

Identification of enriched hyperthermophilic microbial communities from a deep-sea hydrothermal vent chimney under electrolithoautotrophic culture conditions.

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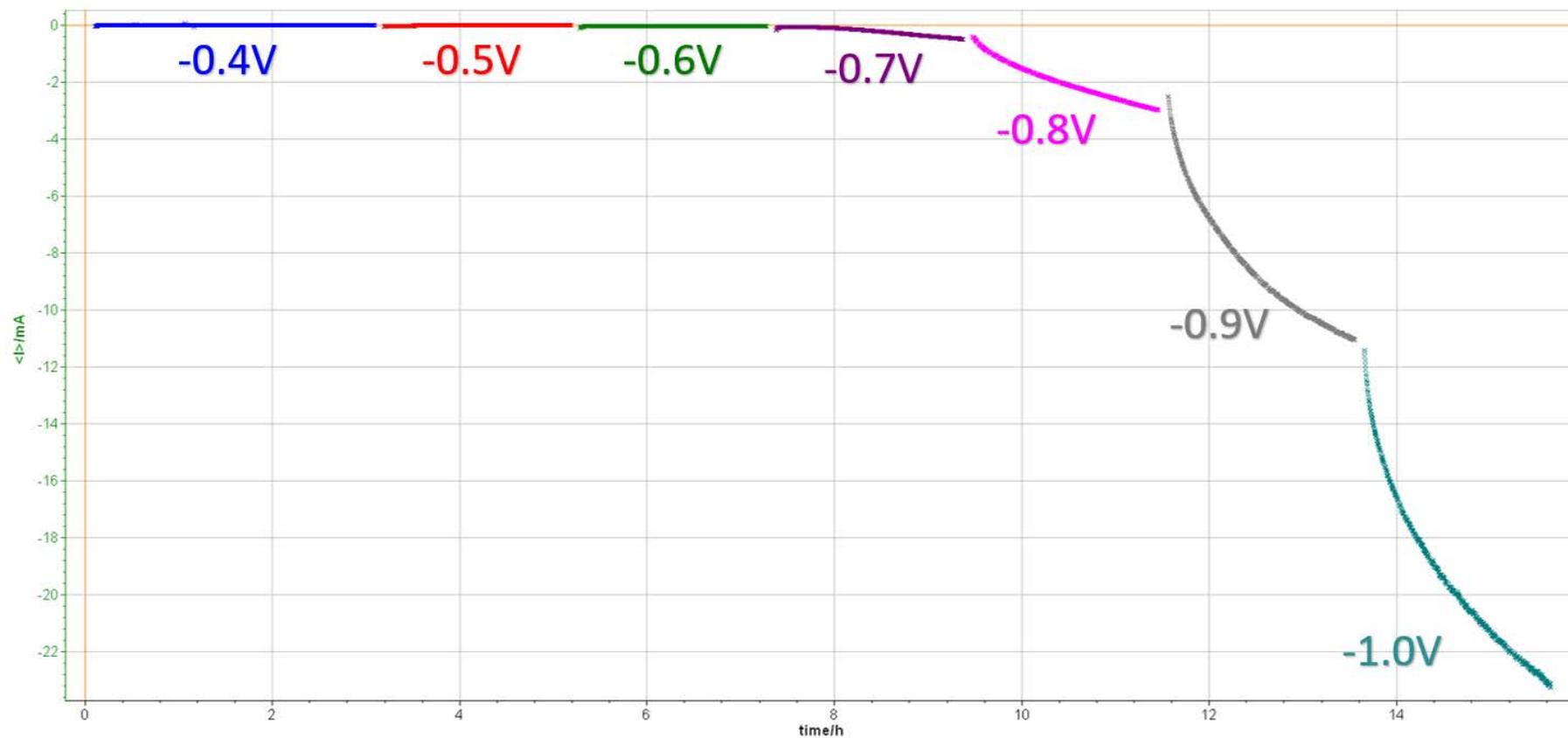
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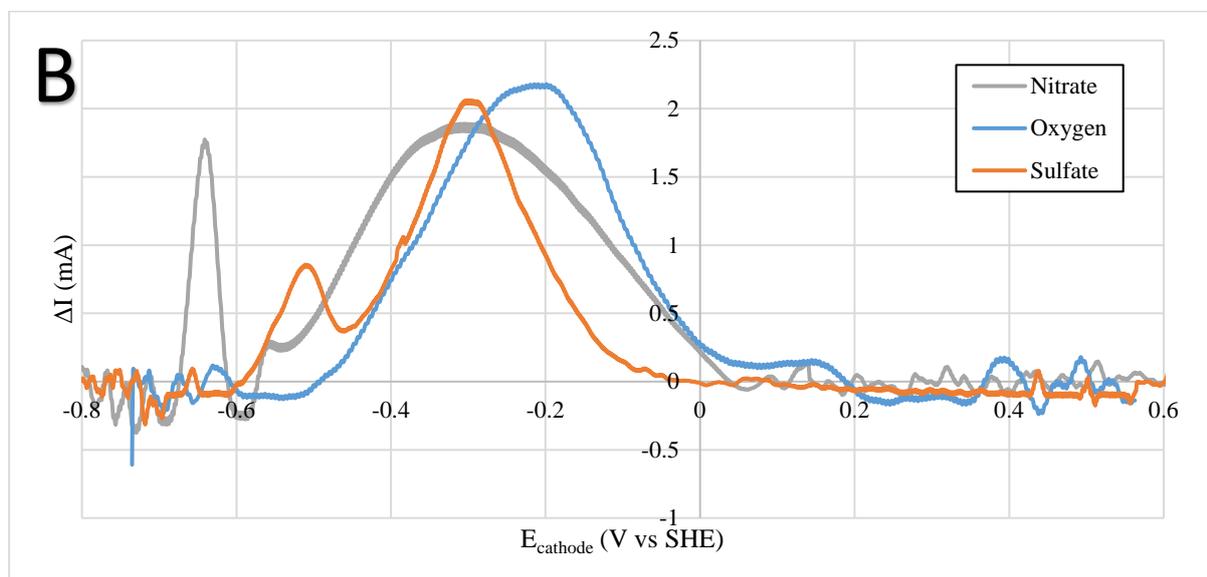
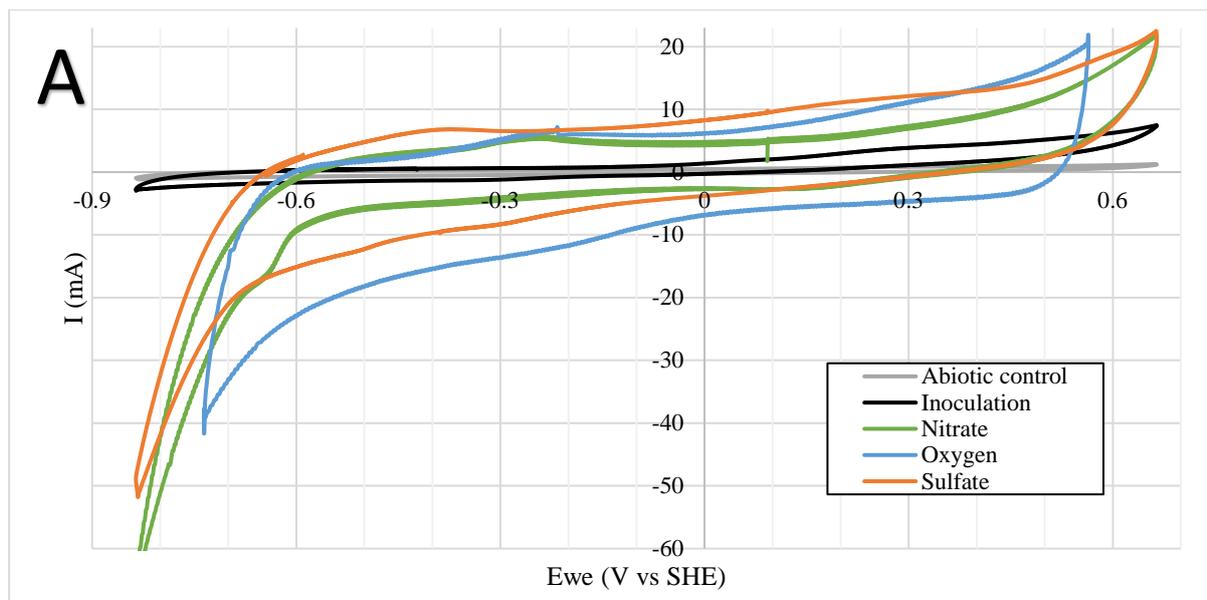
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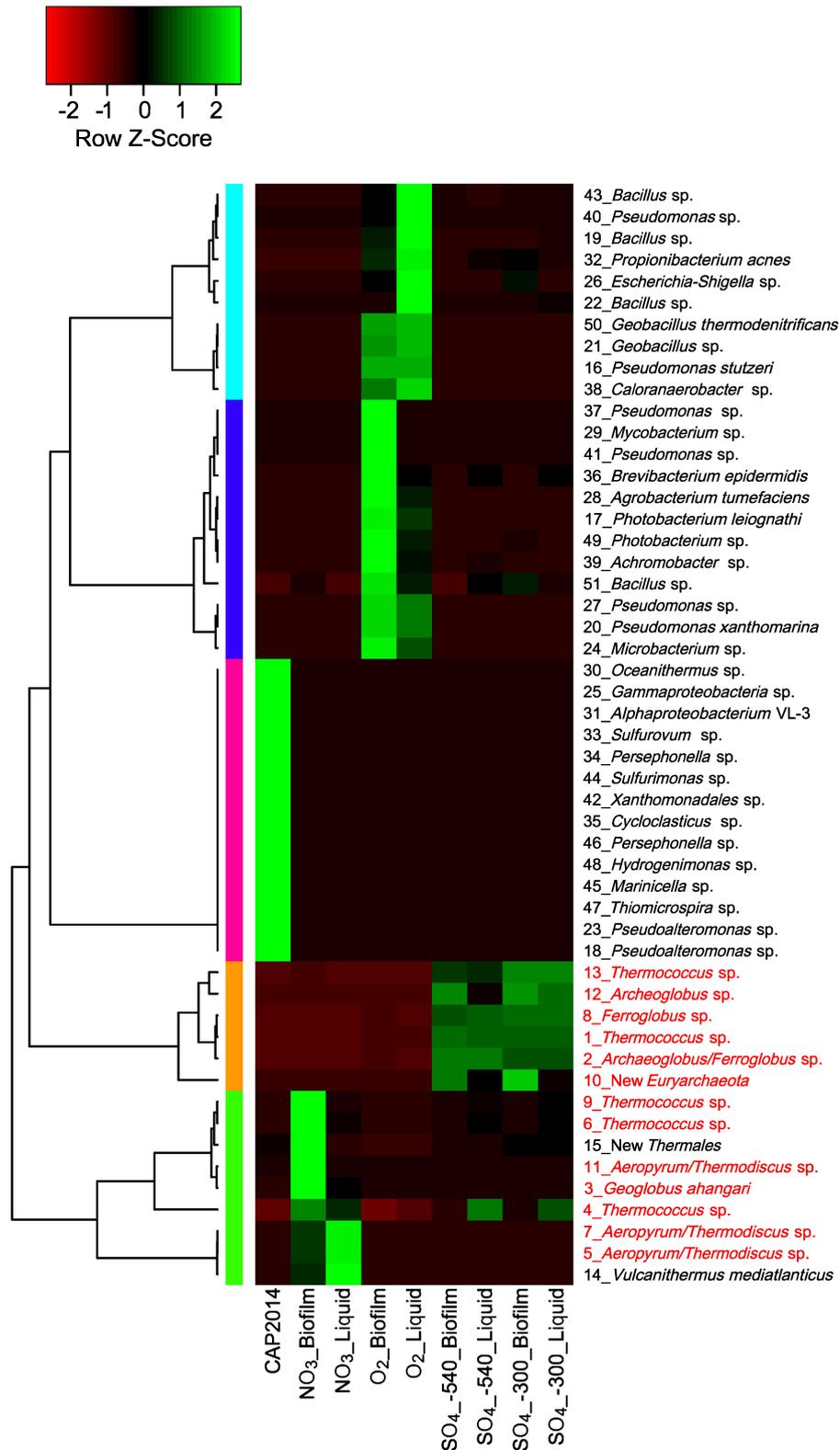
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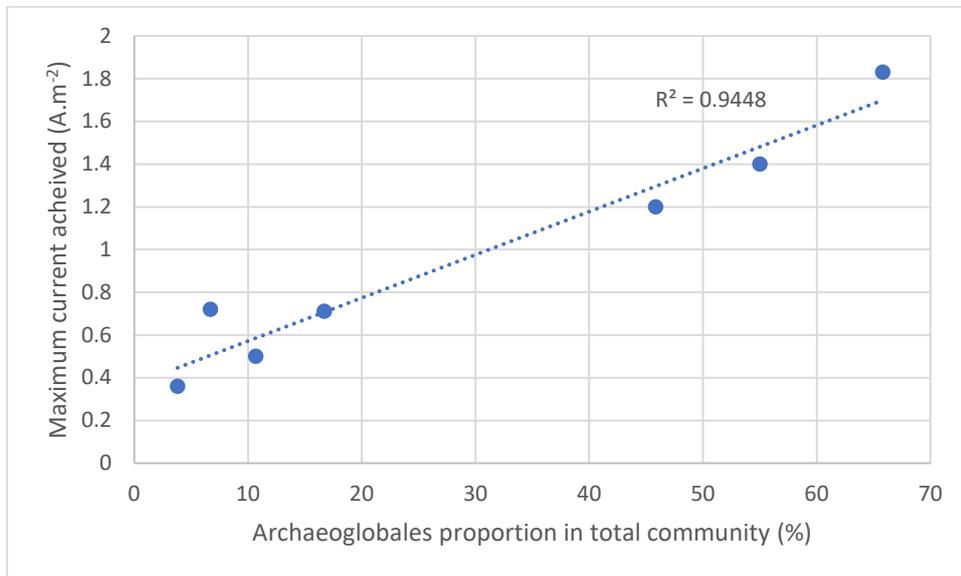
Supplementary Figure S1: Screening of potentials in abiotic and anaerobic conditions to select the lowest potential before water electrolysis. Potentials are expressed vs. SHE.



Supplementary Figure S2: A) Cyclic Voltammograms (scan rate = 20 mV/s) of the abiotic control, and of the experiments at inoculation time and after 30 days for each condition (Nitrate, Oxygen and Sulfate). B) Reduction peaks extracted from Cyclic Voltammograms (scan rate = 20 mV/s) where the baseline have been subtracted with the software QSoas. The ΔI of reduction peaks are expressed in inversed values. Cyclovoltammetries carried out with a 3 M Ag/AgCl reference electrode ($E = +0.165$ V vs SHE at 80°C).



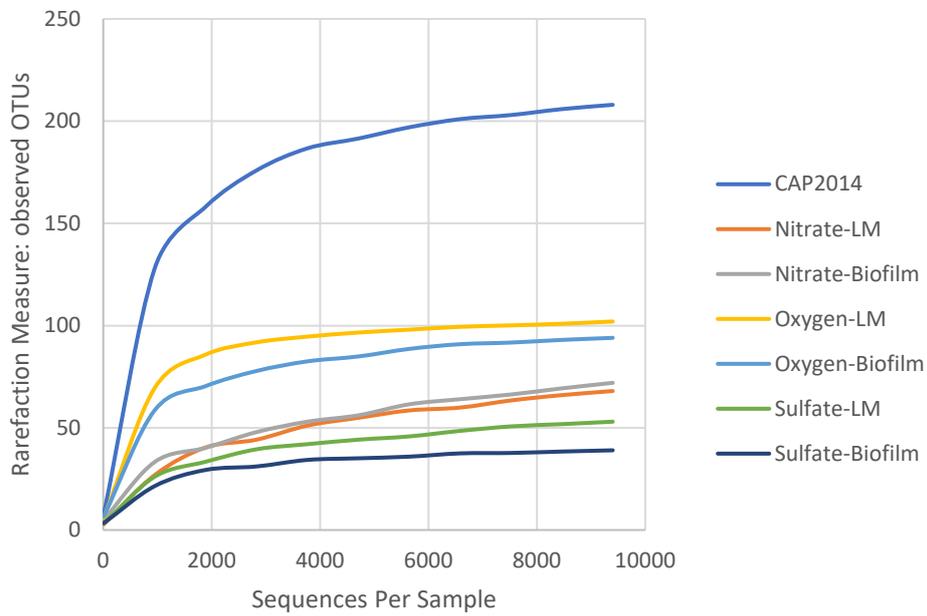
Supplementary Figure S3: Heatmap representation of the distribution of dominant OTUs (>0.5%) over the different electron acceptors (Liquid: Liquid Media/planktonic cells). OTUs and samples clustering were performed with centroid average method and with Pearson distance measurement method. The red taxa represent the *Archaea* members and black taxa, the *Bacteria*. RStudio: Integrated Development for R. RStudio, PBC, Boston, MA URL <http://www.rstudio.com/> and the package gplots by Warnes et al. (2020).



Supplementary Figure S4: Correlation between maximum current and proportion of *Archaeoglobales* in the total community measured by Metabarcoding and weighted by the total qPCR quantification. The data were obtained from the 4 enrichments presented in this study, 2 subcultures from Nitrate enrichment and one enrichment on Fe(III)Oxide enrichment, not presented in this study.

Transient compounds	Time (days)														
	0	1	2	3	4	5	7	9	11	12	13	15	16	18	21
<i>Benzoate like</i>	5.6	0.0	29.4	19.8	24.2	25.5	54.4	55.0	76.6	76.2	94.8	103.4	116.1	99.0	128.4
<i>Methanol</i>	3.2	0.0	0.0	10.8	16.1	31.5	9.0	36.0	9.2	0.0	0.0	7.2	0.0	4.6	5.4
<i>Formate</i>	1.9	61.5	8.4	54.9	21.8	70.5	23.4	63.0	25.8	17.0	32.6	23.6	0.0	13.4	22.0
<i>Cystine</i>	12.3	35.5	30.2	23.7	30.6	23.6	17.7	13.8	9.6	7.8	1.2	2.6	0.0	0.0	19.4
<i>Acetoacetate</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.0	4.6	15.4	0.0	0.0	0.0	0.0	0.0
<i>Lactate</i>	6.6	30.0	24.0	15.0	10.6	31.5	9.2	37.0	11.0	12.2	17.2	16.0	27.6	11.0	13.0
<i>Threonine</i>	1.9	11.5	2.6	3.6	4.0	3.0	4.2	0.0	2.2	2.0	0.0	2.0	8.7	1.2	4.0
<i>Succinate</i>	1.3	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
<i>Ethanol</i>	2.2	177.0	40.6	37.5	42.5	47.5	29.8	86.0	16.8	0.0	33.6	0.0	57.9	0.0	6.4
<i>Alanine</i>	0.0	0.0	0.0	10.8	12.0	10.5	13.8	0.0	20.2	0.0	54.2	93.6	178.5	179.8	236.6
<i>Acetamide</i>	0.0	0.0	0.0	0.0	20.0	25.5	48.6	54.0	57.6	69.2	39.4	35.8	18.9	10.6	6.4
<i>2-Aminoisobutyric acid</i>	4.8	67.0	0.0	5.1	4.2	6.5	15.2	28.0	19.6	21.6	12.0	13.2	8.1	0.0	0.0
<i>3-hydroxyisovalerate</i>	4.6	37.5	7.6	28.2	6.6	34.5	9.4	81.0	13.8	8.0	14.4	11.2	23.4	9.8	14.6

Supplementary Table S1: Evolution of transient compounds (in μM) over the enrichment on Nitrate measured by NMR.



Supplementary Figure S5: Rarefaction curves of 16S rDNA sequences for bacterial and archaeal diversities in the different samples. LM: Liquid media; Biofilm (cathode). Curves were calculated on OTUs at 97% similarity.