

Supplementary Materials

Figure S1: Potential RNA secondary structures located in the un-translated region (UTR) of the *M. barkeri* Mba_A1958 mRNA using RNAfold webserver [16]. Regions of potential base pairing are indicated as are the 5' mRNA start and the 3' end corresponding to the start of translation.

Table S1: Oligonucleotides used in this study.

Table S2: Proteins identified by LC-MS/MS.

Table S3: Mbar_A1758 peptides detected from analyses of multiple gel bands.

Table S4: Microarray transcript abundance of all cell surface and cell surface-related genes annotated in the *M. acetivorans* genome.

Figure S1: Potential RNA secondary structures located in the untranslated region (UTR) of the *M. barkeri* Mba_A1758 mRNA.

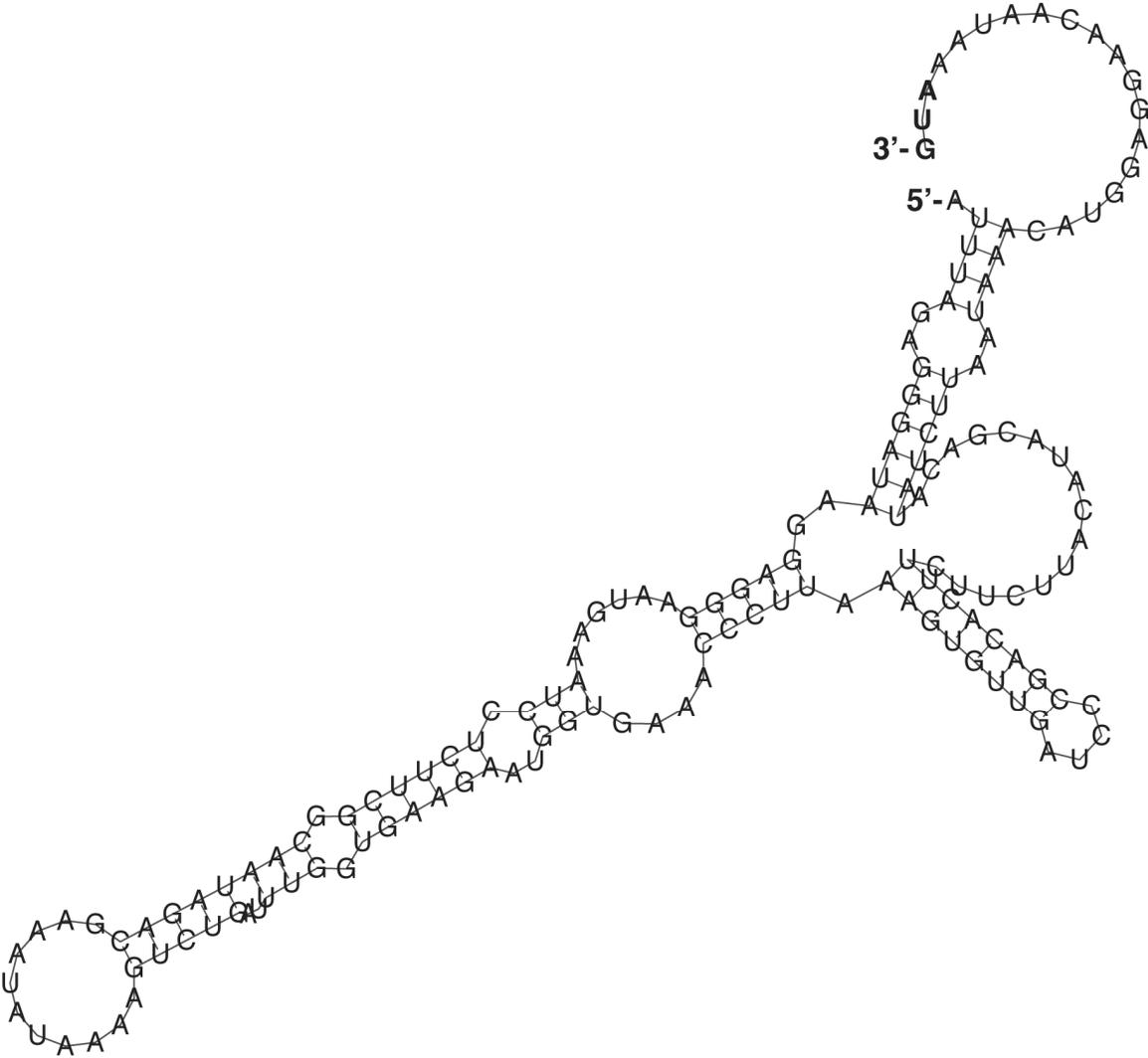


Table S1: Oligonucleotides used in this study.

| Primer Name | Sequence | Primer Name | Sequence |
|-----------------|---|-----------------|------------------------------------|
| Mbar_A1034RTfor | cactccaagttctgctcaactcca | Mbar_A1034RTrev | tggcaggttgatggaagca |
| Mbar_A1577RTfor | catcctctgctcctcttctcga | Mbar_A1577RTrev | aactcctgcaagcacctcga |
| Mbar_A1758RTfor | gctgacactccaacatccga | Mbar_A1758RTrev | cggagtctcgctgctgta |
| Mbar_A1775RTfor | tcggtcgattcttctccaga | Mbar_A1775RTrev | ccagccgtctcagcattaag |
| Mbar_A1815RTfor | tcaacctgctggccttgatac | Mbar_A1815RTrev | actggtgccgattgcca |
| Mbar_A1816RTfor | tgccatggagtggataagctt | Mbar_A1816RTrev | agtccggagaattcacgctga |
| Mbar_A2011RTfor | agcttgctcagcagcgttg | Mbar_A2011RTrev | ggcaggactataggagataacggt |
| Mbar_A2016RTfor | ttccgatgattgcggtcc | Mbar_A2016RTrev | cattgtgatcctgagtcgga |
| Mbar_A3145RTfor | tcgagagcttctggcctc | Mbar_A3145RTrev | gtgtctctggagttggcgga |
| MA0068RTfor | gatgatgaggaggagactgt | MA0068RTrev | gccggacatcgatatgact |
| MA0653RTfor | cggctacgttattcctctgca | MA0653RTrev | ttcctctcgctcttcca |
| MA0829RTfor | cggcttcggtgatcaatca | MA0829RTrev | tgcgatggtggtggtgtaa |
| MA0876RTfor | Gaatctctggatcggacggt | MA0876RTrev | ggacacggaagtgtggaagg |
| MA0884RTfor | Ggctccgaacatcctgca | MA0884RTrev | catctccgccgatagcca |
| MA0957RTfor | Cagaaccggtgtattcgtca | MA0957RTrev | tggataaccgtctcggtgaag |
| MA3556RTfor | Tctgctcctcaaccttctgacc | MA3556RTrev | ttgctcctctcggtctctcc |
| MA3598RTfor | Gtgcgctgttccgtga | MA3598RTrev | tgcatctcaggattgatgg |
| MA3639RTfor | Ccatgcatctccggtctacc | MA3639RTrev | tcttcagaggcgacaagatcct |
| MA4531RTfor | Tgaacattgctggaagcagg | MA4531RTrev | ggaagcaatggaggatacgtg |
| MA0830RTfor | Agccggaataagcacactga | MA0830RTrev | ccttcggagacgttaagaacc |
| MA3606RTfor | Caategaaccgcactgg | MA3606RTrev | gtcatcacctgccacctaggaa |
| MA4546RTfor | Ggcacatgcaacaccgga | MA4546RTrev | tcgcaaccgagtcacactc |
| MA3998RTfor | Caacacggtcgcagatctc | MA3998RTrev | ccaaggtggcggttacaa |
| Mbar_A1758prim | Cggatgcaaatacagtcagaagcatgaga gcagccag | MA08295prim | Ctgaccacggatctcaattactgctactgcgctt |

Table S2: Proteins identified by LC-MS/MS.

| ID number (UniProt) | Comment | ID number (NCBI) | Protein Description | Mascot Prot Score | MW (Da) | Peptides |
|---|---------|-----------------------------|--|-------------------|---------|----------|
| Band 1 | | | | | | |
| P0C0W7_METBF | | Mbar_A1502 | Trimethylamine methyltransferase mttB (EC 2.1.1.-) (TMA methyltransferase). | 1140 | 53625 | 21 |
| Q46BP2_METBF | | Mbar_A1758 | Hypothetical protein. | 1097 | 73491 | 23 |
| P07955_METBF | | Mbar_A0897 | Methyl-coenzyme M reductase subunit beta (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase beta). | 836 | 45261 | 14 |
| Q46CN6_METBF | | Mbar_A1396 | Pyruvate, phosphate dikinase. | 706 | 96914 | 15 |
| Q464Z4_METBF | | Mbar_A3685 | Protein translation elongation factor 1A. | 672 | 46128 | 15 |
| P07962_METBF | | Mbar_A0893 | Methyl-coenzyme M reductase subunit alpha (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase alpha). | 560 | 61791 | 12 |
| Q46D74_METBF | | Mbar_A1201 | Hsp60. | 299 | 59181 | 6 |
| Q464Z3_METBF | | Mbar_A3686 | Elongation factor 2 fusA EF2_METBF AAZ72549 | 299 | 80864 | 6 |
| Q469Z7_METBF | | Mbar_A2374 | Carbamoyl-phosphate synthase large chain. | 295 | 118270 | 8 |
| Q46FD0_METBF | | Mbar_A0199, Mbar_A0429 | Carbon-monoxide dehydrogenase, subunit gamma. | 220 | 51200 | 5 |
| Q46CA1_METBF | | Mbar_A1543 | 60 kDa chaperonin. | 173 | 57890 | 4 |
| Q46FC7_METBF or Q46G06_METBF | | Mbar_A0432 or Mbar_A0202 | Carbon-monoxide dehydrogenase, subunit beta. | 169 | 52718 | 4 |
| Q465G4_METBF | | Mbar_A3613 | Isoleucyl-tRNA synthetase.. | 169 | 120433 | 3 |
| Q46DJ0_METBF | | Mbar_A1084 | Hsp60. | 160 | 58194 | 4 |
| Q46FV4_METBF | | Mbar_A0254 | F420-dependent N5,N10-methylene-tetrahydromethanopterin reductase. | 150 | 34570 | 2 |
| Q46EW5_METBF | | Mbar_A0597 | Phosphomethylpyrimidine synthase 1 thiC1 AAZ69577 | 133 | 46586 | 3 |
| Q46FH4_METBF | | Mbar_A0385 | H(+)-transporting ATP synthase, subunit B. | 108 | 50308 | 2 |
| Q46E72_METBF, Q1DGD7_METBF, Q46E73_METBF, P0C0W3_METBF | | Mbar_A0843 or Mbar_A0846 | Monomethylamine methyltransferase mtmB1 (EC 2.1.1.-) (MMA methyltransferase 1) (MMAMT 1).. MTMB1_METBF=Q46E72 | 80 | 49945 | 2 |
| Band 2 | | | | | | |
| Q46BP2_METBF | | Mbar_A1758 | Hypothetical protein. | 966 | 73491 | 17 |
| P0C0W7_METBF | | Mbar_A1502 | Trimethylamine methyltransferase mttB (EC 2.1.1.-) (TMA methyltransferase). | 899 | 53625 | 16 |
| Q46CN6_METBF | | Mbar_A1396 | Pyruvate, phosphate dikinase. | 757 | 96914 | 15 |
| Q464Z4_METBF | | Mbar_A3685 | Protein translation elongation factor 1A. | 605 | 46128 | 14 |
| P07955_METBF | | Mbar_A0897 | Methyl-coenzyme M reductase subunit beta (EC 2.8.4.1) | 593 | 45261 | 11 |

| ID number (UniProt) | Comment | ID number (NCBI) | Protein Description | Mascot Prot Score | MW (Da) | Peptides |
|---|---------|-----------------------------|---|-------------------|---------|----------|
| P07962_METBF | | Mbar_A0893 | (Coenzyme-B sulfoethylthiotransferase beta). Methyl-coenzyme M reductase subunit alpha (EC 2.8.4.1) | 492 | 61791 | 12 |
| Q469Z7_METBF | | Mbar_A2374 | (Coenzyme-B sulfoethylthiotransferase alpha). Carbamoyl-phosphate synthase large chain. | 369 | 118270 | 9 |
| Q46G04_METBF | | Mbar_A0204 | Carbon-monoxide dehydrogenase, subunit alpha. | 256 | 88717 | 6 |
| Q464Y7_METBF | | Mbar_A3692 | DNA-directed RNA polymerase, subunit A. | 253 | 98377 | 9 |
| Q465G4_METBF | | Mbar_A3613 | Isoleucyl-tRNA synthetase.. | 216 | 120433 | 5 |
| Q464Z3_METBF | | Mbar_A3686 | Elongation factor 2 fusA EF2_METBF AAZ72549 | 197 | 80864 | 5 |
| Q46AW0_METBF | | Mbar_A2048 | Leucyl-tRNA synthetase. | 195 | 111025 | 6 |
| Q46FC7_METBF or | | Mbar_A0432 or | Carbon-monoxide dehydrogenase, subunit beta. | 193 | 52718 | 5 |
| Q46G06_METBF | | Mbar_A0202 | | | | |
| Q465I5_METBF | | Mbar_A3589 | Superoxide dismutase (Fe) (EC 1.15.1.1).. | 182 | 23931 | 5 |
| Q46AV5_METBF | | Mbar_A2053 | Membrane alanine aminopeptidase. | 181 | 109644 | 5 |
| Q46FD0_METBF | | Mbar_A0199, Mbar_A0429 | Carbon-monoxide dehydrogenase, subunit gamma. | 156 | 51200 | 4 |
| Q46CA1_METBF | | Mbar_A1543 | 60 kDa chaperonin. | 156 | 57890 | 3 |
| Q46D74_METBF | | Mbar_A1201 | Hsp60. | 153 | 59181 | 3 |
| Q465Y6_METBF | | Mbar_A3433 | Heat shock 70 kDa protein; HSP70, chaperone dnaK_METBF AAZ72306: | 135 | 66362 | 2 |
| Q46C68_METBF | | Mbar_A1577 | Hypothetical protein. | 132 | 82328 | 3 |
| Q46E72_METBF, Q1DGD7_METBF, Q46E73_METBF, P0C0W3_METBF Q46EW5_METBF | | Mbar_A0843 or Mbar_A0846 | Monomethylamine methyltransferase mtmB1 (EC 2.1.1.-) (MMA methyltransferase 1) (MMAMT 1).. MTMB1_METBF=Q46E72 | 113 | 49945 | 4 |
| | | Mbar_A0597 | Phosphomethylpyrimidine synthase 1 thiC1 AAZ69577 | 98 | 46586 | 2 |
| Band 3 | | | | | | |
| Q46CN6_METBF | | Mbar_A1396 | Pyruvate, phosphate dikinase. | 1498 | 96914 | 30 |
| P0C0W7_METBF | | Mbar_A1502 | Trimethylamine methyltransferase mttB (EC 2.1.1.-) (TMA methyltransferase). | 930 | 53625 | 17 |
| Q464Y7_METBF | | Mbar_A3692 | DNA-directed RNA polymerase, subunit A. | 890 | 98377 | 22 |
| Q46BP2_METBF | | Mbar_A1758 | Hypothetical protein. | 667 | 73491 | 12 |
| Q464Z4_METBF | | Mbar_A3685 | Protein translation elongation factor 1A. | 524 | 46128 | 12 |
| P07962_METBF | | Mbar_A0893 | Methyl-coenzyme M reductase subunit alpha (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase alpha). | 476 | 61791 | 10 |
| P07955_METBF | | Mbar_A0897 | Methyl-coenzyme M reductase subunit beta (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase beta). | 452 | 45261 | 8 |

| ID number (UniProt) | Comment | ID number (NCBI) | Protein Description | Mascot Prot Score | MW (Da) | Peptides |
|---------------------|--|---------------------------|---|-------------------|---------|----------|
| Q464Z3_METBF | | Mbar_A3686 | Elongation factor 2 fusA EF2_METBF AAZ72549 | 402 | 80864 | 10 |
| Q46FD0_METBF | | Mbar_A0199, Mbar_A0429 | Carbon-monoxide dehydrogenase, subunit gamma. | 304 | 51200 | 6 |
| Q46CS0_METBF | | Mbar_A1361 | Alanyl-tRNA synthetase. | 265 | 103076 | 8 |
| Q46G04_METBF | | Mbar_A0204 | Carbon-monoxide dehydrogenase, subunit alpha. | 244 | 88717 | 6 |
| Q465Y6_METBF | | Mbar_A3433 | Heat shock 70 kDa protein; HSP70, chaperone dnaK_METBF AAZ72306: | 187 | 66362 | 3 |
| Q46CA1_METBF | | Mbar_A1543 | 60 kDa chaperonin. | 162 | 57890 | 3 |
| Q46FC7_METBF or | | Mbar_A0432 or | Carbon-monoxide dehydrogenase, subunit beta. | 148 | 52718 | 4 |
| Q46G06_METBF | | Mbar_A0202 | | | | |
| Q46B32_METBF | | Mbar_A1976 | Valyl-tRNA synthetase valS SYV_METBF AAZ70910 | 129 | 98910 | 4 |
| Q46D74_METBF | | Mbar_A1201 | Hsp60. | 122 | 59181 | 4 |
| Q46FV4_METBF | | Mbar_A0254 | F420-dependent N5,N10-methylene-tetrahydromethanopterin reductase. | 118 | 34570 | 3 |
| Q46FH3_METBF | | Mbar_A0386 | A1AO H+ ATPase subunit A. | 91 | 63600 | 2 |
| P07964_METBF | | Mbar_A0894 | Methyl-coenzyme M reductase subunit gamma (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase gamma) MCRG_METBF. | 89 | 27663 | 3 |
| Q46EK0_METBF | | Mbar_A0714 | Aconitate hydratase. | 71 | 102838 | 2 |
| Band 4 | | | | | | |
| P0C0W7_METBF | | Mbar_A1502 | Trimethylamine methyltransferase mttB (EC 2.1.1.-) (TMA methyltransferase). | 1171 | 53625 | 34 |
| Q46A14_METBF | | Mbar_A2180 | Glutamate-ammonia ligase. | 829 | 57085 | 17 |
| Q46FD0_METBF | | Mbar_A0199, Mbar_A0429 | Carbon-monoxide dehydrogenase, subunit gamma. | 592 | 51200 | 11 |
| Q46G06_METBF | Peptide 340-349 (FIQSDGGWNR) was unique to Q46G06_METBF. It differentiated from Q46FC7_METBF | Mbar_A202 | Carbon-monoxide dehydrogenase, subunit beta. | 561 | 52614 | 13 |
| Q464Z4_METBF | | Mbar_A3685 | Protein translation elongation factor 1A. | 462 | 46128 | 11 |
| P07955_METBF | | Mbar_A0897 | Methyl-coenzyme M reductase subunit beta (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase beta). | 427 | 45261 | 8 |
| Q46DX8_METBF | | Mbar_A0942 | 2-isopropylmalate synthase. | 363 | 54208 | 7 |
| Q46E72_METBF, | | Mbar_A0843 or | Monomethylamine methyltransferase mtmB1 (EC 2.1.1.-) | 256 | 49945 | 7 |

| ID number (UniProt) | Comment | ID number (NCBI) | Protein Description | Mascot Prot Score | MW (Da) | Peptides |
|---|---------|-----------------------------|--|-------------------|---------|----------|
| Q1DGD7_METBF, Q46E73_METBF, P0C0W3_METBF P0C0W5_METBF | | Mbar_A0846 | (MMA methyltransferase 1) (MMAMT 1).. MTMB1_METBF=Q46E72 | | | |
| | | Mbar_A1506 | Dimethylamine methyltransferase mtbB1 (EC 2.1.1.-) (DMA methyltransferase 1) (DMAMT 1). | 241 | 50169 | 7 |
| P07964_METBF | | Mbar_A0894 | Methyl-coenzyme M reductase subunit gamma (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase gamma) MCRG_METBF. | 237 | 27663 | 5 |
| Q46BP1_METBF | | Mbar_A1759 | Hypothetical protein. | 236 | 26745 | 4 |
| Q46FY1_METBF | | Mbar_A0227 | Glutamate synthase (NADPH). | 230 | 50623 | 7 |
| Q46EW5_METBF | | Mbar_A0597 | Phosphomethylpyrimidine synthase 1 thiC1 AAZ69577 | 162 | 46586 | 3 |
| Q46E2_METBF | | Mbar_A2850 | Enolase (EC 4.2.1.11) (2-phospho-D-glycerate hydro-lyase). | 139 | 46410 | 3 |
| Q46FH4_METBF | | Mbar_A0385 | H(+)-transporting ATP synthase, subunit B. | 134 | 50308 | 2 |
| Q46W7_METBF | | Mbar_A3191 | Cobyric acid synthase. | 128 | 53269 | 3 |
| Q46CK2_METBF | | Mbar_A1431 | D-3-phosphoglycerate dehydrogenase. | 118 | 55761 | 3 |
| Q46X0_METBF | | Mbar_A3188 | Putative thymidine phosphorylase TYPH_METBF AAZ72072 | 112 | 54594 | 3 |
| P07962_METBF | | Mbar_A0893 | Methyl-coenzyme M reductase subunit alpha (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase alpha). | 103 | 61791 | 2 |
| Q46DL0_METBF | | Mbar_A1064 | Methanol:corrinoid methyltransferase. | 83 | 50303 | 2 |
| Band 5 | | | | | | |
| P07955_METBF | | Mbar_A0897 | Methyl-coenzyme M reductase subunit beta (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase beta). | 911 | 45261 | 15 |
| Q464Z4_METBF | | Mbar_A3685 | Protein translation elongation factor 1A. | 875 | 46128 | 19 |
| P0C0W5_METBF | | Mbar_A1506 | Dimethylamine methyltransferase mtbB1 (EC 2.1.1.-) (DMA methyltransferase 1) (DMAMT 1). | 762 | 50169 | 21 |
| Q465E0_METBF | | Mbar_A3638 | Methanol-5-hydroxybenzimidazolylcobamide co-methyltransferase, isozyme 3. | 751 | 50247 | 15 |
| Q46E2_METBF | | Mbar_A2850 | Enolase (EC 4.2.1.11) (2-phospho-D-glycerate hydro-lyase). | 740 | 46410 | 14 |
| Q46FH4_METBF | | Mbar_A0385 | H(+)-transporting ATP synthase, subunit B. | 598 | 50308 | 9 |
| Q46E72_METBF, Q1DGD7_METBF, Q46E73_METBF, P0C0W3_METBF | | Mbar_A0843 or Mbar_A0846 | Monomethylamine methyltransferase mtmB1 (EC 2.1.1.-) (MMA methyltransferase 1) (MMAMT 1).. MTMB1_METBF=Q46E72 | 585 | 49945 | 14 |
| Q46EW5_METBF | | Mbar_A0597 | Phosphomethylpyrimidine synthase 1 thiC1 AAZ69577 | 582 | 46586 | 11 |
| Q46FD0_METBF | | Mbar_A0199, Mbar_A0429 | Carbon-monoxide dehydrogenase, subunit gamma. | 566 | 51200 | 11 |

| ID number (UniProt) | Comment | ID number (NCBI) | Protein Description | Mascot Prot Score | MW (Da) | Peptides |
|---------------------------------|---------|-----------------------------|---|-------------------|---------|----------|
| P0C0W7_METBF | | Mbar_A1502 | Trimethylamine methyltransferase mttB (EC 2.1.1.-) (TMA methyltransferase). | 461 | 53625 | 9 |
| Q46FF6_METBF | | Mbar_A0403 | Adenylosuccinate synthetase purA AAZ69386 | 310 | 46646 | 8 |
| Q46DL0_METBF | | Mbar_A1064 | Methanol:corrinoide methyltransferase. | 271 | 50303 | 7 |
| Q46CY7_METBF | | Mbar_A1292 | Molybdenum formylmethanofuran dehydrogenase subunit. | 265 | 47519 | 6 |
| Q468C0_METBF | | Mbar_A2872 | Coenzyme F390 synthetase/phenylacetyl-CoA ligase. | 198 | 48998 | 4 |
| P07964_METBF | | Mbar_A0894 | Methyl-coenzyme M reductase subunit gamma (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase gamma) MCRG_METBF. | 170 | 27663 | 4 |
| Q46BD3_METBF or Q46BD4_METBF | | Mbar_A1869 or Mbar_A1868 | Iron(III) dicitrate-binding protein. | 166 | 43383 | 4 |
| Q464Y8_METBF | | Mbar_A3691 | DNA-directed RNA polymerase, subunit A. | 158 | 46698 | 3 |
| Q46CD5_METBF | | Mbar_A1503 | Dimethylamine corrinoide protein. | 129 | 23068 | 2 |
| Q465P3_METBF | | Mbar_A3530 | PmbA/TldD family protein. | 117 | 46101 | 3 |
| Q46FC9_METBF or Q46GO8_METBF | | Mbar_A0430 or Mbar_A0200 | CO dehydrogenase/acetyl-COA synthase delta subunit. | 109 | 47267 | 3 |
| Q466Y5_METBF | | Mbar_A3173 | Aspartyl-tRNA synthetase aspS AAZ72057 | 107 | 50764 | 2 |
| Band 6 | | | | | | |
| Q46FY8_METBF | | Mbar_A0220 | Ketol-acid reductoisomerase; ILVC_METBF AAZ69204 | 496 | 36971 | 12 |
| Q465J3_METBF | | Mbar_A3581 | Putative pyridoxine biosynthesis protein. | 458 | 31895 | 10 |
| Q46DI1_METBF | | Mbar_A1093 | Phosphoserine phosphatase. | 404 | 32860 | 9 |
| Q48941_METBA | | Mbar_A1288 | molybdenum formylmethanofuran dehydrogenase chain F; S62197- fmdF | 388 | 37226 | 10 |
| Q46BM3_METBF | | Mbar_A1778 | Phosphate-binding protein. | 388 | 31499 | 8 |
| Q46FV4_METBF | | Mbar_A0254 | F420-dependent N5,N10-methylene-tetrahydromethanopterin reductase. | 353 | 34570 | 9 |
| P94919_METBF | | Mbar_A2233 | N(5),N(10)-methenyltetrahydromethanopterin cyclohydrolase, MCH_METBF, AAZ71158, | 336 | 34881 | 7 |
| Q46BI0_METBF | | Mbar_A1821 | Phosphate acetyltransferase. | 334 | 35326 | 5 |
| O93716_METBF | | Mbar_A1255 | MTRH_METBF, AAZ70218, Tetrahydromethanopterin S-methyltransferase subunit H, Methanosarcina barkeri (strain Fusaro / DSM 804) | 324 | 34234 | 8 |
| Q48949_METBA | | Mbar_A1054 | mtaA methylcobalamin-coenzyme M methyltransferase isozyme I s62368 | 317 | 35849 | 6 |
| P07964_METBF | | Mbar_A0894 | MCRG Methyl-coenzyme M reductase subunit gamma (EC 2.8.4.1) (Coenzyme-B sulfoethylthiotransferase gamma). | 305 | 27663 | 7 |

| ID number (UniProt) | Comment | ID number (NCBI) | Protein Description | Mascot Prot Score | MW (Da) | Peptides |
|---|----------------|-----------------------------|---|----------------------------------|--------------------|-----------------|
| Q46CL6_METBF | | Mbar_A1417 | Dimethylallyltranstransferase / geranyltranstransferase. | 299 | 35366 | 5 |
| Q46D91_METBF | | Mbar_A1183 | GTP cyclohydrolase mptA Methanosarcina barkeri (strain Fusaro / DSM 804). | 251 | 35716 | 5 |
| Q46E75_METBF | | Mbar_A0841 | Methylcobamide:CoM methyltransferase mtbA (EC 2.1.1.-) (Methylcobamide:CoM methyltransferase II isozyme A) (MT2-A).. MTBA_METBA; S62369, O30640, Q48928 | 245 | 36510 | 5 |
| Q48943_METBF | | Mbar_A1290 | formylmethanofuran dehydrogenase (EC 1.2.99.5) (molybdenum) chain C ; s62199; FMDC_METBF | 209 | 31531 | 4 |
| Q465R0_METBF | | Mbar_A3512 | Ornithine carbamoyltransferase. | 193 | 33792 | 5 |
| Q46BF4_METBF | | Mbar_A1847 | F420-nonreducing hydrogenase I. | 174 | 41354 | 4 |
| P55301_METBF | | Mbar_A0980 | H4MPT formyltransferase AAZ69952 | 159 | 31677 | 4 |
| Q466U0_METBF | | Mbar_A3220 | Phage shock protein A. | 151 | 28109 | 4 |
| Q46F30_METBF | | Mbar_A0531 | Phosphoribosylaminoimidazole-succinocarboxamide synthase. | 122 | 27157 | 3 |
| Q46D96_METBF | | Mbar_A1178 | GMP synthase (Glutamine-hydrolyzing). | 117 | 34072 | 3 |
| Q465Y2_METBF | | Mbar_A3437 | Hypothetical protein. | 101 | 35933 | 2 |
| Q46GC8_METBF | | Mbar_A0077 | 30S Ribosomal protein S4P AAZ69064 | 99 | 24348 | 2 |
| Q46DH9_METBF | | Mbar_A1095 | Methylenetetrahydromethanopterin dehydrogenase. | 95 | 29802 | 2 |
| Q46ET9_METBF | | Mbar_A0623 | Isocitrate/isopropylmalate dehydrogenase family protein. | 94 | 37134 | 2 |
| Q464Z4_METBF | | Mbar_A3685 | Protein translation elongation factor 1A. | 94 | 46128 | 3 |
| Q46G31_METBF | | Mbar_A0176 | Fructose-bisphosphate aldolase. | 74 | 33668 | 2 |
| Q46D53_METBF | | Mbar_A1222 | Hypothetical protein. | 71 | 34314 | 2 |
| Q46E72_METBF, Q1DGD7_METBF, Q46E73_METBF, P0C0W3_METBF | | Mbar_A0843 or Mbar_A0846 | Monomethylamine methyltransferase mtmB1 (EC 2.1.1.-) (MMA methyltransferase 1) (MMAMT 1).. MTMB1_METBF=Q46E72 | 60 | 49965 | 2 |

Table S3: Mbar_A1758 peptides detected from analyses of multiple gel bands.

| Peptides | Sequence |
|----------|---------------------------|
| 25-31 | A.ADSVEIR.G |
| 75-94 | K.DVSGNSGNGVIGEGGIVYSTK.I |
| 136-147 | K.LVIDSDDKITLR.T |
| 148-163 | R.TGETLDIGQGYTLQAK.Q |
| 164-171 | K.QVDVDGEK.V |
| 164-171 | K.pyro-QVDVDGEK.V |
| 164-178 | K.QVDVDGEKVVWLEFDR.D |
| 172-178 | K.VWLEFDR.D |
| 277-289 | R.DSTNELAEGLSFK.V |
| 290-299 | K.VADTSSNVL.R.F |
| 305-315 | K.EFTDPGTYEVR.G |
| 420-435 | R.TGETFDLGEYSIQAK.Q |
| 444-450 | K.VWLEFDK.D |
| 488-495 | K.VHVNQVFR.G |
| 539-549 | K.ISNEDTFTLTR.D |
| 550-562 | R.DSDEDIGEGMYFK.V |
| 550-562 | R.DSDEDIGEGMoxYFK.V |
| 563-572 | K.VADTPTSEL.R.Y |
| 573-579 | R.YYPAIER.I |

Table S4: Microarray transcript abundance of all cell surface and cell surface-related genes annotated in the *M. acetivorans* genome.

| Name ^a | Annotated Function ^a | Proteomic data ^b | Average count ^c | | Transmembrane domains ^d |
|-------------------|---|-----------------------------|----------------------------|---------|------------------------------------|
| | | | Methanol | Acetate | |
| MA0336 | cell surface protein | Y | 1866.2 | 155.2 | 2 |
| MA0488 | cell surface protein | N | 152.1 | 1.1 | 0 |
| MA0509 | surface antigen gene | N | NA | NA | 1 |
| MA0512 | surface antigen gene | N | NA | NA | 2 |
| MA0588 | cell surface protein | Y | 413.1 | 339.4 | 1 |
| MA0850 | cell surface protein | N | 417.4 | 130.2 | 1 |
| MA0851 | cell surface protein | N | 313.3 | 70 | 1 |
| MA1286 | cell surface glycoprotein (S-layer protein) | N | 75.9 | 26.6 | 3 |
| MA1292 | cell surface protein | N | 744.9 | 191.3 | 1 |
| MA1293 | cell surface protein | N | 161.7 | 32.4 | 0 |
| MA1420 | cell surface protein | Y | 497.7 | 338 | 1 |
| MA1454 | cell surface lipoprotein | Y | 441.2 | 44.1 | 1 |
| MA1508 | cell surface protein | N | 237.1 | 145.8 | 1 |
| MA1517 | cell surface protein | N | 447.9 | 162.8 | 0 |
| MA1590 | surface antigen gene | N | 414.7 | 116.4 | 1 |
| MA1591 | surface antigen gene | N | NA | NA | 1 |
| MA1717 | cell surface protein | N | 612.8 | 155.2 | 2 |
| MA1730 | cell surface protein | N | 157.8 | 137.5 | 1 |
| MA1738 | cell surface protein | N | 650 | 347.1 | 1 |
| MA1749 | cell surface glycoprotein | N | 31.9 | 3.9 | 1 |
| MA1751 | cell surface glycoprotein | N | 618.4 | 473.1 | 1 |
| MA1753 | cell surface protein | N | 350.4 | 508.3 | 1 |
| MA1754 | cell surface protein | N | 389.7 | 906.3 | 0 |
| MA1756 | cell surface protein | N | 558.2 | 1219.6 | 0 |
| MA1761 | surface antigen gene | Y | NA | NA | 1 |
| MA1762 | cell surface protein | Y | NA | NA | 1 |
| MA1764 | cell surface protein | Y | 534.7 | 1959.7 | 1 |
| MA1766 | cell surface protein | Y | 94.7 | 1748.6 | 2 |
| MA1767 | cell surface protein | N | NA | NA | 1 |
| MA1838 | cell surface protein | N | 281.5 | 135 | 1 |
| MA1961 | cell surface glycoprotein (S-layer protein) | N | 49.5 | 12.9 | 1 |
| MA2017 | cell surface protein | N | 178 | 154.2 | 0 |
| MA2019 | pneumococcal surface protein | Y | 338.9 | 215.9 | 0 |
| MA2284 | cell surface protein | N | 242.1 | 174.9 | 1 |
| MA2335 | cell surface protein | N | 269.7 | 80.1 | 0 |
| MA2457 | cell surface glycoprotein (S-layer protein) | N | 45.6 | 23.2 | 1 |
| MA2507 | cell surface protein | N | 66.1 | 51.7 | 0 |
| MA2706 | cell surface protein | N | 253.5 | 51.8 | 1 |
| MA2707 | cell surface protein | N | NA | NA | 0 |
| MA2793 | cell surface protein | N | 385.7 | 235.6 | 1 |
| MA2885 | cell surface protein | N | 531.4 | 212.8 | 1 |
| MA2886 | cell surface protein | N | 1073.8 | 673.4 | 0 |

| Name ^a | Annotated Function ^a | Proteomic data ^b | Average count ^c | | Transmembrane domains ^d |
|-------------------|---------------------------------|-----------------------------|----------------------------|---------|------------------------------------|
| | | | Methanol | Acetate | |
| MA2916 | cell surface protein | N | 13 | 14.6 | 2 |
| MA2926 | cell surface protein | N | 275.1 | 48.4 | 1 |
| MA2979 | cell surface protein | N | 222.1 | 121.2 | 3 |
| MA3101 | cell surface protein | N | 204.6 | 135.2 | 2 |
| MA3118 | surface antigen gene | Y | NA | NA | 1 |
| MA3120 | surface antigen gene | N | NA | NA | 1 |
| MA3122 | surface antigen gene | N | NA | NA | 1 |
| MA3133 | cell surface protein | Y | 745 | 884.7 | 2 |
| MA3229 | cell surface protein | N | 30.2 | -18.6 | 4 |
| MA3430 | cell surface protein | N | 173.9 | 76.3 | 1 |
| MA3664 | cell surface protein | N | 2206.5 | 404.5 | 2 |
| MA3698 | cell surface protein | N | 123 | 19.5 | 0 |
| MA3699 | cell surface protein | N | 561.2 | 315.1 | 1 |
| MA3700 | cell surface protein | N | 1369.2 | 490 | 1 |
| MA3703 | cell surface glycoprotein | N | 766.7 | 185.4 | 1 |
| MA3782 | cell surface protein | N | 383 | 126.6 | 2 |
| MA3842 | cell surface protein | Y | 130.9 | 43.5 | 2 |
| MA4033 | surface antigen gene | N | 616.5 | 556 | 1 |
| MA4222 | cell surface protein | N | 322.7 | 203.3 | 1 |
| MA4284 | cell surface protein | N | NA | NA | 0 |
| MA4285 | cell surface protein | N | 181.7 | 115.8 | 0 |
| MA4287 | cell surface protein | N | 2538.2 | 839.6 | 1 |
| MA4289 | cell surface protein | N | 297 | 144 | 0 |
| MA4291 | cell surface protein | N | 341.8 | 509.9 | 1 |
| MA4292 | cell surface protein | N | 567 | 502.7 | 0 |
| MA4297 | cell surface protein | N | 306.6 | 169.7 | 0 |
| MA4299 | cell surface protein | N | NA | NA | 1 |
| MA4301 | cell surface protein | N | 858.7 | 369 | 0 |
| MA4305 | cell surface protein | N | 741.8 | 140.2 | 1 |
| MA4309 | cell surface protein | N | 409.2 | 282.2 | 1 |
| MA4312 | cell surface protein | N | 89.3 | 21.5 | 1 |
| MA4315 | cell surface protein | N | 1227.9 | 668.6 | 1 |
| MA4363 | cell surface protein | N | 267.4 | 47.2 | 1 |
| MA4478 | cell surface protein | N | 3091 | 610.1 | 0 |
| MA4481 | cell surface protein | N | 481.7 | 52 | 1 |
| MA4577 | cell surface protein | N | 276.9 | 97.8 | 2 |
| MA4588 | cell surface protein | N | 264.9 | 82.6 | 1 |
| MA4589 | cell surface protein | N | 514.2 | 258.6 | 1 |

^aGene annotations are from the original genome annotation file [2] ^bData from [17]. ^cMicroarray data [17] from (see Methods and Materials). ^dPredicted trans-membrane domain (TM) from the genome annotation using TMHMM [18]. N, not detected; Y, detected; NA, data not articulated.