

Supplementary Table 4- Assignment of *pmoA* clones to the closest cultured and uncultured methanotrophs

Clone name	Uncultured Methanotrophs		Cultured methanotrophs	
	Description	Fraction Identical (%)	Description	Fraction Identical (%)
AT-A01	ABY90350-PmoA [uncultured type I methanotroph]	98.21	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.69
AT-A02	Not Available	-	BAH22842-methane monoxygenase protein A [Methylomarinum vadi]	97.08
AT-A03	ABY90350P-moA [uncultured type I methanotroph]	98.21	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.69
AT-A04	AGO87376-particulate methane monoxygenase, partial [uncultured bacterium]	88.17	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	83.43
AT-A05	ABY90350P-moA [uncultured type I methanotroph]	98.73	AAQ10311-particulate methane monoxygenase [Methylococcus capsulatus]	88.54
AT-A06	AGO87376-particulate methane monoxygenase, partial [uncultured bacterium]	87.57	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	82.84
AT-A07	AGO87376-particulate methane monoxygenase, partial [uncultured bacterium]	87.2	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	82.32
AT-A08	ABY90350-PmoA [uncultured type I methanotroph]	95.3	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	86.58
AT-A09	ABY90350-PmoA [uncultured type I methanotroph]	98.21	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.69
AT-A10	ABY90350-PmoA [uncultured type I methanotroph]	98.21	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.69
AT-B02	AGO87376-particulate methane monoxygenase, partial [uncultured bacterium]	87.43	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	82.63
AT-B03	AGO87376-particulate methane monoxygenase, partial [uncultured bacterium]	87.57	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	82.84
AT-B04	AGO87376-particulate methane monoxygenase, partial [uncultured bacterium]	87.57	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	82.84
AT-B05	ABY90350-PmoA [uncultured type I methanotroph]	98.21	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.69
AT-B06	Not Available	-	BAH22842-methane monoxygenase protein A [Methylomarinum vadi]	97.5
AT-B09	Not Available	-	BAF62077-particulate methane monoxygenase protein A [Methylomarinum vadi]	97.01
AT-B10	ABY90350-PmoA [uncultured type I methanotroph]	97.62	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	86.51
AT-B11	ABY90350-PmoA [uncultured type I methanotroph]	97.62	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	86.51

AT-B12	ABY90350-PmoA [uncultured type I methanotroph]	97.62	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.1
AT-C02	ABC86668-particulate methane monoxygenase [uncultured gamma proteobacterium]	65.34	AAB49821-particulate methane monoxygenase 27 kDa subunit [Methylococcus capsulatus str. Bath]	63.07
AT-C03	ACC85993-PmoA, partial [uncultured bacterium]	85.89	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	82.82
AT-C05	ABY90350-PmoA [uncultured type I methanotroph]	97.04	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	87.57
AT-C06	AGO87376-particulate methane monoxygenase, partial [uncultured bacterium]	87.95	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	83.13
AT-C07	AGO87376-particulate methane monoxygenase, partial [uncultured bacterium]	87.88	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	83.03
AT-C08	ACC85993-PmoA, partial [uncultured bacterium]	84.87	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	81.58
AT-C09	ABY90350-PmoA [uncultured type I methanotroph]	98.2	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.02
AT-C10	Not Available	-	BAF62077-particulate methane monoxygenase protein A [Methylomarinum vadi]	97.04
AT-C11	ABY90350-PmoA [uncultured type I methanotroph]	98.22	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.24
AT-C12	ABY90350-PmoA [uncultured type I methanotroph]	97.04	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.17
AT-D01	ABY90350-PmoA [uncultured type I methanotroph]	98.21	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.69
AT-D03	ABY90350-PmoA [uncultured type I methanotroph]	98.2	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	88.62
AT-D05	ABY90350-PmoA [uncultured type I methanotroph]	97.97	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	87.16
AT-D06	ACC85993-PmoA, partial [uncultured bacterium]	85.89	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	82.82
AT-D07	ABC86668-particulate methane monoxygenase [uncultured gamma proteobacterium]	62.15	AAB49821-particulate methane monoxygenase 27 kDa subunit [Methylococcus capsulatus str. Bath]	59.89
AT-D08	AGO87376-particulate methane monoxygenase, partial [uncultured bacterium]	87.57	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	82.84
AT-D09	Not Available	-	BAH22842-methane monoxygenase protein A [Methylomarinum vadi]	95.86
AT-D10	ACP41280-particulate methane monoxygenase alpha subunit [uncultured bacterium]	98.82	BAL04120-particulate methane monoxygenase alpha-subunit, partial [Methylococcaceae bacterium OS501]	76.92
AT-D12	ABY90350-PmoA [uncultured type I methanotroph]	96.97	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	87.27
AT-E01	ABY90350-PmoA [uncultured type I methanotroph]	95.65	YP_115248-methane monoxygenase subunit A [Methylococcus capsulatus str. Bath]	85.71

AT-E04	ABC86668-particulate methane monooxygenase [uncultured gamma proteobacterium]	65.54	AAB49821-particulate methane monooxygenase 27 kDa subunit [Methylococcus capsulatus str. Bath]	63.28
AT-E05	ABY90350P-moA [uncultured type I methanotroph]	97.62	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.1
AT-E06	AGO87376-particulate methane monooxygenase, partial [uncultured bacterium]	86.67	AAQ10311-particulate methane monooxygenase [Methylococcus capsulatus]	82.67
AT-E07	ABY90350-PmoA [uncultured type I methanotroph]	96.97	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	87.88
AT-E08	ABY90350-PmoA [uncultured type I methanotroph]	98.2	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.62
AT-E09	ABY90350-PmoA [uncultured type I methanotroph]	97.6	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.02
AT-E10	AGI16288-particulate methane monooxygenase subunit alpha, partial [uncultured bacterium]	64.02	BAM38053-putative ethylene monooxygenase protein A [Haliea sp. ETY-M]	62.2
AT-E11	ABY90350-PmoA [uncultured type I methanotroph]	98.15	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.27
AT-E12	ACP41280-particulate methane monooxygenase alpha subunit [uncultured bacterium]	100	BAL04120-particulate methane monooxygenase alpha-subunit, partial [Methylococcaceae bacterium OS501]	78.11
AT-F01	ABY90350-PmoA [uncultured type I methanotroph]	97.63	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	87.57
AT-F02	ABY90350-PmoA [uncultured type I methanotroph]	98.22	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.76
AT-F03	Not Available	-	BAF62077-particulate methane monooxygenase protein A [Methylomarinum vadi]	95.86
AT-F04	ABY90350-PmoA [uncultured type I methanotroph]	98.2	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.62
AT-F05	ABY90350-PmoA [uncultured type I methanotroph]	98.22	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.76
AT-F06	AGO87376-particulate methane monooxygenase, partial [uncultured bacterium]	88.02	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	83.23
AT-F10	ABY90350P-moA [uncultured type I methanotroph]	98.21	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.69
AT-F12	ABY90350-PmoA [uncultured type I methanotroph]	98.17	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.41
AT-G01	Not Available	-	BAF62077-particulate methane monooxygenase protein A [Methylomarinum vadi]	97.04
AT-G02	ABY90350P-moA [uncultured type I methanotroph]	98.11	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	88.05
AT-G04	AGO87376-particulate methane monooxygenase, partial [uncultured bacterium]	88.17	YP_115248-methane monooxygenase subunit A [Methylococcus capsulatus str. Bath]	83.43

KB.1-A02	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-A03	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-A04	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-A05	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-A06	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-A07	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-A09	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-A10	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-B01	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-B02	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-B03	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-B05	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-B06	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-B07	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-B08	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-B09	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-B12	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-C02	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-C03	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-C04	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86

KB.1-C06	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-C07	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-C08	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-C09	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-C12	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-D01	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.41
KB.1-D02	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-D04	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-D05	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-D06	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.64
KB.1-D07	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-D08	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-D09	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-D10	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-D11	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-D12	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-E02	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-E03	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-E05	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-E06	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45

KB.1-E07	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-E08	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-E09	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.43
KB.1-E10	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-E11	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-E12	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-F01	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-F02	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-F03	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-F04	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-F05	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-F06	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-F08	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-F09	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-F10	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-F11	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-G01	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-G02	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-G03	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-G05	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45

KB.1-G07	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-G08	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-G11	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-H01	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-H02	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-H03	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-H06	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-H07	Not Available	-	BAF62077-particulate methane monooxygenase protein A [Methylomarinum vadi]	96.45
KB.1-H08	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-H09	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-H11	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.45
KB.1-A01	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.15
KB.1-B04	CAO98555-methane monooxygenase subunit A [uncultured methanotrophic bacterium]	97.48	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.23
KB.1-C05	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-E04	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.86
KB.1-G12	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.25
KB.2-B06	Not Available	-	BAF62077-particulate methane monooxygenase protein A [Methylomarinum vadi]	96.45
KB.2-C03	CAO98555-methane monooxygenase subunit A [uncultured methanotrophic bacterium]	97.53	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	96.3
KB.2-F05	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.91
KB.2-G09	Not Available	-	WP_020158144-ammonia monooxygenase [Methylobacter marinus]	95.27