

Appendix 1. Genes marked with "X" do not meet the criteria established for microarray analysis of gene expression

Name	ID	Blood	CSF	ECC
Conserved hypothetical protein	NTL02SP0067			
Transporter, truncation	NTL02SP0105			
Hypothetical protein	NTL02SP0107			
Conserved hypothetical protein	NTL02SP0108			
Hypothetical protein	NTL02SP0225			
The type 2 capsule locus of Streptococcus pneumoniae	NTL02SP0315			
The type 2 capsule locus of Streptococcus pneumoniae	NTL02SP0316			
The type 2 capsule locus of Streptococcus pneumoniae	NTL02SP0317			
The type 2 capsule locus of Streptococcus pneumoniae	NTL02SP0319			
Ribonuclease P - RNA component	NTL02SP0332.1			
Hypothetical protein	NTL02SP0419			
Hypothetical protein	NTL02SP0491			
Hypothetical protein	NTL02SP0703			
Hypothetical protein	NTL02SP0955			
UDP-N-acetyl-D-mannosaminuronic acid dehydrogenase	NTL02SP0961			
Conserved hypothetical protein	NTL02SP0962			
Hypothetical protein	NTL02SP0963			
Hypothetical protein	NTL02SP0965			
Conserved hypothetical protein	NTL02SP0967			
Hypothetical protein	NTL02SP0968			
Nikkomycin biosynthesis protein, carboxylase	NTL02SP0969			
Conserved hypothetical protein	NTL02SP0970			
Conserved hypothetical protein	NTL02SP0972			
Hypothetical protein	NTL02SP1026			
Conserved hypothetical protein	NTL02SP1178			
Cytidine deaminase	NTL02SP1187			
Conserved hypothetical protein	NTL02SP1188			
Hypothetical protein	NTL02SP1189			
ABC transporter membrane-spanning permease - oligopeptide tran	NTL02SP1191			
ABC transporter substrate-binding protein - oligopeptide trans	NTL02SP1193			
Conserved hypothetical protein	NTL02SP1194			
Hypothetical protein	NTL02SP1212			
Hypothetical protein	NTL02SP1402			
Hypothetical protein	NTL02SP1480			
Hypothetical protein	NTL02SP1483			
Hypothetical protein	NTL02SP1548			
Conserved hypothetical protein	NTL02SP1549			
chromosomal replication initiator protein DnaA	SP0001			
DNA polymerase III, beta subunit	SP0002			
hypothetical protein	SP0003	X	X	X
GTP-binding protein	SP0004			
peptidyl-tRNA hydrolase	SP0005			
transcription-repair coupling factor	SP0006		X	
S4 domain protein	SP0007			
hypothetical protein	SP0008			
hypothetical protein	SP0009		X	
conserved domain protein	SP0010		X	
MesJ/Ycf62 family protein	SP0011			
hypoxanthine-guanine phosphoribosyltransferase	SP0012			
cell division protein FtsH	SP0013			
transcriptional regulator ComX1	SP0014			
IS630-Spn1, transposase Orf1	SP0015			
IS630-Spn1, transposase Orf2	SP0016			

IS1167, transposase, degenerate	SP0017		X	
hypothetical protein	SP0018		X	
adenylosuccinate synthetase	SP0019			
cytidine/deoxycytidylate deaminase family protein	SP0020		X	
deoxyuridine 5triphosphate nucleotidohydrolase, putative	SP0021			
conserved hypothetical protein	SP0022	X		X
DNA repair protein RadA, authentic point mutation	SP0023	X		X
conserved hypothetical protein	SP0024			
hypothetical protein	SP0025			
hypothetical protein	SP0026			
ribose-phosphate pyrophosphokinase	SP0027			
IS1167, transposase, truncation	SP0028	X	X	
IS1167, transposase, truncation	SP0028		X	X
hypothetical protein	SP0029	X		X
competence-induced protein Ccs16	SP0030	X		X
hypothetical protein	SP0031		X	
DNA polymerase I	SP0032			
conserved hypothetical protein	SP0033			
membrane protein	SP0034			
aromatic amino acid aminotransferase	SP0035			
conserved hypothetical protein	SP0036			
fatty acid/phospholipid synthesis protein PlsX	SP0037			
acyl carrier protein, putative	SP0038			
IS1381, transposase OrfB, truncation	SP0039		X	
bacteriocin BlpU	SP0041			
competence factor transporting ATP-binding/permease protein Co	SP0042			
competence factor transport protein ComB	SP0043			
phosphoribosylaminoimidazole-succinocarboxamide synthase	SP0044		X	
phosphoribosylformylglycinamide synthase, putative	SP0045		X	
amidophosphoribosyltransferase	SP0046		X	
phosphoribosylformylglycinamide cyclo-ligase	SP0047		X	
phosphoribosylglycinamide formyltransferase	SP0048		X	
vanZ protein, putative	SP0049	X	X	X
phosphoribosylaminoimidazolecarboxamide formyltransferase/IMP	SP0050		X	
phosphoribosylamine--glycine ligase	SP0051		X	
phosphoribosylaminoimidazole carboxylase, catalytic subunit	SP0053		X	
phosphoribosylaminoimidazole carboxylase, ATPase subunit	SP0054			
hypothetical protein	SP0055		X	
adenylosuccinate lyase	SP0056			
beta-N-acetylhexosaminidase	SP0057		X	
transcriptional regulator, GntR family	SP0058			
beta-galactosidase	SP0060	X	X	X
PTS system, IIB component	SP0061	X	X	X
PTS system, IIC component	SP0062	X	X	X
PTS system, IID component	SP0063	X	X	X
PTS system, IIA component	SP0064	X	X	X
sugar isomerase domain protein AgaS	SP0065	X	X	X
aldose 1-epimerase	SP0066	X	X	X
hypothetical protein	SP0067	X	X	X
hypothetical protein	SP0068	X	X	X
choline binding protein I	SP0069	X	X	X
immunoglobulin A1 protease	SP0071	X	X	X
conserved hypothetical protein	SP0073	X	X	X
acetyltransferase, CysE/LacA/LpxA/NodL family	SP0074	X	X	X
phosphorylase, Pnp/Udp family	SP0075			
hypothetical protein	SP0077	X	X	X
potassium uptake protein, Trk family	SP0078			

potassium uptake protein, Trk family	SP0079			
glycosyl transferase, family 2, authentic point mutation	SP0081			
cell wall surface anchor family protein	SP0082	X	X	X
DNA-binding response regulator	SP0083		X	
sensor histidine kinase	SP0084			
ribosomal protein S4	SP0085			
IS630-Spn1, transposase Orf1, truncation	SP0086			
hypothetical protein	SP0087	X	X	X
hypothetical protein	SP0088			
ABC transporter, permease protein	SP0090	X	X	X
ABC transporter, permease protein	SP0091	X	X	X
ABC transporter, substrate-binding protein	SP0092	X	X	X
hypothetical protein	SP0093	X	X	X
hypothetical protein	SP0094	X	X	X
conserved hypothetical protein	SP0095			
hypothetical protein	SP0096	X	X	X
conserved domain protein	SP0097			
hypothetical protein	SP0098			
hypothetical protein	SP0099	X	X	X
conserved hypothetical protein	SP0100	X	X	X
conserved hypothetical protein	SP0101			
glycosyl transferase	SP0102			
capsular polysaccharide biosynthesis protein, putative	SP0103			
hydrolase, haloacid dehalogenase-like family	SP0104			
L-serine dehydratase, iron-sulfur-dependent, alpha subunit	SP0105			
L-serine dehydratase, iron-sulfur-dependent, beta subunit	SP0106		X	
LysM domain protein	SP0107			
hypothetical protein	SP0108		X	
bacteriocin, putative	SP0109	X	X	X
hypothetical protein	SP0110		X	
amino acid ABC transporter, ATP-binding protein, putative	SP0111			
amino acid ABC transporter, periplasmic amino acid-binding protein	SP0112	X	X	X
argininosuccinate synthase, truncation	SP0113		X	
hypothetical protein	SP0114	X	X	X
hypothetical protein	SP0115		X	
hypothetical protein	SP0116	X	X	X
pneumococcal surface protein A	SP0117			
tRNA (5-methylaminomethyl-2-thiouridylate)-methyltransferase	SP0118			
MutT/nudix family protein	SP0119			
glucose-inhibited division protein A	SP0120			
metallo-beta-lactamase superfamily protein	SP0121			
conserved hypothetical protein	SP0122			
competence-induced protein Ccs1	SP0123	X	X	X
hypothetical protein	SP0124	X	X	X
hypothetical protein	SP0125	X	X	X
conserved hypothetical protein	SP0127			
ribosomal-protein-alanine acetyltransferase, putative	SP0128			
glycoprotease family protein	SP0129			
IS1167, transposase, degenerate	SP0130		X	
IS630-Spn1, transposase Orf2	SP0131		X	
IS630-Spn1, transposase Orf1, degenerate	SP0132	X	X	X
hypothetical protein	SP0133	X	X	X
hypothetical protein	SP0134		X	
glycosyl transferase, putative	SP0135		X	
glycosyl transferase, family 2	SP0136	X	X	X
ABC transporter, ATP-binding protein	SP0137		X	
hypothetical protein	SP0138	X	X	X

conserved domain protein	SP0139	X	X	X
UDP-glucose 6-dehydrogenase, authentic frameshift	SP0140	X	X	X
transcriptional regulator	SP0141			
hypothetical protein	SP0142		X	
conserved domain protein	SP0143			
hypothetical protein	SP0144			
conserved hypothetical protein	SP0145		X	
conserved hypothetical protein	SP0146	X	X	X
hypothetical protein	SP0147	X	X	X
ABC transporter, substrate-binding protein	SP0148			
lipoprotein	SP0149			
peptidase, M20/M25/M40 family	SP0150		X	
ABC transporter, ATP-binding protein	SP0151			
ABC transporter, permease protein, putative	SP0152		X	
hypothetical protein	SP0153		X	
hypothetical protein	SP0154			
sensor histidine kinase, putative	SP0155		X	
DNA-binding response regulator	SP0156			
hypothetical protein	SP0157			
NrdI family protein	SP0158			
conserved hypothetical protein	SP0159			
conserved domain protein	SP0160	X		X
conserved domain protein	SP0161	X		X
transcriptional regulator PlcR, putative	SP0163	X	X	X
hypothetical protein	SP0164	X	X	X
flavoprotein	SP0165	X	X	X
pyridoxal-dependent decarboxylase, Orn/Lys/Arg family	SP0166	X	X	X
hypothetical protein	SP0167	X	X	X
macrolide efflux protein, putative	SP0168	X	X	X
lactose phosphotransferase system repressor, degenerate	SP0169	X	X	X
ROK family protein	SP0171	X	X	X
DNA mismatch repair protein HexB	SP0173			
riboflavin synthase, beta subunit	SP0175			
3,4-dihydroxy-2-butanone 4-phosphate synthase/GTP cyclohydrolase	SP0176			
riboflavin synthase, alpha subunit	SP0177			
riboflavin biosynthesis protein RibD	SP0178			
Holliday junction DNA helicase RuvA	SP0179			
DNA-3-methyladenine glycosylase I	SP0180		X	
conserved hypothetical protein	SP0181	X	X	X
MccC family protein	SP0182		X	
hypothetical protein	SP0184			
magnesium transporter, CorA family	SP0185			
excinuclease ABC, subunit A	SP0186			
peptidase M24 family protein	SP0187			
conserved hypothetical protein	SP0189			
hypothetical protein	SP0191			
conserved hypothetical protein	SP0192			
conserved hypothetical protein, authentic frameshift	SP0193			
conserved hypothetical protein	SP0194			
dihydrofolate synthetase, putative	SP0197		X	
hypothetical protein	SP0198			
cardiolipin synthetase	SP0199			
competence-induced protein Ccs4	SP0200			
hypothetical protein	SP0201			
anaerobic ribonucleoside-triphosphate reductase	SP0202			
acetyltransferase, GNAT family	SP0204			
anaerobic ribonucleoside-triphosphate reductase activating pro	SP0205		X	

hypothetical protein	SP0206		X	
conserved domain protein	SP0207		X	
ribosomal protein S10	SP0208			
ribosomal protein L3	SP0209			
ribosomal protein L4	SP0210			
ribosomal protein L23	SP0211			
ribosomal protein L2	SP0212			
ribosomal protein S19	SP0213			
ribosomal protein L22	SP0214			
ribosomal protein S3	SP0215			
ribosomal protein L16	SP0216			
ribosomal protein L29	SP0217			
ribosomal protein S17	SP0218			
ribosomal protein L14	SP0219			
ribosomal protein L24	SP0220			
ribosomal protein L5	SP0221			
ribosomal protein S14	SP0222			
ribosomal protein S8	SP0224			
ribosomal protein L6	SP0225			
ribosomal protein L18	SP0226			
ribosomal protein S5	SP0227			
ribosomal protein L30	SP0228			
ribosomal protein L15	SP0229			
preprotein translocase, SecY subunit	SP0230			
adenylate kinase	SP0231			
translation initiation factor IF-1	SP0232			
ribosomal protein L36	SP0233			
ribosomal protein S13	SP0234			
ribosomal protein S11	SP0235			
DNA-directed RNA polymerase, alpha subunit	SP0236			
ribosomal protein L17	SP0237			
ACT domain protein	SP0238			
conserved hypothetical protein	SP0239			
phosphoglycerate mutase family protein	SP0240			
iron ABC transporter, permease protein, degenerate	SP0241	X	X	X
iron ABC transporter, ATP-binding protein	SP0242	X	X	X
iron ABC transporter, iron-binding protein	SP0243	X	X	X
pyruvate formate-lyase-activating enzyme, putative	SP0245	X	X	X
transcriptional regulator, DeoR family	SP0246		X	
transcriptional regulator	SP0247	X	X	X
PTS system, IIA component	SP0248	X	X	X
PTS system, IIB component	SP0249	X	X	X
PTS system, IIC component	SP0250	X	X	X
formate acetyltransferase, putative	SP0251	X	X	X
transaldolase family protein	SP0252	X	X	X
glycerol dehydrogenase	SP0253	X	X	X
leucyl-tRNA synthetase	SP0254			
acetyltransferase, GNAT family	SP0255			
acetyltransferase, GNAT family	SP0256		X	
group II intron, maturase, degenerate	SP0257	X	X	X
Holliday junction DNA helicase RuvB	SP0259			
conserved hypothetical protein	SP0260			
undecaprenyl diphosphate synthase	SP0261			
phosphatidate cytidyltransferase	SP0262		X	
eep protein	SP0263			
prolyl-tRNA synthetase	SP0264			
glycosyl hydrolase, family 1	SP0265			

glucosamine--fructose-6-phosphate aminotransferase, isomerizing	SP0266			
oxidoreductase, putative	SP0267			
alkaline amylopullulanase, putative	SP0268	X	X	X
ribosomal protein S12	SP0271			
ribosomal protein S7	SP0272			
translation elongation factor G	SP0273			
DNA polymerase III, alpha subunit, Gram-positive type	SP0274			
conserved hypothetical protein	SP0275		X	
conserved hypothetical protein	SP0276		X	
hypothetical protein	SP0277		X	
aminopeptidase PepS	SP0278			
conserved hypothetical protein	SP0279			
ribosomal small subunit pseudouridine synthase A	SP0280			
aminopeptidase C	SP0281			
PTS system, mannose-specific IID component	SP0282			
PTS system, mannose-specific IIC component	SP0283			
PTS system, mannose-specific IIAB components	SP0284			
alcohol dehydrogenase, zinc-containing	SP0285			
Cof family protein	SP0286			
xanthine/uracil permease family protein	SP0287			
conserved hypothetical protein	SP0288		X	
dihydropteroate synthase	SP0289			
dihydrofolate synthetase	SP0290			
GTP cyclohydrolase I	SP0291			
bifunctional folate synthesis protein	SP0292			
hypothetical protein	SP0293			
ribosomal protein L13	SP0294			
ribosomal protein S9	SP0295			
hypothetical protein	SP0296	X	X	X
hypothetical protein	SP0297	X	X	X
conserved hypothetical protein	SP0298	X	X	X
IS630-Spn1, transposase Orf1	SP0299			
IS630-Spn1, transposase Orf2	SP0300			
conserved domain protein	SP0302	X	X	X
6-phospho-beta-glucosidase	SP0303	X	X	X
conserved hypothetical protein	SP0304	X	X	X
PTS system, IIB component	SP0305	X	X	X
transcriptional regulator, putative	SP0306	X	X	X
PTS system, IIA component	SP0307	X	X	X
PTS system, IIA component	SP0308	X	X	X
hypothetical protein	SP0309	X	X	X
PTS system, IIC component	SP0310	X	X	X
hypothetical protein	SP0311	X	X	X
glycosyl hydrolase, family 31	SP0312			
glutathione peroxidase	SP0313	X	X	X
hyaluronidase	SP0314	X	X	X
IS200S, transposase, interruption	SP0315	X	X	X
4-hydroxy-2-oxoglutarate aldolase/2-dehydro-3-deoxyphosphogluco	SP0317	X	X	X
carbohydrate kinase, PfkB family	SP0318	X	X	X
conserved domain protein	SP0319	X	X	X
oxidoreductase, short chain dehydrogenase/reductase family	SP0320	X	X	X
PTS system, IIA component	SP0321	X	X	X
glucuronyl hydrolase	SP0322	X	X	X
PTS system, IIB component	SP0323	X	X	X
PTS system, IIC component	SP0324	X	X	X
PTS system, IID component	SP0325	X	X	X
preprotein translocase, YajC subunit	SP0326	X	X	X

hypothetical protein, interruption	SP0327	X	X	X
IS1380-Spn1, transposase	SP0328	X	X	X
hypothetical protein, interruption	SP0329	X	X	X
sugar binding transcriptional regulator RegR	SP0330			
hypothetical protein, authentic frameshift	SP0331	X	X	X
hypothetical protein	SP0332	X	X	X
transcriptional regulator, putative	SP0333	X	X	X
yllC protein	SP0334			
cell division protein FtsL	SP0335			
penicillin-binding protein 2X	SP0336			
phospho-N-acetylmuramoyl-pentapeptide-transferase	SP0337			
ATP-dependent Clp protease, ATP-binding subunit, putative	SP0338	X		X
group II intron, maturase, truncation	SP0339	X	X	X
autoinducer-2 production protein	SP0340			
hypothetical protein	SP0341			
glucan 1,6-alpha-glucosidase	SP0342			
IS1380-Spn1, transposase	SP0343	X	X	X
IS630-Spn1, transposase Orf2	SP0344			
IS630-Spn1, transposase Orf1	SP0345			
capsular polysaccharide biosynthesis protein Cps4A	SP0346			
capsular polysaccharide biosynthesis protein Cps4B	SP0347			
capsular polysaccharide biosynthesis protein Cps4C	SP0348			
capsular polysaccharide biosynthesis protein Cps4D	SP0349	X	X	X
capsular polysaccharide biosynthesis protein Cps4E	SP0350	X	X	X
capsular polysaccharide biosynthesis protein Cps4F	SP0351	X	X	X
capsular polysaccharide biosynthesis protein Cps4G	SP0352	X	X	X
capsular polysaccharide biosynthesis protein Cps4H	SP0353	X	X	X
hypothetical protein	SP0354	X	X	X
hypothetical protein	SP0355	X	X	X
O-antigen transporter RfbX, putative	SP0356	X	X	X
UDP-N-acetylglucosamine-2-epimerase	SP0357	X	X	X
capsular polysaccharide biosynthesis protein cps4J	SP0358	X	X	X
capsular polysaccharide biosynthesis protein Cps4K	SP0359	X	X	X
UDP-N-acetylglucosamine 2-epimerase	SP0360	X	X	X
IS66 family element, Orf3, degenerate	SP0362			
transposase family protein, truncation	SP0363	X	X	X
IS66 family element, Orf2, interruption	SP0364		X	
IS66 family element, Orf1, authentic frameshift	SP0365	X	X	X
oligopeptide ABC transporter, oligopeptide-binding protein Ali	SP0366			
hypothetical protein	SP0367	X	X	X
cell wall surface anchor family protein, authentic frameshift	SP0368	X	X	X
penicillin-binding protein 1A	SP0369			
recombination protein U	SP0370			
conserved hypothetical protein	SP0371	X	X	X
conserved hypothetical protein	SP0372			
conserved hypothetical protein	SP0373			
hypothetical protein	SP0374			
6-phosphogluconate dehydrogenase, decarboxylating	SP0375			
DNA-binding response regulator	SP0376			
choline binding protein C	SP0377			
choline binding protein J	SP0378			
conserved hypothetical protein	SP0379	X	X	X
hypothetical protein	SP0380	X	X	X
mevalonate kinase	SP0381			
mevalonate diphosphate decarboxylase	SP0382			
phosphomevalonate kinase	SP0383			
FMN-dependent dehydrogenase family protein	SP0384			

conserved hypothetical protein	SP0385			
sensor histidine kinase, putative	SP0386			
DNA-binding response regulator	SP0387			
hypothetical protein, authentic frameshift	SP0388			
hypothetical protein	SP0389			
choline binding protein G	SP0390			
choline binding protein F	SP0391			
IS3-Spn1, transposase, degenerate	SP0392		X	
IS3-Spn1, hypothetical protein, authentic point mutation	SP0393	X	X	X
PTS system, mannitol-specific IIBC components	SP0394	X	X	X
transcriptional regulator, putative	SP0395	X	X	X
PTS system, mannitol-specific IIA component	SP0396	X	X	X
mannitol-1-phosphate 5-dehydrogenase	SP0397	X	X	X
hypothetical protein	SP0398	X	X	X
glutamine ABC transporter, ATP-binding protein, truncation	SP0399	X	X	X
trigger factor	SP0400			
helicase, putative	SP0401			
signal peptidase I	SP0402	X	X	
signal peptidase I	SP0402			X
ribonuclease HIII	SP0403			
hypothetical protein	SP0404			
conserved hypothetical protein	SP0405			
MutS2 family protein	SP0406			
sodium:alanine symporter family protein	SP0408			
conserved hypothetical protein	SP0409	X	X	X
exfoliative toxin, putative	SP0410		X	
seryl-tRNA synthetase	SP0411			
conserved hypothetical protein	SP0412			
aspartate kinase	SP0413			
enoyl-CoA hydratase/isomerase family protein	SP0415			
transcriptional regulator, MarR family	SP0416			
3-oxoacyl-(acyl-carrier-protein) synthase III	SP0417			
acyl carrier protein	SP0418			
enoyl-(acyl-carrier-protein) reductase	SP0419			
malonyl CoA-acyl carrier protein transacylase	SP0420			
3-oxoacyl-[acyl-carrier protein] reductase	SP0421			
3-oxoacyl-(acyl-carrier-protein) synthase II	SP0422			
acetyl-CoA carboxylase, biotin carboxyl carrier protein	SP0423			
(3R)-hydroxymyristoyl-(acyl-carrier-protein) dehydratase	SP0424			
acetyl-CoA carboxylase, biotin carboxylase	SP0425			
acetyl-CoA carboxylase, carboxyl transferase subunit beta	SP0426			
acetyl-CoA carboxylase, carboxyl transferase subunit alpha	SP0427			
hypothetical protein	SP0429	X	X	X
hypothetical protein	SP0430		X	
conserved domain protein	SP0431	X	X	X
IS1167, transposase, interruption	SP0432			
N utilization substance protein B	SP0433			
conserved hypothetical protein	SP0434			
translation elongation factor P	SP0435			
glutamyl-tRNA(Gln) amidotransferase, B subunit	SP0436	X	X	X
glutamyl-tRNA(Gln) amidotransferase, A subunit	SP0437			
glutamyl-tRNA(Gln) amidotransferase, C subunit	SP0438			
peptide chain release factor 3	SP0439			
glycosyl transferase, degenerate	SP0440		X	
glycosyl transferase, degenerate	SP0440			
ribosomal protein L28	SP0441			
conserved hypothetical protein	SP0442			

conserved hypothetical protein	SP0443			
acetolactate synthase, large subunit, biosynthetic type	SP0445			
acetolactate synthase, small subunit	SP0446			
ketol-acid reductoisomerase	SP0447			
hypothetical protein	SP0448		X	
hypothetical protein	SP0449			
threonine dehydratase	SP0450			
hypothetical protein	SP0451			
amino acid ABC transporter, ATP-binding protein	SP0452			
amino acid ABC transporter, amino acid-binding protein/permease	SP0453			
hypothetical protein	SP0454	X	X	X
hypothetical protein	SP0455		X	
transposase, IS116/IS110/IS902 family, degenerate	SP0456			
bacitracin resistance protein	SP0457			
DNA-damage inducible protein P	SP0458			
formate acetyltransferase	SP0459			
IS1167, transposase	SP0460	X	X	X
transcriptional regulator, putative	SP0461	X	X	X
cell wall surface anchor family protein	SP0462	X	X	X
cell wall surface anchor family protein	SP0463	X	X	X
cell wall surface anchor family protein	SP0464	X	X	X
hypothetical protein	SP0465	X	X	X
sortase, putative	SP0466	X	X	X
sortase, putative	SP0467	X	X	X
sortase, putative	SP0468	X	X	X
IS1167, transposase, interruption	SP0469			
IS1167, transposase, interruption	SP0469			
hypothetical protein	SP0470	X	X	X
conserved hypothetical protein	SP0471		X	
hypothetical protein	SP0472	X	X	X
ROK family protein	SP0473			
PTS system, cellobiose-specific IIC component	SP0474	X	X	X
hypothetical protein	SP0475	X	X	X
PTS system, lactose-specific IIA component	SP0476	X	X	X
6-phospho-beta-galactosidase	SP0477		X	
PTS system, lactose-specific IIBC components	SP0478	X	X	X
potassium uptake protein, Trk family	SP0479			
potassium uptake protein, Trk family	SP0480			
conserved hypothetical protein	SP0481			
conserved hypothetical protein	SP0482			
ABC transporter, ATP-binding protein	SP0483			
conserved hypothetical protein	SP0484		X	
RNA methyltransferase, TrmH family	SP0486	X	X	X
hypothetical protein	SP0487		X	
conserved hypothetical protein	SP0488			
PAP2 family protein	SP0489			
hypothetical protein	SP0490			
hypothetical protein	SP0491		X	
conserved domain protein	SP0492	X	X	X
DNA-directed RNA polymerase, delta subunit, putative	SP0493			
CTP synthase	SP0494			
IS1380-Spn1, transposase	SP0495	X	X	X
Na/Pi cotransporter II-related protein	SP0496			
endo-beta-N-acetylglucosaminidase, putative	SP0498	X	X	X
phosphoglycerate kinase	SP0499			
conserved domain protein	SP0500		X	
transcriptional regulator, MerR family	SP0501			

glutamine synthetase, type I	SP0502			
hypothetical protein	SP0503	X	X	X
type I restriction-modification system, S subunit, putative	SP0505	X		X
integrase/recombinase, phage integrase family	SP0506		X	
type I restriction-modification system, S subunit, putative	SP0507		X	
type I restriction-modification system, S subunit	SP0508			
type I restriction-modification system, M subunit	SP0509			
type I restriction-modification system, R subunit	SP0510		X	
hypothetical protein	SP0511	X	X	X
hypothetical protein	SP0512	X	X	X
hypothetical protein	SP0513	X	X	X
hypothetical protein	SP0514	X	X	X
heat-inducible transcription repressor HrcA	SP0515			
heat shock protein GrpE	SP0516			
dnaK protein	SP0517			
dnaJ protein	SP0519			
hypothetical protein	SP0520			
HIT family protein	SP0521	X	X	X
ABC transporter, ATP-binding protein	SP0522			
ABC transporter, permease protein, putative	SP0523			
BlpT protein, fusion	SP0524	X	X	X
blpS protein	SP0525			
response regulator BlpR	SP0526	X	X	X
putative histidine kinase BlpH	SP0527		X	
transport protein BlpB	SP0529	X	X	X
BlpC ABC transporter, ATP-binding protein, authentic frameshift	SP0530		X	
bacteriocin BlpI	SP0531	X	X	X
bacteriocin BlpJ	SP0532	X	X	X
bacteriocin BlpK	SP0533			
hypothetical protein	SP0535	X	X	X
immunity protein BlpL	SP0536	X	X	X
IS1381, transposase OrfA	SP0537		X	
IS1381, transposase OrfB	SP0538			
bacteriocin BlpM	SP0539	X	X	X
blpN protein	SP0540	X	X	X
bacteriocin BlpO	SP0541		X	
hypothetical protein	SP0542	X	X	X
hypothetical protein	SP0543	X	X	X
immunity protein BlpX	SP0544	X	X	X
immunity protein BlpY	SP0545	X		X
BlpZ protein, fusion	SP0546	X	X	X
conserved domain protein	SP0547	X	X	X
hypothetical protein	SP0548	X	X	X
conserved hypothetical protein	SP0549			
conserved hypothetical protein	SP0550			
conserved hypothetical protein	SP0552			
N utilization substance protein A	SP0553		X	
conserved hypothetical protein	SP0554			
ribosomal protein L7A family	SP0555			
translation initiation factor IF-2	SP0556			
ribosome-binding factor A	SP0557			
conserved hypothetical protein	SP0558	X	X	X
hypothetical protein	SP0559		X	
hypothetical protein	SP0560	X	X	X
conserved domain protein	SP0561		X	
conserved hypothetical protein	SP0562			
hypothetical protein	SP0563	X	X	X

hypothetical protein	SP0564			
conserved domain protein	SP0565			
acetyltransferase, GNAT family	SP0566		X	
conserved domain protein	SP0567	X	X	X
valyl-tRNA synthetase	SP0568			
conserved domain protein	SP0570	X	X	X
cell filamentation protein Fic-related protein	SP0571		X	
IS1167, transposase, degenerate	SP0572			
hypothetical protein	SP0573	X	X	X
hypothetical protein	SP0574	X	X	X
helicase, putative	SP0575	X	X	X
transcription antiterminator Lict	SP0576	X	X	X
PTS system, beta-glucosides-specific IIABC components	SP0577	X	X	X
6-phospho-beta-glucosidase	SP0578		X	
phenylalanyl-tRNA synthetase, alpha subunit	SP0579			
acetyltransferase, GNAT family	SP0580		X	
phenylalanyl-tRNA synthetase, beta subunit	SP0581			
hypothetical protein	SP0582			
IS1239, transposase, putative, degenerate	SP0583		X	
transcriptional regulator, putative	SP0584		X	
5-methyltetrahydropteroyltriglutamate--homocysteine methyltran	SP0585	X	X	X
5,10-methylenetetrahydrofolate reductase, putative	SP0586	X	X	X
hypothetical protein	SP0587	X	X	X
polyribonucleotide nucleotidyltransferase	SP0588			
serine acetyltransferase	SP0589			
acetyltransferase, GNAT family	SP0590			
cysteinyl-tRNA synthetase	SP0591			
conserved hypothetical protein	SP0592			
leucine-rich protein	SP0593			
hypothetical protein, fusion	SP0594	X	X	X
hypothetical protein	SP0595	X	X	X
hypothetical protein	SP0596	X	X	X
group II intron, maturase, degenerate	SP0597		X	
group II intron, maturase, degenerate	SP0597		X	
hypothetical protein	SP0598	X	X	X
transmembrane protein Vexp1	SP0599		X	
ABC transporter, ATP-binding protein Vexp2	SP0600	X	X	X
transmembrane protein Vexp3	SP0601		X	
DNA-binding response regulator VncR	SP0603			
sensor histidine kinase VncS	SP0604			
fructose-bisphosphate aldolase	SP0605			
oxidoreductase, putative	SP0606			
amino acid ABC transporter, permease protein	SP0607		X	
amino acid ABC transporter, permease protein	SP0608		X	
amino acid ABC transporter, amino acid-binding protein	SP0609		X	
amino acid ABC transporter, ATP-binding protein	SP0610		X	
single-stranded-DNA-specific exonuclease RecJ	SP0611			
metallo-beta-lactamase superfamily protein	SP0613			
tributylin esterase	SP0614			
beta-lactam resistance factor	SP0615			
beta-lactam resistance factor	SP0616			
conserved domain protein	SP0617			
excinuclease ABC, subunit C	SP0618			
conserved hypothetical protein	SP0619			
amino acid ABC transporter, amino acid-binding protein, putati	SP0620		X	
nitroreductase family protein	SP0622			
dipeptidase	SP0623			

conserved hypothetical protein	SP0624			
conserved hypothetical protein, authentic point mutation	SP0625			
branched-chain amino acid transport system II carrier protein	SP0626	X	X	X
conserved hypothetical protein	SP0627			
HIT family protein	SP0628			
conserved hypothetical protein	SP0629			
ribosomal protein L11	SP0630			
ribosomal protein L1	SP0631			
group II intron, maturase, truncation	SP0632		X	
hypothetical protein	SP0633	X	X	X
conserved domain protein	SP0634	X	X	X
hypothetical protein	SP0635			
ABC transporter, ATP-binding protein	SP0636			
membrane protein	SP0637		X	
conserved hypothetical protein	SP0638			
hypothetical protein	SP0639			
hypothetical protein	SP0640		X	
serine protease, subtilase family	SP0641			
IS1167, transposase, truncation	SP0642	X	X	
IS1167, transposase, truncation	SP0642			X
transposase family protein, truncation	SP0643		X	
IS66 family element, Orf3, degenerate	SP0644			
PTS system IIA component, putative	SP0645	X	X	X
PTS system, IIB component, putative	SP0646	X	X	X
PTS system, IIC component, putative	SP0647	X	X	X
beta-galactosidase	SP0648	X	X	X
conserved hypothetical protein, degenerate	SP0649	X	X	X
hypothetical protein	SP0650		X	
conserved hypothetical protein	SP0651		X	
conserved hypothetical protein	SP0652			
hypothetical protein	SP0653	X	X	X
sodium/hydrogen exchanger family protein	SP0655		X	
hypothetical protein	SP0656		X	
ribonuclease BN, putative	SP0657		X	
cytochrome c-type biogenesis protein CcdA	SP0658	X	X	
cytochrome c-type biogenesis protein CcdA	SP0658		X	X
thioredoxin family protein	SP0659	X	X	
thioredoxin family protein	SP0659		X	X
peptide methionine sulfoxide reductase	SP0660	X	X	X
DNA-binding response regulator	SP0661		X	
sensor histidine kinase, putative	SP0662		X	
conserved hypothetical protein	SP0663			
zinc metalloprotease ZmpB, putative	SP0664	X	X	X
chorismate binding enzyme	SP0665		X	
conserved hypothetical protein	SP0666	X	X	X
pneumococcal surface protein, putative	SP0667			
glucokinase	SP0668			
thymidylate synthase	SP0669			
hypothetical protein	SP0670			
tRNA isopentenylpyrophosphate transferase	SP0671			
GTP-binding protein HflX	SP0672			
hypothetical protein	SP0673			
metallo-beta-lactamase superfamily protein	SP0674			
oxidoreductase, short chain dehydrogenase/reductase family	SP0675			
transcriptional regulator, putative	SP0676			
conserved hypothetical protein	SP0677			
conserved hypothetical protein	SP0678			

hypothetical protein	SP0679	X	X	X
ribosomal small subunit pseudouridine synthase A	SP0680	X	X	X
elongation factor Tu family protein	SP0681			
hypothetical protein	SP0682		X	
conserved hypothetical protein	SP0686		X	
ABC transporter, ATP-binding protein	SP0687	X	X	X
UDP-N-acetylmuramoylalanine--D-glutamate ligase	SP0688			
UDP-N-acetylglucosamine--N-acetylmuramyl-(pentapeptide) pyrophosphatase	SP0689			
cell division protein DivIB	SP0690			
hypothetical protein	SP0691		X	
hypothetical protein	SP0692	X	X	X
conserved domain protein	SP0694		X	
HesA/MoeB/ThiF family protein	SP0695		X	
hypothetical protein	SP0696	X	X	X
ABC transporter, ATP-binding protein, authentic point mutation	SP0697	X	X	X
hypothetical protein	SP0698	X	X	X
transposase, IS30 family, degenerate	SP0700		X	
orotidine 5-phosphate decarboxylase	SP0701	X	X	X
orotate phosphoribosyltransferase PyrE	SP0702		X	
hypothetical protein	SP0703		X	
hypothetical protein	SP0704	X	X	X
hypothetical protein	SP0705		X	
hypothetical protein	SP0706	X	X	X
ABC transporter, ATP-binding protein	SP0707		X	
amino acid ABC transporter, amino acid-binding protein, authentic	SP0708	X	X	X
amino acid ABC transporter, ATP-binding protein	SP0709	X	X	X
amino acid ABC transporter, permease protein	SP0710		X	
amino acid ABC transporter, permease protein	SP0711	X	X	X
lactate oxidase, truncation	SP0712			
lysyl-tRNA synthetase	SP0713			
IS1380-Spn1, transposase	SP0714	X	X	X
lactate oxidase	SP0715			
transcriptional regulator, putative	SP0716			
hydroxyethylthiazole kinase	SP0717			
thiamine-phosphate pyrophosphorylase	SP0718	X	X	X
conserved hypothetical protein	SP0719	X	X	X
ABC transporter, ATP-binding protein	SP0720	X	X	X
conserved hypothetical protein	SP0721	X	X	X
transcriptional activator TenA	SP0722	X	X	X
conserved domain protein	SP0723	X	X	X
hydroxyethylthiazole kinase, putative	SP0724	X	X	X
thiamine-phosphate pyrophosphorylase	SP0725	X	X	X
phosphomethylpyrimidine kinase	SP0726	X	X	X
transcriptional repressor, putative	SP0727	X	X	X
hypothetical protein	SP0728			
cation-transporting ATPase, E1-E2 family	SP0729			
pyruvate oxidase	SP0730			
conserved domain protein	SP0731			
transposase family protein, authentic frameshift	SP0732	X	X	X
hypothetical protein	SP0733	X	X	X
6-phospho-beta-glucosidase, truncation	SP0735	X	X	X
mannose-6-phosphate isomerase	SP0736			
sodium-dependent transporter	SP0737	X	X	X
conserved domain protein	SP0738	X	X	X
transcriptional regulator, MerR family	SP0739		X	
MutT/nudix family protein	SP0740		X	
conserved hypothetical protein	SP0741			

conserved hypothetical protein	SP0742			
transcriptional regulator, TetR family	SP0743		X	
cytidine and deoxycytidylate deaminase family protein	SP0744		X	
uracil phosphoribosyltransferase	SP0745			
ATP-dependent Clp protease, proteolytic subunit	SP0746			
conserved hypothetical protein	SP0748		X	
branched-chain amino acid ABC transporter, amino acid-binding	SP0749			
branched-chain amino acid ABC transporter, permease protein	SP0750			
branched-chain amino acid ABC transporter, permease protein	SP0751			
branched-chain amino acid ABC transporter, ATP-binding protein	SP0752			
branched-chain amino acid ABC transporter, ATP-binding protein	SP0753			
acetoin utilization protein AcuB, putative	SP0754	X	X	X
peptide chain release factor 2, authentic frameshift	SP0755			
cell division ABC transporter, ATP-binding protein FtsE	SP0756			
cell division ABC transporter, permease protein FtsX	SP0757			
PTS system, IIABC components	SP0758		X	
hypothetical protein	SP0759	X	X	X
hypothetical protein	SP0760	X	X	X
ATP-dependent RNA helicase, DEAD/DEAH box family	SP0761		X	
S-adenosylmethionine synthetase	SP0762			
hypothetical protein	SP0763	X	X	X
dihydroorotate dehydrogenase A	SP0764			
conserved hypothetical protein	SP0765			
superoxide dismutase, manganese-dependent	SP0766			
conserved hypothetical protein	SP0767			
conserved hypothetical protein	SP0768			
VanZF-related protein	SP0769			
ABC transporter, ATP-binding protein	SP0770			
peptidyl-prolyl cis-trans isomerase, cyclophilin-type	SP0771			
hypothetical protein	SP0772	X	X	X
hypothetical protein	SP0774	X	X	X
ribosomal protein S16	SP0775			
KH domain protein	SP0776			
hypothetical protein	SP0777			
16S rRNA processing protein RimM	SP0778			
tRNA (guanine-N1)-methyltransferase	SP0779			
ribonucleoside-diphosphate reductase, alpha subunit, truncatio	SP0780			
hypothetical protein	SP0781			
conserved hypothetical protein	SP0782	X	X	X
conserved hypothetical protein	SP0783			
glutathione reductase	SP0784			
conserved hypothetical protein	SP0785			
ABC transporter, ATP-binding protein	SP0786			
conserved hypothetical protein	SP0787			
methionyl-tRNA synthetase	SP0788			
conserved hypothetical protein	SP0789		X	
conserved domain protein	SP0790		X	
oxidoreductase, aldo/keto reductase family	SP0791			
hypothetical protein	SP0792			
oxidoreductase, short chain dehydrogenase/reductase family	SP0793			
MutT/nudix family protein	SP0794			
PEP-utilizing enzymes family protein	SP0795		X	
conserved hypothetical protein	SP0796		X	
aminopeptidase N	SP0797			
DNA-binding response regulator CiaR	SP0798			
sensor histidine kinase CiaH	SP0799			
hypothetical protein	SP0800			

conserved hypothetical protein	SP0801			
DNA polymerase III, epsilon subunit/ATP-dependent helicase Din	SP0802			
rod shape-determining protein RodA, putative	SP0803			
4-methyl-5(b-hydroxyethyl)-thiazole monophosphate biosynthesis	SP0804			
hydrolase, haloacid dehalogenase-like family	SP0805			
DNA gyrase subunit B	SP0806			
septation ring formation regulator EzrA, putative	SP0807			
hypothetical protein	SP0810	X	X	X
transposase family protein	SP0811	X	X	X
IS66 family element, Orf2, interruption	SP0812			
IS3-Spn1, hypothetical protein, authentic point mutation	SP0813		X	
IS3-Spn1, transposase, internal deletion	SP0814	X	X	X
hypothetical protein	SP0816			
MutT/nudix family protein	SP0817	X	X	X
IS630-Spn1, transposase Orf1	SP0818			
IS630-Spn1, transposase Orf2	SP0819			
ATP-dependent Clp protease, ATP-binding subunit ClpE	SP0820			
conserved hypothetical protein	SP0822			
amino acid ABC transporter, permease protein	SP0823	X	X	X
amino acid ABC transporter, ATP-binding protein	SP0824		X	
methylenetetrahydrofolate dehydrogenase/methenyltetrahydrofolate	SP0825			
hypothetical protein	SP0826	X	X	X
conserved hypothetical protein, authentic point mutation	SP0827	X	X	X
ribose 5-phosphate isomerase	SP0828			
phosphopentomutase	SP0829			
hypothetical protein	SP0830			
purine nucleoside phosphorylase, family 2	SP0831			
hypothetical protein	SP0832		X	
hypothetical protein	SP0833			
hemolysin-related protein	SP0834			
purine nucleoside phosphorylase, family 1	SP0835			
IS1167, transposase	SP0836			
IS1167, transposase	SP0836			
DNA topology modulation protein FlaR, putative	SP0837			
ribosomal protein S20	SP0838			
pantothenate kinase	SP0839			
hypothetical protein	SP0840	X	X	X
conserved hypothetical protein	SP0841			
pyrimidine-nucleoside phosphorylase	SP0842			
deoxyribose-phosphate aldolase	SP0843			
cytidine deaminase	SP0844			
lipoprotein	SP0845			
sugar ABC transporter, ATP-binding protein	SP0846			
sugar ABC transporter, permease protein, putative	SP0847			
sugar ABC transporter, permease protein, putative	SP0848			
IS3-Spn1, hypothetical protein, degenerate	SP0849	X	X	X
IS3-Spn1, transposase, authentic point mutation	SP0850		X	
conserved hypothetical protein	SP0851		X	
topoisomerase IV, subunit B	SP0852		X	
hypothetical protein	SP0854	X	X	X
topoisomerase IV, subunit A	SP0855		X	
branched-chain amino acid aminotransferase	SP0856			
oligopeptide-binding protein, internal deletion, authentic poi	SP0857			
membrane protein, putative	SP0858			
membrane protein	SP0859			
pyrrolidone-carboxylate peptidase	SP0860			
hypothetical protein	SP0861			

ribosomal protein S1	SP0862			
IS1167, transposase, degenerate	SP0863			
conserved hypothetical protein	SP0864			
DNA polymerase III, gamma and tau subunits	SP0865			
hypothetical protein	SP0866			
ABC transporter, ATP-binding protein	SP0867			
conserved hypothetical protein	SP0868			
aminotransferase, class-V	SP0869			
NifU family protein	SP0870			
conserved hypothetical protein	SP0871			
D-alanyl-D-alanine carboxypeptidase	SP0872			
membrane protein	SP0873			
lactose phosphotransferase system repressor	SP0875			
1-phosphofructokinase, putative	SP0876			
PTS system, fructose specific IIABC components	SP0877		X	
spoE family protein	SP0878			
hypothetical protein	SP0879	X		X
aminotransferase, class-V	SP0880			
thiazole biosynthesis protein ThiI	SP0881			
conserved hypothetical protein	SP0882	X	X	X
hypothetical protein	SP0883	X	X	X
hypothetical protein	SP0884	X	X	X
hypothetical protein	SP0885		X	
type I restriction-modification system, M subunit, putative	SP0886			
type I restriction-modification system, S subunit, putative	SP0887			
hypothetical protein	SP0888	X	X	X
hypothetical protein	SP0889	X	X	X
integrase/recombinase, phage integrase family	SP0890	X	X	X
type I restriction-modification system, S subunit, putative	SP0891	X	X	X
type I restriction-modification system, R subunit, putative	SP0892			
transcriptional repressor, putative	SP0893	X	X	X
X-pro dipeptidyl-peptidase	SP0894	X	X	X
DNA polymerase III, alpha subunit	SP0895		X	
6-phosphofructokinase	SP0896			
pyruvate kinase	SP0897			
transcriptional repressor, degenerate	SP0898		X	
conserved hypothetical protein	SP0899		X	
IS1381, transposase OrfA, truncation	SP0900	X	X	X
hypothetical protein	SP0901		X	
hypothetical protein	SP0902	X	X	X
hypothetical protein	SP0903	X	X	X
conserved hypothetical protein	SP0904			
conserved hypothetical protein	SP0905			
capsular polysaccharide biosynthesis protein, putative	SP0907	X	X	X
transcriptional regulator, putative	SP0908			
conserved hypothetical protein	SP0909		X	
conserved hypothetical protein	SP0910			
hypothetical protein	SP0911	X	X	X
ABC transporter, ATP-binding protein	SP0912	X	X	X
ABC transporter, permease protein, putative	SP0913	X	X	X
nodulin-related protein, truncation	SP0914	X	X	X
IS1239, transposase, putative	SP0915	X	X	X
lysine decarboxylase	SP0916		X	
pilin gene inverting-related protein	SP0917			
spermidine synthase	SP0918			
conserved hypothetical protein	SP0919		X	
carboxynorspermidine decarboxylase	SP0920		X	

conserved hypothetical protein	SP0921			
carbon-nitrogen hydrolase family protein	SP0922			
Cof family protein	SP0923	X	X	X
hypothetical protein	SP0924	X	X	X
conserved hypothetical protein	SP0925		X	
hypothetical protein	SP0926	X	X	X
transcriptional regulator, LysR family	SP0927			
lipoprotein signal peptidase	SP0928			
ribosomal large subunit pseudouridine synthase D	SP0929		X	
choline binding protein E	SP0930			
glutamate 5-kinase	SP0931			
gamma-glutamyl phosphate reductase	SP0932			
pyrroline-5-carboxylate reductase	SP0933		X	
thymidylate kinase	SP0935			
DNA polymerase III, delta prime subunit	SP0936			
conserved hypothetical protein	SP0937		X	
tetrapyrrole methylase family protein	SP0938			
conserved hypothetical protein	SP0939		X	
replication initiator protein, truncation, authentic frameshift	SP0940	X	X	X
IS1381, transposase OrfB	SP0941			
IS1381, transposase OrfA	SP0942		X	
Gid protein	SP0943			
uridylate kinase	SP0944			
ribosome recycling factor	SP0945			
conserved hypothetical protein	SP0946	X		X
conserved hypothetical protein	SP0947		X	
PhoH family protein	SP0948			
IS1515, transposase, authentic frameshift	SP0949	X	X	X
acetyltransferase, GNAT family	SP0950			
conserved hypothetical protein	SP0951			
alanine dehydrogenase, authentic frameshift	SP0952		X	
acetyltransferase, GNAT family	SP0953	X	X	X
competence protein CeaA	SP0954	X	X	X
competence protein CelB	SP0955	X	X	X
hypothetical protein	SP0956			
ABC transporter, ATP-binding protein	SP0957	X	X	X
hypothetical protein	SP0958			
translation initiation factor IF-3	SP0959			
ribosomal protein L35	SP0960			
ribosomal protein L20	SP0961			
lactoylglutathione lyase	SP0962			
dihydroorotate dehydrogenase, electron transfer subunit	SP0963			
dihydroorotate dehydrogenase B	SP0964			
endo-beta-N-acetylglucosaminidase	SP0965			
adherence and virulence protein A	SP0966			
conserved hypothetical protein TIGR00043	SP0967			
diacylglycerol kinase	SP0968	X	X	X
GTP-binding protein Era	SP0969			
formamidopyrimidine-DNA glycosylase	SP0970			
kinase, putative	SP0971			
multi-drug resistance efflux pump	SP0972			
ribosomal protein L33	SP0973		X	
preprotein translocase, SecE subunit, putative	SP0974			
exoribonuclease, VacB/Rnb family	SP0975			
SsrA-binding protein	SP0976			
tellurite resistance protein TehB	SP0977	X	X	
tellurite resistance protein TehB	SP0977			X

competence protein CoiA	SP0978	X	X	X
oligoendopeptidase F	SP0979			
O-methyltransferase	SP0980			
protease maturation protein, putative	SP0981			
IS3-Spn1, hypothetical protein/transposase, internal deletion	SP0982	X	X	X
IS630-Spn1, transposase Orf2, degenerate	SP0983	X	X	X
phosphoglycerate mutase family protein	SP0984		X	
regulatory protein, putative	SP0985		X	
conserved hypothetical protein	SP0986		X	
hypothetical protein	SP0987			
UDP-N-acetylglucosamine pyrophosphorylase	SP0988			
MutT/nudix family protein	SP0989			
hypothetical protein	SP0990			
5-methylthioadenosine/S-adenosylhomocysteine nucleosidase	SP0991			
conserved hypothetical protein	SP0992			
exonuclease	SP0993			
hypothetical protein	SP0994			
IS630-Spn1, transposase Orf1	SP0995			
IS630-Spn1, transposase Orf2, truncation	SP0996			
hypothetical protein	SP0997	X	X	X
hypothetical protein	SP0998	X	X	X
cytochrome c-type biogenesis protein CcdA	SP0999	X	X	X
thioredoxin family protein	SP1000			
amino acid permease family protein	SP1001			
adhesion lipoprotein	SP1002			
conserved hypothetical protein	SP1003			
conserved hypothetical protein	SP1004	X	X	X
conserved domain protein, degenerate	SP1005	X	X	X
hypothetical protein	SP1006	X	X	X
hypothetical protein	SP1007	X	X	X
peptidase t	SP1008			
ferrochelatase	SP1009	X	X	X
large conductance mechanosensitive channel protein MscL	SP1010			
GtrA family protein	SP1011	X	X	X
conserved hypothetical protein	SP1012		X	
aspartate-semialdehyde dehydrogenase	SP1013			
dihydrodipicolinate synthase	SP1014			
IS1167, transposase, authentic frameshift	SP1015			
IS1167, transposase, authentic frameshift	SP1015			
thiophene and furan oxidation protein ThdF	SP1016			
4-oxalocrotonate tautomerase	SP1017			
thymidine kinase	SP1018			
acetyltransferase, GNAT family	SP1019			
peptide chain release factor 1	SP1020			
HemK protein	SP1021			
Sua5/YciO/YrdC family protein	SP1022			
acetyltransferase, GNAT family	SP1023			
serine hydroxymethyltransferase	SP1024			
hypothetical protein	SP1025		X	
conserved hypothetical protein	SP1026			
conserved hypothetical protein	SP1027			
RNA methyltransferase, TrmA family	SP1029			
conserved hypothetical protein	SP1030	X	X	X
iron-compound ABC transporter, iron compound-binding protein	SP1032			
iron-compound ABC transporter, permease protein	SP1033		X	
iron-compound ABC transporter, permease protein	SP1034		X	
iron-compound ABC transporter, ATP-binding protein	SP1035		X	

type II restriction endonuclease, putative	SP1037	X	X	X
hypothetical protein	SP1038	X	X	X
hypothetical protein	SP1039	X	X	X
site-specific recombinase, resolvase family	SP1040		X	
hypothetical protein	SP1041	X	X	X
hypothetical protein	SP1042	X	X	X
hypothetical protein	SP1043		X	
hydrolase, putative	SP1044		X	
conserved hypothetical protein TIGR00147	SP1045			
alpha amylase family protein, authentic point mutation	SP1046	X	X	X
hypothetical protein	SP1047	X	X	X
hypothetical protein	SP1048	X	X	X
hypothetical protein	SP1049	X	X	X
transcriptional regulator, putative	SP1050	X	X	X
conserved hypothetical protein	SP1051		X	
phosphoesterase, putative	SP1052		X	
conserved domain protein	SP1053		X	
Tn5252, Orf 10 protein	SP1054	X	X	X
Tn5252, Orf 9 protein	SP1055	X	X	X
Tn5252, relaxase	SP1056	X	X	X
transcriptional regulator PlcR, putative	SP1057	X	X	X
hypothetical protein	SP1058	X	X	X
hypothetical protein	SP1059	X	X	X
hypothetical protein	SP1060	X	X	X
protein kinase, putative	SP1061	X	X	X
ABC transporter, ATP-binding protein	SP1062	X	X	X
ABC-2 transporter, permease protein, putative	SP1063	X	X	X
transposase, IS200 family	SP1064	X	X	X
hypothetical protein	SP1065	X	X	X
IS1381, transposase OrfA, truncation	SP1066	X	X	X
cell division protein FtsW, putative	SP1067			
phosphoenolpyruvate carboxylase	SP1068			
conserved hypothetical protein	SP1069		X	
conserved hypothetical protein	SP1070			
ABC transporter, ATP-binding protein	SP1071			
DNA primase	SP1072			
RNA polymerase sigma-70 factor	SP1073			
conserved hypothetical protein	SP1074			
glycosyl transferase CpoA	SP1075			
glycosyl transferase, group 1	SP1076			
conserved domain protein	SP1077		X	
hypothetical protein	SP1078	X	X	X
GTP-binding protein, GTP1/Obg family	SP1079			
hypothetical protein	SP1080		X	
UDP-N-acetylglucosamine 1-carboxyvinyltransferase	SP1081			
acetyltransferase, GNAT family	SP1082			
conserved hypothetical protein	SP1083			
methionine aminopeptidase, type I	SP1084			
IS1381, transposase OrfA, authentic frameshift	SP1085		X	
IS1381, transposase OrfB	SP1086			
ATP-dependent DNA helicase PcrA	SP1087			
DNA repair protein RadC	SP1088			
glutamine amidotransferase, class I	SP1089		X	
conserved hypothetical protein	SP1090			
hypothetical protein	SP1092		X	
hypothetical protein	SP1093		X	
aminotransferase, class-V	SP1094			

ribose-phosphate pyrophosphokinase	SP1095			
conserved hypothetical protein	SP1096	X	X	X
conserved hypothetical protein	SP1097	X		X
conserved hypothetical protein	SP1098			
ribosomal large subunit pseudouridine synthase, RluD subfamily	SP1099			
phosphate acetyltransferase	SP1100			
IS1167, transposase, degenerate	SP1101			
conserved hypothetical protein TIGR00103	SP1102		X	
hypothetical protein	SP1104			
ribosomal protein L21	SP1105			
conserved hypothetical protein	SP1106			
ribosomal protein L27	SP1107			
hypothetical protein	SP1108	X	X	X
hypothetical protein	SP1109	X	X	X
macrolide-efflux protein	SP1110			
conserved hypothetical protein	SP1111			
degV family protein	SP1112			
DNA-binding protein HU	SP1113			
ABC transporter, ATP-binding protein	SP1114		X	
ABC transporter, ATP-binding protein	SP1114		X	
transcriptional regulator MutR, putative	SP1115		X	
transporter, putative	SP1116		X	
DNA ligase, NAD-dependent	SP1117		X	
pullulanase, putative	SP1118			
glyceraldehyde-3-phosphate dehydrogenase, NADP-dependent	SP1119		X	
1,4-alpha-glucan branching enzyme	SP1121	X	X	X
glucose-1-phosphate adenylyltransferase	SP1122			
glycogen biosynthesis protein GlgD	SP1123		X	
glycogen synthase	SP1124		X	
phosphoserine phosphatase SerB, degenerate	SP1125	X	X	X
conserved hypothetical protein TIGR00045	SP1126	X	X	X
hypothetical protein	SP1127		X	
enolase	SP1128			
integrase/recombinase, phage integrase family	SP1129	X	X	X
transcriptional regulator	SP1130	X	X	X
transcriptional regulator, putative	SP1131	X	X	X
hypothetical protein	SP1132	X	X	X
hypothetical protein	SP1133	X	X	X
hypothetical protein	SP1134	X	X	X
hypothetical protein	SP1135	X	X	X
conserved domain protein	SP1136	X	X	X
GTP-binding protein, putative	SP1137	X	X	X
hypothetical protein	SP1138	X	X	X
hypothetical protein	SP1139	X	X	X
hypothetical protein	SP1140	X	X	X
hypothetical protein	SP1141	X	X	X
hypothetical protein	SP1142	X	X	X
conserved hypothetical protein	SP1143	X	X	X
conserved hypothetical protein	SP1144	X	X	X
hypothetical protein	SP1145	X	X	X
hypothetical protein	SP1146	X	X	X
integrase/recombinase, phage integrase family, truncation	SP1147		X	
IS630-Spn1, transposase Orf2	SP1148			
IS630-Spn1, transposase Orf1	SP1149			
exonuclease RexB	SP1151		X	
exonuclease RexA	SP1152			
hypothetical protein	SP1153			

immunoglobulin A1 protease	SP1154	X	X	X
GTP-binding protein	SP1155		X	
ribonuclease HII	SP1156			
voltage-gated chloride channel family protein	SP1157			
integrase/recombinase, phage integrase family	SP1159			
lipoate-protein ligase, putative	SP1160			
acetoin dehydrogenase complex, E3 component, dihydrolipoamide	SP1161	X	X	X
acetoin dehydrogenase complex, E2 component, dihydrolipoamide	SP1162	X	X	X
acetoin dehydrogenase, E1 component, beta subunit, putative	SP1163			
acetoin dehydrogenase, E1 component, alpha subunit, putative	SP1164			
MATE efflux family protein	SP1166			
dihydroorotase, multifunctional complex type	SP1167			
mutator MutT protein	SP1168		X	
uracil-DNA glycosylase	SP1169		X	
hypothetical protein	SP1170		X	
hydrolase, haloacid dehalogenase-like family	SP1171			
hypothetical protein	SP1172	X	X	X
conserved hypothetical protein	SP1173	X	X	X
conserved domain protein	SP1174			
conserved domain protein	SP1175			
phosphoenolpyruvate-protein phosphotransferase	SP1176			
phosphocarrier protein HPr	SP1177			
NrdH-redoxin	SP1178	X	X	
NrdH-redoxin	SP1178		X	X
ribonucleoside-diphosphate reductase 2, alpha subunit	SP1179			
ribonucleoside-diphosphate reductase 2, beta subunit	SP1180			
lactose phosphotransferase system repressor	SP1182			
hypothetical protein	SP1183	X	X	X
6-phospho-beta-galactosidase	SP1184		X	
PTS system, lactose-specific IIBC components	SP1185	X	X	X
PTS system, lactose-specific IIA component	SP1186	X	X	X
transcription antiterminator LacT	SP1187	X	X	X
hypothetical protein	SP1189	X	X	X
tagatose 1,6-diphosphate aldolase	SP1190	X	X	X
tagatose-6-phosphate kinase	SP1191	X	X	X
galactose-6-phosphate isomerase, LacB subunit	SP1192		X	
galactose-6-phosphate isomerase, LacA subunit	SP1193		X	
lacX protein, truncation	SP1194	X	X	X
IS1381, transposase OrfB	SP1195			
IS1381, transposase OrfA, authentic frameshift	SP1196		X	
conserved hypothetical protein	SP1197	X	X	X
hypothetical protein	SP1198	X	X	X
hypothetical protein	SP1199	X	X	X
GTP-binding protein LepA	SP1200			
serine/threonine protein phosphatase	SP1201	X	X	X
DNA repair protein RecN	SP1202			
transcriptional repressor, putative	SP1203			
hemolysin A, putative	SP1204		X	
geranyltranstransferase	SP1205			
exodeoxyribonuclease VII, small subunit	SP1206			
exodeoxyribonuclease VII, large subunit	SP1207			
uridine kinase	SP1208			
hypothetical protein	SP1209	X	X	X
hypothetical protein	SP1210		X	
tRNA pseudouridine synthase B	SP1212			
conserved domain protein	SP1213	X	X	X
transulfuration enzyme family protein, authentic point mutatio	SP1214	X	X	X

transporter, FNT family, putative	SP1215	X	X	X
hypothetical protein	SP1216	X	X	X
conserved hypothetical protein	SP1218			
DNA gyrase subunit A	SP1219			
L-lactate dehydrogenase	SP1220			
type II restriction endonuclease, putative	SP1221			
type II restriction endonuclease, putative	SP1222			
conserved hypothetical protein	SP1223		X	
conserved domain protein	SP1224		X	
vicX protein	SP1225			
sensory box sensor histidine kinase	SP1226			
DNA-binding response regulator	SP1227			
A/G-specific adenine glycosylase	SP1228			
formate--tetrahydrofolate ligase	SP1229			
conserved hypothetical protein	SP1230			
flavoprotein	SP1231			
membrane protein	SP1232		X	
hypothetical protein	SP1233		X	
transcriptional regulator, biotin repressor family	SP1234	X	X	X
MutT/nudix family protein	SP1235		X	
acetyltransferase, GNAT family	SP1236	X	X	X
acetyltransferase, GNAT family	SP1237	X	X	X
excinuclease ABC, subunit B	SP1238			
conserved hypothetical protein	SP1240			
amino acid ABC transporter, amino acid-binding protein/permeas	SP1241			
amino acid ABC transporter, ATP-binding protein	SP1242			
glucose-6-phosphate 1-dehydrogenase	SP1243			
signal recognition particle-docking protein FtsY	SP1244			
Cof family protein	SP1245		X	
Cof family protein	SP1246			
conserved hypothetical protein	SP1247			
ribonuclease III	SP1248		X	
conserved hypothetical protein	SP1249			
conserved domain protein	SP1250	X	X	X
endonuclease, putative	SP1251	X	X	X
hypothetical protein	SP1252	X	X	X
hypothetical protein	SP1254	X	X	X
3-isopropylmalate dehydratase, small subunit, putative	SP1255		X	
conserved hypothetical protein	SP1256	X	X	X
3-isopropylmalate dehydrogenase, authentic point mutation	SP1257		X	
2-isopropylmalate synthase, putative	SP1258			
conserved hypothetical protein	SP1259		X	
copper homeostasis protein CutC	SP1260			
conserved hypothetical protein	SP1261		X	
IS1167, transposase	SP1262			
DNA topoisomerase I	SP1263			
conserved domain protein	SP1264		X	
DNA processing protein DprA, putative	SP1266			
licC protein	SP1267			
licB protein	SP1268			
choline kinase	SP1269			
alcohol dehydrogenase, zinc-containing	SP1270			
cytidine diphosphocholine pyrophosphorylase, putative	SP1271			
polysaccharide biosynthesis protein, putative	SP1272			
licD1 protein	SP1273			
licD2 protein	SP1274		X	
carbamoyl-phosphate synthase, large subunit	SP1275			

carbamoyl-phosphate synthase, small subunit	SP1276			
aspartate carbamoyltransferase	SP1277			
pyrimidine operon regulatory protein	SP1278			
endonuclease III	SP1279			
conserved hypothetical protein	SP1280			
hypothetical protein	SP1281	X	X	X
ABC transporter, ATP-binding protein	SP1282		X	
heat shock protein HtpX	SP1283			
lemA protein	SP1284			
glucose-inhibited division protein B	SP1285			
uracil permease	SP1286			
signal recognition particle protein	SP1287			
conserved hypothetical protein	SP1288		X	
hypothetical protein	SP1289		X	
conserved hypothetical protein	SP1290			
Cof family protein	SP1291		X	
SAP domain protein	SP1292	X	X	X
ribosomal protein L19	SP1293			
crcB protein	SP1294		X	
crcB protein	SP1295			
chorismate mutase, putative	SP1296			
flavodoxin	SP1297			
DHH subfamily 1 protein	SP1298			
ribosomal protein L31	SP1299			
hypothetical protein	SP1300	X	X	X
transposase family protein, degenerate	SP1301	X	X	X
conserved hypothetical protein	SP1302		X	
NADP-specific glutamate dehydrogenase	SP1306			
hypothetical protein	SP1307		X	
toxin secretion ATP-binding protein, truncation	SP1308			
IS1381, transposase OrfB, authentic frameshift	SP1309		X	
IS1381, transposase OrfA	SP1310			
IS66 family element, Orf3, degenerate	SP1311			
transposase family protein, degenerate	SP1312		X	
IS66 family element, Orf2, interruption	SP1313		X	
IS66 family element, Orf1	SP1314	X	X	X
v-type sodium ATP synthase, subunit D	SP1315	X	X	X
v-type sodium ATP synthase, subunit B	SP1316	X	X	X
v-type sodium ATP synthase, subunit A	SP1317	X	X	X
v-type sodium ATP synthase, subunit G	SP1318	X	X	X
v-type sodium ATP synthase, subunit C	SP1319	X	X	X
v-type sodium ATP synthase, subunit E	SP1320	X	X	X
v-type sodium ATP synthase, subunit K	SP1321	X	X	X
v-type sodium ATP synthase, subunit I	SP1322	X	X	X
hypothetical protein	SP1323	X	X	X
ROK family protein	SP1324	X	X	X
oxidoreductase, Gfo/Idh/MocA family	SP1325	X	X	X
neuraminidase, putative	SP1326	X	X	X
conserved hypothetical protein	SP1327	X	X	X
sodium:solute symporter family protein	SP1328	X	X	X
N-acetylneuraminase lyase	SP1329	X	X	X
N-acetylmannosamine-6-P epimerase, putative	SP1330	X	X	X
phosphosugar-binding transcriptional regulator, putative	SP1331	X	X	X
conserved domain protein	SP1332	X	X	X
hypothetical protein	SP1333		X	
conserved hypothetical protein	SP1334	X	X	X
hypothetical protein	SP1335	X	X	X

type II DNA modification methyltransferase Spn5252IP	SP1336	X	X	X
IS1380-Spn1, transposase	SP1337	X	X	X
hypothetical protein	SP1338	X	X	X
hypothetical protein	SP1340		X	
ABC transporter, ATP-binding protein	SP1341		X	
toxin secretion ABC transporter, ATP-binding/permease protein	SP1342		X	
prolyl oligopeptidase family protein	SP1343		X	
conserved hypothetical protein	SP1344	X	X	X
hypothetical protein	SP1345		X	
conserved hypothetical protein	SP1346	X	X	X
hypothetical protein	SP1347			
conserved hypothetical protein	SP1348	X	X	X
hypothetical protein	SP1349	X	X	X
conserved domain protein	SP1350	X	X	X
hypothetical protein	SP1351	X	X	X
IS1380-Spn1, transposase	SP1352	X	X	X
ribosomal protein L7/L12	SP1354			
ribosomal protein L10	SP1355			
Atz/Trz family protein	SP1356			
ABC transporter, ATP-binding/permease protein	SP1357			
ABC transporter, ATP-binding/permease protein	SP1358			
peptide methionine sulfoxide reductase	SP1359			
homoserine kinase	SP1360			
homoserine dehydrogenase	SP1361			
putative transcriptional regulator MecA	SP1362			
conserved domain protein	SP1363			
hypothetical protein	SP1364	X	X	X
glycosyl transferase, family 2	SP1365			
glycosyl transferase, group 1	SP1366			
licD3 protein	SP1367			
psr protein	SP1368			
prephenate dehydratase	SP1369			
shikimate kinase	SP1370			
3-phosphoshikimate 1-carboxyvinyltransferase	SP1371			
conserved hypothetical protein	SP1372			
prephenate dehydrogenase	SP1373			
chorismate synthase	SP1374			
3-dehydroquinate synthase	SP1375			
shikimate 5-dehydrogenase	SP1376			
3-dehydroquinate dehydratase	SP1377			
conserved hypothetical protein	SP1378			
hypothetical protein	SP1379	X	X	X
hypothetical protein	SP1380		X	
ABC transporter, ATP-binding protein	SP1381	X	X	X
alpha-amylase	SP1382	X	X	X
alanyl-tRNA synthetase	SP1383			
conserved hypothetical protein	SP1384			
hypothetical protein	SP1385		X	
spermidine/putrescine ABC transporter, spermidine/putrescine-b	SP1386			
spermidine/putrescine ABC transporter, permease protein	SP1387			
spermidine/putrescine ABC transporter, permease protein	SP1388			
spermidine/putrescine ABC transporter, ATP-binding protein	SP1389			
UDP-N-acetylenolpyruvoylglucosamine reductase	SP1390			
conserved hypothetical protein	SP1391		X	
alpha-acetolactate decarboxylase	SP1392			
conserved hypothetical protein	SP1393			
amino acid ABC transporter, amino acid-binding protein	SP1394			

phosphate transport system regulatory protein PhoU, putative	SP1395			
phosphate ABC transporter, ATP-binding protein, putative	SP1396			
phosphate ABC transporter, ATP-binding protein, putative	SP1397			
phosphate ABC transporter, permease protein, putative	SP1398			
phosphate ABC transporter, permease protein, putative	SP1399			
phosphate ABC transporter, phosphate-binding protein, putative	SP1400	X		X
hypothetical protein	SP1401			
NOL1/NOP2/sun family protein	SP1402		X	
inositol monophosphatase family protein	SP1403			
conserved hypothetical protein	SP1404			
conserved hypothetical protein	SP1405			
hypothetical protein	SP1406			
hydrolase, haloacid dehalogenase-like family	SP1407			
acyl-ACP thioesterase, putative	SP1408			
oxygen-independent coproporphyrinogen III oxidase, putative	SP1409			
conserved hypothetical protein	SP1410			
conserved hypothetical protein	SP1411			
prolipoprotein diacylglyceryl transferase	SP1412			
Hpr(Ser) kinase/phosphatase	SP1413			
ribosomal protein S21	SP1414			
ribosomal protein S21	SP1414	X	X	X
glucosamine-6-phosphate isomerase	SP1415			
S-adenosylmethionine:tRNA ribosyltransferase-isomerase	SP1416			
pspC protein, degenerate	SP1417		X	
IS1380-Spn1, transposase	SP1418	X	X	X
acetyltransferase, GNAT family	SP1419			
NH(3)-dependent NAD(+) synthetase	SP1420	X		X
conserved hypothetical protein	SP1421			
hypothetical protein	SP1422	X	X	X
transcriptional repressor, putative	SP1423	X	X	X
hypothetical protein	SP1424	X	X	X
ABC transporter, ATP-binding protein	SP1426		X	
peptidase, U32 family	SP1427			
conserved hypothetical protein	SP1428		X	
peptidase, U32 family	SP1429			
type II restriction endonuclease, putative, authentic point mu	SP1430			
type II DNA modification methyltransferase, putative	SP1431		X	
hypothetical protein	SP1432	X	X	X
transcriptional regulator, araC family	SP1433			
ABC transporter, ATP-binding/permease protein	SP1434	X	X	X
ABC transporter, ATP-binding protein	SP1435	X	X	X
hypothetical protein	SP1436	X	X	X
conserved domain protein	SP1437	X	X	X
ABC transporter, ATP-binding protein	SP1438	X	X	X
IS1380-Spn1, transposase	SP1439	X	X	X
ABC transporter, ATP-binding protein, fragment	SP1440	X	X	X
IS66 family element, Orf3, degenerate	SP1441		X	
IS66 family element, Orf2	SP1442		X	
IS66 family element, Orf1	SP1443	X	X	X
IS1167, transposase	SP1444			
GMP synthase	SP1445			
transcriptional regulator, GntR family	SP1446	X	X	X
membrane protein	SP1447		X	
conserved hypothetical protein	SP1448			
cppA protein	SP1449			
platelet activating factor, putative	SP1450	X	X	X
Cof family protein	SP1451		X	

hypothetical protein	SP1452		X	
conserved domain protein	SP1453		X	
hypothetical protein	SP1454	X	X	X
hypothetical protein	SP1455	X	X	X
polypeptide deformylase	SP1456			
spoU rRNA methylase family protein	SP1457			
thioredoxin reductase	SP1458			
hypothetical protein	SP1459	X	X	X
amino acid ABC transporter, ATP-binding protein	SP1460			
amino acid ABC transporter, permease protein	SP1461			
conserved hypothetical protein	SP1462			
methylated-DNA--protein-cysteine S-methyltransferase	SP1463			
acetyltransferase, GNAT family	SP1464			
hypothetical protein	SP1465			
hemolysin	SP1466			
conserved hypothetical protein	SP1467			
pyridoxine biosynthesis protein	SP1468			
NADH oxidase	SP1469			
thiamine biosynthesis protein ApbE, putative	SP1470	X	X	X
oxidoreductase, putative	SP1471		X	
oxidoreductase, putative	SP1472	X	X	X
conserved hypothetical protein	SP1473		X	
glycyl-tRNA synthetase, beta subunit	SP1474			
glycyl-tRNA synthetase, alpha subunit	SP1475			
hypothetical protein	SP1476			
hypothetical protein	SP1476	X	X	X
hypothetical protein	SP1477			
oxidoreductase, aldo/keto reductase family	SP1478			
peptidoglycan N-acetylglucosamine deacetylase A	SP1479			
hypothetical protein	SP1480	X		X
oxidoreductase, Gfo/Idh/MocA family	SP1482			
ATP-dependent RNA helicase, DEAD/DEAH box family	SP1483			
transposase family protein, authentic frameshift	SP1484		X	
IS3-Spn1, transposase	SP1485	X	X	X
IS3-Spn1, hypothetical protein, degenerate	SP1486	X	X	X
hypothetical protein	SP1487		X	
hypothetical protein	SP1488		X	
translation elongation factor Tu	SP1489			
glycerol uptake facilitator protein, putative	SP1491			
cell wall surface anchor family protein	SP1492	X	X	X
hypothetical protein	SP1493	X	X	X
hypothetical protein	SP1494			
hypothetical protein	SP1495	X	X	X
transposase, IS630-Spn1 related, Orf2	SP1496	X	X	X
transposase, IS630-Spn1 related, Orf1, authentic frameshift	SP1497	X	X	X
phosphoglucomutase	SP1498			
bacterocin transport accessory protein	SP1499			
amino acid ABC transporter, amino acid-binding protein	SP1500			
amino acid ABC transporter, ATP-binding protein	SP1501			
amino acid ABC transporter, permease protein	SP1502			
IS1380-Spn1, transposase	SP1503	X	X	X
TPR domain protein	SP1504			
membrane protein	SP1505			
conserved hypothetical protein	SP1506			
ATP synthase F1, epsilon subunit	SP1507			
ATP synthase F1, beta subunit	SP1508			
ATP synthase F1, gamma subunit	SP1509			

ATP synthase F1, alpha subunit	SP1510			
ATP synthase F1, delta subunit	SP1511			
ATP synthase F0, B subunit	SP1512	X	X	
ATP synthase F0, A subunit	SP1513			
ATP synthase F0, C subunit	SP1514			
IS1239, transposase, putative, degenerate	SP1515	X	X	X
acetyltransferase, GNAT family	SP1516			
transcription elongation factor GreA	SP1517			
conserved hypothetical protein	SP1518			
acetyltransferase, GNAT family	SP1519		X	
acetyltransferase, GNAT family	SP1520			
UDP-N-acetylmuramate--alanine ligase	SP1521			
conserved domain protein	SP1522			
Snf2 family protein	SP1523			
aminotransferase, class II	SP1524		X	
transulfuration enzyme family protein	SP1525			
ABC transporter, ATP-binding protein authentic frameshift	SP1526		X	
oligopeptide ABC transporter, oligopeptide-binding protein Ali	SP1527			
polysaccharide biosynthesis protein, putative	SP1529			
UDP-N-acetylmuramoylalanyl-D-glutamate--2,6-diaminopimelate li	SP1530			
hypothetical protein	SP1531		X	
conserved domain protein, authentic frameshift	SP1532		X	
conserved domain protein	SP1533		X	
inorganic pyrophosphatase, manganese-dependent	SP1534			
conserved hypothetical protein	SP1535			
conserved hypothetical protein	SP1536			
general stress protein 13, putative	SP1537			
cof family protein/peptidyl-prolyl cis-trans isomerase, cyclop	SP1538			
ribosomal protein S18	SP1539			
single-strand binding protein	SP1540			
ribosomal protein S6	SP1541			
asparaginyl-tRNA synthetase	SP1542			
conserved hypothetical protein, authentic point mutation	SP1543			
aspartate aminotransferase	SP1544			
conserved hypothetical protein	SP1545			
conserved domain protein	SP1546			
conserved hypothetical protein	SP1547			
hypothetical protein	SP1548			
polypeptide deformylase	SP1549			
glutathione S-transferase family protein	SP1550			
cation-transporting ATPase, E1-E2 family	SP1551			
cation efflux family protein	SP1552			
ABC transporter, ATP-binding protein	SP1553			
polyA polymerase family protein	SP1554	X	X	
polyA polymerase family protein	SP1554			X
dihydrodipicolinate reductase	SP1555			
hypothetical protein	SP1556	X	X	X
degV family protein	SP1557			
hypothetical protein	SP1558			
phosphoglucomutase/phosphomannomutase family protein	SP1559			
conserved hypothetical protein	SP1560			
conserved hypothetical protein	SP1561			
hypothetical protein	SP1562	X	X	X
pyridine nucleotide-disulphide oxidoreductase family protein	SP1563			
conserved hypothetical protein	SP1564			
conserved hypothetical protein	SP1565			
conserved hypothetical protein	SP1566			

endoribonuclease L-PSP	SP1567			
GTP-binding protein	SP1568			
ATP-dependent Clp protease, ATP-binding subunit ClpX	SP1569			
hypothetical protein	SP1570		X	
dihydrofolate reductase	SP1571			
non-heme iron-containing ferritin	SP1572			
lysozyme	SP1573			
triosephosphate isomerase	SP1574			
conserved hypothetical protein	SP1575			
homoserine O-succinyltransferase	SP1576			
adenine phosphoribosyltransferase	SP1577			
methyltransferase, putative	SP1578			
sugar ABC transporter, ATP-binding protein	SP1580			
hypothetical protein	SP1581	X	X	X
IS1167, transposase	SP1582			
isochorismatase family protein	SP1583			
transcriptional regulator, putative	SP1584			
ATP-dependent RNA helicase, putative	SP1586			
oxalate:formate antiporter	SP1587			
oxidoreductase, pyridine nucleotide-disulfide, class I	SP1588			
oxidoreductase, pyridine nucleotide-disulfide, class I	SP1588	X	X	X
Mur ligase family protein	SP1589			
conserved hypothetical protein	SP1590			
proline dipeptidase	SP1591			
conserved domain protein	SP1592	X	X	X
IS3-Spn1, transposase, authentic point mutation	SP1593	X	X	X
IS3-Spn1, hypothetical protein, interruption	SP1594		X	
IS1380-Spn1, transposase	SP1595	X	X	X
IS3-Spn1, hypothetical protein, interruption	SP1596	X	X	X
conserved hypothetical protein	SP1597		X	
phosphomethylpyrimidine kinase, putative	SP1598		X	
tRNA pseudouridine synthase A	SP1599		X	
hypothetical protein	SP1600		X	
conserved hypothetical protein	SP1601			
phnA protein	SP1602			
cytidylate kinase	SP1603			
hypothetical protein	SP1604			
ferredoxin	SP1605			
glycosyl transferase, family 2	SP1606	X		X
UDP-glucose 4-epimerase	SP1607			
oxidoreductase, DadA family protein	SP1608		X	
conserved hypothetical protein	SP1609		X	
Bcl-2 family protein	SP1610	X	X	X
conserved domain protein	SP1612	X	X	X
IS3-Spn1, transposase, authentic point mutation	SP1613		X	
IS3-Spn1, hypothetical protein, degenerate	SP1614	X	X	X
transketolase, authentic frameshift	SP1615		X	
ribulose-phosphate 3-epimerase family protein	SP1616	X	X	X
PTS system, IIC component	SP1617	X	X	X
PTS system, IIB component	SP1618	X	X	X
PTS system, IIA component	SP1619	X	X	X
PTS system, nitrogen regulatory component IIA, putative	SP1620	X	X	X
transcription antiterminator BglG family protein, authentic fr	SP1621	X	X	X
transposase, IS200 family	SP1622	X	X	X
cation-transporting ATPase, E1-E2 family	SP1623			
acyltransferase family protein	SP1624		X	
acyltransferase family protein	SP1624	X	X	X

cadmium resistance transporter, putative	SP1625			
ribosomal protein S15	SP1626			
conserved hypothetical protein	SP1627	X	X	X
hypothetical protein	SP1628	X	X	X
hypothetical protein	SP1630			
threonyl-tRNA synthetase	SP1631			
sensor histidine kinase	SP1632		X	
DNA-binding response regulator	SP1633			
hypothetical protein	SP1634		X	
hypothetical protein	SP1635	X	X	X
Rrf2 family protein	SP1636			
conserved hypothetical protein	SP1637			
iron-dependent transcriptional regulator	SP1638			
IS1167, transposase	SP1639			
hypothetical protein	SP1640		X	
conserved domain protein	SP1641			
hypothetical protein	SP1642		X	
hypothetical protein	SP1643	X	X	X
conserved hypothetical protein	SP1644			
GTP pyrophosphokinase	SP1645			
metallo-beta-lactamase superfamily protein	SP1646			
endopeptidase O	SP1647	X		X
manganese ABC transporter, ATP-binding protein	SP1648			
manganese ABC transporter, permease protein, putative, authentic	SP1649			
manganese ABC transporter, manganese-binding adhesion lipotei	SP1650			
thiol peroxidase	SP1651			
hypothetical protein	SP1652		X	
ABC transporter, ATP-binding protein	SP1653			
conserved hypothetical protein	SP1654		X	
phosphoglycerate mutase	SP1655			
hypothetical protein	SP1656	X	X	X
hypothetical protein	SP1657	X	X	X
hypothetical protein	SP1658		X	
isoleucyl-tRNA synthetase	SP1659			
hypothetical protein	SP1660			
cell division protein DivIVA	SP1661			
ylmH protein	SP1662			
ylmG protein	SP1663			
ylmF protein	SP1664			
ylmE protein	SP1665			
cell division protein FtsZ	SP1666			
cell division protein FtsA	SP1667			
hypothetical protein	SP1668		X	
MutT/nudix family protein	SP1669	X	X	X
UDP-N-acetylmuramoylalanyl-D-glutamyl-2,6-diaminopimelate--D-a	SP1670			
D-alanine--D-alanine ligase	SP1671			
recombination protein RecR	SP1672			
penicillin-binding protein 2B	SP1673			
phosphosugar-binding transcriptional regulator, putative	SP1674			
ROK family protein	SP1675			
N-acetylneuraminate lyase, putative	SP1676		X	
hypothetical protein	SP1677	X	X	X
hypothetical protein	SP1679	X	X	X
conserved hypothetical protein	SP1680	X	X	X
sugar ABC transporter, permease protein	SP1681		X	
sugar ABC transporter, permease protein	SP1682		X	
sugar ABC transporter, sugar-binding protein	SP1683		X	

PTS system, IIBC components	SP1684		X	
conserved hypothetical protein	SP1685			
oxidoreductase, Gfo/Idh/MocA family	SP1686	X	X	X
neuraminidase B	SP1687	X	X	X
ABC transporter, permease protein	SP1688	X	X	X
ABC transporter, permease protein	SP1689	X	X	X
ABC transporter, substrate-binding protein	SP1690	X	X	X
conserved hypothetical protein	SP1691	X	X	X
IS1167, transposase	SP1692			
neuraminidase A, authentic frameshift	SP1693		X	
acetyl xylan esterase, putative	SP1695			
ATP-dependent DNA helicase RecG	SP1697			
alanine racemase	SP1698			
holo-(acyl-carrier protein) synthase	SP1699			
phospho-2-dehydro-3-deoxyheptonate aldolase	SP1700			
phospho-2-dehydro-3-deoxyheptonate aldolase	SP1701			
preprotein translocase, SecA subunit	SP1702			
conserved domain protein	SP1703	X	X	X
ABC transporter, ATP-binding protein	SP1704	X	X	X
hypothetical protein	SP1705	X	X	X
hypothetical protein	SP1706	X	X	X
hypothetical protein	SP1707	X	X	X
hypothetical protein	SP1708		X	
phosphoglycerate dehydrogenase-related protein	SP1709			
nitroreductase family protein	SP1710	X		X
primosomal protein DnaI	SP1711			
hypothetical protein	SP1712			
conserved hypothetical protein	SP1713			
transcriptional regulator, GntR family	SP1714			
ABC transporter, ATP-binding protein	SP1715			
conserved hypothetical protein	SP1716			
ABC transporter, ATP-binding protein	SP1717			
IS1239, transposase, putative, degenerate	SP1719	X	X	X
conserved hypothetical protein	SP1720			
fructokinase	SP1721		X	
PTS system IIABC components	SP1722	X	X	X
hypothetical protein	SP1723	X	X	X
sucrose-6-phosphate hydrolase	SP1724		X	
sucrose operon repressor	SP1725			
3-hydroxy-3-methylglutaryl-CoA reductase	SP1726			
hydroxymethylglutaryl-CoA synthase	SP1727			
hypothetical protein	SP1728			
IS1381, transposase OrfA/OrfB, truncation	SP1729			
hypothetical protein	SP1730			
conserved hypothetical protein	SP1731		X	
serine/threonine protein kinase	SP1732			
phosphatase, putative	SP1733			
rRNA methyltransferase RsmB	SP1734		X	
methionyl-tRNA formyltransferase	SP1735			
primosomal protein N	SP1736	X	X	X
DNA-directed RNA polymerase, omega subunit, putative	SP1737			
guanylate kinase	SP1738			
KH domain protein	SP1739			
conserved hypothetical protein	SP1740	X	X	X
conserved hypothetical protein	SP1741	X	X	X
conserved hypothetical protein	SP1742		X	
conserved hypothetical protein	SP1743			

iojap-related protein	SP1744			
isochorismatase family protein	SP1745			
conserved hypothetical protein	SP1746			
conserved hypothetical protein	SP1747			
conserved hypothetical protein	SP1748			
GTP-binding protein	SP1749			
conserved hypothetical protein	SP1750			
magnesium transporter, CorA family, putative	SP1751			
conserved domain protein	SP1752			
sodium/dicarboxylate symporter family protein	SP1753			
conserved hypothetical protein	SP1754			
hypothetical protein	SP1755	X	X	X
conserved domain protein	SP1756	X	X	X
conserved hypothetical protein	SP1757	X	X	X
glycosyl transferase, group 1	SP1758	X	X	X
preprotein translocase, SecA subunit	SP1759	X	X	X
conserved domain protein	SP1760	X	X	X
hypothetical protein	SP1761	X	X	X
hypothetical protein	SP1762	X	X	X
preprotein translocase SecY family protein	SP1763	X	X	X
glycosyl transferase, family 2	SP1764	X	X	X
glycosyl transferase, family 8	SP1765	X	X	X
glycosyl transferase, family 8	SP1766	X	X	X
glycosyl transferase, family 8	SP1767	X	X	X
conserved hypothetical protein	SP1768	X	X	X
glycosyl transferase, authentic frameshift	SP1769	X	X	X
glycosyl transferase, family 8	SP1770	X	X	X
glycosyl transferase, family 2/glycosyl transferase family 8	SP1771	X	X	X
cell wall surface anchor family protein	SP1772	X	X	X
IS630-Spn1, transposase Orf1/Orf2 degenerate	SP1773	X	X	X
transcriptional regulator, putative	SP1774			
conserved domain protein	SP1775			
thioredoxin	SP1776			
conserved hypothetical protein	SP1777	X	X	X
aquaporin	SP1778			
hypothetical protein	SP1779			
oligoendopeptidase F, putative	SP1780			
conserved hypothetical protein	SP1781			
ribosomal protein L11 methyltransferase	SP1782			
MutT/nudix family protein	SP1783		X	
hypothetical protein	SP1784	X	X	X
hypothetical protein	SP1785			
conserved hypothetical protein	SP1786	X	X	
conserved hypothetical protein	SP1786			X
hypothetical protein	SP1787			
hypothetical protein	SP1789	X	X	X
ATPase, AAA family	SP1790		X	
integrase-related protein	SP1791	X	X	X
IS1167, transposase	SP1792			
hypothetical protein	SP1793	X	X	X
hypothetical protein	SP1794	X	X	X
sucrose-6-phosphate hydrolase, putative	SP1795	X	X	X
ABC transporter, substrate-binding protein	SP1796	X	X	X
ABC transporter, permease protein	SP1797	X	X	X
ABC transporter, permease protein	SP1798	X	X	X
sugar-binding transcriptional regulator, LacI family	SP1799	X	X	X
transcriptional activator, putative	SP1800	X	X	X

conserved hypothetical protein	SP1801		X	
hypothetical protein	SP1802			
conserved hypothetical protein	SP1803		X	
general stress protein 24, putative	SP1804			
hypothetical protein	SP1805			
conserved domain protein	SP1806	X	X	X
acetyltransferase, GNAT family	SP1807	X	X	X
type IV prepilin peptidase, putative	SP1808	X	X	X
transcriptional regulator	SP1809			
hypothetical protein	SP1810			
tryptophan synthase, alpha subunit	SP1811			
tryptophan synthase, beta subunit	SP1812			
N-(5-phosphoribosyl)-anthranilate isomerase	SP1813		X	
indole-3-glycerol phosphate synthase	SP1814			
anthranilate phosphoribosyltransferase	SP1815			
anthranilate synthase component II	SP1816			
anthranilate synthase component I	SP1817			
sugar-binding transcriptional regulator, LacI family	SP1821		X	
conserved domain protein	SP1822	X	X	X
MgtC/SapB family protein	SP1823		X	
ABC transporter, permease protein	SP1824	X	X	X
ABC transporter, ATP-binding protein	SP1825	X	X	X
ABC transporter, substrate-binding protein	SP1826	X	X	X
hypothetical protein	SP1827	X	X	X
UDP-glucose 4-epimerase	SP1828	X	X	X
galactose-1-phosphate uridylyltransferase	SP1829	X	X	X
phosphate transport system regulatory protein PhoU, putative	SP1830	X	X	X
hypothetical protein	SP1831	X	X	X
hypothetical protein	SP1832	X	X	X
cell wall surface anchor family protein	SP1833	X	X	X
hypothetical protein	SP1834	X	X	X
hypothetical protein	SP1835	X	X	X
hypothetical protein	SP1836		X	
capsular polysaccharide biosynthesis protein, putative	SP1837	X	X	
capsular polysaccharide biosynthesis protein, putative	SP1837			X
glycosyl transferase, putative	SP1838			
ABC transporter, ATP-binding/permease protein	SP1839			
ABC transporter, ATP-binding/permease protein	SP1840	X	X	
ABC transporter, ATP-binding/permease protein	SP1840			X
conserved domain protein	SP1841			
hypothetical protein	SP1842		X	
hypothetical protein	SP1844			
exodeoxyribonuclease	SP1845			
conserved hypothetical protein, degenerate	SP1846			
xanthine phosphoribosyltransferase	SP1847		X	
xanthine permease	SP1848		X	
DpnD protein	SP1849			
type II restriction endonuclease DpnI	SP1850		X	
conserved hypothetical protein	SP1851	X	X	X
galactose-1-phosphate uridylyltransferase	SP1852	X	X	X
galactokinase	SP1853			
galactose operon repressor	SP1854	X	X	X
alcohol dehydrogenase, zinc-containing	SP1855			
transcriptional regulator, MerR family	SP1856		X	
cation efflux system protein	SP1857	X	X	X
transcriptional regulator, TetR family	SP1858		X	
conserved domain protein	SP1859		X	

choline transporter	SP1860			
choline transporter	SP1861			
hypothetical protein	SP1862			
transcriptional regulator, MarR family	SP1863			
conserved hypothetical protein	SP1864			
glutamyl-aminopeptidase	SP1865			
hypothetical protein	SP1866	X	X	X
NAD-dependent epimerase/dehydratase family protein	SP1867	X	X	X
iron-compound ABC transporter, permease protein	SP1869	X	X	X
iron-compound ABC transporter, permease protein	SP1870	X	X	X
iron-compound ABC transporter, ATP-binding protein	SP1871	X	X	X
iron-compound ABC transporter, iron-compound-binding protein	SP1872	X	X	X
conserved hypothetical protein	SP1873		X	
ribosomal large subunit pseudouridine synthase B	SP1874			
conserved hypothetical protein	SP1875			
conserved hypothetical protein	SP1876			
integrase/recombinase, phage integrase family	SP1877			
CBS domain protein	SP1878			
conserved hypothetical protein	SP1879			
HAM1 protein	SP1880			
glutamate racemase	SP1881			
conserved hypothetical protein	SP1882		X	
dextran glucosidase DexS, putative	SP1883		X	
PTS system, IIABC components	SP1884	X	X	X
trehalose operon transcriptional repressor	SP1885		X	
trehalose operon transcriptional repressor	SP1885	X	X	X
IS1167, transposase, degenerate	SP1886			
oligopeptide ABC transporter, ATP-binding protein AmiF	SP1887			
oligopeptide ABC transporter, ATP-binding protein AmiE	SP1888			
oligopeptide ABC transporter, permease protein AmiD	SP1889			
oligopeptide ABC transporter, permease protein AmiC	SP1890			
oligopeptide ABC transporter, oligopeptide-binding protein Ami	SP1891			
hypothetical protein	SP1892	X	X	X
hypothetical protein	SP1893		X	
sucrose phosphorylase	SP1894	X	X	X
sugar ABC transporter, permease protein	SP1895	X	X	X
sugar ABC transporter, permease protein	SP1896	X	X	X
sugar ABC transporter, sugar-binding protein	SP1897		X	
alpha-galactosidase	SP1898	X	X	X
msm operon regulatory protein	SP1899	X	X	X
BirA bifunctional protein	SP1900	X	X	X
RNA methyltransferase, TrmA family	SP1901	X		X
conserved hypothetical protein	SP1902	X	X	X
conserved hypothetical protein	SP1903			
hypothetical protein	SP1904	X	X	X
IS1167, transposase, interruption	SP1905			
chaperonin, 60 kDa	SP1906			
chaperonin, 10 kDa	SP1907			
single-strand DNA-binding protein, authentic point mutation	SP1908	X	X	X
oxidoreductase, short chain dehydrogenase/reductase family	SP1909			
conserved hypothetical protein	SP1910			
thioredoxin, putative	SP1911			
hypothetical protein	SP1912			
cspC-related protein, authentic point mutation	SP1913	X		X
hypothetical protein	SP1914	X		X
hypothetical protein	SP1915	X		X
PAP2 family protein	SP1916	X	X	X

hypothetical protein	SP1917	X	X	X
ABC transporter, ATP-binding protein	SP1918		X	
ABC transporter, permease protein	SP1919	X	X	X
transcriptional regulator, MarR family	SP1920	X	X	X
conserved hypothetical protein	SP1922			
pneumolysin	SP1923			
hypothetical protein	SP1924			
hypothetical protein	SP1925			
hypothetical protein	SP1926			
IS1381, transposase OrfA	SP1927		X	
IS1381, transposase OrfB	SP1928			
hypothetical protein	SP1930	X	X	X
hypothetical protein, fusion	SP1931	X	X	X
hypothetical protein	SP1933	X	X	X
hypothetical protein	SP1934	X	X	X
hypothetical protein	SP1935	X	X	X
type II restriction-modification system regulatory protein, pu	SP1936	X	X	X
autolysin	SP1937			
MATE efflux family protein DinF	SP1939			
recA protein	SP1940			
competence/damage-inducible protein CinA	SP1941			
transcriptional regulator, putative	SP1942			
acetyltransferase, GNAT family	SP1943			
conserved hypothetical protein TIGR00150	SP1944			
hypothetical protein	SP1945			
transcriptional regulator PlcR, putative	SP1946		X	
hypothetical protein	SP1947	X	X	X
conserved domain protein	SP1948	X	X	X
hypothetical protein	SP1949	X	X	X
bacteriocin formation protein, putative	SP1950	X	X	X
conserved hypothetical protein	SP1951	X	X	X
hypothetical protein	SP1952	X	X	X
toxin secretion ABC transporter, ATP-binding/permease protein	SP1953	X	X	X
serine protease, subtilase family, authentic frameshift	SP1954		X	
hypothetical protein	SP1955	X	X	X
hypothetical protein	SP1956	X	X	X
ABC transporter, ATP-binding protein	SP1957		X	
hypothetical protein	SP1958	X	X	X
nucleoside diphosphate kinase	SP1959			
DNA-directed RNA polymerase, beta subunit	SP1960			
DNA-directed RNA polymerase, beta subunit	SP1961			
CBS domain protein	SP1963			
DNA-entry nuclease	SP1964			
hypothetical protein	SP1965	X	X	X
UDP-N-acetylglucosamine 1-carboxyvinyltransferase	SP1966			
conserved hypothetical protein	SP1967			
phosphopantetheine adenylyltransferase	SP1968			
type II DNA modification methyltransferase, putative	SP1969		X	
aspartate--ammonia ligase	SP1970			
hypothetical protein	SP1971	X	X	X
membrane protein	SP1972			
SpoU rRNA Methylase family protein	SP1973	X		X
acylphosphatase	SP1974	X	X	X
spoIIIJ family protein	SP1975			
pyruvate formate-lyase-activating enzyme	SP1976			
diaminopimelate decarboxylase	SP1978			
pur operon repressor	SP1979			

cmp-binding-factor 1	SP1980			
competence-induced protein Ccs50	SP1981			
conserved hypothetical protein	SP1982			
ribulose-phosphate 3-epimerase	SP1983			
conserved hypothetical protein TIGR00157	SP1984			
dimethyladenosine transferase	SP1985	X	X	X
hypothetical protein	SP1986		X	
ABC transporter, ATP-binding protein	SP1987		X	
immunity protein, putative	SP1988		X	
transcriptional regulator PlcR, putative	SP1989		X	
primase-related protein	SP1990			
hydrolase, putative	SP1991			
cell wall surface anchor family protein	SP1992			
aminotransferase, class I	SP1994			
conserved hypothetical protein	SP1995	X	X	X
universal stress protein family	SP1996			
Cof family protein	SP1997			
L-asparaginase, putative	SP1998			
catabolite control protein A	SP1999			
DNA-binding response regulator	SP2000	X	X	X
sensor histidine kinase, putative	SP2001		X	
conserved hypothetical protein	SP2002	X	X	X
ABC transporter, ATP-binding protein	SP2003		X	
hypothetical protein	SP2004	X	X	X
hypothetical protein	SP2005	X	X	X
transcriptional regulator ComX1	SP2006	X		X
transcription antitermination protein NusG	SP2007			
preprotein translocase, SecE subunit, putative	SP2008		X	
ribosomal protein L33	SP2009		X	
penicillin-binding protein 2A	SP2010			
ribosomal large subunit pseudouridine synthase, RluD subfamily	SP2011		X	X
glyceraldehyde 3-phosphate dehydrogenase	SP2012			
conserved hypothetical protein	SP2013			
IS630-Spn1, transposase Orf2	SP2014		X	
IS630-Spn1, transposase Orf1	SP2015			
nicotinate-nucleotide pyrophosphorylase	SP2016			
membrane protein	SP2017	X		
transposase, IS3 family, degenerate	SP2018	X		X
ABC transporter, ATP-binding protein, truncation	SP2019		X	X
transcriptional regulator, GntR family	SP2020			
glycosyl hydrolase, family 1	SP2021			
PTS system, IIC component	SP2022		X	
PTS system, IIB component	SP2023			
PTS system, IIA component	SP2024		X	
alcohol dehydrogenase, iron-containing	SP2026		X	
conserved hypothetical protein	SP2027			
phosphotyrosine protein phosphatase	SP2028			
preprotein translocase, YajC subunit	SP2029			
transketolase	SP2030			
conserved hypothetical protein	SP2031	X		
transcriptional regulator, BglG family	SP2032	X	X	X
L-ribulose 5-phosphate 4-epimerase AraD, putative	SP2033	X	X	X
hexulose-6-phosphate isomerase, putative	SP2034		X	X
hexulose-6-phosphate synthase, putative	SP2035	X	X	
PTS system, IIA component	SP2036	X	X	X
PTS system, IIB component	SP2037	X	X	X
PTS system, membrane component, putative	SP2038	X	X	X

conserved hypothetical protein	SP2039		X	X
jag protein, putative	SP2040		X	
SpoIIIJ family protein	SP2041			
ribonuclease P protein component	SP2042			
acetate kinase	SP2044			
conserved hypothetical protein	SP2045			
conserved domain protein, authentic frameshift	SP2046	X		
conserved domain protein	SP2047	X	X	X
conserved hypothetical protein	SP2048	X	X	X
conserved hypothetical protein	SP2049	X	X	X
competence protein CglD	SP2050	X		X
competence protein CglC	SP2051		X	X
competence protein CglB	SP2052	X	X	
competence protein CglA	SP2053		X	X
conserved hypothetical protein	SP2054		X	
alcohol dehydrogenase, zinc-containing	SP2055			
N-acetylglucosamine-6-phosphate deacetylase	SP2056			
conserved hypothetical protein	SP2057			
queuine tRNA-ribosyltransferase	SP2058			
conserved hypothetical protein	SP2059			
pyrrolidone-carboxylate peptidase	SP2060			
conserved hypothetical protein	SP2061	X	X	
transcriptional regulator, MarR family	SP2062		X	X
LysM domain protein, authentic frameshift	SP2063		X	
hydrolase, haloacid dehalogenase-like family	SP2064			
MATE efflux family protein	SP2065		X	
threonine synthase	SP2066			
hypothetical protein	SP2067			
cytidine/deoxycytidylate deaminase family protein	SP2068			
glutamyl-tRNA synthetase	SP2069			
glucose-6-phosphate isomerase	SP2070			
conserved domain protein	SP2071			
glutamine amidotransferase, class-I	SP2072	X	X	
ABC transporter, ATP-binding/permease protein	SP2073		X	X
transposase, IS116/IS110/IS902 family, degenerate	SP2074			
ABC transporter, ATP-binding/permease protein	SP2075			
DNA mismatch repair protein HexA, authentic frameshift	SP2076			
transcriptional repressor, putative	SP2077			
arginyl-tRNA synthetase	SP2078		X	
IS1381, transposase OrfB	SP2079			
IS1381, transposase OrfA, truncation	SP2080			
conserved hypothetical protein	SP2081		X	
response regulator	SP2082			
sensor histidine kinase PnpS	SP2083			
phosphate ABC transporter, phosphate-binding protein	SP2084	X		
phosphate ABC transporter, permease protein	SP2085	X	X	X
phosphate ABC transporter, permease protein	SP2086	X	X	X
phosphate ABC transporter, ATP-binding protein	SP2087	X	X	X
phosphate transport system regulatory protein PhoU	SP2088	X	X	X
transposase, IS1380-Spn1 related, truncation	SP2089	X	X	X
transcriptional regulator	SP2090	X	X	X
glycerol-3-phosphate dehydrogenase (NAD(P)+)	SP2091		X	X
UTP-glucose-1-phosphate uridylyltransferase	SP2092			
hypothetical protein	SP2093	X		
conserved hypothetical protein	SP2094		X	X
5-formyltetrahydrofolate cyclo-ligase family protein	SP2095			
peptidase, M20/M25/M40 family	SP2096			

2,3,4,5-tetrahydropyridine-2-carboxylate N-succinyltransferase	SP2097			
membrane protein	SP2098			
penicillin-binding protein 1B	SP2099			
tyrosyl-tRNA synthetase	SP2100			
cation-transporting ATPase, EI-E2 family	SP2101			
hypothetical protein	SP2102			
rRNA (guanine-N1-)-methyltransferase	SP2103		X	
hypothetical protein	SP2104	X		
hypothetical protein	SP2105	X	X	X
glycogen phosphorylase family protein	SP2106		X	X
4-alpha-glucanotransferase	SP2107	X		
maltose/maltodextrin ABC transporter, maltose/maltodextrin-bin	SP2108			X
maltodextrin ABC transporter, permease protein	SP2109			
maltodextrin ABC transporter, permease protein	SP2110	X		
malA protein	SP2111		X	X
maltose operon transcriptional repressor	SP2112			
conserved hypothetical protein	SP2113			
aspartyl-tRNA synthetase	SP2114		X	
hypothetical protein	SP2115			
conserved domain protein	SP2116	X	X	
hypothetical protein	SP2117		X	X
hypothetical protein	SP2118	X	X	
transcriptional regulator, putative	SP2119	X	X	X
hypothetical protein	SP2120	X	X	X
histidyl-tRNA synthetase	SP2121		X	X
conserved hypothetical protein	SP2122			
conserved hypothetical protein	SP2122	X	X	X
transcriptional regulator, authentic frameshift	SP2123	X	X	
conserved hypothetical protein	SP2125		X	X
dihydroxy-acid dehydratase	SP2126		X	
transketolase, C-terminal subunit	SP2127			
transketolase, N-terminal subunit	SP2128		X	
PTS system, IIC component, putative	SP2129		X	
PTS system, IIB component, putative	SP2130	X	X	
transcriptional regulator, BglG family	SP2131	X	X	X
conserved hypothetical protein	SP2132		X	X
conserved domain protein	SP2133			
ribosomal protein L32	SP2134		X	
ribosomal protein L33	SP2135		X	
choline binding protein PcpA	SP2136	X		
IS1381, transposase OrfA, internal deletion	SP2137		X	X
IS1381, transposase OrfB	SP2138		X	
hypothetical protein	SP2139	X		
hypothetical protein	SP2140	X	X	X
glycosyl hydrolase-related protein	SP2141	X	X	X
ROK family protein	SP2142		X	X
conserved hypothetical protein	SP2143	X	X	
conserved hypothetical protein	SP2144	X	X	X
antigen, cell wall surface anchor family	SP2145	X	X	X
conserved hypothetical protein	SP2146	X	X	X
hypothetical protein	SP2147	X	X	X
arginine deiminase	SP2148		X	X
ornithine carbamoyltransferase	SP2150			
carbamate kinase	SP2151			
conserved hypothetical protein	SP2152			
peptidase, M20/M25/M40 family	SP2153	X		
IS3-Spn1, hypothetical protein, truncation	SP2154	X	X	X

immunoglobulin A1 protease, degenerate	SP2155		X	X
SPFH domain/Band 7 family	SP2156		X	
alcohol dehydrogenase, iron-containing	SP2157	X		
L-fucose isomerase	SP2158	X	X	X
fucollectin-related protein	SP2159	X	X	X
conserved hypothetical protein	SP2160	X	X	X
PTS system, IID component	SP2161	X	X	X
PTS system, IIC component	SP2162	X	X	X
PTS system, IIB component	SP2163	X	X	X
PTS system, IIA component	SP2164	X	X	X
fucose operon FucU protein	SP2165	X	X	X
L-fuculose phosphate aldolase	SP2166	X	X	X
L-fuculose kinase fucK, putative	SP2167	X	X	X
fucose operon repressor, putative	SP2168	X	X	X
zinc ABC transporter, zinc-binding adhesion liprotein	SP2169		X	X
zinc ABC transporter, permease protein	SP2170			
zinc ABC transporter, ATP-binding protein	SP2171			
adc operon repressor AdcR	SP2172			
dltD protein	SP2173			
D-alanyl carrier protein	SP2174	X		
dltB protein	SP2175		X	X
D-alanine-activating enzyme	SP2176			
hypothetical protein	SP2177			
conserved hypothetical protein, interruption	SP2178	X	X	
IS1380-Spn1, transposase	SP2179	X	X	X
conserved hypothetical protein, interruption	SP2180	X	X	X
group II intron, maturase, degenerate	SP2181	X	X	X
hypothetical protein	SP2182		X	X
hypothetical protein	SP2183	X	X	
glycerol uptake facilitator protein	SP2184	X	X	X
hypothetical protein	SP2185	X	X	X
glycerol kinase	SP2186	X	X	X
conserved domain protein	SP2187		X	X
chaperonin, 33 kDa	SP2188			
TIM-barrel protein, putative, NifR3 family	SP2189			
choline binding protein A	SP2190			
conserved hypothetical protein	SP2191			
sensor histidine kinase	SP2192			
DNA-binding response regulator	SP2193			
ATP-dependent Clp protease, ATP-binding subunit	SP2194		X	
transcriptional regulator CtsR	SP2195			
ABC transporter, ATP-binding protein	SP2196			
ABC transporter, substrate-binding protein, putative	SP2197			
ABC transporter, permease protein	SP2198			
conserved hypothetical protein	SP2199			
hypothetical protein	SP2200	X	X	
choline binding protein D	SP2201	X		
choline binding protein D	SP2201		X	X
conserved hypothetical protein	SP2202		X	X
replicative DNA helicase	SP2203			
ribosomal protein L9	SP2204			
DHH subfamily 1 protein	SP2205			
ribosomal subunit interface protein	SP2206			
competence protein ComF, putative	SP2207	X		
helicase, putative	SP2208	X	X	X
conserved hypothetical protein	SP2209		X	X
cysteine synthase	SP2210			

IS66 family element, Orf3, degenerate	SP2211		X	
transposase family protein, truncation	SP2212	X	X	
IS66 family element, Orf2, interruption	SP2213		X	X
translation elongation factor Ts	SP2214		X	
ribosomal protein S2	SP2215			
secreted 45 kd protein	SP2216			
rod shpae-determining protein MreD, putative	SP2217			
rod shape-determining protein MreC	SP2218		X	
rod shape-determining protein MreC	SP2218			
conserved hypothetical protein	SP2219		X	
ABC transporter, ATP-binding protein	SP2220			
ABC transporter, ATP-binding protein	SP2221			
CDP-diacylglycerol--glycerol-3-phosphate 3-phosphatidyltransfe	SP2222			
conserved hypothetical protein	SP2223			
peptidase, M16 family	SP2224			
conserved hypothetical protein	SP2225			
conserved hypothetical protein	SP2226			
recF protein	SP2227		X	
inosine-5-monophosphate dehydrogenase	SP2228		X	
tryptophanyl-tRNA synthetase	SP2229			
ABC transporter, ATP-binding protein	SP2230			
ABC transporter, permease protein, putative	SP2231	X		
conserved hypothetical protein, authentic frameshift	SP2232	X	X	X
hypothetical protein	SP2233	X	X	X
transcriptional regulator, TetR family	SP2234	X	X	X
response regulator ComE	SP2235			X
putative sensor histidine kinase ComD	SP2236			
competence stimulating peptide 2	SP2237		X	
conserved hypothetical protein	SP2238			
serine protease	SP2239		X	
spspoJ protein	SP2240			