

Culture based approaches, dependent and independent, for microbial community fractions in petroleum oil reservoirs

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Received 15 November 2017; revised 08 January 2018

Petroleum reservoir is an ecosystem having extreme environmental conditions of temperature, pressure and salinity. They possess highly anoxic conditions. Major microbial communities present in this environment include fermentative bacteria, sulphate reducing bacteria (SRB), syntrophic bacteria and methanogens. Phylogenetic diversity of microorganisms as well as their ecological role play an important role in the petroleum reservoir ecosystem. Past and present efforts to characterize microbial communities in oil field ecosystem by culture-dependent and culture-independent approaches are discussed with highlights of microbial ecology of petroleum oil reservoir ecosystem(s). Novel strategies used to study culture independent diversity of microorganisms using metagenomic techniques have also been narrated.

Keywords: Community genomics, Metagenomics, Microbial ecology, Sulfate reducers, Thermophiles