¹
<i>Acidisoma</i>	F+C	Chemo-organotrophic	Acidophilic	Aerobic	Psychrotolerant	Oxidase and catalase-positive	²
<i>Aciditerrimonas</i>	F+C+S	Facultatively autotrophic	Thermoacidophilic	Facultatively anaerobic	Thermophile	Capable of reducing ferric iron. Related to natural products production	³
<i>Actinoallomurus</i>	F+C+S		Acidophilic	Strictly aerobic	Mesophilic	Potential to produce metabolites arising from different biosynthetic pathways.	⁴
<i>Aminomonas</i>	F+C		Neutrophilic	Strictly anaerobic	Mesophilic	Grows by utilizing amino acids only in the presence of yeast extract	⁵
<i>Anaeromyxobacter</i>	S		Neutrophilic	Facultative anaerobic	Mesophilic	Acetate, succinate, pyruvate, formate, and H ₂ are used as electron donors	⁶
<i>Aquisphaera</i>	F	Chemoheterotrophic	Neutrophilic	Strictly aerobic	Mesophilic	Catalase and cytochrome oxidase-positiv	⁷
<i>Bacillus</i>	F+C		Acidophilic/Alkaliphils	Obligate aerobes/facultative anaerobes	Psychophiles to Thermophiles;	Most catalase positive	⁸

<i>Bdellovibrio</i>	S			Obligate aerobic		Parasites of other bacteria and kill other gram negative bacteria	9
<i>Blastochloris</i>	F	Heterotroph or photoheterotroph	Acidophilic	Faculative anaerobe	Mesophilic	Unique due to the presence of bacteriochlorophyll (BChl)b	10
<i>Bradyrhizobium</i>	F+C+S		Acidophilic	Strictly aerobic	Mesophilic	Take atmospheric nitrogen and fix it into ammonia (NH ₃) or ammonium (NH ₄ ⁺)	11
<i>Burkholderia</i>	F		Acidophilic	Obligately aerobic	Mesophilic	Saprophytic species or opportunistic pathogens that infect animals, humans and plants; Several <i>Burkholderia</i> species are now being utilized in industrial applications as biocatalysts, for biodegradation and PGPR	12
<i>Candidatus Solibacter</i>	F+S	Chemoorganotrophic	Acidophilic	Aerobic	Mesophilic temperatures	It produces enzymes to breaking down organic carbon available in its environment for metabolism and participates in nitrate and nitrite reduction	13
<i>Chitinimonas</i>	F		Acidophilic	Aerobic and anaerobic	Mesophilic	Chitinolytic	14
<i>Conexibacter</i>	F+C	Chemoorganotrophs	Neutrophilic	Aerobic	Mesophilic	Reduce nitrate to nitrite	15
<i>Crossiella</i>	C			Aerobic.	Mesophilic	Catalase positive	16
<i>Dyella</i>	F+C		Neutrophilic	Aerobic	Mesophilic	Catalase and oxidase positive and urease-negative	17
<i>Elusimicrobium</i>	F+S	Heterotrophic	Neutrophilic	Obligately anaerobic	Mesophilic		18
<i>Ferrovum</i>	S	Chemolitho-autotrophic	Acidophilic	Obligately <i>aerobic</i>	Psychrotolerant	Iron-oxidizing	19
<i>Ferruginibacter</i>	F+S		Neutrophilic	Strictly aerobic	Mesophilic		20
<i>Gemmata</i>	F+C	Heterotrophic,		Aerobic			21
<i>Gemmatimonas</i>	F+C		Neutrophilic	Aerobic or micro-oxic conditions	Mesophilic		22
<i>Geobacter</i>	S	Chemo-organotroph	Neutrophilic	Anaerobic respiration	Mesophilic	Useful in bioremediation; ability to reduce organic compounds and metals, including iron, radioactive metals	23
<i>Georgfuchsia</i>	F+S	Chemo-organoheterotrophic	Neutrophilic	Strictly respiratory type of metabolism	Mesophilic	Capability to degrade aromatic compounds	24
<i>Granulicella</i>	F+C	Chemo-organotrophs	Acidophilic	Aerobic	Mesophilic	Produce amorphous extracellular polysaccharide-like substance	25

<i>Haliangium</i>	F+S			Obligate aerobic and moderately halophilic,	Mesophile		26
<i>Iamia</i>	C		Neutrophilic	Obligate aerobic	Mesophile		27
<i>Jahnella</i>	F+S				Mesophile		28
<i>Ktedonobacter</i>	F+C+S	Heterotrophic	Acidophilic	Aerobic	Mesophilic		29
<i>Lysinibacillus</i>	F		Neutrophilic	Obligate aerobe	Mesophilic		30
<i>Methanomassiliicoccus</i>	F+S		Slightly alkaliphilic	Obligatory anaerobic	Mesophilic	Archaea	31
<i>Methylocapsa</i>	C		Acidophilic	Strictly aerobic	Mesophilic	Capable of atmospheric nitrogen fixation	32
<i>Methylocystis</i>	C	Chemolithotroph	Cidophilic	Aerobic	Mesophilic	Facultatively methanotrophic	33
<i>Mucilaginibacter</i>	F	Chemo-organotrophic	Acidophilic	Facultative aerobes	Mesophilic		34
<i>Mycobacterium</i>	F+C			Aerobic	Mesophilic		35
<i>Nitrospira</i>	F+S	Chemolithoautotrophic	Alkaliphilic		Mesophilic	Nitrite-oxidizing bacteria	36
<i>Novosphingobium</i>	F+S		Alkaliphilic	Facultative anaerobic	Mesophilic		37
<i>Ohtaekwangia</i>	F		Acidophilic	Strictly aerobic	Mesophilic		38
<i>Oxalophagus</i>	F			Anaerobic	Mesophilic		39
<i>Pedomicrobium</i>	F+S		Acidophilic		Mesophilic	Abilities to oxidise manganese (Mn)	40
<i>Phenylobacterium</i>	F+S	Chemoorganotrophic	Alkaliphilic	Strictly aerobic	Mesophilic		41
<i>Planctomyces</i>	F+S	Chemoorganotroph		Facultative aerobic	Mesophilic		42
<i>Propionibacterium</i>	C	Chemoorganotrophic		Anaerobic/facultatively aerobic	Mesophilic	Widely used in the production of vitamin B12, tetrapyrrole compounds, and propionic acid, as well as in the probiotics and cheese industries	43
<i>Pseudonocardia</i>	C	Facultative autotrophs		Aerobic	Mesophilic		44
<i>Rhizomicrobium</i>	F+C+S		Acidophilic	Facultatively anaerobic.	Mesophilic	Reduces Fe(III) o Fe(II) in the presence of glucose	45
<i>Rhodanobacter</i>	F		Acidophilic	Facultatively anaerobic	Mesophilic	Bioremediation	46
<i>Rhodomicrobium</i>	F+C+S	Photo-organoheterotrophy and chemo-organoheterotrophy	Acidophilic	Microaerobic to anaerobic	Psychrotolerant		47
<i>Rhodoplanes</i>	F+C+S	Phototrophic	Acidophilic	Anaerobic	Mesophilic, neutrophic, and nonhalophilic	Denitrification positive	48
<i>Sideroxydans</i>	S	Autotrophic	Acidophilic	Microaerophilic	Psychrotolerant	Iron-oxidizing	49
<i>Skermanella</i>	S	Chemo-organotroph	Acidophilic	strictly aerobic	Mesophilic		50

<i>Stenoxybacter</i>	C			Strict aerobe obligate microaerophile	Mesophilic		51
<i>Steroidobacter</i>	F+C+S	Chemo-organotrophs	Acidophilic	Anaerobe or aerobe	Mesophilic	Exhibit reduction of nitrate to dinitrogen monoxide and further to dinitrogen without any intermediate accumulation of nitrite.	52
<i>Streptacidiphilus</i>	C	Chemo-organotrophic	Acidophilic	Aerobic	Mesophilic	Turnover of organic matter in acidic habitats. Also reported to be potential producers of antifungal compounds and acid-stable enzymes.	53
<i>Telmatobacter</i>	F+S	Chemo-organotrophic	Acidophile	Facultatively anaerobic	Psychrotolerant		54
<i>Thermogemmatispora</i>	F+C	Heterotrophs	Acidophile	Aerobic	Thermophilic		55
<i>Thermosporothrix</i>	F+C	Heterotrophic	Neutrophilic	Aerobic	Thermophilic		56
<i>Vampirovibrio</i>	F+S			Obligate aerobic and epibiotic parasitic	Mesophilic	Is one of the few known predatory bacteria, an obligate parasite	57
<i>Variovorax</i>	F	Chemo-organotrophic	Neutrophilic	Anaerobic	Mesophilic	Diverse metabolic capabilities enable it to degrade a wide array of recalcitrant organic pollutants including 2,4-dinitrotoluene, aliphatic polycarbonates and polychlorinated biphenyls.	58
<i>Zavarzinella</i>	F+C	Chemo-organotrophic	Acidophile	Aerobic	Mesophilic	Catalase- and cytochrome oxidase-positive	59

F – Floor; C – Ceiling; S – Speleothem.

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