Gene Name	Protein	Source	DEG Essential genes	DEG hits	TM	MW	Taxonomic coverage	Interpro No	Crystal homolog	YPK No	Assayable
accA	acetyl-CoA carboxylase, carboxytransferase subunit alpha	fn	Ab, Bs, Ec, Fn, Hi, Pa, Sa, Sp, St, Vc	10	0	35305	Bacteria + plants	IPR001095	2F9I	1082	Soriano et al (2006) Anal Biochem 349:268
cmk	cytidylate kinase	fn	Ab, Bs, Ec, Fn, Hi, Mg, Mt, Mp, Pa, Sa, Vc	11	0	24708	Bacteria	IPR003136	2H92	2669	Thum et al (2009) J Bacteriol 191:2884
cspA	cold shock protein, DNA-binding	fn	Bs, Ec, Fn, Mt, Pa, Sa, St, Vc	8	0	7334	Bacteria	IPR012156	1C9O	2474	Grazia et al (1982) Anal Biochem 123:265
ddlB	D-alanine-D-alanine ligase B	fn	Ab, Bs, Ec, Fn, Hi, Hp, Mt, Sa, St, Vc	10	0	32655	Bacteria + plants	IPR005905	2DLN	3516	Sova (2009) Bioorg Med Chem Lett 19:1376
deoD	Purine nucleoside phosphorylase	mp	Bs, Ec, Fn, Hi, Hp, Mg, Mp, Sa, Sp, St, Vc,	11	0	25609	Bacteria	IPR004402	1A69	3624	Li et al (2008) Extremophiles 12:325
dnaA	chromosomal replication initiator protein	fn	Bs, Ec, Fn, Hi, Mg, Mt, Mp, Pa, Sa, Vc	10	0	55696	Bacteria	IPR001957	1L8Q	0001	Fossum et al 2008 FEM Microbiol Lett 281:210

dnaB	replicative DNA helicase	fn	Ab, Bs, Ec, Fn, Hi, Mg, Mt, Mp, Sa, Sp, Vc,	11	0	51884	Bacteria	IPR007692	1B79	3855	Biswas et al (2009) J Bacteriol 191:259
dnaG	DNA primase	fn	Ab, Bs, Ec, Fn, Hi, Mg, Mt, Mp, Sa, Vc	10	0	68848	Bacteria	IPR006295	1DD9	0635	Maciag et al (2010) Plasmid 63:61
efp	elongation factor P	fn	Ec, Fn, Mg, Mt, Mp,Sa, Sp, St	8	0	20798	Bacteria + plants	IPR011768	1UEB	3818	Aoki et al (1997) Biochimie 79:7
fabD	malonyl-CoA:ACP transacylase	fn	Bs, Ec, Fn, Hi, Sa, Sp, St, Vc	8	0	33370	Bacteria + plants	IPR004410	2QC3	1685	Molnos et al (2003) Anal Biochem 319:171
fabG	beta-ketoacyl-ACP reductase	fn	Bs, Ec, Fn, Hi, pa, Sa, Sp, St, Vc	9	0	26244	Bacterial	IPR011285	3LYL	1686	Sohn et al (2008) J Antibiotic 61:697
fabZ	beta-hydroxyacyl-ACP dehydratase	fn	Ab, Ec, Fn, Hi, Pa, Sp, Vc	7	0	18019	Bacteria + plants	IPR010084	1U1Z	1077	Zhang et al (2008) J Biol Chem 283:5370
fbaA	Fructose-biphosphate aldolase	mp	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mp, Mt, Pa, Sa, Sp, St, Vc	14	0	30492	Bacterial	IPR006412	3C4U	0982	Zhang et al (2006) Biometals19: 31

fpg	Formamidopyrimidine-DNA glycosylase MutM	mp	Bs, Ec, Fn, Hi, Mg, Mt, Pa, St, Vc	9	0	32210	Bacteria	IPR020629	1EE8	4152	Sanada et al (2009) J Biochem 145:525
FTN_0104	phosphoheptose isomerase	fn	Ec, Hi, Hp, Fn, Mt, Pa, St, Vc	8	0	21056	Bacteria	IPR020620	1TK9	0537	Eidels & Osbourne (1974) J Biol Chem 249:5642
ftsA	cell division protein FtsA	fn	Bs, Ec, Fn, Hi, Pa, Sa, Vc	7	0	44691	Bacterial	IPR020823	1E4G	3514	ParadisBleau (2005) Protein Eng Des Sel 18:85
ftsI	cell division protein, peptidoglycan synthetase (PBP)	fn	Ab, Bs, Fn, Ec, Mt, St, Vc	7	1	62555	Bacteria + plants	IPR001460	1XP4	3524	Wissel & Weiss (2004) J Bact 186:490
ftsY	cell division protein, signal recognition particle GTPase	fn	Ab, Bs, Fn, Ec, Hi, Hp, Mg, Mp, Sa, Sp, St, Vc	12	0	36007	Bacteria + plants	IPR004390	2IYL	3979	Arvidson et al (1999) J Bact 181:731
glmU	UDP-N-acetylglucosamine pyrophosphorylase/glucosamine-1-phosphate N-acetyltransferase	fn	Ab, Bs, Ec, Fn, Mt, Sa, Sp, Vc	8	0	49507	Bacteria	IPR005882	2W0W	4228	Zhang et al (2008) Int J Biochem Cell Biol 40:2560
greA	Transcription elongation factor GreA	mp	Bs, Ec, Fn, Hi, Hp, Mg, Mp, Mt, Pa, Sa, Sp, St,	13	0	18583	Bacteria	IPR006359	1GRJ	3739	Borukhov & Goldfarb (1996) Methods Enzymol 274:315

			Vc,								
gyrA	DNA gyrase, subunit A	fn	Ab, Bs, Ec, Fn, Mg, Mp, Pa, Sa, St, Vc	10	0	97011	Bacteria + plants	IPR005743	1AB4	2846	Fisher & Pan (2008) Methods Mol Med 142:11
holB	DNA polymerase III, delta prime subunit	fn	Ab, Bs, Ec, Fn, Hi, Hp, Vc	7	0		Bacteria	IPR004622	1A5T	1692	Commercial kits
hup	DNA-binding protein Hu	mp	Bs, Ec, Fn, Hi, Hp, Mg, Mp, Mt, Pa, Sa, Sp, St, Vc	13	0	14742	Bacteria	IPR005902	2O97	3231	Tanaka et al (1993) J Biochem 113:568
ispE	4-diphosphocytidyl-2-C-methyl-D-erythritol kinase	fn	Bs, Ec, Fn, Hi, Hp, Mt, Pa, Sa, St, Vc	10	0	31354	Bacteria + plants	IPR004424	3VF3	2182	Eoh et al (2009) Chem & Biol 16:1230
ispF	2-C-methyl-D-erythritol 2,4-cyclodiphosphate synthase	fn	Ab, Bs, Ec, Fn, Hi, Mg, Mt, Vc	7	0	17545	Bacteria + plants	IPR003526	2UZH	3430	Narayanasamy et al (2010) Chem & Biol 17:117
ligA	DNA ligase	fn	Ab, Bs, Ec, Fn, Hi, mg, Mt, Mp, Pa, Sa, St, Vc	12	0	76276	Human	IPR001679	1TAE	2811	Srivastava et al (2007) Protein Struct Funct 69:97

lpxC	UDP-3-O-acyl-N-acetylglucosamine deacetylase	fn	Ec, Fn, Hi, Hp, Pa, St, Vc	7	0	31859	Bacteria + plants	IPR004463	1P42	3512	Barb & Zhou (2008) Curr Pharm Biotechnol 9:9
lpxK	tetraacyldisaccharide 4'-kinase	fn	Ab, Ec, Fn, Hi, Hp, Pa, St, Vc	8	0	36014	Bacteria + plants	IPR003758	2HF1	2664	Asay Garrett et al (1998) J Biol Chem 273:12457
mrsA	phosphoglucosamine mutase	fn	Ab, Bs,Fn, Mt, Pa, Sa, Sp, Vc	8	0	48015	Bacteria	IPR006352	3KD8	3734	MenginLecreulx & van Heijenoort (1996) 271:32
msbA	lipid exporter (LipidE) family protein	fn	Ab, Hi, Fn, Hp, Mt, Sp, St, Vc	8	0	48015	Bacteria	IPR011917	3B5Y	2665	Doerrier et al (2002) J Biol Chem 277:36697
murA	UDP-N-acetylglucosamine enolpyruvoyl transferase	fn	Ab, Bs, Ec, Fn, Hi, Hp, Mt, Pa, Sa, Sp, St, Vc	12	0	48256	Bacteria + plants	IPR005750	2RL1	518	Baum et al (2001) Antimicrob Agents Chemotherap 45:3182
murD	UDP-N-acetylmuramoylalanine--D-glutamate ligase	fn	Ab, Bs, Ec, Fn, Hi, Mt, Pa, Sa, St, Sp, Vc	11	0	46706	Bacteria + plants	IPR005762	1EEH	3520	ParadisBleau (2006) Peptides 1693:700
murE	UDP-N-acetylmuramoylalanyl-D-glutamate--2,6-diaminopimelate ligase	fn	Ab, Bs, Ec, Fn, Hi, Mt, Sa, St, Vc	9	0	54651	Bacteria + plants	IPR005761	1E8C	3523	ParadisBleau (2009) Biochem J 421:263

murF	d-alanyl-d-alanine-adding enzyme	fn	Ab, Bs, Ec, Fn, Pa, Sa, Sp, St, Vc	9	0	50100	Bacteria + plants	IPR005863	1GG4	3522	ParadisBleau (2008) BMC Biochem 19:33
murG	UDP-N-acetylglucosamine--N-acetylmuramyl-(pentapeptide) pyrophosphoryl-undecaprenol N-acetylglucosamine transferase	fn	Bs, Fn, Hp, Mt, Pa, Sa, Vc	7	0	40728	Bacteria + plants	IPR006009	1F0K	3518	Auger et al (2003) FEMS Microbiol Lett 219:115
murI	glutamate racemase	fn	Ab, Bs, Ec, Fn, Hi,Mn, Mt, Pa, Sa, St, Vc	11	1	29204	Bacteria	IPR004391	1B73	4072	Breault et al (2008) Bioorg Med Chem Lett 18:6100
nadD	Nicotinamide-nucleotide adenylyltransferase	mp	Ec, Mg, Mp, Mt, Pa, Sp, St, Vc,	8	0	42753	Bacteria	IPR006417	1LW7	3018	Balducci et al (1995) Anal Biochem 228:64
nusA	transcription elongation factor	fn	Ab, Bs, Fn, Hp, Mg, Mt, Mp, Sa, St, Vc	10	0	54967	Bacteria	IPR010213	2CXC	3731	Watnick & Gottesman (1998) PNAS 95:1546
nusG	transcription antitermination protein nusG	fn	Bs, Ec, Fn, Hi, Hp, Mg, Mp, Pa, Sa, Sp, St, Vc,	12	0	19851	Bacteria	IPR001062	1NNP	0334	Li et al (1992) J Biol Chem 267:6012
oxyR	oxidative stress transcriptional regulator	fn	Ab, Ec, Fn, Hi,	7	0	33099	Bacteria + plants	IPR000524	12EX	4079	Aslund et al (1999) PNAS

			Pa, St, Vc								96:6161
parE	topoisomerase IV, subunit B	fn	Ab, Bs, Ec, Fn, Hi, Mt, Mp, Pa, Sa, Sp, Vc	11	0	70154	Bacteria	IPR005737	1S14	0659	Bellon et al (2004) Antimicrob Agents Chemother 48:1856
pcrA(uvrD)	ATP-dependent helicase PcrA	mp	Bs, Fn, Mp, Mt, Pa, Sa, Sp, St, Vc,	8	0	86474	Bacteria	IPR005753	2IS1	4007	Bird et al (1998) Nuc Acid Res 26:2686
plsX	Fatty acid/phospholipid biosynthesis enzyme	fn	Bs,Fn, Hp, Mg, Mp, Sa, Vc	7	0	37695	Bacteria	IPR003664	1U7N	1683	Hara et al 2008 Genes Genet Syst 83:433
ptsH	Phosphocarrier protein HPr	mp	Bs, Ec, Hi, Mp, Mg, Pa, Sa, Sp, St, Vc,	10	0	9482	Bacteria	IPR005698	3IHS	1428	Eisermann et al (1998) J Biol Chem 263:17050
ptsI	Phosphoenolpyruvate-protein phosphotransferase	mp	Bs, Ec, Hi, Mp, Mg, Pa, Sa, Sp, St, Vc,	10	0	64587	Bacteria	IPR006318	1ZYM	1427	Weaver et al (2000) Genet Mol Biol 146:1179
pyrH	uridylate kinase	fn	Ab, Ec,Fn, Hi, Mg, Mt, Mp, Pa, St, Vc	10	0	26528	Bacteria + plants	IPR015963	2V4Y	1068	Sakamoto et al (2004) Microbiol 150:2153
rnpA	ribonuclease P protein component	fn	Ec, Hi, Mg, Mp, Sa, St, Vc	7	0	18994	Bacteria	IPR000100	1A6F	4248	Gossringer et al (2006) J Bact

											188:6816
smpB	SsrA-binding protein	mp	Fn, Hi, Hp, Mg, Mp, Mt, Pa, Sa, Sp, St, Vc,	11	0	16835	Bacteria	IPR000037	1J1H	2980	Karzai et al (1999) EMBO J 18:3793
spoT	GDP diphosphokinase/guanosine-3',5'-bis(diphosphate) 3'-diphosphatase	fn	Bs, Ec, Fn, Hi, Hp, Mg, Mt, Pa, Sa, Sp, St, vc	12	0	81128	Bacteria	IPR004811	1VJ7	4178	Gropp (2001) J Bact 183:570
sufS	selenocysteine lyase	fn	Ab, Bs, Fn, Hi, Mg, Mt, Mp, Sa, St, Vc	10	0	45021	Bacteria+ plants	IPR010970	1T3I	1851	Loiseau et al (2003) J Biol Chem 278:38382
thyA	thymidylate synthase	fn	Ab, Bs, Ec, Hi, Fn, Mt, Mp, Mt, Pa, Sa, Sp, St, Vc	13	0	31245	Bacteria	IPR003669	2KCE	1036	Hunter et al (2008) PLoS one 3:e2237
trmD	tRNA (Guanine-N(1)-)-methyltransferase	fn	Bs, Ec, Fn, Mg, Mt, Mp, Sa, Sp, St, Vc	10	0	27988	Bacteria	IPR002649	1P9P	3362	O'Dwyer et al (2004) J Bact 186:2346
infA	translation initiation factor IF-1	fn	Ab, Bs, Fn, Hi, Hp, Mg, Mt, Mp,	11	0	8104	Bacteria + plants	IPR004368	1HR0	2691	NA

			Pa, Sa, Vc								
recD	Exodeoxyribonuclease V alpha chain	mp	Ec, Fn, Hi, Mn, Mt, Pa, St, Vc	8	0	80774	Bacteria+ plants	IPR006344	1W36	1044	NA
rimM	16S rRNA processing protein RimM	fn	Ec, Fn, Mt, Pa, Sp, St, Vc	7	0	18994	Bacteria + plants	IPR011961	2DYI	3363	NA
rpoA	DNA-directed RNA polymerase, alpha subunit	fn	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mp, Mt, Pa, Sa, Sp, St, Vc,	14	0	35255	Bacteria + plants	IPR011773	1BDF	0308	NA
rpoD	RNA polymerase sigma-70 factor	fn	Ab, Ec, Fn, Hi, Pa, St, Vc	7	0	67544	Bacteria + plants	IPR000943	2P7V	0634	NA
deoB	Phosphopentomutase	mp	Bs, Ec, Fn, Hp, Mp, Sa, Sp, St, Vc,	9	0	44183	Bacterial	IPR010045	3M7V	3625	NA
fabI	enoyl-ACP reductase I	fn	Ab, Ec,Fn, Hi, Sa. St	6	0	27676	Bacteria + plants	IPR014358	1BVR	NA	
hrcA	Heat-inducible transcription repressor	mp	Bs, Hp, Mg, Mp, Mt, Sa, Sp	7	0	39725	Bacteria	IPR002571	1STZ	NA	
ribF	riboflavin kinase/FMN adenylyltransferase	fn	Ab, Ec,Fn, Hp, Mg,	8	0	34790	Bacterial	IPR002606	1T6Z	NA	

			Mt, Mp, Vc								
ylqF/rbgA	GTPase protein YlqF	mp	Ab, Ec, Fn, HI, Hp, Mg, Pa, Sp, St, Vc	10	0	33808	Bacteria + plants	IPR019991	1PUJ	NA	
acpP	acyl carrier protein	fn	Bs, Ec, Hp, Mg, Mp, Mt, Sa, Sp, St, Vc	10	0	12475	Bacteria	IPR017768	NA		
cbiO	Metal ion ABC transporter, ATP-binding protein, putative	mp	Ec, Hi, Mg, Mp, Sa, Sp, Vc	7	0	34692	Bacterial	IPR015856	NA		
FTN_0418	endonuclease	fn	Hi, Hp, Fn, Mp, Pa, Sa, Sp, Vc	8	0	11621	Bacteria	IPR014527	NA		
gshA	glutamate-cysteine ligase	fn	Ec, Fn, Pa, Sa, Sp, St, Vc		0	56918	Bacteria	IPR011718	NA		
lytB	1-hydroxy-2-methyl-2-(E)-butenyl 4- diphosphate reductase	fn	Bs, Ec, Fn, Hi, Mt, Pa, St, Vc	8	0	5322	Bacteria + plants	IPR003451	NA		
parC	DNA topoisomerase IV subunit A	fn	Ab, Bs, Ec, Fn, Mg, Mp, Sa, Vc	7	0	84041	Bacteria	IPR005742	NA		
rpoH	RNA polymerase sigma-32 factor	fn	Ab, Ec, Fn, Hi, Pa, sa, Sp, St, Vc	9	0	33361	Bacteria	IPR012759	NA		

sufC	sufS activator complex, sufC subunit	fn	Bs, Ec, Fn, Mt, Sa, Sp, St	7	0	27446	Bacteria	IPR014291	NA		
dnaC	Replicative DNA helicase	mp	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mp, Mt, Pa, Sa, Sp, St, Vc,	14	0	52475	Bacterial	NA			
era	GTP-binding protein	fn	Ec, Fn, Hi, Mt, Mp, Pa, Vc	7	0	33803	Bacteria	NA			
FTN_0503	ABC transporter, ATPase component	fn	Ab, Bs, Ec, Fn, Hi, Pa, Sa, Sp, St, Vc	10	0	25726	Bacteria	NA			
MYPU_0260	ABC transporter ATP-binding protein	mp	Bs, Fn, Hi, Mg, Mn, Mt, Pa. Sa, St	9	0	68894	Bacteria	NA			
MYPU_2240	Phosphonate ABC transporter, ATP-binding protein, putative	mp	Ab, Ec, Fn, Hi, Hp, Mg, Mn, Pa, Sa, Sp, Vc	11	0	28196	Bacteria	NA			
MYPU_6900	ABC transporter ATP-binding protein	mp	Bs, Ec, Fn, Hi, Hp, Mg, Mn, Mt, Pa, Sa, Sp, St, Vc	13	0	61213	Bacteria	NA			

MYPU_6990	ATP synthase subunit B	mp	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mn, Mt, Pa, Sa, Sp, St, Vc	14	0	52335	Bacteria	NA			
MYPU_7730	ABC transporter ATP-binding protein	mp	Ab, Bs, Ec, Hi, Mg, Mp, Mt, Pa, Sa,	9	0	34061	Bacteria	NA			
obg/obgE	GTPase protein Obg	mp	Ab, Bs, Ec, Fn, Mg, Mt, Mp, Sa, Sp, St	10	0	36808	Bacterial	NA			
yhbG	ABC transporter, ATP-binding protein	fn	Ab, Ec, Fn, Hi, Mt, Pa, Vc	7	0	27161	Bacterial	NA			
accC	acetyl-CoA carboxylase, biotin carboxylase subunit	fn	Ab, Bs, Fn, Hi, Mt, Pa, Sp, Vc	8	0	49780	Eukaryotes				
accD	acetyl-CoA carboxylase, carboxytransferase subunit beta	fn	Ab, Fn, Hi, Pa, Sa, St, Vc	7	0	33256	Ubiquitous				
acpS	Holo-[acyl-carrier protein] synthase	mp	Ab, Bs, Fn, Mt, Mp, Pa, Vc	7	0	8321	Eukaryote	IPR002582			
adk	adenylate kinase	fn	Ab, Bs, Ec, Fn, Mg, Mp,	9	0	24231	Ubiquitous				

			Sa, St, Vc								
aroK	shikimate kinase I	fn	Ab, Ec, Fn, Hi, Hp, Mt, Pa,	7	0	19606	Eukaryotes				
atpA	ATP synthase, F1 sector, subunit alpha	fn	Ab, Fn, Mt, Mg, Mp, Sp, Vc	7	0	55422	Eukaryotes				
atpD	ATP synthase, F1 sector, subunit beta	fn	Ab, Fn, Hp, Mg, Mt, Mp, Vc	7	0	49684	bacteria, mitrochondria, chloroplast				
atpF	ATP synthase, F0 sector, subunit b	fn	Ab, Fn, Ec, Mg, Mt, Mp, Sa, Vc	8	1	17238	bacteria, mitrochondria, chloroplast				
atpG	ATP synthase, F1 sector, subunit gamma	fn	Ab, Fn, Hp, Mg, Mt, Mp, Vc	7	0	33056	bacteria, mitrochondria, chloroplast				
atpH	ATP synthase delta chain	mp	Bs, Ec, Mg, Mp, Mt, Pa, Sp, St	8	0	20658	bacteria, mitrochondria, chloroplast				
coaD	phosphopantetheine adenylyltransferase	fn	Ab, Ec, Fn, Hi, Pa, Sp, Vc	7	0	18386	Eukaryotes				
def	Peptide deformylase	mp	Ec, Hp,Fn, Mg, Mt, Mp, Pa	7	0	19667	Eukaryotes				

dfp	P-pantothenate cysteine ligase/P-pantothenoylcysteine decarboxylase	fn	Ab, Ec, Fn, Mt, Pa, Sa, St, Vc	8	0	42895	Eukaryotes				
dhfr	Dihydrofolate reductase	mp	Ab, Bs, Ec, Fn, Hi, Mg, Mt, Pa, Sa, Sp, St, Vc	12	0	21491	Ubiquitous				
dnaH	DNA polymerase III delta' subunit	mp	Ab, Bs, Ec, Fn, Hi, Hp Mg, Mt, Pa, Sa, Sp, St, Vc	13		34460	Eukaryotes	IPR010372			
dnaN	DNA polymerase III, beta subunit	fn	Ab, Bs, Fn, Hi, Hp, Mp, Pa, Vc	8	0	41530	Eukaryote	IPR001001			
dnaQ	DNA polymerase III, epsilon subunit	fn	Ab, Ec, Fn, Hi, Pa, Vc	6	0	26006	Eukayotes	IPR006054			
dnaX	DNA polymerase III, gamma/tau subunits	fn	Ab, Bs, Ec, Fn, Mg, Mt, Mp, Sa, Sp, Vc	10	0	61077	Eukaryotes				
dxr	1-deoxy-D-xylulose 5-phosphate reductoisomerase	fn	Ab, Ec, Fn, Hi, Pa, Vc	6	0	42642	Eukaryotes				
engA	GTP-binding protein	fn	Bs, Ec, Fn, Mg, Mp, Pa, Sa, St, Vc	9	0	52331	Eukaryotes				

engB	ATP/GTP-binding protein	fn	Bs, Ec, Fn, Hi, Hp, Mg, Mt, Mp, pa, Sp, Vc	11	0	22173	Eukaryotes				
eno	enolase (2-phosphoglycerate dehydratase)	fn	Ab, Bs, Fn, Mg, Mt, Mp, Sa, St, Vc	9	0	49382	Ubiquitous				
fabF	beta-ketoacyl-ACP synthase II	fn	Bs, Ec, Fn, Hi, Hp, Mt, Pa, Sa, Sp, St, Vc	11	0	44020	Eukaryotes				
ffh	signal recognition particle GTPase	fn	Bs, Ec, Fn, Mg, Mt, Mp, Sa, Sp, Vc,	9	0	50208	Eukaryotes				
fmt	methionyl-tRNA formyltransferase	fn	Bs, Ec,Fn, Mg, Mt, Mp, Pa, Vc	8	0	35120	Mitochrondria l				
folA	dihydrofolate reductase type I	fn	Ab, Bs, Ec, Fn, Hi, Mg, Mp, Pa, Sa, Vc	10	0	21381	Eukaryotes				
folD	methyleneTHF enzyme/ methenyltetrahydrofolate cyclohydrolase/ methylenetetrahydrofolate dehydrogenase	fn	Ab, Bs, Fn, Mg, Mt, Mp, Pa, St	8	0	30300	Ubiquitous				

frr	ribosome recycling factor	fn	Bs, Ec,Fn, Hi, Mg, Mt, Mp, Pa, Sp, Vc	10	0	20422	Eukaryotes				
FTN_0110	peptide deformylase	fn	Bs, Ec, Fn, Hi, Hp, Mg, Mt, Mp, Pa, St, Vc	11	0	19798	Eukaryote	IPR000181			
FTN_0158	Sua5/YciO/YrdC family protein	fn	Ab, Ec, Fn, Hi, Pa Sa, Vc	7	0	20025	Eukaroyte	IPR004388			
FTN_0735	Mg-dependent DNase	fn	Bs, Ec, Fn, Hi, Hp, Mp, Pa, Sa, Sp, St, Vc	11	0	28674	Eukaryote	IPR012278			
FTN_0892	short chain dehydrogenase	fn	Bs, Ec, Fn, Hi, Mt, Pa, Ps, Sa, St, Sp, Vc	11	0	26454	Eukaryote	IPR002198			
FTN_0983	bifunctional protein: glutaredoxin 3 /ribonucleotide reductase beta subunit	fn	Ab, Bs, Ec, Fn, Hi, Mt, Pa	7	0	47253	Eukaryotes				
FTN_1125	short chain dehydrogenase	fn	Bs, Ec, Fn, Mt, Pa, Sa, St, Vc	8	0	31990	Eukaryote	IPR002198			
FTN_1250	predicted ATPase of the PP-loop superfamily	fn	Bs, Ec, Fn, Hi, pa, Sa, Sp, St, Vc	9	0	46067	Eukaryote	NA			

FTN_1412	DNA-directed RNA polymerase, alpha subunit/40 kD subunit	fn	Ab,Bs, Ec, Fn, Hi, Hp, Mg, Mt, Pa, Sa, Sp, St, Vc	13	0	35127	Eukaryotes	IPR011773			
FTN_1643	glutaredoxin-related protein	fn	Ab, Ec, Fn, Hi, Pa, St, Vc	7	0	12311	Eukayotes	NA			
ftsZ	cell division protein FtsZ	fn	Ab, Bs, Fn, Ec, Hi, Hp, Mg, Mt, Mp, Sa, St, Vc	12	0	39598	Eukaryotes				
fusA	elongation factor G (EF-G)	fn	Ab, Bs, Ec, Fn, Hi, Mg, Mt, Mp, Sa, Sp, St, Vc	12	0	77600	Eukaroyte	IPR004540			
gap	Glyceraldehyde 3-phosphate dehydrogenase	mp	Ab, Ec, Mt, Mg, Mp, Sa, Sp	7	0	53084	Eukaryotes				
gatB	Glu-tRNAGln amidotransferase B subunit	fn	Ab,Fn, Hp, Mg, Mt, Mp, Pa, Sa	8	0	52954	Ubiquitous				
gcp	O-sialoglycoprotein endopeptidase	fn	Fn, Mg Mp, Pa, Sa, Sp, Vc	7	0	36713	Ubiquitous				

glmS	Glucosamine--fructose-6-phosphate aminotransferase	fn	Bs, Ec, Fn, Mt, Pa, Sa, Sp	7	0	67370	Eukaryotes				
glyA	serine hydroxymethyltransferase	fn	Ab, Bs, Ec, Fn, Mg, Mt, Mp, Sa	8	0	45152	eukaryotes				
gmk	guanylate kinase	fn	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mt, Mp, Vc	10	0	21676	Ubiquitous				
gor	glutathione reductase	fn	Bs, Ec, Fn, Hi, Mt, Mp, Pa, Sa, Sp, St, Vc	11	0	49518	Eukaryotes				
gpmI	phosphoglycerate mutase, cofactor independent	fn	Bs, Ec, Fn, Hp, Mg, Mp, Pa, Sa, Sp, St, vc	11	0	57537	Eukaryotes				
groEL	chaperonin GroEL (HSP60 family)	fn	Bs, Ec, Fn, Mg, Mt, Sp, St, Vc	8	0	57186	Mitochrondrial				
groES	co-chaperonin GroES (HSP10)	fn	Bs, Ec,Fn, Mg, Mt, Pa, Sa, Vc	8	0	10114	Mitochrondrial				
grpE	Co-chaperone GrpE	mp	Ab, Ec, Hp, Mt, Mp, St, Vc	7	0	34570	Eukaryotes				

guaA	GMP synthetase (glutamine-hydrolysing)	fn	Ab, Fn, Hi, Hp, Mt, Sa,	6	0	57482	ubiquitous				
gyrB	DNA gyrase subunit B	fn	Ab, Bs, Fn, Hi, Mg, Mt, Mp, Sa, Sp, St, Vc	11	0	89611	Eukaryotic homologs				
hemC	hydroxymethylbilane synthase (porphobilinogen deaminase)	fn	Ec, Fn, Hp, Mt, Sa, Vc	6	0	33217	ubiquitous				
hemH	ferrochelatase	fn	Ec, Fn, Hi, Mt, Pa, St, Vc	7	0	38861	ubiquitous				
hpt(hprT)	Hypoxanthine-guanine phosphoribosyltransferase	mp	Bs, Ec, Fn, Hi, Mg, Mt, Sa, Sp, St, Vc	10	0	38991	Ubiquitious				
infB	translation initiation factor IF-2	fn	Bs, Ec, Fn, Mg, Mt, Mp, Pa, Sa, St, Vc	10	0	92175	Mitochrondrial				
infC	translation initiation factor IF-3	fn	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mt, Mp, Sa, Vc	11	0	20155	Eukaryotes	IPR001288			
ispD	2-C-methyl-D-erythritol 4-phosphate cytidylyltransferase	fn	Ab, Bs, Ec, Fn, Hi, Mt, Sp, Vc	8	0	25752	Eukaryotes				

lipB	lipoate-protein ligase B	fn	Ec, Fn, Hi, Mt, Pa, St, vc	7	0	23351	eukaryotes				
lon	Heat shock ATP-dependent protease La	mp	Bs, Ec, Fn, Hi, Hp, Mg, Pa, St, Vc	9	0	95889	Eukaroyte				
lpdA	pyruvate dehydrogenase complex, E3 component, dihydrolipoamide dehydrogenase	fn	Ec, Fn, Hi, Mt, Mp, Sa, St,	7	0	50316	Eukaryote				
lplA	lipoate-protein ligase A	fn	Bs, Ec, Fn, Mg, Mp, Sa, Sp, St, Vc	9	0	35284	Eukaryotes	IPR004134			
map	methionine aminopeptidase	fn	Bs, Ec, Fn, Hi, Hp, Mg, Mt, Mp, Pa, Sa, Sp St, Vc	13	0	28389	Eukaryotes				
metK	S-adenosylmethionine synthetase	fn	Bs, Ec, Fn, Hi, Hp, Mg, Mp, Sa, Sp, Vc	10	0	28259	Eukaryotes				
miaA	tRNA delta(2)-isopentenylpyrophosphate transferase	fn	Bs, Ec, Fn, Hp, Mg, Mt, Mp, Sa, St, Vc	10	0	41972	Ubiquitous				

murB	UDP-N-acetylmuramate dehydrogenase	fn	Ab, Fn, Hp, Mt, Sa, Sp, Vc	7	0	48256	Eukaryote				
MYPU_0080	HIT-like protein (Cell cycle regulation)	mp	Ab, Bs, Ec, Fn,Mn, Pa, Sa, Vc	8	0	29204	Eukaryote	IPR001310			
MYPU_0240	Lipoprotein	mp	Bs, Ec, Fn, Mg,Mn, Pa, Sa, St	8	0	93499	Eukaryotes				
MYPU_3030	SpoU class tRNA/rRNA methyltransferase	mp	Bs, Ec, Fn, Hi, Mg, Mn, Mt, Pa, Sa, Sp, St, Vc	12	0	20139	Ubiquitious				
MYPU_4490	ATP synthase subunit A	mp	Ab, Bs, Ec, Fn, Hp, Mg, Mn, Pa, Sa, Sp, St, Vc	13	0	58129	Ubiquitious				
MYPU_6720	Ribosome-binding factor A	mp	Bs, Ec, Fn, Hi, Hp, Mg, Mn, Pa, Sa, Sp, St, Vc	12	0	13100	Eukaryotes				
nfo	Endonuclease IV	mp	Ec, Mg, Mp, Mt, Pa, Sa, Sp, St,	9	0	31554	eukaryotes				

			Vc,								
nox	NADH oxidase	mp	Ab, Ec, Hi, Mg, Mp, Mt, Sa, St	8	0	53320	eukaryotes				
orn	oligoribonuclease (3'->5' exoribonuclease)	fn	Ec, Fn, Hi, Mt, Pa, St, Vc	7	0	20659	Eukaryotes	IP02562			
pdhD	Dihydrolipoamide dehydrogenase	mp	Bs, Fn, Hi, Mg, Mn, Mt, Pa, Sa, Sp, St, Vc	11	0	67139	Eukaryotes				
pepA	Aminopeptidase (leucine aminopeptidase)	mp	Ec, Fn, Hi, Hp, Mg, Mn, Mt, Pa, Sa, St,Vc	11	0	50593	Eukaryotes				
pepP	Aminopeptidase	mp	Hi, Mg, Mn, Pa, Sp, St, Vc	7	0	39342	Eukaryotes				
pfkA	6-phosphofructokinase	mp	Bs, Ec, Hi, Mg, Mn, Mt, Sa, Sp, St, Vc	10	0	35832	Eukaryotes				
pgi	glucose-6-phosphate isomerase	fn	Bs, Ec, Fn, Hi, Hp, Mg, Mp, Mt, Pa, Sa, Sp, St, Vc	13	0	48252	Ubiquitous				

pgk	Phosphoglycerate kinase	mp	Ab, Bs, Ec, Hi, Mt, Mg, Mp, Sa, Vc	9	0	86689	Eukaryotes				
pgm	Phosphoglyceromutase	mp	Bs, Ec, Fn, Hp, Mg, Mp, Pa, Sa, St, Vc,	10	0	57064	Ubiquitous				
ppa	inorganic pyrophosphatase	fn	Ab, Ec, Fn, Hi, Mg, Mp, Vc	7	0	19471	Eukaryotes				
ppnK	NAD kinase	fn	Bs, Ec, Fn, Hi, Hp, Mt, Pa, St, Vc	9	0	32467	Eukaryotes				
prfA	protein chain release factor A	fn	Ab, Bs, Fn, Hi, Mg, Mt, Mp, Pa, Sa, Sp, St, Vc	12	0	40263	Eukaryotes	IPR004373			
prfB	peptide chain release factor 2	fn	Bs, Fn, Mt, Pa, Sp, St, Vc	7	0	36419	Eukaryotes	IPR020853			
prs	Ribose-phosphate pyrophosphokinase	mp	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mt, Mp, Sa, Vc	11	0	34778	Eukaryotes	IPR005946			
pth	peptidyl-tRNA hydrolase	fn	Bs, Ec, Fn, Hi, Hp, Mg,	12	0	20992	Eukaryotes				

			Mt, Mp, Pa, Sa, Sp, Vc								
pyrG	CTP synthase (UTP-ammonia lyase)	fn	Ab, Bs, Ec, Fn, Hi, Mt, Mp, Pa, St	9	1	60899	eukaryotes				
sdhA	succinate dehydrogenase flavoprotein	fn	Ab, Ec, Fn, Hi, Hp, Mt, Pa, St, Vc	9	0	65870	Eukaryotes				
sodB	iron/manganese superoxide dismutase family protein	fn	Bs, Ec, Fn, Hi, Hp, Pa, Sa, Sp, St, Vc	10	0	21935	Eukaryotes				
ssb	single-strand DNA binding protein	fn	Bs, Fn, Hp, Mg, Mp, Sa, sp, Vc	8	0	17479	Eukaryotes				
sucA/kgd	2-oxoglutarate dehydrogenase complex, E1 component, 2-oxoglutarate decarboxylase	fn	Bs, Ec, Fn, Hi, Mt, Pa, Sa, St, Vc	9	0	52918	Eukaryotes				
tktA	Transketolase	mp	Ab, Bs, Fn, Hi, Mt, Mp, pa, St	8	0	67191	Eukaryotes				
tmk	thymidylate kinase	fn	Bs, Ec, Fn, Hi, Mg, Mp, Pa, Sa,	10	0	23581	Eukaryotes				

			St, Vc								
topA	DNA topoisomerase I	mp	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mn, Mt, Pa, Sa, Sp, St, Vc	14	0	72013	Eukaryotes				
tpiA	triosephosphate isomerase	fn	Bs, Fn, Hi, Mg, Mt, Mp, Sa, Vc	8	0	27483	Eukaryotes				
tsf	protein chain elongation factor EF-Ts	fn	Ab, Bs, Ec, Fn, Mg, Mt, Mp, Sa, St, Vc	10	0	30829	Ubiquitious	IPR001816			
tufA	elongation factor Tu	fn	Bs, Ec, Fn, Mg, Mt, Mp, Sa	7	0	43260	Ubiquitious	IPR004541			
ubiE	ubiquinone/menaquinone biosynthesis methyltransferase	fn	Ab, Bs, Ec, Fn, Hp, Mt, Pa, Sa	8	0	27940	Eukaryotes				
uppS	undecaprenyl pyrophosphate synthetase	fn	Bs, Ec, Hi, Hp, Fn, Mt, Pa, Sa, Sp, St, Vc	11	1	29588	Human	IPR001441			
ychF	GTPase translation factor, putative	mp	Bs, Ec, Fn, Hi, Mg, Mn,	12	0	41371	Ubiquitous				

			Mt, Pa, Sa, Sp, St, Vc								
acnA	aconitate hydratase	fn	Bs, Ec, Fn, Mt, Pa, Sa, St, Vc	8	0	102588					
atpE	ATP synthase, F0 sector, subunit c	fn	Ab, Fn, Mg, Mt, Mp, Pa, Vc	7	2						
cdsA	phosphatidate cytidylyltransferase	fn	Bs, Fn, Ec, Pa, Sa, St, Vc	7	8						
cls	Cardiolipin synthetase	mp	Ec, Fn, Mp, Pa, Sp, St, Vc,	7	3						
dnaE	DNA polymerase III, alpha subunit	fn	Ab, Bs, Ec, Fn, Hi, Mg, Mt, Mp, Pa, Sa, Sp, Vc	12	0	129608					
FTN_0502	ABC transporter, involved in lipoprotein release, permease component	fn	Ab, Ec, Fn ,Hi, Hp, Pa, St, Vc	8	4						
hemL	glutamate-1-semialdehyde-2,1-aminomutase	fn	Ab, Fn, Hp, Mg, Mt, Mp, Sa, St, Vc	9	2						

hflB	ATP-dependent metalloprotease	fn	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mt, Mp, Pa, Sa, Sp, St, vc	14	2						
lgt	prolipoprotein diacylglyceryl transferase	fn	Ec, Fn, Hi, Mg, Mt, Mp, Vc	7	7						
lolB	outer membrane lipoprotein LolB	fn	Ab, Ec, Fn, Hi, Mt, Pa, Vc	7	1						
lspA	lipoprotein signal peptidase II	fn	Ab, Bs, Ec, Fn, Hi, Hp, Mg, Mt, Pa, Sa, Sp, St, Vc	13	5						
lysU	lysyl-tRNA synthetase	fn	Ab, Ec, Fn, Hi, Mt, Pa, Vc	7	5						
mgtA	Cation-transporting P-type ATPase	mp	Ab,Ec, Fn, Hi, Mt, Mg, St,	7	10	104260					
MYPU_0270	ABC transporter permease protein	mp	Bs, Ec, Fn, Mg, Mn, Mt, Sa, Sp, St, Vc	10	6	39965					
MYPU_0280	ABC transporter permease protein	mp	Bs, Ec, Hi, Hp, Mg, Mn, Mt, Pa,	11	6	38416					

			Sp, St, Vc								
MYPU_7740	ABC transporter permease protein	mp	Fn, Hi, Mg, Mn, Mt, Pa, Sa, Sp, St, Vc	10	8						
nuoJ	NADH dehydrogenase I, J subunit	fn	Bs, Ec, Fn, Hp, Mt, Pa, St	7	5						
nuoL	NADH dehydrogenase I, L subunit	fn	Ab, Bs, Ec, Fn, Hp, Mt, Pa, Sa	8	18						
nuoM	NADH dehydrogenase I, M subunit	fn	Ab, Ec, Fn, Hp, Mt, Pa, Sa	7	14						
ompH	outer membrane protein	fn	Ec, Fn, Hi, Hp, Pa, St, Vc	7	0						
oppB	Oligopeptide ABC transporter, permease protein (OppB)	mp	Bs, Ec, Hi, Hp, Mg, Mn, Mt, Sa, St, Vc	10	7						
oppC	Oligopeptide ABC transporter, permease protein (OppC)	mp	Bs, Ec, Hi, Hp, Mp, Mg, Mt, St, Vc,	9	6						
pgsA	phosphatidylglycerophosphate synthetase	fn	Bs, Ec, Fn, Hi, Hp, Mt, Mp, Pa,	10	4						

			Sa, Vc								
polC	DNA polymerase III subunit alpha	mp	Bs, Mg, Mt, Sa, Sp, Bp	8	0	166245					
potA	Spermidine/putrescine ABC transporter ATP-binding protein PotA	mp	Ec, Fn, Hi, Mg, Mp, Pa, Sp, St, Vc,	9	6						
potB	Spermidine/putrescine ABC transporter permease protein PotB	mp	Ec, Fn, Hi, Mg, Mp, Pa, Sp, St, Vc,	9	6						
potC	Spermidine/putrescine ABC transporter permease protein PotC	mp	Ec, Fn, Hi, Mg, Mn, Pa, Sp, St, Vc	9	6						
ptsG	PTS system, glucose-specific IIABC component	mp	Bs, Ec, Mg, Mp, Sa, Sp, St, Vc,	8	12						
rpoB	DNA-directed RNA polymerase, beta subunit/140 kD subunit	fn	Ab, Bs, Ec, Fn, Hi, Mt, Mp, Pa, Sa, St, Vc	11	0	151198					
rpoC	DNA-directed RNA polymerase, beta' subunit/160 kD subunit	fn	Ab, Bs, Ec, Fn, Mg, Mt, Mp, Sa, St, Vc	10	7						

secA	preprotein translocase, subunit A (ATPase, RNA helicase)	fn	Ab, Bs, Ec, Fn, Mg, Mt, Mp, Pa, Sa, Vc	10	0	103440					
secD	preprotein translocase, subunit D, membrane protein	fn	Ab, Ec, Fn, Hi, Hp, Mp, Mt, Pa, Sa, St, Vc,	11	12						
secF	preprotein translocase, subunit F, membrane protein	fn	Ab, Ec, Fn, Hi, Hp, Pa, Sa St, Vc	9	6						
secY	preprotein translocase, subunit Y, membrane protein	fn	Bs, Ec, Fn, Hi, Hp, Mt, Mg, Mp, St, Sa Vc	11	10						
tolR	group A colicin translocation; tolR protein	fn	Ec, Fn, Hi, Hp, Pa, St, Vc	7	1						
trkH	K+ transporter (Trk) family protein	fn	Ec, Fn, Hi, Pa, Sa,Sp, St, Vc	8	10						
yajC	preprotein translocase family protein	fn	Bs, Ec, Fn, Hi, Hp, pa, Sa, Sp, St, Vc	10	2						
yldC	Inner membrane protein translocase component YidC	mp	Hi, Hp, Mg, Mp, Mt, Pa,	8	5						

			St, Vc								
accB	acetyl-CoA carboxylase, biotin carboxy carrier protein subunit	fn	Ab, Bs, Fn, Vc	4							
ackA	Acetate kinase	mp	Ec, Mg, Mp, Sa, Vc	5							
acpD	Acyl carrier protein phosphodiesterase	mp	Ec, Hi, Mp	3							
apt	Adenine phosphoribosyltransferase	mp	Ec, Hi, Hp, Mg, Mp, Vc	6							
aroD	3-dehydroquinate dehydratase	fn	Ec, Hi, Hp, Mg, Mp, Vc	6							
atpB	ATP synthase, F0 sector, subunit a	fn	Fn, Mg, Mp, Vc	4							
bioC	biotin synthesis protein BioC	fn	Ab, Hi, Fn,	3							
birA	biotin--acetyl-CoA-carboxylase ligase	fn	Bs, Ec, Fn, Hi, Sp, Vc	6							
cbiQ	Metal ion ABC transporter, permease protein	mp		5							
chaB	putative membrane ion antiporter regulator	fn	Fn	1							
csd	Cysteine desulferase	mp	Bs, Mt, Gp	3							
cysK	cysteine synthase	fn	Fn, Pa	2							

deoC	Deoxyribose-phosphate aldolase	mp	Mg, Mp, Mt, Sa	4							
dnaJ	Heat shock protein DnaJ	mp	Mg, Mp, Sa,	3							
dnaK	Molecular chaperone DnaK	mp	Ec, Mt, Mp, St, Sa	5							
dut	dUTP pyrophosphatase (Deoxyuridine 5'- triphosphate nucleotidohydrolase)	fn	Ab, Ec, Fn, Mt,	4							
fabH	3-oxoacyl-[acyl-carrier protein] synthase III	fn	Ec, Fn, Hi, Vs	4							
fimV	Type IV pili, pilus assembly protein	fn	Fn	1							
folB	dihydroneopterin aldolase	fn	Ab, Fn, Mt,	3							
FTN_0015	regulatory protein, AlpA family	fn	Ec, Fn, St, Vc	4							
FTN_0072	LPS fatty acid acyltransferase	fn	Ec, Hi, Fn, Pa, St, Vc	6							
FTN_0082	predicted hydrolase of the HAD superfamily	fn	Bs, Fn, Sa, Sp	4							
FTN_0092	inorganic phosphate transporter (PiT) family protein	fn	Bs, Fn, Mt, Sa	4							
FTN_0093	cytochrome b561 family protein	fn	Ec, Fn, Pa, Sa, St	5							
FTN_0134	carboxylesterase/phospholipase family protein	fn	Fn, Pa	2							

FTN_0279	oxidoreductase	fn	Ab, Fn, Pa	3							
FTN_0295	phosphatidic acid phosphatase, PAP2 superfamily	fn	Fn, Pa	2							
FTN_0486	acetyltransferase	fn	Fn, Sp	2							
FTN_0559	peptidyl-prolyl cis-trans isomerase (PPIase)	fn	Ec, Fn, Hi, Pa, St, Vc	6							
FTN_0645	multidrug/oligosaccharidyl-lipid/polysaccharide (MOP) transporter	fn	Fn	1							
FTN_0662	predicted thiamine pyrophosphokinase	fn	Bs, Fn, Sa	3							
FTN_0749	predicted metal-dependent hydrolase	fn	fn, Hp, Mp	3							
FTN_0783	isochorismatase family protein	fn	Fn, Sp	2							
FTN_0819	6-hydroxymethyl-7,8-dihydropterin pyrophosphokinase/dihydropteroate synthase	fn	Fn	1							
FTN_0886	sugar:cation symporter family protein	fn	Bs, Fn	2							
FTN_0889	transcriptional regulator, cro/C1-type HTH domain	fn	Bs, Fn, Pa, Sp	4							
FTN_0978	ubiquinone biosynthesis protein COQ7	fn	Fn, Pa	2							

FTN_1148	glycoprotease family protein	fn	Ec, Fn, Hi, Pa, St, Vc	6							
FTN_1163	oligoketide cyclase/lipid transport protein	fn	Ec, Fn, Pa, St, Vc	5							
FTN_1296	sigma54 modulation protein	fn	Ec, Fn, Pa, St, Vc	5							
FTN_1301	choloylglycine hydrolase family protein	fn	Fn, Sa, St, Vc	4							
FTN_1564	fatty acid desaturase	fn	Fn	1							
FTN_1702	phosphopantetheinyl transferase	fn	Fn, Sa	2							
FTN_1748	4Fe-4S ferredoxin	fn	Ab, Fn, Hp, Mt, Pa, Vc	6							
FTN_1749	acyltransferase	fn	Bs, Fn, Mg, Mp, Pa, Vc	6							
ftsH	Cell division protein FtsH	mp	Ab, Hp, Mt, Mg, Sa,Vc	6							
ftsQ	cell division protein FtsQ	fn	Ec, Fn, Hi, Mt, Vc	5							
gatA	Glu-tRNAGln amidotransferase A subunit	fn	Ab, Fn, Mg, Mt, Mp, Sa	6							
gatC	Glu-tRNAGln amidotransferase C subunit	fn	Ab, Bs, Fn, Mp, Sp	5							

gidA	glucose inhibited division protein A	fn	Fn, Mg, Mp, Sa	4							
gpsA	Glycerol-3-phosphate dehydrogenase	mp	Bs, Hi, Mp, Vc	4							
hemA	glutamyl-tRNA reductase	fn	Ac, Fn, Mt,	3							
hemB	delta-aminolevulinic acid dehydratase	fn	Ec, Fn, Hp, Mt, Sa	5							
hemD	uroporphyrinogen-III synthase	fn	Ec, Fn, Mt, Vc	4							
hemE	uroporphyrinogen decarboxylase	fn	Ab, Ec, Fn, St, Vc	5							
hemF	coproporphyrinogen III oxidase	fn	Ec, Fn, Pa, St, Vc	5							
hemG	protoporphyrinogen oxidase	fn	Fn	1							
hemK	Protoporphirogen oxidase	mp	Ec, Hi, Mt, Mp, St	5							
holA	DNA polymerase III, delta subunit	fn	Ec, Fn, Hi, Mp, St, Vc	6							
hprK	HPr kinase/phosphorylase	mp	Bs, Ec, Hi, Mg, Mp, Sa	6							
icd	isocitrate dehydrogenase	fn	Fn, Mt, Pa, Vc	4							
iscU	IscU, NifU homolog involved in Fe-S cluster formation	mp	Ec, Hi, Mp, Pa, St, Vc	6							
ispB	octaprenyl diphosphate synthase	fn	Bs, Ec, Fn, Hp, Mt, Vc	6							

ispG	1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate synthase	fn	Ab, Bs, Ec, Fn, Pa, Vc	6							
ktrA	Potassium uptake protein KtrA	mp	Bs, Mg, Mp, Mt, Sp,	5							
ktrB	Potassium uptake protein KtrB	mp		6							
lepB	signal peptidase I	fn	Ac, Ec, Fn, Hi, Hp, St	6							
lipA	lipoic acid synthetase	fn	Fn, Mt, Sa	3							
lolA	lipoprotein releasing system, subunit A, outer membrane lipoproteins carrier	fn	Ab, Fn, Hi, Hp, Pa, Vc	6							
lpxA	UDP-N-acetylglucosamine acyltransferase	fn	Ec, Fn, Hp, St, Vc	5							
lpxB	lipid A disaccharide synthetase	fn	Ab, Ec, Fn, Vc	4							
lpxD	UDP-3-O-(3-hydroxy-fatty acid)-glucosamine N-acyltransferase	fn	Ab, Fn, Hi, Hp, Vc	5							
lpxH	UDP-2,3-diacylglucosamine hydrolase	fn	Ab, Ec, Fn, Sa, St, Vc	6							
mesJ	PP-loop superfamily ATPase/cell cycle protein	mp	Bs, Ec, Fn, Hi, Pa, Vc	6							

mraY	phospho-N-acetylmuramoyl-pentapeptidetransferase	fn	Ab, Ec, Fn, Mt,	4							
msrB	Methionine sulfoxide reductase B	mp	Ab,Ec, Fn, St, Vc	5							
mtn	5'-methylthioadenosine/S-adenosylhomocysteine nucleosidase	fn	Mg, Mp	2							
MYPU_0250	Lipoprotein (nuclease)	mp	Mp, Mg	2							
MYPU_1030	Oligo-1,6-glucosidase	mp	Mp, Vc	2							
MYPU_1580	Lipoprotein	mp	Mp	1							
MYPU_1610	Predicted kinase, related to dihydroxyacetone kinase	mp	Mg, Mp	2							
MYPU_1760	Conserved protein	mp	Mp	1							
MYPU_2250	Phosphonate ABC transporter, substrate binding protein (P37), putative	mp	Mp	1							
MYPU_2440	COF family HAD hydrolase protein, conserved	mp	Ec, Mg, Mn, Sa, Sp, St	6							
MYPU_2820	Lipoprotein	mp	Mp	1							

MYPU_2930	Conserved hypothetical protein, putative Na+ driven multidrug efflux pump	mp	Mp	1							
MYPU_3010	COF family HAD hydrolase protein	mp	Ec, Mg, Mp	3							
MYPU_3230	Lipoprotein	mp	Mp	1							
MYPU_3590	DegV family protein	mp	Mg, Mp	2							
MYPU_3740	Lipoprotein	mp	Mp	1							
MYPU_4080	Mg2+ transport protein (MgtE)	mp	Mp	1							
MYPU_4210	Potassium channel protein	mp	Ec, Fn,Mn, Pa, St, Vc	6							
MYPU_4830	Nicotinate phosphoribosyltransferase	mp	Bs, Mp, Sp	3							
MYPU_4840	Conserved hypothetical protein	mp	Mp	1							
MYPU_4930	S-adenosyl-methyltransferase	mp	Ec, Mg, Mp, Mt, Sp, Vc	6							
MYPU_4940	Protein MraZ	mp	Mp	1							
MYPU_5490	COF family HAD hydrolase protein	mp	Ec, Mg, Mn, Sa, Sp, St	6							
MYPU_5560	Holliday junction resolvase, putative	mp	Ec, Mg, Mp, Mt, Sp, Vc	6							

MYPU_6330	Oligo-1,6-glucosidase	mp	Mp, Vc	2							
MYPU_6860	Protein phosphatase	mp	Mg, Mp, Sp	3							
MYPU_6920	Phosphoesterase, DHH subfamily 1	mp	Mg, Mp, Mt, Sp	4							
MYPU_7040	Metallo-beta-lactamase superfamily protein	mp	Bs, Mg, Mp, Sa, Sp	5							
MYPU_7050	Hydrolase, metallo-beta-lactamase superfamily	mp	Bs, Mg, Mp, Sa, Sp	5							
MYPU_7200	5'-3' exonuclease, exo domain of DNA polymerase I	mp	Mp	1							
MYPU_7700	Glycosyltransferase	mp	Mp	1							
nadE	NH(3)-dependent NAD(+) synthase	mp	Ab, Ec, Fn, Sa, Sp, Vc	5							
nhaD	Na+:H+ antiporter	fn	Fn, Mt, Vc	3							
nrdA	ribonucleoside-diphosphate reductase, alpha subunit	fn	Ab, Ec, Fn, Hi, Vc	5							
nrdI	Ribonucleoprotein NrdI	mp	Ec, Mg, Mp, Mt, Sa, St	6							
nuoA	NADH dehydrogenase I, A subunit	fn	Ec, Fn, Mt, Pa, St	5							
nuoB	NADH dehydrogenase I, B subunit	fn	Ec, Fn, Hp, Mt, Pa, St	6							

nuoC	NADH dehydrogenase I, C subunit	fn	Fn	1							
nuoD	NADH dehydrogenase I, D subunit	fn	Ec, Fn, Hp, Mt, Pa, St	6							
nuoE	NADH dehydrogenase I, E subunit	fn	Ec, Fn, Mt, Pa, St	5							
nuoF	NADH dehydrogenase I, F subunit	fn	Ec, Fn, Mt, Pa, St	5							
nuoG	NADH dehydrogenase I, G subunit	fn	Ec, Fn, Mt, Pa, St	5							
nuoH	NADH dehydrogenase I, H subunit	fn	Ec, Fn, Hp, Mt, Pa, St	6							
nuoI	NADH dehydrogenase I, I subunit	fn	Ec, Fn, Hp, Mt, Pa, St	6							
nuoK	NADH dehydrogenase I, K subunit	fn	Ec, Fn, Hp, Mt, Pa, St	6							
oppD	Oligopeptide ABC transporter, ATP-binding protein	mp	Ec, Mg, Mp, Sa	4							
pdhA	Pyruvate dehydrogenase component E1, alpha subunit	mp	Bs, Mg, Mp, Sa	4							
pdhC	Dihydrolipoamide acetyltransferase	mp	Mg, Mn, Sa	3							
pknB	Serine/threonine-protein kinase PknB	mp	Mp	2							

plsC	1-acylglycerol-3-phosphate acyltransferase	fn	Ec, Fn, Hi, Hp, Mp, Vc	6							
potD	Spermidine/putrescine ABC transporter substrate binding protein	mp	Ec, Hi, Mp	3							
psd	phosphatidylserine decarboxylase, proenzyme	fn	Ab, Fn, Hp,	3							
pssA	phosphatidylserine synthase	fn	Ec, Fn, St, Vc	4							
pta/eutD	Phosphate acetyltransferase	mp	Mt, Mn, Sa	3							
ptsN	PEP-dependent sugar phosphotransferase system (PTS), enzyme IIA	fn	Ec, Fn, Hi	3							
purB	adenylosuccinate lyase	fn	Ab, Fn, Sa,	3							
pyk	Pyruvate kinase	mp	Hi, Mt, Mg, Mp, Sa	5							
rbfA	ribosome-binding factor A	fn	Fn, Hp, Mg, Sa, Vc	5							
rbsF/rpsF	Ribosomal protein S6	mp	Mp	1							
rho	transcription termination factor Rho	fn	Fn, Mt, Sa, Vc	4							

ribAB	3,4-dihydroxy-2-butanone 4-phosphate synthase/GTP cyclohydrolase II	fn	Ab, Fn, Mt, Vc	4							
rluD	Pseudouridine synthase	mp	Ec, Hi, Hp, Mg, Mp	5							
rne	ribonuclease E	fn	Ec, Fn, Hi, Mt	4							
rnhC	Ribonuclease HIII	mp	Mg, Mp	2							
rpiB	Ribose-5-phosphate isomerase B	mp	Ec, Hp, Mg, Mt, Mp,	5							
rubA	rubredoxin	fn	Fn, Mt, Pa, St,	5							
scpA	Segregation and condensation protein A	mp	Bs, Mn	2							
scpB	Segregation and condensation protein B	mp	Bs, Mn	2							
sdhD	succinate dehydrogenase hydrophobic membrane anchor protein	fn	Ec, Fn, Pa, St, Vc	5							
secE	preprotein translocase, subunit E, membrane protein	fn	Ab, Ec, Fn, Pa, St, Vc	6							
serA	D-3-phosphoglycerate dehydrogenase	fn	Fn, Hi, Sa, Sp	4							
serC	phosphoserine aminotransferase	fn	Ab, Fn, Hp, Mt, Vc	5							

smc	Chromosome segregation ATPase Smc	mp	Bs, Mp, Sa	3							
sspA	stringent starvation protein A	fn	Ec, Fn, Hi, Pa, St, Vc	6							
sucB	2-oxoglutarate dehydrogenase complex, E2 component, dihydrolipoyltranssuccinase	fn	Bs, Ec, Fn, Mt, Pa, Sa,	6							
sufB	sufS activator complex, sufB subunit	fn	Bs, Ec, Fn, Sa, Sp, St	6							
sufD	sufS activator complex, sufD subunit	fn	Ec, Fn, St,	3							
sufE	sulfur acceptor protein SufE	fn	Ec, Fn, Mt, Pa, St, Vc	6							
thiI	Thiamine biosynthesis/tRNA modification protein	mp	Mg, Mp	2							
tolQ	group A colicin translocation; tolQ protein	fn	Ec, Fn, Hi, Pa, St, Vc	6							
trkA	Trk system potassium uptake protein TrkA	fn	Ec, Fn, Hi, Pa, St, Vc	6							
trmE	tRNA modification GTPase TrmE	mp	Ec, Hi, Mg, Mp, Sa	5							

trmU	tRNA (5-methylaminomethyl-2-thiouridylate)-methyltransferase	mp	Bs, Ec, Mg, Mp, Vc	5							
trxA	Thioredoxin	mp	Ab, Bs, Mg, Mp, St,	5							
trxB	Thioredoxin reductase	mp	Bs, Mg, Mn, Sp	4							
ubiA	4-hydroxybenzoate octaprenyltransferase	fn	Ac, Fn, Hp,	3							
ubiB	2-octaprenylphenol hydroxylase	fn	Ec, Fn, Pa, Vc	4							
ubiF	2-octaprenyl-3-methyl-6-methoxy-1,4-benzoquinol hydroxylase	fn	Ec, Fn, Pa, St, Vc	5							
ubiG	3-demethylubiquinone 3-methyltransferase/ 2-octaprenyl-6-hydroxyphenol methylase	fn	Ec, Fn, Vc	3							
ubiH	2-octaprenyl-6-methoxyphenyl hydroxylase	fn	Ec, Fn, Pa, St, Vc	5							
upp	Uracil phosphoribosyltransferase	mp	Mg, Mn, Sa	3							
alaS	alanyl-tRNA synthetase	fn									
argS	Arginyl-tRNA synthetase	mp									

asnS/asnC	Asparaginyl-tRNA synthetase	mp									
aspS	aspartyl-tRNA synthetase	fn									
cysS	cysteinyl-tRNA synthetase	fn									
FTN_0026	hypothetical protein	fn									
FTN_0073	conserved membrane protein of unknown function	fn									
FTN_0091	conserved protein of unknown function	fn									
FTN_0105	outer membrane lipoprotein	fn									
FTN_0160	zinc-binding protein	fn									
FTN_0274	conserved protein of unknown function	fn									
FTN_0314	hypothetical protein	fn									
FTN_0324	conserved hypothetical protein	fn									
FTN_0356	protein of unknown function	fn									
FTN_0370	conserved hypothetical protein	fn									
FTN_0371	protein of unknown function	fn									
FTN_0381	protein of unknown function	fn									

FTN_0450	protein of unknown function	fn									
FTN_0460	conserved protein of unknown function	fn									
FTN_0478	conserved hypothetical membrane protein	fn									
FTN_0480	protein of unknown function	fn									
FTN_0491	hypothetical protein	fn									
FTN_0510	hypothetical protein	fn									
FTN_0521	protein of unknown function	fn									
FTN_0547	protein of unknown function	fn									
FTN_0575	protein of unknown function	fn									
FTN_0610	conserved protein of unknown function	fn									
FTN_0658	conserved membrane protein of unknown function	fn									
FTN_0659	conserved membrane protein of unknown function	fn									
FTN_0682	conserved protein of unknown function	fn									
FTN_0719	hypothetical protein	fn									
FTN_0724	hypothetical protein	fn									

FTN_0743	conserved hypothetical membrane protein	fn									
FTN_0752	conserved protein of unknown function	fn									
FTN_0775	hypothetical protein	fn									
FTN_0837	hypothetical protein	fn									
FTN_0864	protein of unknown function	fn									
FTN_0867	conserved protein of unknown function	fn									
FTN_0874	nucleotide-binding protein	fn									
FTN_0890	conserved protein of unknown function	fn									
FTN_0903	conserved protein of unknown function	fn									
FTN_0904	conserved protein of unknown function	fn									
FTN_0924	hypothetical membrane protein	fn									
FTN_0941	hypothetical protein	fn									
FTN_0942	hypothetical protein	fn									
FTN_0944	protein of unknown function	fn									
FTN_1037	hypothetical membrane protein	fn									

FTN_1065	conserved protein of unknown function	fn									
FTN_1105	conserved membrane protein of unknown function	fn									
FTN_1122	hypothetical protein	fn									
FTN_1132	conserved protein of unknown function	fn									
FTN_1150	GTP-binding protein	fn									
FTN_1167	protein of unknown function	fn									
FTN_1183	protein of unknown function	fn									
FTN_1184	hypothetical membrane protein	fn									
FTN_1193	hypothetical protein	fn									
FTN_1244	hypothetical protein	fn									
FTN_1258	conserved protein of unknown function	fn									
FTN_1269	protein of unknown function	fn									
FTN_1297	protein of unknown function	fn									
FTN_1369	protein of unknown function	fn									
FTN_1482	conserved outer membrane protein of unknown function	fn									

FTN_1495	conserved protein of unknown function	fn									
FTN_1666	conserverd protein of unknown function	fn									
FTN_1747	hypothetical membrane protein	fn									
FTN_1751	conserved hypothetical protein	fn									
FTN_A0001	hypothetical protein	fn									
FTN_A0002	hypothetical protein	fn									
glnS	glutaminyl-tRNA synthetase	fn									
gltX	glutamyl-tRNA synthetase	fn									
glyQ	glycyl-tRNA synthetase alpha chain	fn									
glyS	glycyl-tRNA synthetase beta subunit	fn									
hisS	histidyl-tRNA synthetase	fn									
ileS	isoleucyl-tRNA synthetase	fn									
leuS	leucyl-tRNA synthetase	fn									
metG	methionyl-tRNA synthetase	fn									
MYPU_0110	Conserved hypothetical protein	mp									

MYPU_1190	Conserved hypothetical protein, similar to glycoprotein endopeptidase	mp									
MYPU_1200	Conserved protein	mp									
MYPU_1330	Hypothetical protein	mp									
MYPU_1460	Conserved hypothetical protein	mp									
MYPU_1490	Hypothetical protein	mp									
MYPU_2310	Hypothetical protein	mp									
MYPU_2330	Hypothetical protein	mp									
MYPU_2510	Hypothetical protein	mp									
MYPU_2560	Hypothetical protein	mp									
MYPU_2950	Conserved hypothetical membrane protein	mp									
MYPU_3050	Conserved hypothetical protein	mp									
MYPU_3130	Hypothetical protein, possible esterase or lipase	mp									
MYPU_4070	Conserved hypothetical protein	mp									
MYPU_4440	Hypothetical protein	mp									

MYPU_4480	Hypothetical protein	mp									
MYPU_4760	Conserved hypothetical protein	mp									
MYPU_4770	Conserved hypothetical protein	mp									
MYPU_4920	Hypothetical protein	mp									
MYPU_5140	Conserved hypothetical protein, possible hemolysin	mp									
MYPU_5170	Conserved hypothetical protein	mp									
MYPU_6130	Conserved protein	mp									
MYPU_6690	Hypothetical protein, likely surface protein	mp									
MYPU_6700	Conserved hypothetical protein	mp									
MYPU_6710	Conserved hypothetical protein, possible Ser/Thr protein phosphatase	mp									
MYPU_7090	Conserved hypothetical protein, possibly related to phosphomannomutase	mp									
MYPU_7170	Hypothetical protein	mp									
MYPU_7240	Hypothetical protein	mp									

MYPU_7380	Conserved hypothetical protein, putative Na+ driven multidrug efflux pump	mp									
MYPU_7430	Conserved hypothetical protein	mp									
MYPU_7660	Conserved hypothetical protein, degV family member	mp									
MYPU_7670	Hypothetical protein	mp									
pheS	phenylalanyl-tRNA synthetase alpha-chain	fn									
pheT	phenylalanine tRNA synthetase, beta-subunit	fn									
proS	prolyl-tRNA synthetase	fn									
rmpC	Ribosomal protein L29	mp									
rplA	50S ribosomal protein L1	fn									
rplB	50S ribosomal protein L2	fn									
rplC	50S ribosomal protein L3	fn									
rplD	50S ribosomal protein L4	fn									
rplE	50S ribosomal protein L5	fn									
rplF	50S ribosomal protein L6	fn									
rplI	Ribosomal protein L9	mp									

rplJ	50S ribosomal protein L10	fn									
rplK	50S ribosomal protein L11	fn									
rplL	50S ribosomal protein L7/L12	fn									
rplM	50S ribosomal protein L13	fn									
rplN	50S ribosomal protein L14	fn									
rplO	50S ribosomal protein L15	fn									
rplP	50S ribosomal protein L16	fn									
rplQ	50S ribosomal protein L17	fn									
rplR	50S ribosomal protein L18	fn									
rplS	Ribosomal protein L19	mp									
rplT	50S ribosomal protein L20	fn									
rplU	ribosomal protein L21	fn									
rplV	50S ribosomal protein L22	fn									
rplW	50S ribosomal protein L23	fn									
rplX	50S ribosomal protein L24	fn									
rplY	50S ribosomal protein L25	fn									
rpmA	ribosomal protein L27	fn									

rpmB	50S ribosomal protein L28	fn									
rpmC	50S ribosomal protein L29	fn									
rpmD	50S ribosomal protein L30	fn									
rpmE	50S ribosomal protein L31	fn									
rpmF	50S ribosomal protein L32	fn									
rpmG	Ribosomal protein L3s	mp									
rpmH	50S ribosomal protein L34	fn									
rpmI	50S ribosomal protein L35	fn									
rpmJ	50S ribosomal protein L36	fn									
rpsB	30S ribosomal protein S2	fn									
rpsC	30S ribosomal protein S3	fn									
rpsD	30S ribosomal protein S4	fn									
rpsE	30S ribosomal protein S5	fn									
rpsF	30S ribosomal protein S6	fn									
rpsG	30S ribosomal protein S7	fn									
rpsH	30S ribosomal protein S8	fn									

rpsI	30S ribosomoal protein S9	fn									
rpsJ	30S ribosomal protein S10	fn									
rpsK	30S ribosomal protein S11	fn									
rpsL	30S ribosomal protein S12	fn									
rpsM	30S ribosomal protein S13	fn									
rpsN	30S ribosomal protein S14	fn									
rpsO	30S ribosomal protein S15	fn									
rpsP	30S ribosomal protein S16	fn									
rpsQ	30S ribosomal protein S17	fn									
rpsR	30S ribosomal protein S18	fn									
rpsS	30S ribosomal protein S19	fn									
rpsT	ribosomal protein S20	fn									
rpsU	30S ribosomal protein S21	fn									
serS	seryl-tRNA synthetase	fn									
thrS	threonyl-tRNA synthetase	fn									
trpS	tryptophanyl-tRNA synthetase	fn									

tyrS	tyrosyl-tRNA synthetase	fn									
valS	valyl-tRNA synthetase	fn									
ymdA	Conserved hypothetical protein	mp									