

Supplementary Information

Table S1. Sequence analyses of representative *mcrA/mrtA* gene clones.

Clone (Acc. No.)	Sequences	Closest Cultivable Relative (Acc. No.) with Sequence Identity	BstNI T-RF (bp)
<i>Methanobacterium</i>	-	-	-
E10-8H2 (LN847074)	4	<i>Methanobacterium congolense</i> strain NBRC 105227 (AB542748.1) 73%	469
E2-8H1 (LN847075)	6	<i>Methanobacterium formicicum</i> (LN515531.1) 86%	470
C9-8C1 (LN847076)	6	<i>Methanobacterium formicicum</i> strain BRM9 (CP006933.1) 86%	463
C1-8H2 (LN847077)	8	<i>Methanobacterium kanagiense</i> (AB551869.1) 90%	469
E8-8H1 (LN847078)	3	<i>Methanobacterium</i> sp. MB1 (HG425166.1) 99%	332
<i>Methanoculleus</i>	-	-	-
A1-8C1(LN847079)	6	<i>Methanoculleus bourgensis</i> MS2T (HE964772.2) 99%	93
H8-8C2 (LN847080)	1	<i>Methanoculleus bourgensis</i> strain MAB1 (KJ708788.1) 93%	93
C6-8C2 (LN847081)	9	<i>Methanoculleus chikugoensis</i> (AB288270.1) 93%	91
D10-8C2 (LN847082)	1	<i>Methanoculleus chikugoensis</i> strain NBRC 101202 (AB703634.1) 90%	92
A12-8C1 (LN847083)	6	<i>Methanoculleus</i> sp. M07 (AB288284.1) 93%	92
<i>Methanomassiliicoccus</i>	-	-	-
C10-8C1 (LN847084)	2	<i>Methanomassiliicoccus luminyensis</i> strain B10 (HQ896500.1) 93%	408
<i>Methanoregula</i>	-	-	-
H3-8H2 (LN847085)	6	<i>Methanoregula formicicum</i> SMSP (CP003167.1) related 81%	338
<i>Methanosaeta</i>	-	-	-
A10-8C1(LN847086)	15	<i>Methanosaeta concilii</i> strain NBRC 103675 (AB679170.1) 93%	127
<i>Methanosarcina</i>	-	-	-
A4-8C1 (LN847087)	9	<i>Methanosarcina mazei</i> Tuc01 (CP004144.1) 93%	55
B3-8C1 (LN847088)	29	<i>Methanosarcina thermophila</i> TM-1 (AB353225.1) 96%	56
B1-8XH1 (LN847089)	1	<i>Methanosarcina mazei</i> strain KOR-4 (KC292223.1) 99%	55
B9-8XH1 (LN847090)	1	<i>Methanosarcina mazei</i> strain NBRC 101201 (AB703645.1) 99%	487
<i>Methanospirillum</i>	-	-	-
B11-8C1 (LN847091)	3	<i>Methanospirillum stamsii</i> strain Pt1 (KC951357.1) 95%	344