

Case Study Oil and Gas Ecology

Project Topic: Analysis of microbial process in oil and gas wells

Project Partner: National Energy Technology Laboratory (US DOE)

Location: Oil and gas wells in Pennsylvania (USA) and Texas (USA)

Sample type: Produced fluids

Target Molecule: DNA

Laboratory Analysis:

16S rRNA and metagenomic sequencing of microbial biomass retrieved from produced waters and oil and gas wells and infrastructure

Bioinformatic Analysis:

Basecalling, taxonomic classification, assembly and binning, genome quality assessment, annotation, metabolic pathway reconstruction

Summary:

Evaluation of microbial abundance and composition patterns highlighted elevated potential for biocorrosion and well fouling. Statistical assessment suggested a link between biocide usage and microbial distribution. Reconstruction and characterization of draft genomes provided insights into microbial processes in oil and gas environments.

More details:

<https://journals.asm.org/doi/abs/10.1128/aem.02659-16>

<https://academic.oup.com/femsle/article/365/12/fny107/4982779?login=true>

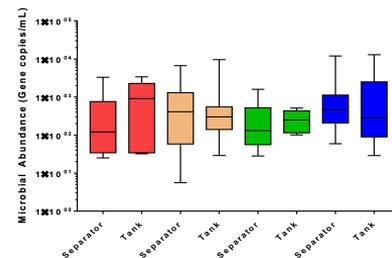
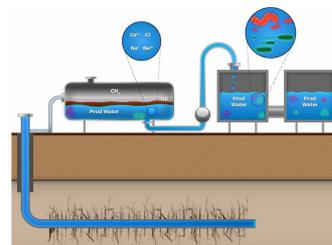


TABLE 1 Average nucleotide identity and amino acid identity between recovered produced water *Halanaerobium* sp. strain MDAL1 draft genome and other available *Halanaerobium* genomes^a

Genome	GenBank accession no.	ANI (%)	AAI (%)
<i>Halanaerobium</i> sp. strain MDAL1 draft genome	MJUU00000000.1		
<i>Halanaerobium</i> sp. strain T82-1	LSBN000000000.1	98.48	93.82
<i>Halanaerobium</i> saccharolyticum subsp. saccharolyticum DSM 6643	NZ_CAUI000000000.1	84.62	82.04
<i>Halanaerobium</i> praevalens DSM 2228	CP002175.1	83.93	73.73
<i>Halanaerobium</i> hydrogeniformans	CP002304.1	82.65	67.59

^aANI, average nucleotide identity; AAI, amino acid identity.