

Consolidated list of down-regulated proteins expressed at different Cr (VI) concentrations at time points

Cr (VI) concentration	6 h	9 h	12 h	18 h	24 h	36 h
	1-pyrroline-5-carboxylate dehydrogenase	1,4-dihydroxy-2-naphthoyl-CoA synthase	50S ribosomal protein L27	1,4-dihydroxy-2-naphthoyl-CoA synthase	hypothetical protein A4A82_03560	DNA-binding protein
	2-oxoglutarate dehydrogenase E1	30S ribosomal protein S1		1-pyrroline-5-carboxylate dehydrogenase		
	2-oxoisovalerate dehydrogenase	ATP-dependent Zn metalloproteinase		2-deoxyribose-5-phosphate aldolase		
	30S ribosomal protein S10	DNA-directed RNA polymerase subunit beta'		3-hexulose-6-phosphate synthase		
	30S ribosomal protein S11	UDP-N-acetylglucosamine 1-carboxyvinyltransferase		3-hydroxyacyl-CoA dehydrogenase		
	30S ribosomal protein S16	enoyl-ACP reductase		30S ribosomal protein S2		
	30S ribosomal protein S17	ferritin		30S ribosomal protein S3		
	30S ribosomal protein S20	fructose-bisphosphate aldolase		30S ribosomal protein S5		
	30S ribosomal protein S3	hypothetical protein BSF33_05765		30S ribosomal protein S6		

30S ribosomal protein S4	malate dehydrogenase (acceptor)	30S ribosomal protein S7
30S ribosomal protein S5	oligoribonuclease	5'(3')-deoxyribonucleotidase
30S ribosomal protein S7	purine-nucleoside phosphorylase	50S ribosomal protein L10
30S ribosomal protein S9		50S ribosomal protein L13
4,4'-diaponeurosporenoate glycosyltransferase		50S ribosomal protein L19
50S ribosomal protein L11		50S ribosomal protein L24
50S ribosomal protein L13		50S ribosomal protein L25
50S ribosomal protein L14		50S ribosomal protein L29
50S ribosomal protein L15		50S ribosomal protein L7/L12
50S ribosomal protein L21		ABC transporter ATP-binding protein
50S ribosomal protein L23		ATP synthase F0F1 CDP-glycerol:poly(glycerophosphate)
50S ribosomal protein L25		D-alanine aminotransferase

50S ribosomal
protein L27

50S ribosomal
protein L30

50S ribosomal
protein L33

50S ribosomal
protein L4

50S ribosomal
protein L6

ABC transporter
ATP-binding protein

ATP-dependent Clp
protease proteolytic
subunit

DNA-directed RNA
polymerase subunit
beta

F0F1 ATP synthase
subunit beta

IMP dehydrogenase

DNA-binding
protein

DNA-directed RNA
polymerase subunit
beta'

F0F1 ATP synthase
Fe-S cluster
assembly protein
SufD

GTPase Era

GTPase ObgE

NADH
dehydrogenase

Oligoendopeptidase
F

PTS glucose
transporter subunit
IIA

ThiJ/PfpI family
protein

UDP-glucose 4-
epimerase

UDP-N-
acetylglucosamine 1-
carboxyvinyltransfer
ase

beta-ketoacyl-ACP
reductase

beta-ketoacyl-[acyl-
carrier-protein]
synthase II

branched-chain
alpha-keto acid
dehydrogenase
subunit E2

catabolite control
protein A

catalase

cell division protein
FtsZ

cell division protein
GpsB

citrate synthase

cysteine synthase
dihydrolipoyl
dehydrogenase

acetyltransferase

aldehyde
dehydrogenase

alkaline shock
protein 23

aspartate
aminotransferase

bifunctional 5,10-
methylene-
tetrahydrofolate
dehydrogenase/5,10-
cell division protein
DivIVA

citrate synthase

class I fructose-
biphosphate
aldolase

cold-shock protein

cysteine synthase
dihydroxyacetone
kinase subunit L

100 mg L-1

elongation factor G

elongation factor Tu

fructose-
biphosphate
aldolase

glutamine--fructose-
6-phosphate
aminotransferase

glycerol kinase

glycerol-3-phosphate
cytidyltransferase

glycerol-3-phosphate
dehydrogenase

glycine C-
acetyltransferase
glycine cleavage
system protein T

hypothetical protein
AXY36_00580

hypothetical protein
RES9_02285

elongation factor P

enolase

glutamate
dehydrogenase

glutamine--fructose-
6-phosphate
aminotransferase

glutaryl-CoA
dehydrogenase

glycerol kinase

glycine C-
acetyltransferase

glycine--tRNA
ligase
hydroxyacid
dehydrogenase

hypothetical protein
A4A82_02240

hypothetical protein
A4A82_08945

lipid hydroperoxide
peroxidase

hypothetical protein
A4A82_09265

malate:quinone
oxidoreductase

hypothetical protein
A4A82_12170

molecular chaperone
DnaK

hypothetical protein
AXY36_02415

ornithine--oxo-acid
aminotransferase

hypothetical protein
AXY36_02580

pyruvate kinase

hypothetical protein
AXY36_03955

serine
hydroxymethyltransf
erase

hypothetical protein
AXY36_06600

single-stranded
DNA-binding
protein

hypothetical protein
AXY36_06780

stage V sporulation
protein G

hypoxanthine
phosphoribosyltransf
erase

succinate--CoA
ligase subunit alpha

malate
dehydrogenase
(acceptor)

succinate--CoA
ligase subunit beta

malate:quinone
oxidoreductase

transaldolase

transcription
elongation factor
GreA

transglycosylase

transketolase

translation initiation
factor IF-3

trigger factor
triose-phosphate
isomerase

type I glutamate--
ammonia ligase

type I
glyceraldehyde-3-
universal stress
protein UspA

manganese-
dependent inorganic
pyrophosphatase

metal-dependent
hydrolase

methionine sulfoxide
molecular chaperone
DnaK

oligoribonuclease

peptidase

peptidase M28

phosphoenolpyruvat
e-protein
phosphotransferase

phosphonate ABC
transporter ATP-

pyruvate kinase

pyruvate oxidase
pyruvate, phosphate
ribosome recycling
factor

sigma-54
modulation protein

stage V sporulation
protein G

succinate
dehydrogenase
flavoprotein subunit

succinate--CoA
ligase subunit alpha

superoxide
dismutase
thiol reductase
thioredoxin
thioredoxin-disulfide
transketolase
translation initiation
translation initiation
type I
glyceraldehyde-3-
phosphate
dehydrogenase
universal stress
protein
universal stress
protein UspA
uracil
uridylate kinase

200 mg L-1

ATP-dependent Clp
protease ATP-
binding subunit
ClpX

		sulfurtransferase				
peptidase M23	30S ribosomal protein S10	30S ribosomal protein S16	30S ribosomal protein S10	30S ribosomal protein S17	2-oxoisovalerate dehydrogenase	
	30S ribosomal protein S16	30S ribosomal protein S19	30S ribosomal protein S18	30S ribosomal protein S19	30S ribosomal protein S19	
	30S ribosomal protein S9	beta-ketoacyl-[acyl-carrier-protein] synthase II	30S ribosomal protein S9	50S ribosomal protein L1	30S ribosomal protein S4	
	50S ribosomal protein L1	class I fructose-bisphosphate aldolase	50S ribosomal protein L15	50S ribosomal protein L11	30S ribosomal protein S8	
	50S ribosomal protein L14	universal stress protein	50S ribosomal protein L18	50S ribosomal protein L14	30S ribosomal protein S9	
	50S ribosomal protein L18		50S ribosomal protein L27	50S ribosomal protein L15	50S ribosomal protein L1	
	50S ribosomal protein L23		50S ribosomal protein L28	50S ribosomal protein L17	50S ribosomal protein L14	
	50S ribosomal protein L30		50S ribosomal protein L3	50S ribosomal protein L18	50S ribosomal protein L15	
	50S ribosomal protein L33		50S ribosomal protein L30	50S ribosomal protein L23	50S ribosomal protein L17	
	DNA-directed RNA polymerase subunit alpha		50S ribosomal protein L4	50S ribosomal protein L3	50S ribosomal protein L23	
	glutamyl-tRNA synthetase		6-phosphogluconate dehydrogenase	50S ribosomal protein L30	50S ribosomal protein L30	
	glycine--tRNA ligase		alanine racemase	50S ribosomal protein L33	50S ribosomal protein L4	

300 mg L-1

octanoyltransferase	aminoacyltransferase	50S ribosomal protein L4	branched-chain alpha-keto acid dehydrogenase subunit E2
preprotein translocase subunit YajC	asparagine--tRNA ligase	aminoacyltransferase	cell division protein FtsZ
pyruvate kinase	ATP-dependent Clp protease ATP-binding subunit ClpX	ATP-dependent Clp protease ATP-binding subunit ClpX	DNA-directed RNA polymerase subunit beta
succinate--CoA ligase subunit beta	ATP-dependent Zn metalloproteinase	beta-ketoacyl-[acyl-carrier-protein] synthase II	elongation factor Ts
transcription elongation factor GreA	beta-ketoacyl-[acyl-carrier-protein] synthase II	cell division protein FtsZ	fructose-bisphosphate aldolase
type I glyceraldehyde-3-phosphate dehydrogenase	beta-ketoacyl-ACP reductase	DNA-directed RNA polymerase subunit alpha	hsp90-like protein
	glucokinase	fructose-bisphosphate aldolase	malate:quinone oxidoreductase
	glucosamine-6-phosphate isomerase	glutamyl-tRNA amidotransferase	pyridoxamine 5-phosphate oxidase
	glutamyl-tRNA amidotransferase	hypothetical protein	trigger factor

			glutamyl-tRNA synthetase	hypothetical protein RES9_02285	type I glyceraldehyde-3-phosphate dehydrogenase
			hypothetical protein AXY36_09360	lysine--tRNA ligase	
			IMP dehydrogenase	NAD(P)-dependent oxidoreductase	
			isocitrate dehydrogenase	preprotein translocase subunit YajC	
			lysine--tRNA ligase	pyridoxamine 5-phosphate oxidase	
			methionine--tRNA ligase		
			peptidase M23		
			preprotein translocase subunit YajC		
			ribonuclease R single-stranded DNA-binding protein		
			urease subunit alpha		
	2-deoxyribose-5-phosphate aldolase	2-deoxyribose-5-phosphate aldolase	Fis family transcriptional regulator	alpha/beta hydrolase	

30S ribosomal
protein S1

histidine kinase

L-serine
dehydratase, iron-
sulfur-dependent
subunit alpha

30S ribosomal
protein S15

hypothetical protein
AXY36_01150

adenylosuccinate
synthetase

30S ribosomal
protein S19

hypothetical protein
BSF33_08575

alkaline-shock
protein

30S ribosomal
protein S2

phosphopyruvate
hydratase

alpha/beta hydrolase

30S ribosomal
protein S6

aspartate-
semialdehyde
dehydrogenase

30S ribosomal
protein S8

branched-chain
amino acid
aminotransferase

3-oxoacyl-[acyl-
carrier protein]
reductase

elastin-binding
protein

50S ribosomal
protein L1

malonyl CoA-acyl
carrier protein
transacylase

50S ribosomal
protein L10

purine-nucleoside
phosphorylase

50S ribosomal
protein L17

50S ribosomal
protein L19

50S ribosomal
protein L24

50S ribosomal
protein L29

50S ribosomal
protein L3

50S ribosomal
protein L31

50S ribosomal
protein L5

50S ribosomal
protein L7/L12

aconitate hydratase

acyl carrier protein

adenylate kinase

alanine

dehydrogenase

alkaline shock

protein 23

anti-anti-sigma
factor

ATP synthase F0F1
subunit alpha

ATP synthase F0F1
subunit delta

ATP-dependent Zn
metallopeptidase

CDP-
glycerol:poly(glycer
ophosphate)
glycerophosphotrans
ferase

chorismate mutase

cold-shock protein

delta-aminolevulinic
acid dehydratase

dihydrolipoamide
succinyltransferase

dihydroxyacetone
kinase subunit L
DNA-binding
protein

elongation factor P

endoribonuclease L-
PSP
enolase

enoyl-ACP reductase

ferritin

100 + 200 mg L⁻¹

Fe-S cluster
assembly protein

SufB

Fe-S cluster
assembly protein

SufD

glucose-6-phosphate
isomerase

glutamate
dehydrogenase
glutamine-
hydrolyzing GMP
synthase

glycine--tRNA

ligase

heme-binding
protein

hydroxymethylpyrim
idine/phosphomethyl
pyrimidine kinase

hypothetical protein
A4A82_02240

hypothetical protein
A4A82_03560

hypothetical protein
A4A82_07220

hypothetical protein
A4A82_09265

hypothetical protein
AXY36_02580

hypothetical protein
BSF33_05765

hypothetical protein
RES13_12170,
partial

hypothetical protein
XA22_10040

inosine-5-
monophosphate
dehydrogenase

iron ABC transporter
substrate-binding
protein

lactate
dehydrogenase
late competence
protein ComEC

methionine sulfoxide
reductase

NADH
dehydrogenase
nitric oxide
dioxygenase

nucleoside-
diphosphate kinase

ornithine--oxo-acid
transaminase
peroxiredoxin
Phosphate
acetyltransferase
phosphoglycerate
kinase
PTS glucose
transporter subunit
IIA

putative transporter

pyruvate
dehydrogenase
(acetyl-transferring)
E1 component
subunit alpha

pyruvate, phosphate
dikinase

ribose-phosphate
pyrophosphokinase

ribosome recycling
factor

short-chain
dehydrogenase

succinate
dehydrogenase
flavoprotein subunit

superoxide
dismutase
thiol reductase

thioredoxin
thioredoxin

thymidine
phosphorylase
transcriptional
repressor CodY

Translation
elongation factor Ts

translation initiation
factor IF-1

UDP-glucose 4-
epimerase

UDP-N-acetyl-D-
galactosamine
dehydrogenase

uracil
phosphoribosyltransf
erase

200 + 300 mg L ⁻¹	pathogenicity island protein	30S ribosomal protein S14	transcription elongation factor GreA	DNA polymerase III subunit alpha	DNA polymerase III subunit alpha	Short-chain dehydrogenase/reductase SDR
		catabolite control protein A		VOC family protein	hypothetical protein AXY36_09360	alkyl hydroperoxide reductase
		cell division protein GpsB		hypothetical protein AXY36_04620	isocitrate dehydrogenase	hypothetical protein AXY36_09360
		glucosamine-6-phosphate isomerase		phosphogluconate dehydrogenase (NADP(+)-dependent, decarboxylating)		isocitrate dehydrogenase
		glycine C-acetyltransferase		pyrimidine-nucleoside phosphorylase		transcriptional regulator
		hypothetical protein A4A82_08725				
		hypothetical protein BSF33_04470				
		isocitrate dehydrogenase				
		manganese-dependent inorganic pyrophosphatase				
		membrane protein				

		sufurtransferase FdhD transglycosylase				
	30S ribosomal protein S14	2-oxoglutarate dehydrogenase E1	2,3-bisphosphoglycerate-independent phosphoglycerate mutase	2,3-bisphosphoglycerate-independent phosphoglycerate mutase	2,3-bisphosphoglycerate-independent phosphoglycerate mutase	1-pyrroline-5-carboxylate dehydrogenase
	50S ribosomal protein L36	2-oxoisovalerate dehydrogenase	3-hexulose-6-phosphate synthase	2-oxoglutarate dehydrogenase E1	2-deoxyribose-5-phosphate aldolase	30S ribosomal protein S20
	acetyltransferase	3-hexulose-6-phosphate synthase	30S ribosomal protein S1	2-oxoglutarate ferredoxin oxidoreductase subunit alpha	2-oxoglutarate dehydrogenase E1	30S ribosomal protein S5
	elongation factor Ts	30S ribosomal protein S11	30S ribosomal protein S2	3-methyl-2-oxobutanoate hydroxymethyltransferase	2-oxoisovalerate dehydrogenase	30S ribosomal protein S7
	hypothetical protein AXY36_09360	30S ribosomal protein S17	30S ribosomal protein S20	30S ribosomal protein S1	3-hexulose-6-phosphate synthase	50S ribosomal protein L16
		30S ribosomal protein S19	30S ribosomal protein S3	30S ribosomal protein S11	30S ribosomal protein S11	50S ribosomal protein L2
		30S ribosomal protein S3	30S ribosomal protein S4	30S ribosomal protein S13	30S ribosomal protein S13	50S ribosomal protein L7/L12
		30S ribosomal protein S4	30S ribosomal protein S5	30S ribosomal protein S15	30S ribosomal protein S15	ATP synthase F0F1 subunit alpha

30S ribosomal protein S5	30S ribosomal protein S6	30S ribosomal protein S16	30S ribosomal protein S16	ATP-dependent Clp protease proteolytic subunit
30S ribosomal protein S6	30S ribosomal protein S8	50S ribosomal protein L1	30S ribosomal protein S18	F0F1 ATP synthase subunit beta
30S ribosomal protein S7	50S ribosomal protein L10	50S ribosomal protein L16	30S ribosomal protein S2	IMP dehydrogenase
30S ribosomal protein S8	50S ribosomal protein L13	50S ribosomal protein L21	30S ribosomal protein S20	NADH dehydrogenase
50S ribosomal protein L10	50S ribosomal protein L15	50S ribosomal protein L36	30S ribosomal protein S3	PTS glucose transporter subunit IIA
50S ribosomal protein L11	50S ribosomal protein L17	8-amino-7-oxononanoate synthase	30S ribosomal protein S4	aconitate hydratase
50S ribosomal protein L13	50S ribosomal protein L18	ATP synthase F0F1 subunit B	30S ribosomal protein S5	alpha/beta hydrolase
50S ribosomal protein L17	50S ribosomal protein L21	ATP synthase F0F1 subunit delta	30S ribosomal protein S6	beta-ketoacyl-ACP reductase
50S ribosomal protein L21	50S ribosomal protein L22	DNA polymerase III subunit beta	30S ribosomal protein S7	class I fructose-bisphosphate aldolase
50S ribosomal protein L22	50S ribosomal protein L23	DNA primase	30S ribosomal protein S8	dihydrolipoamide succinyltransferase
50S ribosomal protein L25	50S ribosomal protein L24	LysR family transcriptional regulator	30S ribosomal protein S9	dihydrolipoyl dehydrogenase

50S ribosomal protein L27	50S ribosomal protein L25	NAD kinase	50S ribosomal protein L10	dihydroxyacetone kinase subunit L
50S ribosomal protein L3	50S ribosomal protein L29	Translation elongation factor Ts	50S ribosomal protein L13	elongation factor G
50S ribosomal protein L31	50S ribosomal protein L3	UDP-N-acetyl-D-galactosamine dehydrogenase	50S ribosomal protein L16	elongation factor Tu
50S ribosomal protein L4	50S ribosomal protein L30	acetate kinase	50S ribosomal protein L19	ferritin
50S ribosomal protein L5	50S ribosomal protein L31	alanine dehydrogenase	50S ribosomal protein L21	glucosamine-6-phosphate isomerase
50S ribosomal protein L6	50S ribosomal protein L5	alcohol dehydrogenase	50S ribosomal protein L22	glutamyl-tRNA synthetase
50S ribosomal protein L7/L12	50S ribosomal protein L6	anti-anti-sigma factor	50S ribosomal protein L24	hydroxyacid dehydrogenase
ABC transporter ATP-binding protein	50S ribosomal protein L7/L12	anti-sigma B factor RsbW	50S ribosomal protein L25	hypothetical protein A4A82_02240
ATP-dependent Clp protease proteolytic subunit	6-phosphogluconate dehydrogenase	catabolite control protein A	50S ribosomal protein L27	hypothetical protein A4A82_07220
CDP-glycerol:poly(glycerophosphate) glycerophosphotransferase	ABC transporter ATP-binding protein	chorismate mutase	50S ribosomal protein L29	hypothetical protein AXY36_00580
D-alanine aminotransferase	ATP-dependent Clp protease proteolytic subunit	cysteine desulfurase	50S ribosomal protein L31	hypothetical protein BSF33_05765

DNA gyrase subunit A	DNA starvation/stationary phase protection protein	delta-aminolevulinic acid dehydratase	50S ribosomal protein L5	iron ABC transporter substrate-binding protein
DNA starvation/stationary phase protection protein	DNA-binding protein	dephospho-CoA kinase	50S ribosomal protein L6	nitric oxide dioxygenase
DNA-directed RNA polymerase subunit beta	DNA-directed RNA polymerase subunit alpha	dihydrolipoamide succinyltransferase	50S ribosomal protein L7/L12	ornithine--oxo-acid aminotransferase
FOF1 ATP synthase subunit beta	DNA-directed RNA polymerase subunit beta	dihydrolipoyl dehydrogenase	ABC transporter ATP-binding protein	peroxiredoxin
Fe-S cluster assembly protein SufB	DNA-directed RNA polymerase subunit beta'	elongation factor Tu	ATP synthase FOF1 subunit alpha	phosphoglycerate kinase
Fe-S cluster assembly protein SufD	Fe-S cluster assembly protein SufD	endopeptidase Clp ATP-binding subunit C	ATP-dependent Clp protease proteolytic subunit	phosphopyruvate hydratase
NADH dehydrogenase	IMP dehydrogenase	endoribonuclease L-PSP	ATP-dependent Zn metallopeptidase	pyruvate dehydrogenase (acetyl-transferring) E1 component subunit alpha
PTS glucose transporter subunit IIA	NADH dehydrogenase	ferritin	D-alanine aminotransferase	pyruvate kinase

UDP-N-acetyl-D-galactosamine dehydrogenase	PTS glucose transporter subunit IIA	formate--tetrahydrofolate ligase	DNA starvation/stationary phase protection protein	serine hydroxymethyltransferase
acyl carrier protein	Translation elongation factor Ts	general stress protein	DNA-binding protein	succinate--CoA ligase subunit alpha
adenylate kinase	UDP-N-acetylglucosamine 1-carboxyvinyltransferase	glucose-6-phosphate isomerase	DNA-directed RNA polymerase subunit beta	succinate--CoA ligase subunit beta
alkaline shock protein 23	UDP-glucose 4-epimerase	glycerol-3-phosphate dehydrogenase	DNA-directed RNA polymerase subunit beta'	transketolase
branched-chain alpha-keto acid dehydrogenase subunit E2	aconitate hydratase	glycine cleavage system protein T	F0F1 ATP synthase subunit beta	universal stress protein UspA
cell division protein FtsZ	acyl carrier protein	glycine dehydrogenase	Fe-S cluster assembly protein SufB	uracil phosphoribosyltransferase
class I fructose-bisphosphate aldolase	adenylate kinase	heme-binding protein	Fe-S cluster assembly protein SufD	
cysteine synthase	beta-ketoacyl-ACP reductase	hydroxymethylpyrimidine/phosphomethyl pyrimidine kinase	IMP dehydrogenase	

dihydrolipoyl dehydrogenase	branched-chain alpha-keto acid dehydrogenase subunit E2	hypothetical protein A4A82_07220	NADH dehydrogenase
elongation factor G	cell division protein FtsZ	hypothetical protein AXY36_00580	Oligoendopeptidase F
elongation factor P	chorismate mutase	hypothetical protein AXY36_05930	PTS glucose transporter subunit IIA
elongation factor Tu	cold-shock protein	hypothetical protein AXY36_07855	Phosphate acetyltransferase
enolase	elongation factor G	hypothetical protein BSF33_00215	RNA-binding protein
glycerol-3-phosphate dehydrogenase	elongation factor Tu	hypothetical protein BSF33_00540	Ribonucleotide reductase of class Ib (aerobic), alpha subunit
glycine cleavage system protein H	enolase	hypothetical protein BSF33_00755	Translation elongation factor Ts
glycine cleavage system protein T	enoyl-ACP reductase	hypothetical protein BSF33_05765	UDP-N-acetylglucosamine 1-carboxyvinyltransferase

hydroxymethylpyrimidine/phosphomethyl pyrimidine kinase	fructose-bisphosphate aldolase	hypothetical protein RES10_11420	UDP-glucose 4-epimerase
hypothetical protein XA22_10040	glucose-6-phosphate isomerase	hypothetical protein XA22_10040	acetate kinase
lipid hydroperoxide peroxidase	glycerol-3-phosphate dehydrogenase	iron ABC transporter substrate-binding protein	acetyltransferase
malate:quinone oxidoreductase	glycine C-acetyltransferase	isoleucyl-tRNA synthetase, partial	adenylate kinase
mobilization protein C (plasmid)	glycine--tRNA ligase	late competence protein ComEC	alanine--tRNA ligase
molecular chaperone DnaK	glyoxalase	lipoate--protein ligase	aldehyde dehydrogenase
peptidase M24	hydroxymethylglutaryl-CoA synthase	malate dehydrogenase	alkaline shock protein 23
phosphoglycerate kinase	hypothetical protein A4A82_06020	manganese ABC transporter substrate-binding protein	aminopeptidase
pseudouridine synthase	hypothetical protein A4A82_07220	nucleoside-diphosphate kinase	aspartyl/glutamyl-tRNA amidotransferase subunit A

100 + 300 mg L⁻¹

pyridoxamine 5-phosphate oxidase	hypothetical protein A4A82_11275	peroxiredoxin	bifunctional 5,10-methylene-tetrahydrofolate dehydrogenase/5,10-methylene-tetrahydrofolate cyclohydrolase
pyruvate dehydrogenase (acetyl-transferring) E1 component subunit alpha	malate dehydrogenase (acceptor)	phosphoenolpyruvate carboxykinase	branched-chain alpha-keto acid dehydrogenase subunit E2
recombinase A	malate:quinone oxidoreductase	phosphoenolpyruvate synthase regulatory protein	catabolite control protein A
ribose-phosphate pyrophosphokinase	malonyl CoA-acyl carrier protein transacylase	phosphoglycerate kinase	cell division protein DivIVA
ribosome recycling factor	manganese-dependent inorganic pyrophosphatase	phosphopentomutase	cell division protein GpsB
serine hydroxymethyltransferase	metal-dependent hydrolase	polynucleotide phosphorylase	chorismate mutase
succinate--CoA ligase subunit alpha	peroxiredoxin	preprotein translocase subunit SecA	class I fructose-bisphosphate aldolase
superoxide dismutase	phosphoglycerate kinase	proline dehydrogenase	cold-shock protein

tail protein	purine-nucleoside phosphorylase	pyruvate dehydrogenase (acetyl-transferring) E1 component subunit alpha	cysteine synthase
transaldolase	pyruvate dehydrogenase (acetyl-transferring) E1 component subunit alpha	quinone oxidoreductase	dihydrolipoyl dehydrogenase
transcription termination/antitermination protein NusA	pyruvate kinase	ribose-phosphate pyrophosphokinase	elongation factor G
transcriptional repressor CodY	pyruvate oxidase	serine hydroxymethyltransferase	elongation factor P
translation initiation factor IF-1	ribose-phosphate pyrophosphokinase	signal recognition particle	elongation factor Tu
trigger factor	serine hydroxymethyltransferase	succinyl-diaminopimelate desuccinylase	endoribonuclease L-PSP
triose-phosphate isomerase	superoxide dismutase	thioredoxin	enolase
universal stress protein UspA	thiol reductase thioredoxin	thymidine phosphorylase	enoyl-ACP reductase

uracil phosphoribosyltransf erase	thioredoxin-disulfide reductase	transaldolase	ferritin
uridylate kinase	transaldolase	transcription termination/antiterm ination protein NusA	general stress protein
	transcriptional regulator	transcriptional regulator	glucosamine-6- phosphate isomerase
	transketolase	transcriptional repressor CodY	glucose-6-phosphate isomerase
	translation initiation factor IF-2	triose-phosphate isomerase	glutamate dehydrogenase
	translation initiation factor IF-3	type I glutamate-- ammonia ligase	glutamyl-tRNA synthetase
	trigger factor type I		glycerol kinase
	glyceraldehyde-3- phosphate dehydrogenase		glycerol-3-phosphate cytidyltransferase
			glycerol-3-phosphate dehydrogenase
			glycine--tRNA ligase
			glyoxalase

hydroxymethylpyrimidine/phosphomethylpyrimidine kinase

hypothetical protein
A4A82_02240

hypothetical protein
A4A82_09265

hypothetical protein
A4A82_11275

hypothetical protein
AXY36_00580

hypothetical protein
AXY36_01150

hypothetical protein
AXY36_06600

hypothetical protein
AXY36_06780

hypothetical protein
BSF33_00215

hypothetical protein
BSF33_05765

hypothetical protein
BSF33_08575

hypothetical protein
XA22_10040

hypoxanthine
phosphoribosyltransf
erase

iron ABC transporter
substrate-binding
protein

isoleucyl-tRNA
synthetase, partial

lipid hydroperoxide
peroxidase

malate
dehydrogenase
(acceptor)

malate:quinone
oxidoreductase
malonyl CoA-acyl
carrier protein
transacylase

manganese-
dependent inorganic
pyrophosphatase

membrane protein

metal-dependent
hydrolase
molecular chaperone
DnaK
molecular chaperone
GrpE

nucleoside-
diphosphate kinase

oligoribonuclease

ornithine--oxo-acid
aminotransferase

peptidase M24
peptidase M28
peroxiredoxin

phosphoenolpyruvat
e-protein
phosphotransferase

phosphoglycerate
kinase
preprotein
translocase subunit
SecA

pyruvate
dehydrogenase
(acetyl-transferring)
E1 component
subunit alpha

pyruvate kinase
pyruvate oxidase

ribose-phosphate
pyrophosphokinase

ribosome recycling
factor

serine

hydroxymethyltransf
erase

signal recognition
particle

single-stranded

DNA-binding
protein

stage V sporulation
protein G

succinate--CoA
ligase subunit alpha

succinate--CoA
ligase subunit beta

superoxide

dismutase

thiol reductase

thioredoxin

thioredoxin

thymidine

phosphorylase

transaldolase

transcription
termination/antiterm
ination protein NusA

transcriptional
regulator
transcriptional
repressor CodY
transketolase

translation initiation
factor IF-1

translation initiation
factor IF-3

transposon DNA-
invertase
trigger factor
triose-phosphate
isomerase

type I glutamate--
ammonia ligase

type I
glyceraldehyde-3-
phosphate
dehydrogenase

uracil
phosphoribosyltransf
erase
uridylate kinase

50S ribosomal protein L16	1-pyrroline-5-carboxylate dehydrogenase	1,4-dihydroxy-2-naphthoyl-CoA synthase	2-heptaprenyl-1,4-naphthoquinone methyltransferase MenG	1-pyrroline-5-carboxylate dehydrogenase	2-oxoglutarate dehydrogenase E1
adenylosuccinate synthetase	2,3-bisphosphoglycerate-independent phosphoglycerate mutase	1-pyrroline-5-carboxylate dehydrogenase	30S ribosomal protein S12	2-oxoglutarate dehydrogenase E1 component	30S ribosomal protein S1
alkyl hydroperoxide reductase subunit F	2-succinylbenzoate-CoA ligase	2-oxoisovalerate dehydrogenase	50S ribosomal protein L2	30S ribosomal protein S1	30S ribosomal protein S12
anti-sigma B factor RsbW	30S ribosomal protein S12	30S ribosomal protein S10	50S ribosomal protein L20	30S ribosomal protein S12	50S ribosomal protein L28
aryldialkylphosphatase	30S ribosomal protein S13	30S ribosomal protein S11	50S ribosomal protein L32	3-hydroxy-3-methylglutaryl-CoA reductase	acetate--CoA ligase
glutamine amidotransferase	30S ribosomal protein S15	30S ribosomal protein S13	6,7-dimethyl-8-ribityllumazine synthase	3-hydroxyacyl-CoA dehydrogenase	acetyl-CoA acetyltransferase
glutamine-binding periplasmic protein	30S ribosomal protein S18	30S ribosomal protein S18	aconitate hydratase	3-oxoacyl-[acyl-carrier protein] reductase	alanine dehydrogenase
glutamyl-tRNA amidotransferase	30S ribosomal protein S2	30S ribosomal protein S7	adenine methyltransferase	50S ribosomal protein L2	alcohol dehydrogenase
heme ABC transporter ATP-binding protein	30S ribosomal protein S20	30S ribosomal protein S9	alkyl hydroperoxide reductase subunit F	50S ribosomal protein L20	autolysin

hypothetical protein A4A82_05120	30S ribosomal protein S21	3-hydroxyacyl-CoA dehydrogenase	arginine repressor	50S ribosomal protein L28	betaine-aldehyde dehydrogenase
hypothetical protein A4A82_07100	3-hydroxy-3- methylglutaryl-CoA reductase	3-oxoacyl-[acyl- carrier protein] reductase	aspartyl/glutamyl- tRNA amidotransferase subunit A	50S ribosomal protein L35	catalase
hypothetical protein A4A82_08360	3-oxoacyl-[acyl- carrier protein] reductase	5'(3')- deoxyribonucleotida se	C4-dicarboxylate ABC transporter	50S ribosomal protein L36	competence protein ComF
hypothetical protein A4A82_08725	50S ribosomal protein L15	50S ribosomal protein L1	catalase	6,7-dimethyl-8- ribityllumazine synthase	glycerol kinase
hypothetical protein A4A82_11275	50S ribosomal protein L16	50S ribosomal protein L11	Chemotaxis- inhibiting protein CHIPS, phage associated	acetate--CoA ligase	glycine cleavage system protein T
hypothetical protein AXY36_01150	50S ribosomal protein L19	50S ribosomal protein L14	choline dehydrogenase	acetyl-CoA acetyltransferase	hypothetical protein A4A82_08945
hypothetical protein AXY36_04620	50S ribosomal protein L2	50S ribosomal protein L16	CTP synthase	aconitate hydratase	hypothetical protein XA21_11195
hypothetical protein AXY36_08620	50S ribosomal protein L20	50S ribosomal protein L19	cytochrome aa3 quinol oxidase subunit II	adenylosuccinate synthetase	hypothetical protein XA22_10040
hypothetical protein AXY36_09850	50S ribosomal protein L24	50S ribosomal protein L2	diaminopimelate decarboxylase	alanine dehydrogenase	hypothetical protein XA22_11240

hypothetical protein BSF33_04470	50S ribosomal protein L29	50S ribosomal protein L4	dihydroorotase	alcohol dehydrogenase	lactate dehydrogenase
hypothetical protein RES9_02800	50S ribosomal protein L32	6- phosphogluconolact onase	DNA polymerase I	aldehyde dehydrogenase family protein	magnesium transporter CorA
integrase	50S ribosomal protein L36	acetate kinase	DNA-binding response regulator	alkaline-shock protein	mercuric reductase
L-lactate dehydrogenase	5- methyltetrahydropter oyltriglutamate-- homocysteine methyltransferase	acetate--CoA ligase	exported protein	alkyl hydroperoxide reductase subunit F	MFS transporter
malonyl CoA-acyl carrier protein transacylase	6,7-dimethyl-8- ribityllumazine synthase	acetyltransferase	F0F1 ATP synthase subunit epsilon	arginine--tRNA ligase	serine--tRNA ligase
membrane protein	8-amino-7- oxononanoate synthase	alanine dehydrogenase	F0F1 ATP synthase subunit gamma	ArsC family protein	succinate dehydrogenase
methionyl-tRNA formyltransferase	acetyl-CoA acetyltransferase	alcohol dehydrogenase	formate C- acetyltransferase	aspartate aminotransferase	sulfurtransferase FdhD
molecular chaperone GroEL	aconitate hydratase	aldehyde dehydrogenase family protein	glutamate-1- semialdehyde aminotransferase	aspartate- semialdehyde dehydrogenase	TetR family transcriptional regulator
molecular chaperone GrpE	adenylosuccinate synthetase	alkaline shock protein 23	glutamate-1- semialdehyde-2,1- aminomutase	ATP synthase F0F1 subunit B	
pectate lyase	alanine dehydrogenase	aminopeptidase T	glutathione S- transferase	ATP synthase F0F1 subunit delta	

phosphopyruvate hydratase	alcohol dehydrogenase	anti-sigma B factor RsbW	glutathione-dependent formaldehyde dehydrogenase	ATPase P
plasmid partitioning protein ParB	alkyl hydroperoxide reductase subunit F	AraC family transcriptional regulator	glycine cleavage system protein H	autolysin
pyridoxal biosynthesis protein	anti-anti-sigma factor	arylamine N-acetyltransferase	glycine dehydrogenase subunit 2	bacteriophage resistance protein
redox-regulated ATPase YchF	anti-sigma B factor RsbW	aspartate aminotransferase	glycine/betaine ABC transporter permease	branched-chain amino acid aminotransferase
serine--tRNA ligase	ArsC family protein	ATP synthase F0F1 subunit alpha	histidine kinase	catalase
sodium/sulfate symporter family protein	aryldialkylphosphatase	ATP synthase F0F1 subunit B	Histidine transport protein (permease)	choline dehydrogenase
succinate dehydrogenase	aspartate-semialdehyde dehydrogenase	ATP-dependent 6-phosphofructokinase	HslU--HslV peptidase ATPase subunit	citrate synthase
	aspartate--tRNA ligase	ATP-dependent Clp protease ATP-binding subunit ClpC	hypothetical protein	class II fumarate hydratase
	aspartyl/glutamyl-tRNA amidotransferase subunit A	ATP-dependent Clp protease ATP-binding subunit ClpX	hypothetical protein A4A82_03310	cobalt ABC transporter ATPase

ATP synthase F0F1 subunit alpha	ATP-dependent DNA helicase RecG	hypothetical protein A4A82_05660	cytochrome aa3 quinol oxidase subunit II
ATP synthase F0F1 subunit delta	ATP-dependent Zn metalloproteinase	hypothetical protein A4A82_06485	D-alanine--D-alanine ligase
ATP synthase F0F1 subunit gamma	autolysin	hypothetical protein A4A82_08360	dihydrolipoamide succinyltransferase
ATPase P	bifunctional 5,10-methylene-tetrahydrofolate dehydrogenase/5,10-methylene-tetrahydrofolate cyclohydrolase	hypothetical protein A4A82_09985	dihydroxyacetone kinase
ATP-dependent Clp protease ATP-binding subunit ClpC	branched-chain amino acid aminotransferase	hypothetical protein A4A82_10705	dihydroxyacetone kinase subunit L
ATP-dependent DNA helicase RecG	catalase	hypothetical protein A4A82_11275	DNA gyrase subunit A
autolysin	CBS domain-containing protein	hypothetical protein AXY36_03305	DNA primase

bifunctional 5,10-methylene-tetrahydrofolate dehydrogenase/5,10-methylene-tetrahydrofolate cyclohydrolase	cell division protein FtsA	hypothetical protein AXY36_03940	DNA repair protein
bifunctional ornithine acetyltransferase/N-acetylglutamate synthase	chorismate synthase	hypothetical protein AXY36_07550	elastin-binding protein
branched-chain amino acid aminotransferase	citrate synthase	hypothetical protein BSF33_01790	endopeptidase Clp ATP-binding subunit C
Cadmium-transporting ATPase	class II fumarate hydratase	hypothetical protein BSF33_05110	excinuclease ABC subunit C
catalase	cobalamin Fe ³⁺ -siderophores ABC transporter periplasmic protein	hypothetical protein BSF33_06845	ferrichrome ABC transporter substrate-binding protein
cell division protein DivIVA	cobalt ABC transporter permease	hypothetical protein BSF33_08575	Fis family transcriptional regulator
chorismate mutase	competence protein ComG	hypothetical protein XA21_08700	formate C-acetyltransferase

citrate synthase	cysteine synthase	hypothetical protein XA21_13400	formate--tetrahydrofolate ligase
class A beta-lactamase	cytidylate kinase	imidazolonepropionase	gas vesicle protein-protein
cold-shock protein	cytochrome aa3 quinol oxidase subunit I	lactate dehydrogenase	glutamate synthase subunit beta
coproporphyrinogen III oxidase	cytochrome aa3 quinol oxidase subunit II	leucyl aminopeptidase	glutamate-1-semialdehyde aminotransferase
cystathionine gamma-synthase	D-alanine--D-alanine ligase	lipoyl synthase	glutamine--fructose-6-phosphate aminotransferase
DEAD/DEAH box helicase	deoxyribose-phosphate aldolase	membrane protein	glutaryl-CoA dehydrogenase
dihydrolipoamide succinyltransferase	diaminopimelate decarboxylase	mevalonate kinase	glutathione-dependent formaldehyde dehydrogenase
dihydroxyacetone kinase subunit L	dihydrolipoamide succinyltransferase	molecular chaperone GroEL	glycerol phosphate lipoteichoic acid synthase
DNA methyltransferase	dihydrolipoyl dehydrogenase	NAD-dependent succinate-semialdehyde dehydrogenase	glycine C-acetyltransferase

DNA primase	dihydroxyacetone kinase	NADP-dependent oxidoreductase	glycine cleavage system protein H
DNA-binding protein	DNA methyltransferase	nitric oxide dioxygenase	glycine cleavage system protein T
elastin-binding protein	DNA mismatch repair protein MutS	oligopeptidase PepB	glycine dehydrogenase
endopeptidase Clp ATP-binding subunit C	DNA-directed RNA polymerase subunit omega	peptide ABC transporter ATP-binding protein	glycine dehydrogenase subunit 2
endoribonuclease L-PSP	elastin-binding protein	phage tail tape measure protein	heme-binding protein
Fis family transcriptional regulator	elongation factor P	Phosphate acetyltransferase	HslU--HslV peptidase ATPase subunit
formate acetyltransferase	endoribonuclease L-PSP	Phosphoglycerate mutase	hydroxyacid dehydrogenase
formate--tetrahydrofolate ligase	F0F1 ATP synthase subunit beta	phosphotransferase	hypothetical protein A4A82_02065
gas vesicle protein-protein	F0F1 ATP synthase subunit gamma	porphobilinogen deaminase	hypothetical protein A4A82_05255
general stress protein	ferrichrome ABC transporter substrate-binding protein	pyridoxal biosynthesis protein	hypothetical protein A4A82_06485
glutamate dehydrogenase	Fis family transcriptional regulator	pyrroline-5-carboxylate reductase	hypothetical protein A4A82_07220

glutamine-binding periplasmic protein	formate C-acetyltransferase	pyruvate phosphate dikinase	hypothetical protein A4A82_08945
glutamine--fructose-6-phosphate aminotransferase	formate dehydrogenase	recombinase A	hypothetical protein A4A82_11260
glutamine-hydrolyzing GMP synthase	formate--tetrahydrofolate ligase	recombinase RecB	hypothetical protein A4A82_12170
glutamyl-tRNA amidotransferase	fructose 1,6-bisphosphatase	redox-regulated ATPase YchF	hypothetical protein AXY36_01585
glutaryl-CoA dehydrogenase	gas vesicle protein-protein	restriction endonuclease subunit R	hypothetical protein AXY36_04620
glycerol-3-phosphate cytidyltransferase	general stress protein	ribonuclease J	hypothetical protein AXY36_07245
glycine dehydrogenase subunit 2	glutamate dehydrogenase	ribonuclease Y	hypothetical protein AXY36_07550
glycosyl transferase family 2	glutamate-1-semialdehyde-2,1-aminomutase	Ribonucleotide reductase of class Ib (aerobic), alpha subunit	hypothetical protein AXY36_07855
heme-binding protein	glutamine--fructose-6-phosphate aminotransferase	ribose ABC transporter permease	hypothetical protein AXY36_08170

+ 200 + 300 mg

hypothetical protein A4A82_02240	glutaryl-CoA dehydrogenase	S1 RNA-binding protein	hypothetical protein AXY36_11375
hypothetical protein A4A82_03560	glycerol kinase	serine--tRNA ligase	hypothetical protein BSF33_00755
hypothetical protein A4A82_03720	Glycine cleavage system H protein	signal transduction protein TRAP	hypothetical protein BSF33_06845
hypothetical protein A4A82_03945	glycine cleavage system protein H	smooth muscle caldesmon	hypothetical protein RES9_00450
hypothetical protein A4A82_05255	glycine cleavage system protein T	succinate dehydrogenase iron- sulfur subunit	hypothetical protein UF66_2387
hypothetical protein A4A82_06485	glycine dehydrogenase	succinate- semialdehyde dehydrogenase	hypothetical protein XA21_04180
hypothetical protein A4A82_07220	glycoprotease	tetrahydrodipicolinat e acetyltransferase	hypothetical protein XA21_13400
hypothetical protein A4A82_08360	glyoxal reductase	thioredoxin reductase	imidazolonepropion ase
hypothetical protein A4A82_09265	Hg(II)-responsive transcriptional regulator	uroporphyrinogen decarboxylase	inorganic pyrophosphatase
hypothetical protein A4A82_10890	Holliday junction resolvase	xylulose kinase	inosine-5- monophosphate dehydrogenase

hypothetical protein A4A82_11275	Homoserine dehydrogenase	iron ABC transporter ATP-binding protein
hypothetical protein AXY36_00980	Homoserine kinase	isoleucine--tRNA ligase
hypothetical protein AXY36_02580	hydroxyacid dehydrogenase	lactate dehydrogenase
hypothetical protein AXY36_06600	hypothetical protein	late competence protein ComEC
hypothetical protein AXY36_06780	hypothetical protein A4A82_02240	lipoate--protein ligase
hypothetical protein AXY36_07550	hypothetical protein A4A82_03645	L-Proline/Glycine betaine transporter ProP
hypothetical protein AXY36_07855	hypothetical protein A4A82_03720	malate dehydrogenase
hypothetical protein AXY36_09360	hypothetical protein A4A82_07425	manganese ABC transporter substrate- binding protein
hypothetical protein BSF33_00525	hypothetical protein A4A82_12125	methionine sulfoxide reductase
hypothetical protein BSF33_00755	hypothetical protein A4A82_12320	molecular chaperone GroEL

hypothetical protein
RES9_02800

hypothetical protein
AXY36_00580

monovalent
cation/H⁺ antiporter
subunit D

hypothetical protein
XA22_13430

hypothetical protein
AXY36_03955

N-acetyltransferase

IMP dehydrogenase

hypothetical protein
AXY36_04620

NAD-dependent
dehydratase

inorganic
pyrophosphatase

hypothetical protein
AXY36_06600

nitric oxide
dioxygenase

iron ABC transporter
substrate-binding
protein

hypothetical protein
AXY36_09360

NmrA family protein

isoleucine--tRNA
ligase

hypothetical protein
AXY36_09565

oxidoreductase

isoleucyl-tRNA
synthetase, partial

hypothetical protein
BSF33_05765

peptidase M23

lactate
dehydrogenase

hypothetical protein
BSF33_09115

peptide ABC
transporter ATP-
binding protein

late competence
protein ComEC

hypothetical protein
BSF33_11000

peptide ABC
transporter substrate-
binding protein

L-lactate dehydrogenase	hypothetical protein RES10_11420	permease
luciferase	hypothetical protein RES11_11325	Phage antirepressor protein
lysine--tRNA ligase	hypothetical protein UF66_0386	PhoP family transcriptional regulator
LysR family transcriptional regulator	hypothetical protein UF66_1428	phosphoenolpyruvate carboxykinase
malonyl CoA-acyl carrier protein transacylase	hypothetical protein XA21_11830	Phosphoglycerate mutase
manganese ABC transporter substrate-binding protein	iditol 2-dehydrogenase	phosphopentomutase
methionine sulfoxide reductase	inorganic pyrophosphatase	phosphotransferase
molecular chaperone GroEL	isochorismate synthase	polynucleotide phosphorylase
molecular chaperone GrpE	isocitrate dehydrogenase	proline dehydrogenase
nitric oxide dioxygenase	isoleucyl-tRNA synthetase, partial	protease
nucleoside-diphosphate kinase	lactate dehydrogenase	protein rlx

ornithine--oxo-acid aminotransferase	leucine--tRNA ligase	proteinase
permease	lipid hydroperoxide peroxidase	purine-nucleoside phosphorylase
peroxiredoxin	Major myo-inositol transporter IolT	putative membrane protein
Phosphate acetyltransferase	manganese transporter	pyridine nucleotide- disulfide oxidoreductase
phosphoenolpyruvat e carboxykinase	membrane protein	pyridoxal biosynthesis protein
phosphonate ABC transporter ATP- binding protein	methionine--tRNA ligase	pyrimidine- nucleoside phosphorylase
PTS mannose transporter subunit IIA	molecular chaperone DnaK	pyrroline-5- carboxylate reductase
putative membrane protein	molecular chaperone GroEL	pyruvate phosphate dikinase
pyridoxal biosynthesis protein	nitric oxide dioxygenase	recombinase A

pyruvate phosphate dikinase	non-canonical purine NTP pyrophosphatase	recombinase RecB
pyruvate, phosphate dikinase	nucleoside-diphosphate kinase	ribonuclease H
Repressor CsoR of the copZA operon	ornithine--oxo-acid aminotransferase	ribosome-associated protein Y
RNA-binding protein	ornithine--oxo-acid transaminase	RNA polymerase sigma factor RpoD
RNA-binding protein S1	peptidase M28	septation ring formation regulator EzrA
serine--tRNA ligase	peptide deformylase	serine--tRNA ligase
sigma-54 modulation protein	phosphoenolpyruvate carboxykinase	succinate dehydrogenase flavoprotein subunit
signal recognition particle	phosphoenolpyruvate-protein phosphotransferase	succinate dehydrogenase iron-sulfur subunit
single-stranded DNA-binding protein	phospholipase D	succinate-semialdehyde dehydrogenase (NADP(+))

succinate
dehydrogenase
flavoprotein subunit

plasmid partitioning
protein ParB

succinate
dehydrogenase iron-
sulfur subunit

PP family ATPase

sucrose-6-phosphate
hydrolase

preprotein
translocase subunit
SecA

sugar dehydrogenase

prolyl-tRNA
synthetase

teichoic acid
biosynthesis protein

PTS mannitol
transporter subunit
IIA

ThiJ/PfpI family
protein

putative
acyltransferase

thiol reductase
thioredoxin

pyridoxal
biosynthesis protein

thioredoxin

pyruvate, phosphate
dikinase

thymidine
phosphorylase

recombinase A

TIGR00268 family
protein

response regulator
SirA

succinyl-
diaminopimelate
desuccinylase

sulfurtransferase
FdhD

sugar dehydrogenase

sulfurtransferase

tail protein

teichoic acid
biosynthesis protein

ThiJ/PfpI family
protein

transcription
termination/antiterm
ination protein NusG

transglycosylase

translation initiation
factor IF-2

transcriptional regulator	restriction endonuclease subunit M	two-component response regulator, LytR
Translation elongation factor Ts	ribosome recycling factor	undecaprenyldiphosphate beta-N-acetylglucosaminyltransferase
translation initiation factor IF-3	RNA pseudouridylate synthase	universal stress protein
tRNA and rRNA cytosine-C5-methylase	Rrf2 family transcriptional regulator	universal stress protein UspA
two-component response regulator, LytR	S-adenosylmethionine tRNA ribosyltransferase	Urease accessory protein UreG
type I glutamate--ammonia ligase	serine dehydratase	uroporphyrinogen decarboxylase
UDP-glucose 4-epimerase	serine--tRNA ligase	
universal stress protein	siderophore synthetase	
UTP-glucose-1-phosphate uridylyltransferase	signal transduction protein TRAP	
	succinate dehydrogenase	

succinate
dehydrogenase
flavoprotein subunit

succinate--CoA
ligase subunit alpha

succinate--CoA
ligase subunit beta

succinate-
semialdehyde
dehydrogenase
sulfurtransferase
TetR family
transcriptional
regulator

tetrahydrodipicolinat
e acetyltransferase

ThiJ/PfpI family
protein

Transcription
regulator (contains
diacylglycerol kinase
catalytic domain)

transcriptional
repressor CodY
transglycosylase

transposase, IS605
OrfB family

transposase, partial

triose-phosphate
isomerase

tRNA-binding
protein

type I glutamate--
ammonia ligase

universal stress
protein UspA

uracil

phosphoribosyltransf
erase