

Supplementary Table S1. Name and functional classification of *A. marginale* strain MEX-15-099-01 MLPs.

	NCBI ID	RAST annotation of <i>A. marginale</i> strain MEX-15-099-01 MLPs	COG Functional group	COG Gene Name
1	KAA8473050. 1	DNA mismatch repair endonuclease MutL	L	<i>mutL</i>
2	KAA8473081. 1	ABC transporter ATP-binding protein	Q	<i>mkL</i>
3	KAA8473084. 1	Biotin-[acetyl-CoA-carboxylase] ligase	H	<i>birA</i>
4	KAA8473103. 1	Porphobilinogen synthase	H	<i>hemC</i>
5	KAA8473122. 1	Leucine-tRNA ligase	J	<i>leuS</i>
6	KAA8473129. 1	excinuclease ABC subunit UvrA	L	<i>uvrA</i>
7	KAA8473164. 1	Proline-tRNA ligase	J	<i>proS</i>
8	KAA8473168. 1	Peroxiredoxin	O	<i>prdx1</i>
9	KAA8473177. 1	Translation elongation factor LepA	J	<i>lepA</i>
10	KAA8473193. 1	Triosephosphate isomerase	G	<i>tpiA</i>
11	KAA8473199. 1	Adenylosuccinate lyase	F	<i>purB</i>
12	KAA8473204. 1	Pyridoxal phosphate- dependent aminotransferase	H	<i>bioA</i>
13	KAA8473206. 1	Rod shape-determining protein	D	<i>mreB</i>
14	KAA8472839. 1	Phosphopantothenoylcysteine decarboxylase	H	<i>coaD</i>
15	KAA8472842. 1	Phosphoglycerate kinase	F	<i>Pgk</i>
16	KAA8472854. 1	Ketol-acid reductoisomerase	H	<i>llvc</i>
17	KAA8472865. 1	Molecular chaperone DnaJ	A	<i>dnaJ</i>
18	KAA8472874. 1	Type I glyceraldehyde-3- phosphate dehydrogenase	G	<i>Gap</i>
19	KAA8472877. 1	Aspartate-semialdehyde dehydrogenase	E	<i>Asd</i>
20	KAA8472881. 1	Threonine-tRNA ligase	J	<i>thrS</i>
21	KAA8472917. 1	Ornithine carbamoyltransferase	E	<i>argF</i>

22	KAA8472922. 1	ATP-binding cassette domain- containing protein	V	<i>msbA</i> 2
23	KAA8472925. 1	Glutamine synthetase	E	<i>glnA</i>
24	KAA8472933. 1	Pyruvate dehydrogenase complex dihydrolipoamide acetyltransferase	C	<i>pdhB</i>
25	KAA8472947. 1	Valine-tRNA ligase	J	<i>ileS</i>
26	KAA8472967. 1	Tyrosine-tRNA ligase	J	<i>tyrS</i>
27	KAA8472719. 1	Quinone oxidoreductase	C	<i>Qor</i>
28	KAA8472720. 1	Type I secretion system permease/ATPase	U	<i>yidC</i>
29	KAA8472725. 1	Class II fumarate hydratase	C	<i>fumC</i>
30	KAA8472731. 1	Chaperonin GroEL	O	<i>Groel</i>
31	KAA8472736. 1	Cytosol aminopeptidase PepA	E	<i>pepA</i>
32	KAA8472754. 1	NAD(P)H-dependent glycerol-3- phosphate dehydrogenase	I	<i>gpsA</i>
33	KAA8472760. 1	ATP-dependent protease ATPase subunit HslU	O	<i>hslU</i>
34	KAA8472784. 1	Aconitate hydratase AcnA	C	<i>AcnA</i>
	KAA8472802. 1	Methionine-tRNA ligase	J	<i>infB</i>
36	KAA8472628. 1	Superoxide dismutase	O	<i>tdPX1</i>
37	KAA8472646. 1	Molecular chaperone DnaK	O	<i>dnaK</i>
38	KAA8472652. 1	Transketolase	G	<i>Tkt</i>
39	KAA8472657. 1	Glutamate-tRNA ligase	J	<i>gatC</i>
40	KAA8472519. 1	HtrA protease/chaperone protein	M	<i>htrA</i>
41	KAA8472533. 1	Hiydrolipoamide succinyltransferase component (E2) of 2- oxoglutarate dehydrogenase complex	C	<i>sucB</i>
42	KAA8472539. 1	Metalloprotease	C	<i>Fdxb</i>
43	KAA8472556. 1	ATP-dependent metallopeptidase FtsH/Yme1/Tma family protein	O	<i>ftsH</i>
44	KAA8472563. 1	Isocitrate dehydrogenase	C	<i>Icd</i>

45	KAA8472473. 1	Hsp70 chaperone family protein HscA	O	<i>hscA</i>
46	KAA8472398. 1	50S ribosomal protein L1	J	<i>rpIA</i>
47	KAA8472399. 1	50S ribosomal protein L10	J	<i>rpIJ</i>
48	KAA8472401. 1	DNA-directed RNA polymerase subunit beta	K	<i>rpoB</i>
49	KAA8472421. 1	Succinate dehydrogenase, cytochrome b556 subunit	C	<i>sdhC</i>
50	KAA8472432. 1	ATP-dependent Clp protease ATP- binding subunit ClpX	O	<i>Clpx</i>
51	KAA8472433. 1	Endopeptidase La	Q	
52	KAA8472438. 1	30S ribosomal protein S4	J	<i>rpsD</i>
53	KAA8472355. 1	Isoleucine-tRNA ligase	J	<i>tilS</i>
54	KAA8472356. 1	Thiol peroxidase (Peroxiredoxin)	O	<i>Bcp</i>
55	KAA8472364. 1	NADH-quinone oxidoreductase subunit Nuol	C	<i>ma20</i>
56	KAA8472372. 1	Translational GTPase TypA	T	<i>typA</i>
57	KAA8472305. 1	Pyruvate dehydrogenase complex E1 component subunit beta	C	<i>pdhA</i>
58	KAA8472326. 1	Lipoprotein releasing (ABC transporter ATP-binding protein)	V	<i>lolD</i>
59	KAA8472251. 1	Holliday junction branch migration DNA helicase RuvB	L	<i>ruvB</i>
60	KAA8472256. 1	ABC transporter (ATP-binding cassette domain-containing protein)	G	<i>tpiA</i>
61	KAA8472258. 1	Serine hydroxymethyltransferase	E	<i>glyA</i>
62	KAA8472274. 1	Heme ABC exporter ATP-binding protein CcmA	P	<i>ccmA</i>
63	KAA8472191. 1	50S ribosomal protein L4	J	<i>rpID</i>
64	KAA8472193. 1	50S ribosomal protein L2	J	<i>rpIB</i>
65	KAA8472200. 1	50S ribosomal protein L14	J	<i>rpIN</i>
66	KAA8472202. 1	50S ribosomal protein L5	J	<i>rpIE</i>
67	KAA8472204. 1	30S ribosomal protein S8	J	<i>rpsH</i>
68	KAA8472212. 1	30S ribosomal protein S11	J	<i>rpsK</i>

69	KAA8472223. 1	Phosphate ABC transporter ATP-binding protein	J	<i>pstB</i>
70	KAA8472142. 1	UMP kinase	P	<i>pyrH</i>
71	KAA8472163. 1	Thioredoxin	F	<i>Txn</i>
72	KAA8472099. 1	Glutamine synthetase	O	<i>pdhC</i>
73	KAA8472120. 1	30S ribosomal protein S7	C	<i>rpsG</i>
74	KAA8472121. 1	Elongation factor G	J	<i>fusA</i>
75	KAA8471941. 1	Elongation factor Tu	J	<i>Tst</i>
76	KAA8472015. 1	Aspartate tRNA ligase	J	<i>aspS</i>
77	KAA8472021. 1	Cytochrome c family protein	C	<i>sodB</i>
78	KAA8471995. 1	Bifunctional proline dehydrogenase/L-glutamate gamma-semialdehyde dehydrogenase	E	<i>putA</i>
79	KAA8472002. 1	Phosphopyruvate hydratase (enolase)	F	<i>Eno</i>
80	KAA8471950. 1	Malate dehydrogenase	C	<i>Mdh</i>