

Supporting Information for:

The *Listeria monocytogenes* Core-Genome Sequence Typer (LmCGST): a bioinformatic pipeline for molecular characterization with next-generation sequence data

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Additional file 4: List of 1013 open-reading frames that comprise the high-confidence core genome with NCBI numbers for *Listeria monocytogenes* strain 08-5578.

Protein name	Protein sequence	Gene sequence
hypothetical protein LM5578 0004	gi 284800259 ref YP003412124.1	gi 662858600 ref NC_013766.2 :1450-2313
hypothetical protein LM5578 0005	gi 284800260 ref YP003412125.1	gi 662858600 ref NC_013766.2 :2310-2930
hypothetical protein LM5578 0008	gi 284800263 ref YP003412128.1	gi 662858600 ref NC_013766.2 :4599-5867
L-rhamnose isomerase	gi 284800265 ref YP003412130.1	gi 662858600 ref NC_013766.2 :7350-8612
rhamnulose-1-phosphate aldolase	gi 284800266 ref YP003412131.1	gi 662858600 ref NC_013766.2 :8625-9446
hypothetical protein LM5578 0013	gi 284800268 ref YP003412133.1	gi 662858600 ref NC_013766.2 :c11226-9814
hypothetical protein LM5578 0018	gi 284800273 ref YP003412138.1	gi 662858600 ref NC_013766.2 :17136-18428
hypothetical protein LM5578 0019	gi 284800274 ref YP003412139.1	gi 662858600 ref NC_013766.2 :18503-19384
hypothetical protein LM5578 0020	gi 284800275 ref YP003412140.1	gi 662858600 ref NC_013766.2 :19371-20222
hypothetical protein LM5578 0022	gi 284800277 ref YP003412142.1	gi 662858600 ref NC_013766.2 :21306-22100
hypothetical protein LM5578 0026	gi 284800281 ref YP003412146.1	gi 662858600 ref NC_013766.2 :26478-27140
hypothetical protein LM5578 0028	gi 284800283 ref YP003412148.1	gi 662858600 ref NC_013766.2 :c28238-27639
hypothetical protein LM5578 0033	gi 284800288 ref YP003412153.1	gi 662858600 ref NC_013766.2 :31927-33114

amino-terminal domain-containing protein	gi 284800292 ref YP003412157.1	gi 662858600 ref NC_013766.2 :37589-39931
hypothetical protein LM5578 0039	gi 284800294 ref YP003412159.1	gi 662858600 ref NC_013766.2 :41329-42729
hypothetical protein LM5578 0041	gi 284800296 ref YP003412161.1	gi 662858600 ref NC_013766.2 :44023-45216
glucose-inhibited division protein B	gi 284800312 ref YP003412177.1	gi 662858600 ref NC_013766.2 :56888-57604
hypothetical protein LM5578 0063	gi 284800318 ref YP003412183.1	gi 662858600 ref NC_013766.2 :62165-63070
hypothetical protein LM5578 0064	gi 284800319 ref YP003412184.1	gi 662858600 ref NC_013766.2 :63054-63860
hypothetical protein LM5578 0065	gi 284800320 ref YP003412185.1	gi 662858600 ref NC_013766.2 :64032-64886
hypothetical protein LM5578 0067	gi 284800322 ref YP003412187.1	gi 662858600 ref NC_013766.2 :65392-66114
partition protein, ParA-like protein	gi 284800323 ref YP003412188.1	gi 662858600 ref NC_013766.2 :66338-67099
partition protein ParB homolog	gi 284800324 ref YP003412189.1	gi 662858600 ref NC_013766.2 :67092-67943
catalase	gi 284800329 ref YP003412194.1	gi 662858600 ref NC_013766.2 :72319-73785
hypothetical protein LM5578 0075	gi 284800330 ref YP003412195.1	gi 662858600 ref NC_013766.2 :73996-75912
hypothetical protein LM5578 0076	gi 284800331 ref YP003412196.1	gi 662858600 ref NC_013766.2 :76062-77357
bifunctional glutamate--cysteine ligase/glutathione synthetase	gi 284800343 ref YP003412208.1	gi 662858600 ref NC_013766.2 :c91313-88983
hypothetical protein LM5578 0095	gi 284800350 ref YP003412215.1	gi 662858600 ref NC_013766.2 :c97683-96331

DNA topoisomerase III	gi 284800358 ref YP003412223.1	gi 662858600 ref NC_013766.2 :105943-108096
hypothetical protein LM5578 0104	gi 284800359 ref YP003412224.1	gi 662858600 ref NC_013766.2 :108205-109872
hypothetical protein LM5578 0105	gi 284800360 ref YP003412225.1	gi 662858600 ref NC_013766.2 :110051-111388
hypothetical protein LM5578 0108	gi 284800363 ref YP003412228.1	gi 662858600 ref NC_013766.2 :c115415-113694
hypothetical protein LM5578 0114	gi 284800369 ref YP003412234.1	gi 662858600 ref NC_013766.2 :c122070-120343
hypothetical protein LM5578 0115	gi 284800370 ref YP003412235.1	gi 662858600 ref NC_013766.2 :122400-123089
hypothetical protein LM5578 0124	gi 284800379 ref YP003412244.1	gi 662858600 ref NC_013766.2 :c131821-130139
hypothetical protein LM5578 0127	gi 284800382 ref YP003412247.1	gi 662858600 ref NC_013766.2 :136656-137408
hypothetical protein LM5578 0138	gi 284800392 ref YP003412257.1	gi 662858600 ref NC_013766.2 :c144093-143359
putative 6-phosphogluconolactonase	gi 284800393 ref YP003412258.1	gi 662858600 ref NC_013766.2 :144173-144892
hypothetical protein LM5578 0143	gi 284800397 ref YP003412262.1	gi 662858600 ref NC_013766.2 :148951-149964
hypothetical protein LM5578 0145	gi 284800399 ref YP003412264.1	gi 662858600 ref NC_013766.2 :151685-153427
pepdidoglycan bound protein	gi 284800400 ref YP003412265.1	gi 662858600 ref NC_013766.2 :153568-154515
recombination protein RecR	gi 284800412 ref YP003412277.1	gi 662858600 ref NC_013766.2 :164508-165104
hypothetical protein LM5578 0160	gi 284800414 ref YP003412279.1	gi 662858600 ref NC_013766.2 :c166252-165410

hypothetical protein LM5578 0161	gi 284800415 ref YP003412280.1	gi 662858600 ref NC_013766.2 :c167212-166373
hypothetical protein LM5578 0166	gi 284800420 ref YP003412285.1	gi 662858600 ref NC_013766.2 :170457-171836
hypothetical protein LM5578 0167	gi 284800421 ref YP003412286.1	gi 662858600 ref NC_013766.2 :171889-172515
hypothetical protein LM5578 0172	gi 284800426 ref YP003412291.1	gi 662858600 ref NC_013766.2 :178815-179945
hypothetical protein LM5578 0176	gi 284800430 ref YP003412295.1	gi 662858600 ref NC_013766.2 :c183850-182543
potassium-transporting ATPase subunit A	gi 284800432 ref YP003412297.1	gi 662858600 ref NC_013766.2 :184632-186317
potassium-transporting atpase c chain	gi 284800434 ref YP003412299.1	gi 662858600 ref NC_013766.2 :188389-188961
hypothetical protein LM5578 0181	gi 284800435 ref YP003412300.1	gi 662858600 ref NC_013766.2 :188977-191667
hypothetical protein LM5578 0182	gi 284800436 ref YP003412301.1	gi 662858600 ref NC_013766.2 :191664-192359
hypothetical protein LM5578 0183	gi 284800437 ref YP003412302.1	gi 662858600 ref NC_013766.2 :192400-193212
hypothetical protein LM5578 0192	gi 284800446 ref YP003412311.1	gi 662858600 ref NC_013766.2 :198940-201009
hypothetical protein LM5578 0195	gi 284800449 ref YP003412314.1	gi 662858600 ref NC_013766.2 :201908-203179
hypothetical protein LM5578 0196	gi 284800450 ref YP003412315.1	gi 662858600 ref NC_013766.2 :203216-204268
hypothetical protein LM5578 0197	gi 284800451 ref YP003412316.1	gi 662858600 ref NC_013766.2 :204270-205301
hypothetical protein LM5578 0201	gi 284800455 ref YP003412320.1	gi 662858600 ref NC_013766.2 :208665-209309

elongation factor G	gi 284800460 ref YP003412325.1	gi 662858600 ref NC_013766.2 :212507-214594
elongation factor Tu	gi 284800461 ref YP003412326.1	gi 662858600 ref NC_013766.2 :214703-215890
hypothetical protein LM5578 0212	gi 284800466 ref YP003412331.1	gi 662858600 ref NC_013766.2 :220409-221401
hypothetical protein LM5578 0213	gi 284800467 ref YP003412332.1	gi 662858600 ref NC_013766.2 :221414-222163
hypothetical protein LM5578 0214	gi 284800468 ref YP003412333.1	gi 662858600 ref NC_013766.2 :222123-222842
hypothetical protein LM5578 0217	gi 284800471 ref YP003412336.1	gi 662858600 ref NC_013766.2 :224505-225491
hypothetical protein LM5578 0219	gi 284800473 ref YP003412338.1	gi 662858600 ref NC_013766.2 :c227937-226957
hypothetical protein LM5578 0220	gi 284800474 ref YP003412339.1	gi 662858600 ref NC_013766.2 :c228501-227959
hypothetical protein LM5578 0222	gi 284800476 ref YP003412341.1	gi 662858600 ref NC_013766.2 :c231030-229144
hypothetical protein LM5578 0223	gi 284800477 ref YP003412342.1	gi 662858600 ref NC_013766.2 :231478-232377
hypothetical protein LM5578 0224	gi 284800478 ref YP003412343.1	gi 662858600 ref NC_013766.2 :232541-233623
hypothetical protein LM5578 0226	gi 284800480 ref YP003412345.1	gi 662858600 ref NC_013766.2 :234684-235484
50S ribosomal protein L3	gi 284800482 ref YP003412347.1	gi 662858600 ref NC_013766.2 :236188-236817
50S ribosomal protein L4	gi 284800483 ref YP003412348.1	gi 662858600 ref NC_013766.2 :236843-237466
50S ribosomal protein L2	gi 284800485 ref YP003412350.1	gi 662858600 ref NC_013766.2 :237791-238624

30S ribosomal protein S3	gi 284800488 ref YP003412353.1	gi 662858600 ref NC_013766.2 :239371-240027
50S ribosomal protein L5	gi 284800494 ref YP003412359.1	gi 662858600 ref NC_013766.2 :241760-242299
preprotein translocase subunit SecY	gi 284800502 ref YP003412367.1	gi 662858600 ref NC_013766.2 :245127-246422
hypothetical protein LM5578 0249	gi 284800503 ref YP003412368.1	gi 662858600 ref NC_013766.2 :246482-247129
DNA-directed RNA polymerase subunit alpha	gi 284800508 ref YP003412373.1	gi 662858600 ref NC_013766.2 :248856-249800
hypothetical protein LM5578 0258	gi 284800512 ref YP003412377.1	gi 662858600 ref NC_013766.2 :c253236-252574
cobalt transporter ATP-binding subunit	gi 284800513 ref YP003412378.1	gi 662858600 ref NC_013766.2 :253367-254206
cobalt transporter ATP-binding subunit	gi 284800514 ref YP003412379.1	gi 662858600 ref NC_013766.2 :254182-255048
tRNA pseudouridine synthase A	gi 284800516 ref YP003412381.1	gi 662858600 ref NC_013766.2 :255854-256600
hypothetical protein LM5578 0267	gi 284800521 ref YP003412386.1	gi 662858600 ref NC_013766.2 :259878-260729
ATP:guanido phosphotransferase	gi 284800526 ref YP003412391.1	gi 662858600 ref NC_013766.2 :270180-271202
endopeptidase Clp ATP-binding chain C	gi 284800527 ref YP003412392.1	gi 662858600 ref NC_013766.2 :271231-273693
DNA repair protein RadA	gi 284800528 ref YP003412393.1	gi 662858600 ref NC_013766.2 :273839-275212
2-C-methyl-D-erythritol 4-phosphate cytidyltransferase	gi 284800530 ref YP003412395.1	gi 662858600 ref NC_013766.2 :276439-277137
RNA polymerase factor sigma-70	gi 284800538 ref YP003412403.1	gi 662858600 ref NC_013766.2 :283275-283880

50S ribosomal protein L1	gi 284800543 ref YP003412408.1	gi 662858600 ref NC_013766.2 :286112-286801
hypothetical protein LM5578 0305	gi 284800558 ref YP003412423.1	gi 662858600 ref NC_013766.2 :306990-308450
succinyl-diaminopimelate desuccinylase	gi 284800563 ref YP003412428.1	gi 662858600 ref NC_013766.2 :315735-316874
hypothetical protein LM5578 0312	gi 284800565 ref YP003412430.1	gi 662858600 ref NC_013766.2 :317445-318404
hypothetical protein LM5578 0317	gi 284800570 ref YP003412435.1	gi 662858600 ref NC_013766.2 :c324097-323285
hypothetical protein LM5578 0320	gi 284800573 ref YP003412438.1	gi 662858600 ref NC_013766.2 :c326536-325694
hypothetical protein LM5578 0321	gi 284800574 ref YP003412439.1	gi 662858600 ref NC_013766.2 :c327374-326553
hypothetical protein LM5578 0323	gi 284800576 ref YP003412441.1	gi 662858600 ref NC_013766.2 :c329601-328501
hypothetical protein LM5578 0327	gi 284800580 ref YP003412445.1	gi 662858600 ref NC_013766.2 :c334456-333677
putative lipoprotein	gi 284800584 ref YP003412449.1	gi 662858600 ref NC_013766.2 :c337057-336236
hypothetical protein LM5578 0333	gi 284800586 ref YP003412451.1	gi 662858600 ref NC_013766.2 :338833-339546
hypothetical protein LM5578 0335	gi 284800588 ref YP003412453.1	gi 662858600 ref NC_013766.2 :341560-342882
hypothetical protein LM5578 0336	gi 284800589 ref YP003412454.1	gi 662858600 ref NC_013766.2 :342885-343724
hypothetical protein LM5578 0337	gi 284800590 ref YP003412455.1	gi 662858600 ref NC_013766.2 :343844-344674
hypothetical protein LM5578 0344	gi 284800597 ref YP003412462.1	gi 662858600 ref NC_013766.2 :c353316-352003

hypothetical protein LM5578 0360	gi 284800613 ref YP003412478.1	gi 662858600 ref NC_013766.2 :c366592-365939
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short chain dehydrogenase	gi 284800632 ref YP003412497.1	gi 662858600 ref NC_013766.2 :c390420-389656
hypothetical protein LM5578 0381	gi 284800634 ref YP003412499.1	gi 662858600 ref NC_013766.2 :c391661-390897
hypothetical protein LM5578 0382	gi 284800635 ref YP003412500.1	gi 662858600 ref NC_013766.2 :c392315-391665
hypothetical protein LM5578 0383	gi 284800636 ref YP003412501.1	gi 662858600 ref NC_013766.2 :c393332-392337
hypothetical protein LM5578 0387	gi 284800640 ref YP003412505.1	gi 662858600 ref NC_013766.2 :394787-395551
hypothetical protein LM5578 0389	gi 284800642 ref YP003412507.1	gi 662858600 ref NC_013766.2 :c397602-396076
fumarate reductase flavoprotein subunit	gi 284800643 ref YP003412508.1	gi 662858600 ref NC_013766.2 :397839-399359
hypothetical protein LM5578 0394	gi 284800647 ref YP003412512.1	gi 662858600 ref NC_013766.2 :402602-403462
hypothetical protein LM5578 0395	gi 284800648 ref YP003412513.1	gi 662858600 ref NC_013766.2 :403519-404289
hypothetical protein LM5578 0405	gi 284800658 ref YP003412523.1	gi 662858600 ref NC_013766.2 :c412299-411586
hypothetical protein LM5578 0418	gi 284800671 ref YP003412536.1	gi 662858600 ref NC_013766.2 :422365-423186
low temperature requirement protein A	gi 284800676 ref YP003412541.1	gi 662858600 ref NC_013766.2 :c428215-427100
uracil-DNA glycosylase	gi 284800677 ref YP003412542.1	gi 662858600 ref NC_013766.2 :428301-429011

hypothetical protein LM5578 0426	gi 284800679 ref YP003412544.1	gi 662858600 ref NC_013766.2 :429475-430419
pyrroline-5-carboxylate reductase	gi 284800683 ref YP003412548.1	gi 662858600 ref NC_013766.2 :c433014-432214
hypothetical protein LM5578 0447	gi 284800700 ref YP003412565.1	gi 662858600 ref NC_013766.2 :450630-451439
hypothetical protein LM5578 0448	gi 284800701 ref YP003412566.1	gi 662858600 ref NC_013766.2 :451733-453133
hypothetical protein LM5578 0461	gi 284800714 ref YP003412579.1	gi 662858600 ref NC_013766.2 :462054-463160
hypothetical protein LM5578 0465	gi 284800718 ref YP003412583.1	gi 662858600 ref NC_013766.2 :467357-468103
hypothetical protein LM5578 0470	gi 284800723 ref YP003412588.1	gi 662858600 ref NC_013766.2 :473832-474677
hypothetical protein LM5578 0483	gi 284800736 ref YP003412601.1	gi 662858600 ref NC_013766.2 :490480-491205
hypothetical protein LM5578 0484	gi 284800737 ref YP003412602.1	gi 662858600 ref NC_013766.2 :c491913-491248
hypothetical protein LM5578 0485	gi 284800738 ref YP003412603.1	gi 662858600 ref NC_013766.2 :c492689-491934
hypothetical protein LM5578 0487	gi 284800740 ref YP003412605.1	gi 662858600 ref NC_013766.2 :c496111-494963
hypothetical protein LM5578 0488	gi 284800741 ref YP003412606.1	gi 662858600 ref NC_013766.2 :c497063-496116
hypothetical protein LM5578 0490	gi 284800743 ref YP003412608.1	gi 662858600 ref NC_013766.2 :498948-500231
hypothetical protein LM5578 0491	gi 284800744 ref YP003412609.1	gi 662858600 ref NC_013766.2 :500232-501332
hypothetical protein LM5578 0508	gi 284800760 ref YP003412625.1	gi 662858600 ref NC_013766.2 :515774-516349

hypothetical protein LM5578 0517	gi 284800769 ref YP003412634.1	gi 662858600 ref NC_013766.2 :525328-525921
hypothetical protein LM5578 0518	gi 284800770 ref YP003412635.1	gi 662858600 ref NC_013766.2 :526107-527066
hypothetical protein LM5578 0522	gi 284800774 ref YP003412639.1	gi 662858600 ref NC_013766.2 :529566-530234
hypothetical protein LM5578 0524	gi 284800776 ref YP003412641.1	gi 662858600 ref NC_013766.2 :531000-533060
hypothetical protein LM5578 0525	gi 284800777 ref YP003412642.1	gi 662858600 ref NC_013766.2 :533064-533666
hypothetical protein LM5578 0528	gi 284800780 ref YP003412645.1	gi 662858600 ref NC_013766.2 :534587-535237
hypothetical protein LM5578 0531	gi 284800783 ref YP003412648.1	gi 662858600 ref NC_013766.2 :536604-537875
phosphoribosyl pyrophosphate synthetase	gi 284800784 ref YP003412649.1	gi 662858600 ref NC_013766.2 :538015-538950
hypothetical protein LM5578 0539	gi 284800791 ref YP003412656.1	gi 662858600 ref NC_013766.2 :c546497-545067
hypothetical protein LM5578 0540	gi 284800792 ref YP003412657.1	gi 662858600 ref NC_013766.2 :c547433-546618
hypothetical protein LM5578 0543	gi 284800795 ref YP003412660.1	gi 662858600 ref NC_013766.2 :549773-550780
hypothetical protein LM5578 0552	gi 284800804 ref YP003412669.1	gi 662858600 ref NC_013766.2 :c563736-562075
hypothetical protein LM5578 0554	gi 284800806 ref YP003412671.1	gi 662858600 ref NC_013766.2 :c566109-565369
transmembrane protein	gi 284800807 ref YP003412672.1	gi 662858600 ref NC_013766.2 :566339-567814
hypothetical protein LM5578 0557	gi 284800809 ref YP003412674.1	gi 662858600 ref NC_013766.2 :569314-570564

hypothetical protein LM5578 0559	gi 284800811 ref YP003412676.1	gi 662858600 ref NC_013766.2 :572644-573498
hypothetical protein LM5578 0562	gi 284800814 ref YP003412679.1	gi 662858600 ref NC_013766.2 :574754-576109
hypothetical protein LM5578 0563	gi 284800815 ref YP003412680.1	gi 662858600 ref NC_013766.2 :c577117-576149
hypothetical protein LM5578 0568	gi 284800820 ref YP003412685.1	gi 662858600 ref NC_013766.2 :582429-583622
hypothetical protein LM5578 0569	gi 284800821 ref YP003412686.1	gi 662858600 ref NC_013766.2 :c584582-583662
hypothetical protein LM5578 0571	gi 284800823 ref YP003412688.1	gi 662858600 ref NC_013766.2 :c586048-585062
hypothetical protein LM5578 0572	gi 284800824 ref YP003412689.1	gi 662858600 ref NC_013766.2 :c586590-586069
hypothetical protein LM5578 0574	gi 284800826 ref YP003412691.1	gi 662858600 ref NC_013766.2 :c588300-587050
hypothetical protein LM5578 0575	gi 284800827 ref YP003412692.1	gi 662858600 ref NC_013766.2 :c589505-588558
hypothetical protein LM5578 0579	gi 284800831 ref YP003412696.1	gi 662858600 ref NC_013766.2 :592949-593791
hypothetical protein LM5578 0581	gi 284800833 ref YP003412698.1	gi 662858600 ref NC_013766.2 :c595590-594955
hypothetical protein LM5578 0582	gi 284800834 ref YP003412699.1	gi 662858600 ref NC_013766.2 :595800-596981
hypothetical protein LM5578 0586	gi 284800838 ref YP003412703.1	gi 662858600 ref NC_013766.2 :c601163-600123
hypothetical protein LM5578 0587	gi 284800839 ref YP003412704.1	gi 662858600 ref NC_013766.2 :601554-602468
glutamate dehydrogenase	gi 284800840 ref YP003412705.1	gi 662858600 ref NC_013766.2 :c603887-602511

ATP phosphoribosyltransferase regulatory subunit	gi 284800849 ref YP003412714.1	gi 662858600 ref NC_013766.2 :c610763-609582
histidinol-phosphatase	gi 284800850 ref YP003412715.1	gi 662858600 ref NC_013766.2 :610915-611742
hypothetical protein LM5578 0608	gi 284800860 ref YP003412725.1	gi 662858600 ref NC_013766.2 :620510-621172
preprotein translocase subunit SecA	gi 284800863 ref YP003412728.1	gi 662858600 ref NC_013766.2 :624342-626672
hypothetical protein LM5578 0612	gi 284800864 ref YP003412729.1	gi 662858600 ref NC_013766.2 :626788-627960
hypothetical protein LM5578 0618	gi 284800870 ref YP003412735.1	gi 662858600 ref NC_013766.2 :634575-636344
hypothetical protein LM5578 0619	gi 284800871 ref YP003412736.1	gi 662858600 ref NC_013766.2 :636341-637114
hypothetical protein LM5578 0620	gi 284800872 ref YP003412737.1	gi 662858600 ref NC_013766.2 :637242-637784
hypothetical protein LM5578 0621	gi 284800873 ref YP003412738.1	gi 662858600 ref NC_013766.2 :638012-638812
homoserine O-acetyltransferase	gi 284800874 ref YP003412739.1	gi 662858600 ref NC_013766.2 :c639957-638851
hypothetical protein LM5578 0623	gi 284800875 ref YP003412740.1	gi 662858600 ref NC_013766.2 :c641251-639974
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putative biotin biosynthesis protein BioY	gi 284800878 ref YP003412743.1	gi 662858600 ref NC_013766.2 :c643640-643092
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flagellar biosynthesis protein FliR	gi 284801008 ref YP003412873.1	gi 662858600 ref NC_013766.2:750008-750769
flagellar biosynthesis protein FlhA	gi 284801010 ref YP003412875.1	gi 662858600 ref NC_013766.2:751878-753953
flagellar biosynthesis regulator FlhF	gi 284801011 ref YP003412876.1	gi 662858600 ref NC_013766.2:753975-755198
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flagellar motor protein MotA	gi 284801015 ref YP003412880.1	gi 662858600 ref NC_013766.2:757178-758029
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two-component sensor histidine kinase CheA	gi 284801022 ref YP003412887.1	gi 662858600 ref NC_013766.2:763938-765794
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flagellar hook-associated protein FlgL	gi 284801036 ref YP003412901.1	gi 662858600 ref NC_013766.2 :777248-778123
flagellar capping protein	gi 284801037 ref YP003412902.1	gi 662858600 ref NC_013766.2 :778135-779424
flagellar MS-ring protein	gi 284801043 ref YP003412908.1	gi 662858600 ref NC_013766.2 :781307-782959
flagellar assembly protein H	gi 284801045 ref YP003412910.1	gi 662858600 ref NC_013766.2 :784055-784747
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RNA polymerase sigma factor SigB	gi 284801225 ref YP003413090.1	gi 662858600 ref NC_013766.2 :966653-967432
indirect negative regulation of sigma B dependant gene expression (serine phosphatase)	gi 284801226 ref YP003413091.1	gi 662858600 ref NC_013766.2 :967433-968032
hypothetical protein LM5578 0977	gi 284801227 ref YP003413092.1	gi 662858600 ref NC_013766.2 :968239-969864
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ATP-dependent protease	gi 284801329 ref YP003413194.1	gi 662858600 ref NC_013766.2 :c1065032-1062858
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phosphotransferase system enzyme I	gi 284801335 ref YP003413200.1	gi 662858600 ref NC_013766.2 :1069177-1070895
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pyruvate carboxylase	gi 284801404 ref YP003413269.1	gi 662858600 ref NC_013766.2 :1135248-1138688
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threonine-phosphate decarboxylase	gi 284801489 ref YP	gi 662858600 ref NC_013766.2 :1220393-1221478

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hypothetical protein LM5578 1258	gi 284801505 ref YP003413370.1	gi 662858600 ref NC_013766.2 :1235604-1236149
precorrin-8X methylmutase	gi 284801513 ref YP003413378.1	gi 662858600 ref NC_013766.2 :1243430-1244062
cobalt-precorrin-6Y C(5)-methyltransferase	gi 284801515 ref YP003413380.1	gi 662858600 ref NC_013766.2 :1245196-1245792
hypothetical protein LM5578 1274	gi 284801521 ref YP003413386.1	gi 662858600 ref NC_013766.2 :1249595-1251076
hypothetical protein LM5578 1275	gi 284801522 ref YP003413387.1	gi 662858600 ref NC_013766.2 :1251073-1251858

cobalt-precorrin-2 C(20)-methyltransferase	gi 284801523 ref YP003413388.1	gi 662858600 ref NC_013766.2 :1251851-1252561
cobalt transport protein CbiM	gi 284801524 ref YP003413389.1	gi 662858600 ref NC_013766.2 :1252558-1253292
hypothetical protein LM5578 1279	gi 284801526 ref YP003413391.1	gi 662858600 ref NC_013766.2 :1253548-1254249
hypothetical protein LM5578 1289	gi 284801536 ref YP003413401.1	gi 662858600 ref NC_013766.2 :1261102-1262115
hypothetical protein LM5578 1296	gi 284801543 ref YP003413408.1	gi 662858600 ref NC_013766.2 :1268963-1269664
uracil-DNA glycosylase	gi 284801547 ref YP003413412.1	gi 662858600 ref NC_013766.2 :1276961-1277635
ribonuclease HIII	gi 284801548 ref YP003413413.1	gi 662858600 ref NC_013766.2 :c1278554-1277673
hypothetical protein LM5578 1303	gi 284801550 ref YP003413415.1	gi 662858600 ref NC_013766.2 :1279016-1279558
hypothetical protein LM5578 1304	gi 284801551 ref YP003413416.1	gi 662858600 ref NC_013766.2 :1279651-1281363
recombination and DNA strand exchange inhibitor protein	gi 284801552 ref YP003413417.1	gi 662858600 ref NC_013766.2 :1281386-1283743
aspartate kinase	gi 284801555 ref YP003413420.1	gi 662858600 ref NC_013766.2 :1286211-1287425
hypothetical protein LM5578 1313	gi 284801560 ref YP003413425.1	gi 662858600 ref NC_013766.2 :1290334-1290858
hypothetical protein LM5578 1376	gi 284801623 ref YP003413488.1	gi 662858600 ref NC_013766.2 :1336156-1337514
hypothetical protein LM5578 1385	gi 284801632 ref YP003413497.1	gi 662858600 ref NC_013766.2 :c1343718-1342513
hypothetical protein LM5578 1386	gi 284801633 ref YP003413498.1	gi 662858600 ref NC_013766.2 :1343923-1344582

hypothetical protein LM5578 1392	gi 284801639 ref YP003413504.1	gi 662858600 ref NC_013766.2 :c1348743-1347097
gamma-glutamyl kinase	gi 284801645 ref YP003413510.1	gi 662858600 ref NC_013766.2 :c1354515-1353685
hypothetical protein LM5578 1399	gi 284801646 ref YP003413511.1	gi 662858600 ref NC_013766.2 :c1355790-1354651
trigger factor	gi 284801652 ref YP003413517.1	gi 662858600 ref NC_013766.2 :1359282-1360565
ATP-dependent protease ATP-binding subunit	gi 284801653 ref YP003413518.1	gi 662858600 ref NC_013766.2 :1360750-1362009
hypothetical protein LM5578 1407	gi 284801654 ref YP003413519.1	gi 662858600 ref NC_013766.2 :1362128-1362694
hypothetical protein LM5578 1408	gi 284801655 ref YP003413520.1	gi 662858600 ref NC_013766.2 :1362729-1363298
ribosomal biogenesis GTPase	gi 284801657 ref YP003413522.1	gi 662858600 ref NC_013766.2 :1363952-1364815
DNA topoisomerase I	gi 284801660 ref YP003413525.1	gi 662858600 ref NC_013766.2 :1366863-1368941
hypothetical protein LM5578 1415	gi 284801662 ref YP003413527.1	gi 662858600 ref NC_013766.2 :1370591-1371493
ATP-dependent protease peptidase subunit	gi 284801663 ref YP003413528.1	gi 662858600 ref NC_013766.2 :1371514-1372053
transcriptional repressor CodY	gi 284801665 ref YP003413530.1	gi 662858600 ref NC_013766.2 :1373497-1374276
hypothetical protein LM5578 1421	gi 284801668 ref YP003413533.1	gi 662858600 ref NC_013766.2 :1375135-1376007
DNA topoisomerase IV subunit A	gi 284801672 ref YP003413537.1	gi 662858600 ref NC_013766.2 :1379355-1381814
hypothetical protein LM5578 1428	gi 284801675 ref YP003413540.1	gi 662858600 ref NC_013766.2 :1384756-1386552

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hypothetical protein LM5578 1434	gi 284801681 ref YP003413546.1	gi 662858600 ref NC_013766.2 :1392778-1394007
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hypothetical protein LM5578 1437	gi 284801684 ref YP003413549.1	gi 662858600 ref NC_013766.2 :1395868-1397202
LexA repressor	gi 284801687 ref YP003413552.1	gi 662858600 ref NC_013766.2 :c1399850-1399236
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prolyl-tRNA synthetase	gi 284801704 ref YP003413569.1	gi 662858600 ref NC_013766.2 :1414130-1415836
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hypothetical protein LM5578 1478	gi 284801724 ref YP003413589.1	gi 662858600 ref NC_013766.2 :1435449-1436417
hypothetical protein LM5578 1479	gi 284801725 ref YP003413590.1	gi 662858600 ref NC_013766.2 :1436551-1437642
glycine cleavage system aminomethyltransferase T	gi 284801733 ref YP003413598.1	gi 662858600 ref NC_013766.2 :1441941-1443095
hypothetical protein LM5578 1493	gi 284801739 ref YP003413604.1	gi 662858600 ref NC_013766.2 :1447832-1448893
elongation factor P	gi 284801740 ref YP003413605.1	gi 662858600 ref NC_013766.2 :1448996-1449553
hypothetical protein LM5578 1495	gi 284801741 ref YP003413606.1	gi 662858600 ref NC_013766.2 :1449712-1450179
acetyl-CoA carboxylase biotin carboxylase subunit	gi 284801742 ref YP003413607.1	gi 662858600 ref NC_013766.2 :1450193-1451557
hypothetical protein LM5578 1499	gi 284801745 ref YP003413610.1	gi 662858600 ref NC_013766.2 :1452481-1453335
exodeoxyribonuclease VII large subunit	gi 284801746 ref YP003413611.1	gi 662858600 ref NC_013766.2 :1453354-1454706
hypothetical protein LM5578 1502	gi 284801748 ref YP003413613.1	gi 662858600 ref NC_013766.2 :1454926-1455807
1-deoxy-D-xylulose-5-phosphate synthase	gi 284801750 ref YP003413615.1	gi 662858600 ref NC_013766.2 :1456421-1458202
hypothetical protein LM5578 1505	gi 284801751 ref YP003413616.1	gi 662858600 ref NC_013766.2 :1458199-1459023
DNA repair and genetic recombination	gi 284801753 ref YP003413618.1	gi 662858600 ref NC_013766.2 :1459686-1461377
hypothetical protein LM5578 1508	gi 284801754 ref YP003413619.1	gi 662858600 ref NC_013766.2 :1461506-1462372

dihydrolipoamide dehydrogenase	gi 284801756 ref YP003413621.1	gi 662858600 ref NC_013766.2 :1463592-1465019
6-phosphogluconate dehydrogenase	gi 284801762 ref YP003413627.1	gi 662858600 ref NC_013766.2 :1469933-1471351
two-component response regulator	gi 284801763 ref YP003413628.1	gi 662858600 ref NC_013766.2 :1471542-1472222
two-component sensor histidine kinase	gi 284801764 ref YP003413629.1	gi 662858600 ref NC_013766.2 :1472219-1473670
hypothetical protein LM5578 1525	gi 284801770 ref YP003413635.1	gi 662858600 ref NC_013766.2 :c1477846-1476851
hypothetical protein LM5578 1526	gi 284801771 ref YP003413636.1	gi 662858600 ref NC_013766.2 :1478062-1478988
hypothetical protein LM5578 1527	gi 284801772 ref YP003413637.1	gi 662858600 ref NC_013766.2 :1479140-1481413
pyrroline-5-carboxylate reductase	gi 284801773 ref YP003413638.1	gi 662858600 ref NC_013766.2 :c1482286-1481447
CD4+ T cell-stimulating antigen, lipoprotein	gi 284801774 ref YP003413639.1	gi 662858600 ref NC_013766.2 :1482638-1483711
hypothetical protein LM5578 1531	gi 284801776 ref YP003413641.1	gi 662858600 ref NC_013766.2 :1485678-1486730
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hypothetical protein LM5578 1536	gi 284801781 ref YP003413646.1	gi 662858600 ref NC_013766.2 :1491228-1492157

hypothetical protein LM5578 1537	gi 284801782 ref YP003413647.1	gi 662858600 ref NC_013766.2 :1492247-1492825
recombinase A	gi 284801784 ref YP003413649.1	gi 662858600 ref NC_013766.2 :1494411-1495457
phosphodiesterase	gi 284801785 ref YP003413650.1	gi 662858600 ref NC_013766.2 :1495758-1497320
hypothetical protein LM5578 1542	gi 284801787 ref YP003413652.1	gi 662858600 ref NC_013766.2 :1497937-1498740
DNA mismatch repair protein	gi 284801789 ref YP003413654.1	gi 662858600 ref NC_013766.2 :1499229-1501811
DNA mismatch repair protein	gi 284801790 ref YP003413655.1	gi 662858600 ref NC_013766.2 :1501831-1503642
pyruvate formate-lyase	gi 284801792 ref YP003413657.1	gi 662858600 ref NC_013766.2 :1504633-1506864
pyruvate-formate lyase activating enzyme	gi 284801793 ref YP003413658.1	gi 662858600 ref NC_013766.2 :1506941-1507687
hypothetical protein LM5578 1549	gi 284801794 ref YP003413659.1	gi 662858600 ref NC_013766.2 :c1508252-1507722
peptidoglycan binding protein	gi 284801799 ref YP003413664.1	gi 662858600 ref NC_013766.2 :c1512685-1511366
hypothetical protein LM5578 1556	gi 284801801 ref YP003413666.1	gi 662858600 ref NC_013766.2 :1514190-1515356
hypothetical protein LM5578 1558	gi 284801803 ref YP003413668.1	gi 662858600 ref NC_013766.2 :c1517293-1516049
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hypothetical protein LM5578 1560	gi 284801805 ref YP003413670.1	gi 662858600 ref NC_013766.2 :c1519681-1518644
hypothetical protein LM5578 1562	gi 284801807 ref YP003413672.1	gi 662858600 ref NC_013766.2 :1520810-1521796

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hypothetical protein LM5578 1564	gi 284801809 ref YP003413674.1	gi 662858600 ref NC_013766.2 :c1524173-1523343
manganese transport protein MntH	gi 284801810 ref YP003413675.1	gi 662858600 ref NC_013766.2 :c1525658-1524312
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aspartate kinase I	gi 284801822 ref YP003413687.1	gi 662858600 ref NC_013766.2 :c1538429-1537218
hypothetical protein LM5578 1578	gi 284801823 ref YP003413688.1	gi 662858600 ref NC_013766.2 :c1539484-1538441
hypothetical protein LM5578 1580	gi 284801825 ref YP003413690.1	gi 662858600 ref NC_013766.2 :c1541847-1539682
hypothetical protein LM5578 1582	gi 284801827 ref YP003413692.1	gi 662858600 ref NC_013766.2 :1542886-1543686

hypothetical protein LM5578 1584	gi 284801829 ref YP003413694.1	gi 662858600 ref NC_013766.2 :1544941-1545648
metal (zinc) transport protein (ABC transporter, permease protein)	gi 284801833 ref YP003413698.1	gi 662858600 ref NC_013766.2 :c1548352-1547474
endonuclease IV	gi 284801836 ref YP003413701.1	gi 662858600 ref NC_013766.2 :c1551078-1550185
hypothetical protein LM5578 1592	gi 284801837 ref YP003413702.1	gi 662858600 ref NC_013766.2 :c1552400-1551093
hypothetical protein LM5578 1594	gi 284801839 ref YP003413704.1	gi 662858600 ref NC_013766.2 :c1554708-1553587
hypothetical protein LM5578 1595	gi 284801840 ref YP003413705.1	gi 662858600 ref NC_013766.2 :c1555409-1554705
RNA polymerase sigma factor RpoD	gi 284801841 ref YP003413706.1	gi 662858600 ref NC_013766.2 :c1556601-1555477
DNA primase	gi 284801842 ref YP003413707.1	gi 662858600 ref NC_013766.2 :c1558576-1556696
hypothetical protein LM5578 1599	gi 284801844 ref YP003413709.1	gi 662858600 ref NC_013766.2 :c1560050-1559226
DNA repair protein RecO	gi 284801847 ref YP003413712.1	gi 662858600 ref NC_013766.2 :c1564082-1563315
hypothetical protein LM5578 1603	gi 284801848 ref YP003413713.1	gi 662858600 ref NC_013766.2 :1564218-1564847
GTP-binding protein Era	gi 284801849 ref YP003413714.1	gi 662858600 ref NC_013766.2 :c1565801-1564896
putative metalloprotease	gi 284801852 ref YP003413717.1	gi 662858600 ref NC_013766.2 :c1567076-1566591
hypothetical protein LM5578 1609	gi 284801854 ref YP003413719.1	gi 662858600 ref NC_013766.2 :c1570224-1569265
heat shock protein DnaJ	gi 284801859 ref YP	gi 662858600 ref NC_013766.2 :c1574167-1573034

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class I heat-shock protein (molecular chaperone) DnaK	gi 284801860 ref YP003413725.1	gi 662858600 ref NC_013766.2 :c1576150-1574309
heat shock protein GrpE	gi 284801861 ref YP003413726.1	gi 662858600 ref NC_013766.2 :c1576759-1576184
heat-inducible transcription repressor	gi 284801862 ref YP003413727.1	gi 662858600 ref NC_013766.2 :c1577838-1576801
DNA polymerase III subunit delta	gi 284801868 ref YP003413733.1	gi 662858600 ref NC_013766.2 :c1584285-1583254
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hypothetical protein LM5578 1639	gi 284801884 ref YP003413749.1	gi 662858600 ref NC_013766.2 :c1597641-1597012
uridine kinase	gi 284801887 ref YP003413752.1	gi 662858600 ref NC_013766.2 :c1598991-1598362
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hypothetical protein LM5578 1645	gi 284801890 ref YP003413755.1	gi 662858600 ref NC_013766.2 :1600991-1601617
alanyl-tRNA synthetase	gi 284801894 ref YP003413759.1	gi 662858600 ref NC_013766.2 :c1605255-1602757

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recombination factor protein RarA	gi 284801904 ref YP003413769.1	gi 662858600 ref NC_013766.2 :c1618149-1616866
hypothetical protein LM5578 1661	gi 284801906 ref YP003413771.1	gi 662858600 ref NC_013766.2 :1618965-1620170
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hypothetical protein LM5578 1670	gi 284801915 ref YP003413780.1	gi 662858600 ref NC_013766.2 :c1631780-1629345
bifunctional preprotein translocase subunit SecD/SecF	gi 284801917 ref YP003413782.1	gi 662858600 ref NC_013766.2 :c1634506-1632242
queuine tRNA-ribosyltransferase	gi 284801920 ref YP003413785.1	gi 662858600 ref NC_013766.2 :c1636542-1635403
hypothetical protein LM5578 1676	gi 284801921 ref YP003413786.1	gi 662858600 ref NC_013766.2 :c1637657-1636629
Holliday junction DNA helicase B	gi 284801922 ref YP003413787.1	gi 662858600 ref NC_013766.2 :c1638668-1637661

hypothetical protein LM5578 1678	gi 284801923 ref YP003413788.1	gi 662858600 ref NC_013766.2 :c1639289-1638684
prephenate dehydratase	gi 284801926 ref YP003413791.1	gi 662858600 ref NC_013766.2 :c1642123-1641254
GTPase ObgE	gi 284801927 ref YP003413792.1	gi 662858600 ref NC_013766.2 :c1643458-1642169
glycerol kinase	gi 284801928 ref YP003413793.1	gi 662858600 ref NC_013766.2 :c1645111-1643618
hypothetical protein LM5578 1684	gi 284801929 ref YP003413794.1	gi 662858600 ref NC_013766.2 :c1646004-1645186
hypothetical protein LM5578 1688	gi 284801933 ref YP003413798.1	gi 662858600 ref NC_013766.2 :c1648837-1647476
septum formation inhibitor	gi 284801935 ref YP003413800.1	gi 662858600 ref NC_013766.2 :c1650369-1649692
hypothetical protein LM5578 1691	gi 284801936 ref YP003413801.1	gi 662858600 ref NC_013766.2 :c1651065-1650547
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hypothetical protein LM5578 1693	gi 284801938 ref YP003413803.1	gi 662858600 ref NC_013766.2 :c1653054-1652041
DNA repair protein RadC	gi 284801939 ref YP003413804.1	gi 662858600 ref NC_013766.2 :c1654180-1653506
valyl-tRNA synthetase	gi 284801943 ref YP003413808.1	gi 662858600 ref NC_013766.2 :c1659116-1656465
glutamate-1-semialdehyde aminotransferase	gi 284801944 ref YP003413809.1	gi 662858600 ref NC_013766.2 :c1660728-1659439
delta-aminolevulinic acid dehydratase	gi 284801945 ref YP003413810.1	gi 662858600 ref NC_013766.2 :c1661715-1660741
uroporphyrinogen-III synthase	gi 284801946 ref YP003413811.1	gi 662858600 ref NC_013766.2 :c1662434-1661712

porphobilinogen deaminase	gi 284801947 ref YP003413812.1	gi 662858600 ref NC_013766.2 :c1663360-1662431
glutamyl-tRNA reductase	gi 284801948 ref YP003413813.1	gi 662858600 ref NC_013766.2 :c1664671-1663364
GTPase EngB	gi 284801949 ref YP003413814.1	gi 662858600 ref NC_013766.2 :c1665383-1664799
hypothetical protein LM5578 1709	gi 284801954 ref YP003413819.1	gi 662858600 ref NC_013766.2 :c1671279-1670620
hypothetical protein LM5578 1710	gi 284801955 ref YP003413820.1	gi 662858600 ref NC_013766.2 :c1672060-1671239
methylcitrate synthase	gi 284801958 ref YP003413823.1	gi 662858600 ref NC_013766.2 :c1677280-1676159
pyruvate kinase	gi 284801961 ref YP003413826.1	gi 662858600 ref NC_013766.2 :c1680186-1678429
6-phosphofructokinase	gi 284801962 ref YP003413827.1	gi 662858600 ref NC_013766.2 :c1681428-1680469
acetyl-CoA carboxylase carboxyltransferase subunit alpha	gi 284801963 ref YP003413828.1	gi 662858600 ref NC_013766.2 :c1682668-1681712
hypothetical protein LM5578 1721	gi 284801966 ref YP003413831.1	gi 662858600 ref NC_013766.2 :c1688146-1687208
hypothetical protein LM5578 1725	gi 284801970 ref YP003413835.1	gi 662858600 ref NC_013766.2 :c1692606-1691494
inorganic polyphosphate/ATP-NAD kinase	gi 284801978 ref YP003413843.1	gi 662858600 ref NC_013766.2 :1698076-1698879
ornithine carbamoyltransferase	gi 284801979 ref YP003413844.1	gi 662858600 ref NC_013766.2 :c1699861-1698911
bifunctional ornithine acetyltransferase/N-acetylglutamate synthase protein	gi 284801982 ref YP003413847.1	gi 662858600 ref NC_013766.2 :c1702976-1701780
N-acetyl-gamma-glutamyl-phosphate	gi 284801983 ref YP	gi 662858600 ref NC_013766.2 :c1704023-1702992

reductase	003413848.1	
hypothetical protein LM5578 1739	gi 284801984 ref YP003413849.1	gi 662858600 ref NC_013766.2 :c1705408-1704197
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septation ring formation regulator EzrA	gi 284801986 ref YP003413851.1	gi 662858600 ref NC_013766.2 :c1708391-1706676
30S ribosomal protein S4	gi 284801988 ref YP003413853.1	gi 662858600 ref NC_013766.2 :1709384-1709986
hypothetical protein LM5578 1748	gi 284801993 ref YP003413858.1	gi 662858600 ref NC_013766.2 :c1716201-1715677
hypothetical protein LM5578 1755	gi 284802000 ref YP003413865.1	gi 662858600 ref NC_013766.2 :c1724498-1723698
hypothetical protein LM5578 1758	gi 284802003 ref YP003413868.1	gi 662858600 ref NC_013766.2 :c1726240-1725167
hypothetical protein LM5578 1761	gi 284802006 ref YP003413871.1	gi 662858600 ref NC_013766.2 :c1728020-1727169
tRNA (guanine-N(7))-methyltransferase	gi 284802007 ref YP003413872.1	gi 662858600 ref NC_013766.2 :c1728725-1728081
hypothetical protein LM5578 1763	gi 284802008 ref YP003413873.1	gi 662858600 ref NC_013766.2 :c1729514-1728732
D-amino acid aminotransferase	gi 284802011 ref YP003413876.1	gi 662858600 ref NC_013766.2 :c1732723-1731854
dipeptidase PepV	gi 284802012 ref YP003413877.1	gi 662858600 ref NC_013766.2 :c1734248-1732836
hypothetical protein LM5578 1769	gi 284802014 ref YP003413879.1	gi 662858600 ref NC_013766.2 :1734841-1735671
hypothetical protein LM5578 1770	gi 284802015 ref YP003413880.1	gi 662858600 ref NC_013766.2 :c1736363-1735710

hypothetical protein LM5578 1771	gi 284802016 ref YP003413881.1	gi 662858600 ref NC_013766.2 :c1737986-1736373
tryptophan synthase subunit alpha	gi 284802019 ref YP003413884.1	gi 662858600 ref NC_013766.2 :c1741076-1740303
tryptophan synthase subunit beta	gi 284802020 ref YP003413885.1	gi 662858600 ref NC_013766.2 :c1742271-1741069
phosphoribosyl anthranilate isomerase	gi 284802021 ref YP003413886.1	gi 662858600 ref NC_013766.2 :c1742882-1742274
indole-3-glycerol-phosphate synthase	gi 284802022 ref YP003413887.1	gi 662858600 ref NC_013766.2 :c1743637-1742879
anthranilate phosphoribosyltransferase	gi 284802023 ref YP003413888.1	gi 662858600 ref NC_013766.2 :c1744653-1743634
anthranilate synthase component II	gi 284802024 ref YP003413889.1	gi 662858600 ref NC_013766.2 :c1745230-1744625
anthranilate synthase component I	gi 284802025 ref YP003413890.1	gi 662858600 ref NC_013766.2 :c1746591-1745227
bifunctional acetaldehyde-CoA/alcohol dehydrogenase	gi 284802026 ref YP003413891.1	gi 662858600 ref NC_013766.2 :1747675-1750275
hypothetical protein LM5578 1783	gi 284802028 ref YP003413893.1	gi 662858600 ref NC_013766.2 :1750910-1751830
hypothetical protein LM5578 1784	gi 284802029 ref YP003413894.1	gi 662858600 ref NC_013766.2 :1751827-1752894
aconitate hydratase	gi 284802033 ref YP003413898.1	gi 662858600 ref NC_013766.2 :c1757678-1754829
hypothetical protein LM5578 1794	gi 284802039 ref YP003413904.1	gi 662858600 ref NC_013766.2 :1766546-1767154
hypothetical protein LM5578 1796	gi 284802041 ref YP003413906.1	gi 662858600 ref NC_013766.2 :c1768257-1767742
elongation factor Ts	gi 284802049 ref YP003413914.1	gi 662858600 ref NC_013766.2 :c1777354-1776470

30S ribosomal protein S2	gi 284802050 ref YP003413915.1	gi 662858600 ref NC_013766.2 :c1778183-1777434
hypothetical protein LM5578 1809	gi 284802054 ref YP003413919.1	gi 662858600 ref NC_013766.2 :1783104-1783679
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hypothetical protein LM5578 1816	gi 284802061 ref YP003413926.1	gi 662858600 ref NC_013766.2 :c1794593-1794120
hypothetical protein LM5578 1821	gi 284802066 ref YP003413931.1	gi 662858600 ref NC_013766.2 :c1799122-1798295
1,4-dihydroxy-2-naphthoate octaprenyltransferase	gi 284802069 ref YP003413934.1	gi 662858600 ref NC_013766.2 :1802426-1803364
cystathionine beta-lyase	gi 284802071 ref YP003413936.1	gi 662858600 ref NC_013766.2 :c1806419-1805247
hypothetical protein LM5578 1827	gi 284802072 ref YP003413937.1	gi 662858600 ref NC_013766.2 :c1807536-1806412
5-methyltetrahydropteroyltriglutamate--homocysteine methyltransferase	gi 284802073 ref YP003413938.1	gi 662858600 ref NC_013766.2 :c1809855-1807558
hypothetical protein LM5578 1829	gi 284802074 ref YP003413939.1	gi 662858600 ref NC_013766.2 :c1811320-1810145
hypothetical protein LM5578 1831	gi 284802076 ref YP003413941.1	gi 662858600 ref NC_013766.2 :c1820204-1819263
glutamate-1-semialdehyde aminotransferase	gi 284802077 ref YP003413942.1	gi 662858600 ref NC_013766.2 :1820349-1821647
hypothetical protein LM5578 1837	gi 284802082 ref YP003413947.1	gi 662858600 ref NC_013766.2 :1825614-1826594
hypothetical protein LM5578 1842	gi 284802087 ref YP003413952.1	gi 662858600 ref NC_013766.2 :c1831761-1829164

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hypothetical protein LM5578 1845	gi 284802090 ref YP003413955.1	gi 662858600 ref NC_013766.2 :c1834221-1833679
hypothetical protein LM5578 1846	gi 284802091 ref YP003413956.1	gi 662858600 ref NC_013766.2 :1834411-1835313
hypothetical protein LM5578 1907	gi 284802152 ref YP003414017.1	gi 662858600 ref NC_013766.2 :c1889794-1888925
methionine aminopeptidase	gi 284802155 ref YP003414020.1	gi 662858600 ref NC_013766.2 :c1891811-1891053
hypothetical protein LM5578 1913	gi 284802158 ref YP003414023.1	gi 662858600 ref NC_013766.2 :1893919-1895178
hypothetical protein LM5578 1918	gi 284802162 ref YP003414027.1	gi 662858600 ref NC_013766.2 :c1899261-1898173
hypothetical protein LM5578 1926	gi 284802170 ref YP003414035.1	gi 662858600 ref NC_013766.2 :c1907214-1906231
transcription activator of glutamate synthase operon GltC	gi 284802179 ref YP003414044.1	gi 662858600 ref NC_013766.2 :1923505-1924392
hypothetical protein LM5578 1938	gi 284802182 ref YP003414047.1	gi 662858600 ref NC_013766.2 :c1926922-1926107
hypothetical protein LM5578 1940	gi 284802184 ref YP003414049.1	gi 662858600 ref NC_013766.2 :c1928247-1927582
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hypothetical protein LM5578 1945	gi 284802189 ref YP003414054.1	gi 662858600 ref NC_013766.2 :c1933544-1932867

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hypothetical protein LM5578 1951	gi 284802195 ref YP003414060.1	gi 662858600 ref NC_013766.2 :c1939958-1938597
putative lipid kinase	gi 284802197 ref YP003414062.1	gi 662858600 ref NC_013766.2 :c1941817-1940885
aspartyl/glutamyl-tRNA amidotransferase subunit B	gi 284802198 ref YP003414063.1	gi 662858600 ref NC_013766.2 :c1943388-1941958
hypothetical protein LM5578 1957	gi 284802201 ref YP003414066.1	gi 662858600 ref NC_013766.2 :c1946408-1945293
NAD-dependent DNA ligase LigA	gi 284802202 ref YP003414067.1	gi 662858600 ref NC_013766.2 :c1948420-1946405
geranylgeranylgeranyl glyceryl phosphate synthase-like protein	gi 284802204 ref YP003414069.1	gi 662858600 ref NC_013766.2 :c1951382-1950705
hypothetical protein LM5578 1961	gi 284802205 ref YP003414070.1	gi 662858600 ref NC_013766.2 :1951589-1952944
phosphoribosylamine--glycine ligase	gi 284802208 ref YP003414073.1	gi 662858600 ref NC_013766.2 :c1954956-1953694
bifunctional phosphoribosylaminoimidazolecarboxamide formyltransferase/IMP cyclohydrolase	gi 284802209 ref YP003414074.1	gi 662858600 ref NC_013766.2 :c1956510-1954981
hypothetical protein LM5578 1966	gi 284802210 ref YP003414075.1	gi 662858600 ref NC_013766.2 :c1957082-1956516
phosphoribosylformylglycinamide synthase II	gi 284802213 ref YP003414078.1	gi 662858600 ref NC_013766.2 :c1961778-1959559
phosphoribosylaminoimidazole-succinocarboxamide synthase	gi 284802216 ref YP003414081.1	gi 662858600 ref NC_013766.2 :c1963428-1962715
adenylosuccinate lyase	gi 284802217 ref YP	gi 662858600 ref NC_013766.2 :c1964801-1963509

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phosphoribosylaminoimidazole carboxylase ATPase subunit	gi 284802218 ref YP003414083.1	gi 662858600 ref NC_013766.2 :c1965944-1964820
hypothetical protein LM5578 1977	gi 284802221 ref YP003414086.1	gi 662858600 ref NC_013766.2 :c1973149-1972544
hypothetical protein LM5578 1978	gi 284802222 ref YP003414087.1	gi 662858600 ref NC_013766.2 :1973215-1973988
translation initiation factor IF-3	gi 284802229 ref YP003414094.1	gi 662858600 ref NC_013766.2 :c1978243-1977740
hypothetical protein LM5578 1992	gi 284802236 ref YP003414101.1	gi 662858600 ref NC_013766.2 :1981969-1982685
hypothetical protein LM5578 1994	gi 284802238 ref YP003414103.1	gi 662858600 ref NC_013766.2 :c1983862-1983125
hypothetical protein LM5578 2000	gi 284802244 ref YP003414109.1	gi 662858600 ref NC_013766.2 :c1987928-1986270
hypothetical protein LM5578 2003	gi 284802247 ref YP003414112.1	gi 662858600 ref NC_013766.2 :c1993572-1992220
hypothetical protein LM5578 2006	gi 284802250 ref YP003414115.1	gi 662858600 ref NC_013766.2 :c1998591-1995031
hypothetical protein LM5578 2007	gi 284802251 ref YP003414116.1	gi 662858600 ref NC_013766.2 :c1999303-1998614
fatty acid biosynthesis transcriptional regulator	gi 284802256 ref YP003414121.1	gi 662858600 ref NC_013766.2 :c2003121-2002552
hypothetical protein LM5578 2015	gi 284802259 ref YP003414124.1	gi 662858600 ref NC_013766.2 :c2007031-2006369
hypothetical protein LM5578 2016	gi 284802260 ref YP003414125.1	gi 662858600 ref NC_013766.2 :c2008729-2007071
hypothetical protein LM5578 2019	gi 284802263 ref YP003414128.1	gi 662858600 ref NC_013766.2 :c2010336-2009692
ribulose-phosphate 3-epimerase	gi 284802264 ref YP	gi 662858600 ref NC_013766.2 :c2011056-2010400

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ribosome-associated GTPase	gi 284802265 ref YP003414130.1	gi 662858600 ref NC_013766.2 :c2011934-2011059
hypothetical protein LM5578 2022	gi 284802266 ref YP003414131.1	gi 662858600 ref NC_013766.2 :c2013920-2011953
hypothetical protein LM5578 2024	gi 284802268 ref YP003414133.1	gi 662858600 ref NC_013766.2 :c2016032-2014698
hypothetical protein LM5578 2029	gi 284802273 ref YP003414138.1	gi 662858600 ref NC_013766.2 :c2021560-2020940
hypothetical protein LM5578 2031	gi 284802275 ref YP003414140.1	gi 662858600 ref NC_013766.2 :2022608-2024320
short chain dehydrogenase	gi 284802276 ref YP003414141.1	gi 662858600 ref NC_013766.2 :2024408-2025007
orotate phosphoribosyltransferase	gi 284802277 ref YP003414142.1	gi 662858600 ref NC_013766.2 :c2025677-2025048
hypothetical protein LM5578 2034	gi 284802278 ref YP003414143.1	gi 662858600 ref NC_013766.2 :c2026375-2025674
dihydroorotate dehydrogenase 1B	gi 284802279 ref YP003414144.1	gi 662858600 ref NC_013766.2 :c2027286-2026372
hypothetical protein LM5578 2036	gi 284802280 ref YP003414145.1	gi 662858600 ref NC_013766.2 :c2028047-2027283
carbamoyl phosphate synthase large subunit	gi 284802281 ref YP003414146.1	gi 662858600 ref NC_013766.2 :c2031282-2028070
carbamoyl phosphate synthase small subunit	gi 284802282 ref YP003414147.1	gi 662858600 ref NC_013766.2 :c2032366-2031275
hypothetical protein LM5578 2041	gi 284802285 ref YP003414150.1	gi 662858600 ref NC_013766.2 :c2035912-2034626
pyrimidine regulatory protein PyrR	gi 284802286 ref YP003414151.1	gi 662858600 ref NC_013766.2 :c2036592-2036041

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purine nucleoside phosphorylase	gi 284802302 ref YP003414167.1	gi 662858600 ref NC_013766.2 :c2051484-2050783
hypothetical protein LM5578 2060	gi 284802304 ref YP003414169.1	gi 662858600 ref NC_013766.2 :c2052697-2051792
methionine sulfoxide reductase A	gi 284802306 ref YP003414171.1	gi 662858600 ref NC_013766.2 :c2053757-2053224
hypothetical protein LM5578 2064	gi 284802308 ref YP003414173.1	gi 662858600 ref NC_013766.2 :c2055208-2054423
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xanthine phosphoribosyltransferase	gi 284802330 ref YP003414195.1	gi 662858600 ref NC_013766.2 :c2077200-2076622
hypothetical protein LM5578 2088	gi 284802332 ref YP003414197.1	gi 662858600 ref NC_013766.2 :c2080104-2078956
hypothetical protein LM5578 2090	gi 284802334 ref YP003414199.1	gi 662858600 ref NC_013766.2 :c2081703-2081158
Holliday junction-specific endonuclease	gi 284802336 ref YP003414201.1	gi 662858600 ref NC_013766.2 :2082312-2082917
endonuclease III (DNA repair)	gi 284802339 ref YP003414204.1	gi 662858600 ref NC_013766.2 :c2086618-2085959
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asparaginyl-tRNA synthetase	gi 284802341 ref YP003414206.1	gi 662858600 ref NC_013766.2 :c2088789-2087497
aspartate aminotransferase	gi 284802342 ref YP003414207.1	gi 662858600 ref NC_013766.2 :c2089984-2088803
hypothetical protein LM5578 2099	gi 284802343 ref YP003414208.1	gi 662858600 ref NC_013766.2 :c2090591-2090007

bifunctional ATP-dependent DNA helicase/DNA polymerase III subunit epsilon	gi 284802344 ref YP003414209.1	gi 662858600 ref NC_013766.2 :c2093422-2090636
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3-methyl-2-oxobutanoate hydroxymethyltransferase	gi 284802347 ref YP003414212.1	gi 662858600 ref NC_013766.2 :c2095600-2094767
tRNA CCA-pyrophosphorylase	gi 284802350 ref YP003414215.1	gi 662858600 ref NC_013766.2 :c2098536-2097355
dihydrodipicolinate reductase	gi 284802352 ref YP003414217.1	gi 662858600 ref NC_013766.2 :c2099762-2098971
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prephenate dehydrogenase	gi 284802369 ref YP003414234.1	gi 662858600 ref NC_013766.2 :c2119031-2117928
histidinol-phosphate aminotransferase	gi 284802370 ref YP003414235.1	gi 662858600 ref NC_013766.2 :c2120134-2119052
chorismate synthase	gi 284802373 ref YP003414238.1	gi 662858600 ref NC_013766.2 :c2122771-2121605
ubiquinone/menaquinone biosynthesis methyltransferase	gi 284802376 ref YP003414241.1	gi 662858600 ref NC_013766.2 :c2125126-2124413
hypothetical protein LM5578 2133	gi 284802377 ref YP003414242.1	gi 662858600 ref NC_013766.2 :c2125916-2125149
GTP cyclohydrolase I	gi 284802378 ref YP003414243.1	gi 662858600 ref NC_013766.2 :c2126544-2125975
hypothetical protein LM5578 2136	gi 284802380 ref YP003414245.1	gi 662858600 ref NC_013766.2 :c2128447-2127467
GTP-binding protein EngA	gi 284802382 ref YP003414247.1	gi 662858600 ref NC_013766.2 :c2130899-2129589
30S ribosomal protein S1	gi 284802383 ref YP003414248.1	gi 662858600 ref NC_013766.2 :c2132188-2131043
hypothetical protein LM5578 2140	gi 284802384 ref YP003414249.1	gi 662858600 ref NC_013766.2 :c2133221-2132547
hypothetical protein LM5578 2141	gi 284802385 ref YP003414250.1	gi 662858600 ref NC_013766.2 :c2134199-2133237
hypothetical protein LM5578 2148	gi 284802392 ref YP003414257.1	gi 662858600 ref NC_013766.2 :c2141523-2139733
hypothetical protein LM5578 2149	gi 284802393 ref YP003414258.1	gi 662858600 ref NC_013766.2 :c2142340-2141624

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segregation and condensation protein A	gi 284802396 ref YP003414261.1	gi 662858600 ref NC_013766.2 :c2144602-2143853
purine nucleoside phosphorylase	gi 284802398 ref YP003414263.1	gi 662858600 ref NC_013766.2 :c2146927-2146109
phosphopentomutase	gi 284802399 ref YP003414264.1	gi 662858600 ref NC_013766.2 :c2148130-2146946
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hypothetical protein LM5578 2178	gi 284802422 ref YP003414287.1	gi 662858600 ref NC_013766.2 :c2168799-2167879

2-isopropylmalate synthase	gi 284802433 ref YP003414298.1	gi 662858600 ref NC_013766.2 :2178130-2179668
3-isopropylmalate dehydrogenase	gi 284802434 ref YP003414299.1	gi 662858600 ref NC_013766.2 :2179670-2180722
isopropylmalate isomerase large subunit	gi 284802435 ref YP003414300.1	gi 662858600 ref NC_013766.2 :2180724-2182112
isopropylmalate isomerase small subunit	gi 284802436 ref YP003414301.1	gi 662858600 ref NC_013766.2 :2182099-2182680
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hypothetical protein LM5578 2205	gi 284802449 ref YP003414314.1	gi 662858600 ref NC_013766.2 :c2194575-2193874
acetolactate synthase	gi 284802452 ref YP003414317.1	gi 662858600 ref NC_013766.2 :c2198290-2196593
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hypothetical protein LM5578 2215	gi 284802459 ref YP003414324.1	gi 662858600 ref NC_013766.2 :c2207252-2205948

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hypothetical protein LM5578 2222	gi 284802466 ref YP003414331.1	gi 662858600 ref NC_013766.2 :c2219210-2218683
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hypothetical protein LM5578 2234	gi 284802478 ref YP003414343.1	gi 662858600 ref NC_013766.2 :c2229565-2228876
cell division protein FtsZ	gi 284802479 ref YP003414344.1	gi 662858600 ref NC_013766.2 :c2230859-2229684
hypothetical protein LM5578 2236	gi 284802480 ref YP003414345.1	gi 662858600 ref NC_013766.2 :c2232206-2230926
UDP-N-acetylmuramoyl-L-alanyl-D-glutamate synthetase	gi 284802483 ref YP003414348.1	gi 662858600 ref NC_013766.2 :c2235862-2234495
hypothetical protein LM5578 2240	gi 284802484 ref YP003414349.1	gi 662858600 ref NC_013766.2 :c2236977-2236003
hypothetical protein LM5578 2242	gi 284802486 ref YP003414351.1	gi 662858600 ref NC_013766.2 :c2240890-2238674
S-adenosyl-methyltransferase MraW	gi 284802488 ref YP003414353.1	gi 662858600 ref NC_013766.2 :c2242243-2241305
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protoheme IX farnesyltransferase	gi 284802502 ref YP003414367.1	gi 662858600 ref NC_013766.2 :c2257000-2256095
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hypothetical protein LM5578 2263	gi 284802507 ref YP003414372.1	gi 662858600 ref NC_013766.2 :c2261925-2260300
chaperonin GroEL	gi 284802513 ref YP003414378.1	gi 662858600 ref NC_013766.2 :c2266503-2264875
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O-sialoglycoprotein endopeptidase	gi 284802521 ref YP003414386.1	gi 662858600 ref NC_013766.2 :c2273436-2272414
hypothetical protein LM5578 2279	gi 284802523 ref YP003414388.1	gi 662858600 ref NC_013766.2 :c2274577-2273885
hypothetical protein LM5578 2281	gi 284802525 ref YP003414390.1	gi 662858600 ref NC_013766.2 :c2276282-2275140
hypothetical protein LM5578 2289	gi 284802533 ref YP003414398.1	gi 662858600 ref NC_013766.2 :c2284532-2283201
argininosuccinate lyase	gi 284802537 ref YP003414402.1	gi 662858600 ref NC_013766.2 :2287719-2289089
glycine betaine transporter BetL	gi 284802538 ref YP003414403.1	gi 662858600 ref NC_013766.2 :2289257-2290780
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hypothetical protein LM5578 2312	gi 284802556 ref YP003414421.1	gi 662858600 ref NC_013766.2 :2306794-2307591
putative heme peroxidase	gi 284802560 ref YP003414425.1	gi 662858600 ref NC_013766.2 :2309882-2310637
hypothetical protein LM5578 2320	gi 284802564 ref YP003414429.1	gi 662858600 ref NC_013766.2 :2314451-2314912
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ribonucleotide-diphosphate reductase subunit beta	gi 284802601 ref YP003414466.1	gi 662858600 ref NC_013766.2 :c2353967-2352918
ribonucleotide-diphosphate reductase subunit alpha	gi 284802602 ref YP003414467.1	gi 662858600 ref NC_013766.2 :c2356314-2354023
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adaptor protein	gi 284802637 ref YP003414502.1	gi 662858600 ref NC_013766.2 :c2396451-2395798
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fructose-1-phosphate kinase	gi 284802777 ref YP003414642.1	gi 662858600 ref NC_013766.2 :c2521093-2520170
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hypothetical protein LM5578 2575	gi 284802818 ref YP003414683.1	gi 662858600 ref NC_013766.2 :c2567831-2567247
putative monovalent cation/H ⁺ antiporter subunit D	gi 284802823 ref YP003414688.1	gi 662858600 ref NC_013766.2 :2572774-2574261
putative monovalent cation/H ⁺ antiporter subunit G	gi 284802826 ref YP003414691.1	gi 662858600 ref NC_013766.2 :2575015-2575608
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hypothetical protein LM5578 2618	gi 284802861 ref YP003414726.1	gi 662858600 ref NC_013766.2 :c2607303-2606428
hypothetical protein LM5578 2625	gi 284802868 ref YP003414733.1	gi 662858600 ref NC_013766.2 :c2613153-2612143
hypothetical protein LM5578 2626	gi 284802869 ref YP003414734.1	gi 662858600 ref NC_013766.2 :c2614124-2613153
hypothetical protein LM5578 2636	gi 284802879 ref YP003414744.1	gi 662858600 ref NC_013766.2 :c2621175-2620279

hypothetical protein LM5578 2641	gi 284802884 ref YP003414749.1	gi 662858600 ref NC_013766.2 :c2628225-2627281
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hypothetical protein LM5578 2652	gi 284802895 ref YP003414760.1	gi 662858600 ref NC_013766.2 :c2642912-2642157
phosphoglycerate kinase	gi 284802896 ref YP003414761.1	gi 662858600 ref NC_013766.2 :c2644148-2642958
glyceraldehyde-3-phosphate dehydrogenase	gi 284802897 ref YP003414762.1	gi 662858600 ref NC_013766.2 :c2645293-2644283
hypothetical protein LM5578 2655	gi 284802898 ref YP003414763.1	gi 662858600 ref NC_013766.2 :c2646373-2645327
hypothetical protein LM5578 2657	gi 284802900 ref YP003414765.1	gi 662858600 ref NC_013766.2 :c2649244-2648318
hypothetical protein LM5578 2659	gi 284802902 ref YP003414767.1	gi 662858600 ref NC_013766.2 :c2652175-2651564
hypothetical protein LM5578 2662	gi 284802905 ref YP003414770.1	gi 662858600 ref NC_013766.2 :c2654830-2653397
ATP-dependent Clp protease proteolytic subunit	gi 284802906 ref YP003414771.1	gi 662858600 ref NC_013766.2 :2654987-2655583
hypothetical protein LM5578 2667	gi 284802910 ref YP003414775.1	gi 662858600 ref NC_013766.2 :c2660471-2659500
hypothetical protein LM5578 2668	gi 284802911 ref YP003414776.1	gi 662858600 ref NC_013766.2 :c2661447-2660479
hypothetical protein LM5578 2669	gi 284802912 ref YP003414777.1	gi 662858600 ref NC_013766.2 :c2662345-2661449

hypothetical protein LM5578 2671	gi 284802914 ref YP003414779.1	gi 662858600 ref NC_013766.2 :c2665265-2664204
UDP-glucose 4-epimerase	gi 284802915 ref YP003414780.1	gi 662858600 ref NC_013766.2 :c2666265-2665282
thioredoxin reductase	gi 284802916 ref YP003414781.1	gi 662858600 ref NC_013766.2 :c2667343-2666384
hypothetical protein LM5578 2674	gi 284802917 ref YP003414782.1	gi 662858600 ref NC_013766.2 :c2668915-2667422
pyrophosphatase PpaX	gi 284802919 ref YP003414784.1	gi 662858600 ref NC_013766.2 :c2670137-2669484
prolipoprotein diacylglyceryl transferase	gi 284802920 ref YP003414785.1	gi 662858600 ref NC_013766.2 :c2671014-2670181
HPr kinase/phosphorylase	gi 284802921 ref YP003414786.1	gi 662858600 ref NC_013766.2 :c2672038-2671100
hypothetical protein LM5578 2681	gi 284802924 ref YP003414789.1	gi 662858600 ref NC_013766.2 :c2674022-2672811
excinuclease ABC (subunit A)	gi 284802926 ref YP003414791.1	gi 662858600 ref NC_013766.2 :c2678431-2675561
excinuclease ABC subunit B	gi 284802927 ref YP003414792.1	gi 662858600 ref NC_013766.2 :c2680415-2678439
hypothetical protein LM5578 2686	gi 284802929 ref YP003414794.1	gi 662858600 ref NC_013766.2 :c2681573-2680926
hypothetical protein LM5578 2689	gi 284802932 ref YP003414797.1	gi 662858600 ref NC_013766.2 :c2683319-2682660
hypothetical protein LM5578 2690	gi 284802933 ref YP003414798.1	gi 662858600 ref NC_013766.2 :c2684111-2683332
hypothetical protein LM5578 2693	gi 284802936 ref YP003414801.1	gi 662858600 ref NC_013766.2 :c2686800-2685850
hypothetical protein LM5578 2694	gi 284802937 ref YP003414802.1	gi 662858600 ref NC_013766.2 :c2687775-2686867

two-component sensor histidine kinase	gi 284802938 ref YP003414803.1	gi 662858600 ref NC_013766.2 :c2689806-2688031
two-component response phosphate regulator	gi 284802939 ref YP003414804.1	gi 662858600 ref NC_013766.2 :c2690516-2689806
hypothetical protein LM5578 2697	gi 284802940 ref YP003414805.1	gi 662858600 ref NC_013766.2 :c2691784-2690666
hypothetical protein LM5578 2698	gi 284802941 ref YP003414806.1	gi 662858600 ref NC_013766.2 :c2693317-2691869
hypothetical protein LM5578 2701	gi 284802944 ref YP003414809.1	gi 662858600 ref NC_013766.2 :c2697035-2696151
hypothetical protein LM5578 2702	gi 284802945 ref YP003414810.1	gi 662858600 ref NC_013766.2 :c2697711-2697025
hypothetical protein LM5578 2703	gi 284802946 ref YP003414811.1	gi 662858600 ref NC_013766.2 :c2699078-2698215
hypothetical protein LM5578 2706	gi 284802949 ref YP003414814.1	gi 662858600 ref NC_013766.2 :c2703577-2703014
hypothetical protein LM5578 2707	gi 284802950 ref YP003414815.1	gi 662858600 ref NC_013766.2 :c2704428-2703772
hypothetical protein LM5578 2708	gi 284802951 ref YP003414816.1	gi 662858600 ref NC_013766.2 :c2705740-2704421
hypothetical protein LM5578 2709	gi 284802952 ref YP003414817.1	gi 662858600 ref NC_013766.2 :c2706786-2705935
hypothetical protein LM5578 2710	gi 284802953 ref YP003414818.1	gi 662858600 ref NC_013766.2 :c2707493-2706807
hypothetical protein LM5578 2713	gi 284802956 ref YP003414821.1	gi 662858600 ref NC_013766.2 :2709236-2710294
hypothetical protein LM5578 2714	gi 284802957 ref YP003414822.1	gi 662858600 ref NC_013766.2 :c2711385-2710333
hypothetical protein LM5578 2720	gi 284802963 ref YP003414828.1	gi 662858600 ref NC_013766.2 :c2716670-2715675

UDP-N-acetylglucosamine 1-carboxyvinyltransferase	gi 284802964 ref YP003414829.1	gi 662858600 ref NC_013766.2 :c2718125-2716833
hypothetical protein LM5578 2737	gi 284802980 ref YP003414845.1	gi 662858600 ref NC_013766.2 :c2732399-2731548
threonine synthase	gi 284802984 ref YP003414849.1	gi 662858600 ref NC_013766.2 :c2736093-2735038
homoserine dehydrogenase	gi 284802985 ref YP003414850.1	gi 662858600 ref NC_013766.2 :c2737382-2736096
UDP-N-acetylglucosamine 1-carboxyvinyltransferase	gi 284802990 ref YP003414855.1	gi 662858600 ref NC_013766.2 :c2742058-2740787
hypothetical protein LM5578 2749	gi 284802992 ref YP003414857.1	gi 662858600 ref NC_013766.2 :c2744266-2743256
hypothetical protein LM5578 2750	gi 284802993 ref YP003414858.1	gi 662858600 ref NC_013766.2 :c2745557-2744274
hypothetical protein LM5578 2751	gi 284802994 ref YP003414859.1	gi 662858600 ref NC_013766.2 :c2746732-2745878
putative lipid kinase	gi 284802995 ref YP003414860.1	gi 662858600 ref NC_013766.2 :c2747821-2746901
CTP synthetase	gi 284802997 ref YP003414862.1	gi 662858600 ref NC_013766.2 :c2752533-2750935
arginyl-tRNA synthetase	gi 284802999 ref YP003414864.1	gi 662858600 ref NC_013766.2 :c2755473-2753803
hypothetical protein LM5578 2758	gi 284803001 ref YP003414866.1	gi 662858600 ref NC_013766.2 :c2756650-2755997
hypothetical protein LM5578 2760	gi 284803003 ref YP003414868.1	gi 662858600 ref NC_013766.2 :c2758267-2756945
hypothetical protein LM5578 2766	gi 284803009 ref YP003414874.1	gi 662858600 ref NC_013766.2 :c2762547-2761933
hypothetical protein LM5578 2767	gi 284803010 ref YP003414875.1	gi 662858600 ref NC_013766.2 :c2763203-2762571

hypothetical protein LM5578 2769	gi 284803012 ref YP003414877.1	gi 662858600 ref NC_013766.2 :c2764729-2763731
hypothetical protein LM5578 2773	gi 284803016 ref YP003414881.1	gi 662858600 ref NC_013766.2 :c2771824-2770997
hypothetical protein LM5578 2779	gi 284803022 ref YP003414887.1	gi 662858600 ref NC_013766.2 :c2776595-2775216
hypothetical protein LM5578 2780	gi 284803023 ref YP003414888.1	gi 662858600 ref NC_013766.2 :c2777269-2776592
formate dehydrogenase accessory protein	gi 284803024 ref YP003414889.1	gi 662858600 ref NC_013766.2 :c2778101-2777316
hypothetical protein LM5578 2786	gi 284803029 ref YP003414894.1	gi 662858600 ref NC_013766.2 :c2785484-2784597
lysyl-tRNA synthetase	gi 284803032 ref YP003414897.1	gi 662858600 ref NC_013766.2 :c2794202-2792706
hypothetical protein LM5578 2790	gi 284803033 ref YP003414898.1	gi 662858600 ref NC_013766.2 :c2795312-2794317
hypothetical protein LM5578 2795	gi 284803038 ref YP003414903.1	gi 662858600 ref NC_013766.2 :c2798682-2797756
pantothenate kinase	gi 284803040 ref YP003414905.1	gi 662858600 ref NC_013766.2 :c2800477-2799698
hypothetical protein LM5578 2799	gi 284803042 ref YP003414907.1	gi 662858600 ref NC_013766.2 :c2804960-2803014
peptidyl-tRNA hydrolase	gi 284803048 ref YP003414913.1	gi 662858600 ref NC_013766.2 :c2812397-2811837
hypothetical protein LM5578 2806	gi 284803049 ref YP003414914.1	gi 662858600 ref NC_013766.2 :c2813088-2812504
50S ribosomal protein L25/general stress protein Ctc	gi 284803050 ref YP003414915.1	gi 662858600 ref NC_013766.2 :c2813801-2813178
L-lactate dehydrogenase	gi 284803051 ref YP003414916.1	gi 662858600 ref NC_013766.2 :2814095-2815036

hypothetical protein LM5578 2809	gi 284803052 ref YP003414917.1	gi 662858600 ref NC_013766.2 :2815113-2815787
phospholipase C	gi 284803056 ref YP003414921.1	gi 662858600 ref NC_013766.2 :c2818097-2817228
Zinc metalloproteinase precursor	gi 284803058 ref YP003414923.1	gi 662858600 ref NC_013766.2 :c2821783-2820251
listeriolysin O precursor	gi 284803059 ref YP003414924.1	gi 662858600 ref NC_013766.2 :c2823703-2822114
phosphatidylinositol-specific phospholipase c	gi 284803060 ref YP003414925.1	gi 662858600 ref NC_013766.2 :2823945-2824898
phosphoribosyl pyrophosphate synthetase	gi 284803062 ref YP003414927.1	gi 662858600 ref NC_013766.2 :c2826881-2825925
hypothetical protein LM5578 2820	gi 284803063 ref YP003414928.1	gi 662858600 ref NC_013766.2 :c2828305-2826932
hypothetical protein LM5578 2825	gi 284803068 ref YP003414933.1	gi 662858600 ref NC_013766.2 :c2832736-2832059
purine operon repressor	gi 284803069 ref YP003414934.1	gi 662858600 ref NC_013766.2 :c2833729-2832911
hypothetical protein LM5578 2827	gi 284803070 ref YP003414935.1	gi 662858600 ref NC_013766.2 :c2834630-2833893
4-diphosphocytidyl-2-C-methyl-D-erythritol kinase	gi 284803071 ref YP003414936.1	gi 662858600 ref NC_013766.2 :c2835533-2834652
dimethyladenosine transferase	gi 284803073 ref YP003414938.1	gi 662858600 ref NC_013766.2 :c2836936-2836049
hypothetical protein LM5578 2831	gi 284803074 ref YP003414939.1	gi 662858600 ref NC_013766.2 :c2837504-2836929
hypothetical protein LM5578 2832	gi 284803075 ref YP003414940.1	gi 662858600 ref NC_013766.2 :c2838832-2837606
hypothetical protein LM5578 2833	gi 284803076 ref YP003414941.1	gi 662858600 ref NC_013766.2 :c2839897-2839124

hypothetical protein LM5578 2837	gi 284803080 ref YP003414945.1	gi 662858600 ref NC_013766.2 :c2848594-2847338
hypothetical protein LM5578 2838	gi 284803081 ref YP003414946.1	gi 662858600 ref NC_013766.2 :c2849470-2848622
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hypothetical protein LM5578 2842	gi 284803085 ref YP003414950.1	gi 662858600 ref NC_013766.2 :c2854688-2853828
hypothetical protein LM5578 2847	gi 284803090 ref YP003414955.1	gi 662858600 ref NC_013766.2 :c2861513-2860254
hypothetical protein LM5578 2848	gi 284803091 ref YP003414956.1	gi 662858600 ref NC_013766.2 :c2862438-2861581
hypothetical protein LM5578 2850	gi 284803093 ref YP003414958.1	gi 662858600 ref NC_013766.2 :c2863763-2862882
hypothetical protein LM5578 2852	gi 284803095 ref YP003414960.1	gi 662858600 ref NC_013766.2 :c2864789-2864016
hypothetical protein LM5578 2854	gi 284803097 ref YP003414962.1	gi 662858600 ref NC_013766.2 :c2866059-2865226
DNA polymerase III subunit delta'	gi 284803098 ref YP003414963.1	gi 662858600 ref NC_013766.2 :c2867033-2866065
hypothetical protein LM5578 2856	gi 284803099 ref YP003414964.1	gi 662858600 ref NC_013766.2 :2867274-2868104
hypothetical protein LM5578 2859	gi 284803102 ref YP003414967.1	gi 662858600 ref NC_013766.2 :c2873501-2872689
hypothetical protein LM5578 2860	gi 284803103 ref YP003414968.1	gi 662858600 ref NC_013766.2 :c2875886-2873547
hypothetical protein LM5578 2861	gi 284803104 ref YP003414969.1	gi 662858600 ref NC_013766.2 :2876166-2876846
hypothetical protein LM5578 2907	gi 284803150 ref YP003415015.1	gi 662858600 ref NC_013766.2 :c2910406-2909708

hypothetical protein LM5578 2908	gi 284803151 ref YP003415016.1	gi 662858600 ref NC_013766.2 :c2911637-2910522
hypothetical protein LM5578 2910	gi 284803153 ref YP003415018.1	gi 662858600 ref NC_013766.2 :2912649-2914391
hypothetical protein LM5578 2913	gi 284803156 ref YP003415021.1	gi 662858600 ref NC_013766.2 :c2919477-2917195
hypothetical protein LM5578 2915	gi 284803158 ref YP003415023.1	gi 662858600 ref NC_013766.2 :c2920857-2920225
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hypothetical protein LM5578 2922	gi 284803165 ref YP003415030.1	gi 662858600 ref NC_013766.2 :c2925348-2924383
FOF1 ATP synthase subunit beta	gi 284803169 ref YP003415034.1	gi 662858600 ref NC_013766.2 :c2928710-2927340
FOF1 ATP synthase subunit alpha	gi 284803171 ref YP003415036.1	gi 662858600 ref NC_013766.2 :c2931073-2929577
hypothetical protein LM5578 2964	gi 284803207 ref YP003415072.1	gi 662858600 ref NC_013766.2 :c2973678-2971705
putative accessory gene regulator protein	gi 284803211 ref YP003415076.1	gi 662858600 ref NC_013766.2 :c2976742-2976128
hypothetical protein LM5578 2969	gi 284803212 ref YP003415077.1	gi 662858600 ref NC_013766.2 :c2977610-2976999
arginine deiminase	gi 284803216 ref YP003415081.1	gi 662858600 ref NC_013766.2 :c2980437-2979211
hypothetical protein LM5578 2974	gi 284803217 ref YP003415082.1	gi 662858600 ref NC_013766.2 :c2981182-2980523
hypothetical protein LM5578 2982	gi 284803225 ref YP003415090.1	gi 662858600 ref NC_013766.2 :c2990492-2989134

hypothetical protein LM5578 2983	gi 284803226 ref YP003415091.1	gi 662858600 ref NC_013766.2 :c2992907-2990505
hypothetical protein LM5578 2984	gi 284803227 ref YP003415092.1	gi 662858600 ref NC_013766.2 :c2993869-2992904
LacI family transcription regulator	gi 284803228 ref YP003415093.1	gi 662858600 ref NC_013766.2 :2994071-2995126
hypothetical protein LM5578 2994	gi 284803237 ref YP003415102.1	gi 662858600 ref NC_013766.2 :c3001539-3000664
hypothetical protein LM5578 2996	gi 284803239 ref YP003415104.1	gi 662858600 ref NC_013766.2 :c3004374-3003730
hypothetical protein LM5578 2997	gi 284803240 ref YP003415105.1	gi 662858600 ref NC_013766.2 :c3005130-3004426
hypothetical protein LM5578 2998	gi 284803241 ref YP003415106.1	gi 662858600 ref NC_013766.2 :c3005979-3005158
hypothetical protein LM5578 2999	gi 284803242 ref YP003415107.1	gi 662858600 ref NC_013766.2 :c3006763-3005960
hypothetical protein LM5578 3002	gi 284803245 ref YP003415110.1	gi 662858600 ref NC_013766.2 :c3008431-3007691
hypothetical protein LM5578 3003	gi 284803246 ref YP003415111.1	gi 662858600 ref NC_013766.2 :3008672-3009493
AA3-600 quinol oxidase subunit I	gi 284803251 ref YP003415116.1	gi 662858600 ref NC_013766.2 :c3015281-3013302
hypothetical protein LM5578 3010	gi 284803253 ref YP003415118.1	gi 662858600 ref NC_013766.2 :c3017833-3016751
hypothetical protein LM5578 3012	gi 284803255 ref YP003415120.1	gi 662858600 ref NC_013766.2 :c3019680-3018739
DNA gyrase subunit A	gi 284803259 ref YP003415124.1	gi 662858600 ref NC_013766.2 :c3024560-3022032
DNA gyrase subunit B	gi 284803260 ref YP003415125.1	gi 662858600 ref NC_013766.2 :c3026595-3024655

recombination protein F	gi 284803261 ref YP003415126.1	gi 662858600 ref NC_013766.2 :c3027756-3026644
hypothetical protein LM5578 3020	gi 284803263 ref YP003415128.1	gi 662858600 ref NC_013766.2 :c3029504-3028161
DNA polymerase III subunit beta	gi 284803264 ref YP003415129.1	gi 662858600 ref NC_013766.2 :c3030758-3029613
chromosomal replication initiation protein	gi 284803265 ref YP003415130.1	gi 662858600 ref NC_013766.2 :c3032307-3030952