

SUPPLEMENTARY MATERIALS

EXPERIMENTAL ARTICLES

Alkalothermophilic Iron-Reducing Bacteria Of The Goryachinsk Thermal Water Basin

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Table S1. Taxonomic diversity of microorganisms in the studied samples and enrichment cultures.

	Samples			Enrichments					
Taxa with an abundance greater than 0.1% in at least one of the samples	1	2	3	1/Fe/ye	1/Fe/or.ac.	1/H ₂	1/pyr	2/Fe	3/Fe
<i>Hydrogenophilaceae</i> uncultured	25.7	5.6	1.1	1.3	1.8	0.0	0.0	4.1	5.0
<i>Nitrospira</i>	14.4	0.0	0.3	3.7	2.8	0.0	0.0	0.0	0.0
<i>Meiothermus</i>	10.5	9.5	4.3	3.2	12.5	36.8	0.0	11.6	16.6
<i>Candidatus Alysiosphaera</i>	8.0	1.0	0.4	2.8	6.1	0.0	0.0	1.4	2.1
<i>Microscillaceae</i> uncultured	4.9	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
<i>Sutterellaceae</i> uncultured	4.3	0.0	0.0	0.7	0.9	0.0	0.0	0.0	0.0
<i>Gemmataceae</i> uncultured	3.8	0.5	0.2	2.1	3.3	0.0	0.0	1.6	1.4
<i>Blastocatellia</i> 11-24	3.7	0.0	0.0	0.3	1.3	0.0	0.0	0.0	0.0
<i>Anaerolineaceae</i> uncultured	3.1	7.0	5.3	0.1	0.3	0.0	0.0	7.9	4.6
<i>Saprospiraceae</i> uncultured	2.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
<i>Ahniella</i>	1.9	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0
<i>Armatimonadota</i> uncultured	1.9	0.0	0.0	0.9	1.3	0.0	0.0	0.0	0.0
<i>Anaerolineae</i> SJA-15	1.6	0.0	0.0	0.5	2.8	0.0	0.0	0.0	0.0
<i>Phycisphaeraceae</i> SM1A02	1.3	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
<i>Actinobacteriota</i> MB-A2-108	0.8	0.0	0.0	1.9	2.8	0.0	0.0	0.0	0.0
<i>Gaiella</i>	0.5	0.0	0.0	0.8	1.6	0.0	0.0	0.0	0.0
<i>Babeliaceae</i>	0.4	0.0	0.0	0.6	1.3	0.0	0.0	0.0	0.0
<i>Tepidimonas</i>	0.1	0.0	0.0	1.5	0.3	0.0	0.0	0.0	0.0
<i>Acidimicrobiia</i> IMCC26256	0.1	0.0	0.0	0.4	0.8	0.0	0.0	0.0	0.0
<i>Caloramator</i>	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0
<i>Paludibaculum</i>	0.0	1.2	0.3	2.1	0.1	0.0	0.0	1.4	1.3
Sva0485	0.0	0.8	2.7	0.4	16.3	0.0	0.0	2.0	1.0
<i>Desulfurispora</i>	0.0	0.0	0.0	8.1	1.1	0.0	0.0	0.0	0.0
<i>Desulfotomaculum</i>	0.0	0.0	0.0	3.9	21.1	0.0	0.0	0.0	0.0
<i>Aeromonas</i>	0.0	0.0	17.6	0.0	0.0	0.0	0.0	0.0	0.0
<i>Anaerolinea</i>	0.0	1.3	1.1	0.0	0.0	0.0	0.0	1.1	1.2
<i>Anaerolineae</i> uncultured	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.7
<i>Anoxybacillus</i>	0.0	0.0	0.0	3.8	0.1	0.0	0.0	0.0	0.0
<i>Azoarcus</i>	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.0	0.0
<i>Bacillota</i> BRH-c20a	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
<i>Bacillota</i> D8A-2	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0
<i>Bacillota</i> uncultured	0.0	0.0	0.0	0.0	0.0	1.2	9.1	0.0	0.0
<i>Bacteroidales</i> SB-5	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.1
<i>Bacteroidota</i> vadinHA17	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.3
<i>Bathyarchaeia</i>	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.1
<i>Bellilinea</i>	0.0	0.2	0.2	0.0	0.0	3.1	0.5	1.2	1.5
Blvii28 wastewater-sludge group	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.8	0.0
BSV26	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.6
<i>Calditerrivibrio</i>	0.0	0.2	0.0	0.0	1.1	0.0	0.0	1.2	0.0
<i>Candidatus</i> <i>Dichloromethanomonas</i>	0.0	0.0	0.0	0.0	0.0	0.0	8.4	0.0	0.0
<i>Candidatus</i> Symbiobacter	0.0	1.6	0.3	0.0	0.0	0.0	0.0	0.9	1.1
<i>Carboxydocella</i>	0.0	0.0	0.0	1.7	1.0	0.0	0.0	0.0	0.0

<i>Carboxydotherrmus</i>	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
<i>Clostridia</i> uncultured	0.0	0.0	0.0	0.0	0.0	0.6	39.2	0.0	0.0
<i>Desulfotibacter</i>	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0
<i>Desulfotobacterium</i>	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0
<i>Desulfobacca</i>	0.0	1.3	2.7	0.0	0.0	0.0	0.0	1.4	1.6
<i>Desulfovirga</i>	0.0	1.5	0.5	0.0	0.0	0.0	0.0	1.0	1.2
<i>Fervidobacterium</i>	0.0	0.0	0.0	14.1	1.9	0.1	1.7	0.0	0.0
<i>Bacillota</i> uncultured	0.0	0.0	0.0	0.4	2.3	0.0	0.0	0.0	0.0
<i>Gaiellales</i> uncultured	0.0	0.9	1.3	0.0	0.0	0.0	0.0	1.4	1.6
<i>Ignavibacterium</i>	0.0	1.1	0.7	0.0	0.0	0.0	0.0	1.8	2.0
<i>Lentimicrobium</i>	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0
<i>Limnothrix</i>	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MBNT15	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	2.1
OPB41	0.0	0.7	0.5	0.0	0.0	52.3	32.0	2.1	1.6
<i>Pedosphaeraceae</i>	0.0	1.5	1.0	0.0	0.0	0.0	0.0	0.9	1.0
<i>Pelotomaculum</i>	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
RBG-16-55-12	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.8
<i>Rhodocyclaceae</i> uncultured	0.0	0.5	0.0	0.0	0.0	0.0	0.0	3.3	0.0
<i>Rivibacter</i>	0.0	1.1	0.5	0.0	0.0	0.0	0.0	1.7	1.7
Run-SP154	0.0	1.0	1.3	0.0	0.0	0.0	0.0	1.1	2.4
SBR1031	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.6
<i>Smithella</i>	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.5
<i>Sporolituus</i>	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
SR-FBR-L83	0.0	0.6	0.0	0.0	0.0	0.0	0.0	1.4	0.0
Sva0081 sediment group	0.0	1.3	1.3	0.0	0.0	0.0	0.0	0.7	0.7
<i>Syntrophobacter</i>	0.0	1.6	1.5	0.0	0.0	0.0	0.0	0.8	1.0
<i>Syntrophobacteriales</i> uncultured	0.0	0.2	0.3	0.0	0.0	0.0	0.0	1.3	1.0
TA06	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.1
<i>Thermincola</i>	0.0	0.0	0.0	11.1	1.9	0.0	0.0	0.0	0.0
<i>Thermoanaerobaculum</i>	0.0	0.3	0.1	0.0	0.0	0.0	0.0	1.9	1.8
<i>Thermodesulfovibrio</i>	0.0	0.0	0.0	0.1	0.8	2.9	0.0	0.0	0.0
<i>Thermodesulfovibrionia</i> uncultured	0.0	1.8	2.9	0.0	0.0	0.0	0.0	1.9	2.1
<i>Thermosinus</i>	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
<i>Thermotalea</i>	0.0	0.0	0.0	0.0	0.0	1.4	7.2	0.0	0.0
<i>Thiobacillus</i>	0.0	4.1	1.1	0.0	0.0	0.0	0.0	2.5	2.5
Others	10.3	48.6	31.8	10.6	11.3	1.6	1.8	38.3	36.0

Abundance, %

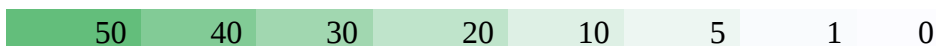


Fig. S1. Sampling location. Well 1/76 (a) sample No. 1; (b) samples No. 2 and No. 3.



Fig. S2. Microphotographs of primary enrichment cultures of alkalithermophilic iron reducers (a, b) of sample No.1 with addition of organic acid mixture and (c, d) of sample No.3. (a, c) phase-contrast microscopy; (b, d) fluorescence microscopy of the same preparation stained with acridine orange. Scale bar 5 μ m.

