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Culturable Microbial Diversity and Adaptation Strategy in the Jutulsessen and Ahlmannryggen of Western Dronning Maud Land, Antarctica

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Abstract : To understand the culturable microbial composition and diversity patterns, soil samples were collected from inland nunataks of Jutulsessen and Ahlmannryggen ranges in Dronning Maud Land, Antarctica. 16S rRNA, ITS and the D1/D2 domain sequencing techniques were used for characterization of microbial communities of these geographical areas. The total 37 species of bacteria such as Arthrobacter agilis, Acinetobacter baumannii, Arthrobacter flavus, Arthrobacter ginsengisoli, Arthrobacter oxydans, Arthrobacter oryzae, Arthrobacter polychromogenes, Arthrobacter sulfonivorans, Bacillus altitudinis, Bacillus cereus, Bacillus paramycoides, Brevundimonas vesicularis, Brachybacterium rhamnosum, Curtobacterium luteum, Dermacoccus nishinomiyaensis, Dietzia aerolata, Janibacter indicus, Knoellia subterranean, Kocuria palustris, Kytococcus aerolatus, Lysinibacillus sphaericus, Microbacterium phyllosphaerae, Micrococcus yunnanensis, Methylobacterium rhodesianum, Moraxella osloensis, Paracoccus acridae, Pontibacter amylolyticus, Pseudomonas hunanensis, Pseudarthrobacter siccitolerans, Pseudarthrobacter phenanthrenivorans, Rhodococcus aerolatus, Rhodococcus sovatensis, Sphingomonas daechungensis, Sphingomonas sanguinis, Stenotrophomonas pavanii, Staphylococcus gallinarum, Staphylococcus arlettae and 9 species of fungi such as Candida davisiana, Cosmospora arxii, Geomyces destructans, Lecanicillium muscarium, Memnoniella humicola, Paecilomyces lilacinus, Pseudogymnoascus verrucosus, Phaeophlebiopsis ignerii and Thyronectria caraganae were recorded. Fatty acid methyl esters (FAME) analyses of representative species of each genus have shown predominance branched and unsaturated fatty acids indicate its adaptation strategy in Antarctic cold environment. To the best of our knowledge, this is the first record of culturable bacterial communities from Jutulsessen and Ahlmannryggen ranges in Western Dronning Maud Land, Antarctica.

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