

Supplementary Material

Proteome map of *P. putida* KT2440 cells in the exponential phase of growth at 30°C in mineral medium with 20 mM succinate

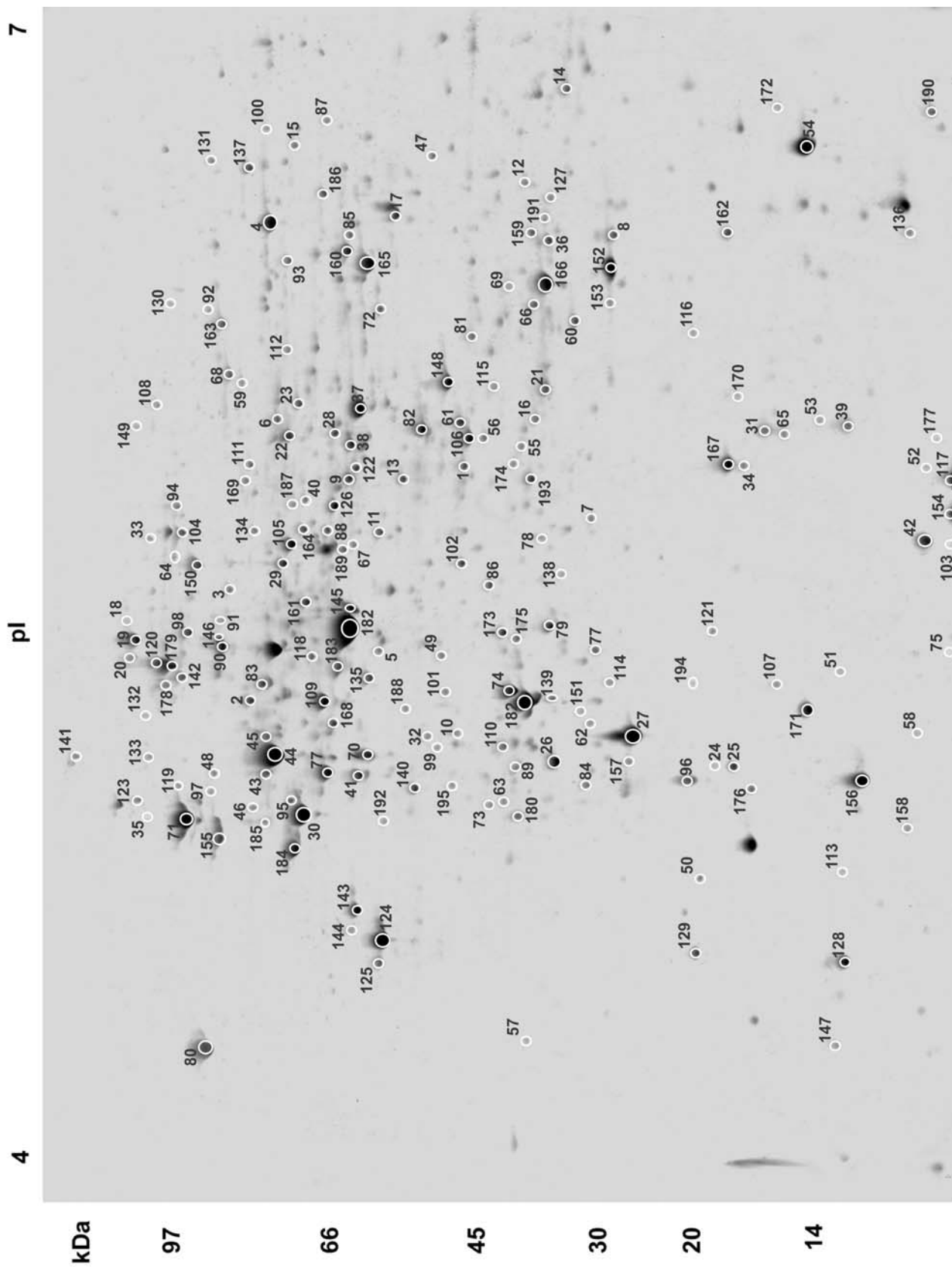


Table. List of *Pseudomonas putida* KT2440 proteins in the 2-DE reference map that were identified by MALDI-TOF-MS and sequence homology

Spot	Protein name/function	GeneBank ID	Functional family
1	2,3,4,5-tetrahydropyridine-2-carboxylate N-succinyltransferase, putative, DapD	AAN67151	Amino acid and protein metabolism
2	2,3-biphosphoglycerate-independent phosphoglycerate mutase, Pgm	AAN70621	Carbon compound metabolism
3	2-isopropylmalate synthase, LeuA	AAN66650	Amino acid and protein metabolism
4	2-oxoglutarate dehydrogenase, lipoamide dehydrogenase component, LpdG	AAN69768	Energy metabolism
5	3,4-dihydroxy-2-butanone 4-phosphate synthase/GTP cyclohydrolase II, RibBA-1	AAN66143	Biosynthesis of cofactors, prosthetic groups, and carriers
6	3-isopropylmalate dehydratase large subunit, LeuC	AAN67600	Amino acid and protein metabolism
7	3-isopropylmalate dehydratase, small subunit, LeuD	AAN67601	Amino acid and protein metabolism
8	3-oxoacyl-(acyl-carrier-protein) reductase, FabG	AAN67532	Fatty acid and phospholipid metabolism
9	3-oxoacyl-(acyl-carrier-protein) synthase I, FabB	AAN69756	Fatty acid and phospholipid metabolism
10	3-oxoacyl-(acyl-carrier-protein) synthase III, FabH1	AAN69957	Fatty acid and phospholipid metabolism
11	3-oxoacyl-(acyl-carrier-protein) synthase III, FabH2	AAN70118	Fatty acid and phospholipid metabolism
12	5,10-methylene-tetrahydrofolate dehydrogenase/cyclohydrolase, FoliD-2	AAN67878	Biosynthesis of cofactors, prosthetic groups, and carriers
13	ABC transporter, periplasmic binding protein	AAN67347	Transport of small molecules
14	ABC transporter, periplasmic binding protein, MetQ-2	AAN65746	Transport of small molecules
15	Acetyl-CoA carboxylase, biotin carboxylase, AccC-1	AAN66185	Fatty acid and phospholipid metabolism
16	Acetylglutamate kinase, ArgB	AAN70854	Amino acid and protein metabolism
17	Acetylornithine aminotransferase, ArgD	AAN70056	Amino acid and protein metabolism
18	Aconitate hydratase 2, AcnB	AAN67952	Energy metabolism
19	Aconitate hydratase 2, AcnB	AAN67952	Energy metabolism
20	Aconitate hydratase 2, AcnB	AAN67952	Energy metabolism
21	Adenylate kinase, Adk	AAN67127	Nucleotide metabolism
22	Adenylosuccinate synthetase, PurA	AAN70456	Nucleotide metabolism
23	Alginate biosynthesis negative regulator, serine protease AlgY	AAN67052	Cell envelope
24	Alkyl hydroperoxide reductase, C subunit, AhpC	AAN68051	Antioxidants, Chaperones and Heat shock proteins
25	Alkyl hydroperoxide reductase, C subunit, AhpC	AAN68051	Antioxidants, Chaperones and Heat shock proteins
26	Amino acid ABC transporter, periplasmic amino acid-binding protein	AAN65913	Transport of small molecules
27	Antioxidant, AhpC/Tsa family	AAN66709	Antioxidants, Chaperones and Heat shock proteins
28	Arginine deiminase, ArcA	AAN66626	Amino acid and protein metabolism
29	ATP synthase F1 alpha subunit, AtpA	AAN70979	Energy metabolism
30	ATP synthase F1 beta subunit, AtpD	AAN70977	Energy metabolism
31	ATP synthase F1, delta subunit, AtpH	AAN70980	Energy metabolism
32	ATP-binding protein, Mrp/Nbp35 family	AAN66723	Hypothetical, unclassified, unknown
33	ATP-dependent Clp protease, ATP-binding subunit, ClpB	AAN66250	Translation, post-translational modification, degradation
34	ATP-dependent Clp protease, proteolytic subunit, ClpP	AAN67913	Translation, post-translational modification, degradation
35	ATP-dependent protease, LonB	AAN66305	Translation, post-translational modification, degradation

36	Basic amino acid ABC transporter, periplasmic basic amino acid-binding protein, AotJ	AAN70061	Transport of small molecules
37	Branched-chain amino acid ABC transporter, periplasmic amino acid-binding protein, BraC	AAN66766	Transport of small molecules
38	Branched-chain amino acid ABC transporter, periplasmic amino acid-binding protein	AAN70436	Transport of small molecules
39	C4-type zinc finger protein, DksA/TraR family	AAN70266	DNA replication, recombination, modification and repair
40	Carboxyl-terminal protease	AAN70623	Translation, post-translational modification, degradation
41	Cell division protein, FtsZ	AAN66965	Cell division
42	Chaperonin 10 kDa, GroES	AAN66983	Antioxidants, Chaperones and Heat shock proteins
43	Chaperonin 60 kDa, GroEL	AAN66984	Antioxidants, Chaperones and Heat shock proteins
44	Chaperonin 60 kDa, GroEL	AAN66984	Antioxidants, Chaperones and Heat shock proteins
45	Chaperonin 60 kDa, GroEL	AAN66984	Antioxidants, Chaperones and Heat shock proteins
46	Chaperonin 60 kDa, GroEL	AAN66984	Antioxidants, Chaperones and Heat shock proteins
47	Chorismate synthase, AroC	AAN67449	Amino acid and protein metabolism
48	Conserved hypothetical protein	AAN66390	Hypothetical, unclassified, unknown
49	Conserved hypothetical protein	AAN67933	Hypothetical, unclassified, unknown
50	Conserved hypothetical protein	AAN66480	Hypothetical, unclassified, unknown
51	Conserved hypothetical protein	AAN67983	Hypothetical, unclassified, unknown
52	Conserved hypothetical protein	AAN70378	Hypothetical, unclassified, unknown
53	Conserved hypothetical protein	AAN68697	Hypothetical, unclassified, unknown
54	Conserved hypothetical protein	AAN70547	Hypothetical, unclassified, unknown
55	Conserved hypothetical protein	AAN70959	Hypothetical, unclassified, unknown
56	Conserved hypothetical protein	AAN66848	Hypothetical, unclassified, unknown
57	Conserved hypothetical protein	AAN70340	Hypothetical, unclassified, unknown
58	Conserved hypothetical protein TIGR00150	AAN70465	Hypothetical, unclassified, unknown
59	CTP synthase, PyrG	AAN67231	Nucleotide metabolism
60	Cysteine ABC transporter, periplasmic cysteine-binding protein, putative, FliY	AAN65859	Transport of small molecules
61	Cysteine synthase A, CysK	AAN70144	Amino acid and protein metabolism
62	Cytidylate kinase, Cmk	AAN67391	Nucleotide metabolism
63	D-alanine--D-alanine ligase B, DdlB	AAN66962	Cell envelope
64	Dehydrogenase subunit, putative	AAN67282	Hypothetical, unclassified, unknown
65	Deoxycytidine triphosphate deaminase, Dcd	AAN66725	Nucleotide metabolism
66	Dihydrodipicolinate synthase, DapA	AAN66861	Amino acid and protein metabolism
67	Dihydroorotase, multifunctional complex type, PyrX	AAN70565	Nucleotide metabolism
68	Dihydroxy-acid dehydratase, IlvD	AAN70693	Amino acid and protein metabolism
69	DNA-binding response regulator, OmpR	AAN65878	Transcription, RNA processing and degradation
70	DNA-directed RNA polymerase, alpha subunit, RpoA	AAN66109	Transcription, RNA processing and degradation
71	Dnak protein	AAN70299	Antioxidants, Chaperones and Heat shock proteins

72	dTDP-glucose 4,6-dehydratase, RmlB	AAN67405	Cell envelope
73	Dyp-type peroxidase family protein	AAN68855	Hypothetical, unclassified, unknown
74	Electron transfer flavoprotein alpha subunit, EtfA	AAN69782	Energy metabolism
75	Endoribonuclease	AAN70868	Transcription, RNA processing and degradation
76	Enhancing lycopene biosynthesis protein 2, ElbB	AAN70785	Central intermediary metabolism
77	Enolase, Eno	AAN67233	Energy metabolism
78	Enoyl-CoA hydratase/isomerase, FadB1x	AAN67830	Fatty acid and phospholipid metabolism
79	Ferredoxin--NADP reductase, Fpr	AAN67259	Energy metabolism
80	Flagellin, FliC	AAN69956	Chemotaxis and motility
81	Fructose-1,6-bisphosphatase Fbp	AAN70605	Carbon compound metabolism
82	Fructose-1,6-bisphosphate aldolase, Fda	AAN70527	Carbon compound metabolism
83	Fumarate hydratase, class I, FumB	AAN66522	Energy metabolism
84	Fumarylacetoacetate hydrolase family protein	AAN70718	Hypothetical, unclassified, unknown
85	Gamma-glutamyl phosphate reductase, ProA	AAN70380	Amino acid and protein metabolism
86	General amino acid ABC transporter, periplasmic binding protein, AapJ	AAN66921	Transport of small molecules
87	Glutamate dehydrogenase, GdhA	AAN66300	Amino acid and protein metabolism
88	Glutamate synthase, small subunit, GltD	AAN69628	Amino acid and protein metabolism
89	Glutamine amidotransferase, class I	AAN67461	Hypothetical, unclassified, unknown
90	Glutamine synthetase, type I, GlnA	AAN70611	Amino acid and protein metabolism
91	Glutamine synthetase, type I, GlnA	AAN70611	Amino acid and protein metabolism
92	Glutamyl-tRNA synthetase, GlnS	AAN68512	Amino acid and protein metabolism
93	Glutamyl-tRNA(Gln) amidotransferase, A subunit, GatA	AAN66556	Translation, post-translational modification, degradation
94	GTP-binding protein TypA/BipA	AAN70609	Hypothetical, unclassified, unknown
95	GTP-binding protein, GTP1/Obg family	AAN66315	Hypothetical, unclassified, unknown
96	Heat shock protein, GrpE	AAN70300	Antioxidants, Chaperones and Heat shock proteins
97	Heat shock protein, HscA	AAN66471	Antioxidants, Chaperones and Heat shock proteins
98	Heat shock protein, HtpG	AAN69760	Antioxidants, Chaperones and Heat shock proteins
99	Hydroxymethylbutenyl pyrophosphate reductase, IspH	AAN66232	Biosynthesis of cofactors, prosthetic groups, and carriers
100	Inosine-5-monophosphate dehydrogenase, GuaB	AAN66656	Nucleotide metabolism
101	Iron ABC transporter, periplasmic iron-binding protein, HitA	AAN70449	Transport of small molecules
102	Iron ABC transporter, periplasmic iron-binding protein, putative, FbpA	AAN70761	Transport of small molecules
103	Iron-binding protein, IscU	AAN66468	Central intermediary metabolism
104	Isocitrate dehydrogenase, NADP-dependent, monomeric-type, Idh	AAN69606	Energy metabolism
105	Isocitrate lyase, AceA	AAN69699	Energy metabolism
106	Ketol-acid reductoisomerase, IlvC	AAN70251	Amino acid and protein metabolism
107	Lactoylglutathione lyase, GloA	AAN69360	Central intermediary metabolism
108	Malate synthase, GlcB	AAN65987	Carbon compound metabolism
109	Malic enzyme, MaeB	AAN70650	Central intermediary metabolism
110	Malonyl CoA-acyl carrier protein transacylase, FabD	AAN67531	Fatty acid and phospholipid metabolism
111	Medium-chain-fatty-acid CoA ligase, AlkK	AAN66388	Fatty acid and phospholipid metabolism
112	Methylmalonate-semialdehyde dehydrogenase, MmsA-1	AAN66224	Energy metabolism
113	NADH dehydrogenase I E subunit, NuoE	AAN69705	Energy metabolism

114	NADH dehydrogenase I, B subunit, NuoB	AAN69703	Energy metabolism
115	NH(3)-dependent NAD(+) synthetase, NadE	AAN70438	Biosynthesis of cofactors, prosthetic groups, and carriers
116	Nitroreductase family protein	AAN70161	Hypothetical, unclassified, unknown
117	Nucleoside diphosphate kinase, Ndk	AAN66474	Nucleotide metabolism
118	Outer membrane efflux protein, OpmH	AAN70490	Transport of small molecules
119	Outer membrane ferric siderophore receptor	AAN68763	Transport of small molecules
120	Outer membrane ferripyoverdine receptor, FpvA	AAN69798	Transport of small molecules
121	Outer membrane lipoprotein carrier protein, LolA	AAN69597	Amino acid and protein metabolism
122	Outer membrane protein OprE3, OprQ	AAN65899	Transport of small molecules
123	Outer membrane protein, bacterial surface antigen family	AAN67220	Cell envelope
124	Outer membrane protein, OprF	AAN67703	Transport of small molecules
125	Outer membrane protein, OprF	AAN67703	Transport of small molecules
126	Outer membrane protein, TolC	AAN70093	Transport of small molecules
127	Oxidoreductase, short chain dehydrogenase/reductase family	AAN70431	Hypothetical, unclassified, unknown
128	Peptidyl-prolyl cis-trans isomerase, FKBP-type, SlyD	AAN66401	Antioxidants, Chaperones and Heat shock proteins
129	Peptidyl-prolyl cis-trans isomerase, FkIB-1	AAN66309	Antioxidants, Chaperones and Heat shock proteins
130	Periplasmic beta-glucosidase, BglX	AAN67026	Cell envelope
131	Periplasmic glucan biosynthesis protein, MgoG	AAN70591	Cell envelope
132	Phenylalanyl-tRNA synthetase beta subunit, PheT	AAN68082	Translation, post-translational modification, degradation
133	Phosphoenolpyruvate synthase, PpsA	AAN67696	Carbon compound metabolism
134	Phosphoglucomutase, alpha-D-glucose phosphate-specific, PgmA	AAN69179	Carbon compound metabolism
135	Phosphoglycerate kinase, Pgk	AAN70530	Carbon compound metabolism
136	Phosphoribosylaminoimidazole carboxylase, catalytic subunit, PurE	AAN70901	Nucleotide metabolism
137	Phosphoribosylaminoimidazolecarboxamide formyltransferase/IMP cyclohydrolase, PurH	AAN70391	Nucleotide metabolism
138	Phosphoribosylaminoimidazole-succinocarboxamide synthase, PurC	AAN66864	Nucleotide metabolism
139	Phosphoribosylformimino-5-aminoimidazole carboxamide ribotide isomerase, HisA	AAN65923	Amino acid and protein metabolism
140	Phosphoribosylformylglycinamide cyclo-ligase, PurM	AAN67286	Nucleotide metabolism
141	Phosphoribosylformylglycinamide synthase, PurL	AAN66662	Nucleotide metabolism
142	Polyribonucleotide nucleotidyltransferase, Prp	AAN70281	Transcription, RNA processing and degradation
143	Porin D, OprD	AAN66830	Transport of small molecules
144	Porin D, OprD	AAN66830	Transport of small molecules
145	Porin E, OprE	AAN65866	Transport of small molecules
146	Prolyl-tRNA synthetase, ProS	AAN66829	Amino acid and protein metabolism
147	Protein-transport protein, SecB	AAN70618	Amino acid and protein metabolism
148	Putrescine ABC transporter, periplasmic putrescine-binding protein, PotF-2	AAN70746	Transport of small molecules
149	Pyruvate dehydrogenase E1 component, AceE	AAN65970	Carbon compound metabolism
150	Pyruvate dehydrogenase, dihydrolipoamide acetyltransferase component, AceF	AAN65969	Carbon compound metabolism
151	Ribose 5-phosphate isomerase, RpiA	AAN70715	Energy metabolism
152	Ribosomal 5S rRNA E-loop binding protein Ctc/L25/TL5	AAN66346	Translation, post-translational modification, degradation
153	Ribosomal 5S rRNA E-loop binding protein Ctc/L25/TL5	AAN66346	Translation, post-translational modification, degradation
154	Ribosomal protein L9, RplI	AAN70443	Translation, post-translational

155	Ribosomal protein S1, RpsA	AAN67392	modification, degradation Translation, post-translational modification, degradation
156	Ribosomal protein S6, RpsF	AAN70446	Translation, post-translational modification, degradation
157	Ribulose-phosphate 3-epimerase, Rpe	AAN66045	Energy metabolism
158	S-adenosylmethionine:2-demethylmenaquinone methyltransferase, MenG	AAN67698	Biosynthesis of cofactors, prosthetic groups, and carriers
159	Septum site-determining protein, MinD	AAN67353	Cell division
160	Serine hydroxymethyltransferase, GlyA-2	AAN66296	Amino acid and protein metabolism
161	Seryl-tRNA synthetase, SerS	AAN69594	Amino acid and protein metabolism
162	Single-stranded DNA-binding protein, ClpE	AAN66115	DNA replication, recombination, modification and repair
163	Succinate dehydrogenase, flavoprotein subunit, SdhA	AAN69772	Energy metabolism
164	Succinate-semialdehyde dehydrogenase, GabD	AAN65845	Central intermediary metabolism
165	Succinyl-CoA synthetase beta subunit, SucC	AAN69767	Energy metabolism
166	Succinyl-CoA synthetase, alpha subunit, SucD	AAN69766	Energy metabolism
167	Superoxide dismutase (Fe), SodB	AAN66540	Antioxidants, Chaperones and Heat shock proteins
168	Survival protein, SurA	AAN66034	Antioxidants, Chaperones and Heat shock proteins
169	Tabtoxinine-beta-lactam limiting dipeptidase, Txp	AAN65836	Translation, post-translational modification, degradation
170	ThiJ/Pfpl family protein	AAN66518	Hypothetical, unclassified, unknown
171	Thiol peroxidase, Tpx	AAN69187	Antioxidants, Chaperones and Heat shock proteins
172	Thiol:disulfide interchange protein, DsbA family, Dsb	AAN65761	Antioxidants, Chaperones and Heat shock proteins
173	Thioredoxin reductase, TrxB	AAN66411	Antioxidants, Chaperones and Heat shock proteins
174	Thiosulfate sulfurtransferase, SseA	AAN70683	Central intermediary metabolism
175	Transaldolase, Tal	AAN67781	Carbon compound metabolism
176	Transcription elongation factor, GreA	AAN70294	Transcription, RNA processing and degradation
177	Transcriptional regulator, Fur	AAN70302	Transcription, RNA processing and degradation
178	Translation elongation factor G, FusA-1	AAN66081	Translation, post-translational modification, degradation
179	Translation elongation factor G, FusA-1	AAN66081	Translation, post-translational modification, degradation
180	Translation elongation factor P, Efp	AAN67477	Translation, post-translational modification, degradation
182	Translation elongation factor Ts, Tsf	AAN67213	Translation, post-translational modification, degradation
182	Translation elongation factor Tu, Tuf-1	AAN66070	Translation, post-translational modification, degradation
183	Translation elongation factor Tu, Tuf-1	AAN66070	Translation, post-translational modification, degradation
184	Trigger factor, Tig	AAN67912	Antioxidants, Chaperones and Heat shock proteins

185	Trigger factor, Tig	AAN67912	Antioxidants, Chaperones and Heat shock proteins
186	Tryptophan synthase beta subunit, TrpB	AAN65717	Amino acid and protein metabolism
187	Tryptophanyl-tRNA synthetase, TrpS	AAN66935	Amino acid and protein metabolism
188	UDP-3-O-acyl N-acetylglucosamine deacetylase, LpxC	AAN66966	Cell envelope
189	UDP-N-acetylglucosamine 1-carboxyvinyltransferase, MurA	AAN66589	Cell envelope
190	Universal stress protein family, UspA	AAN67745	Antioxidants, Chaperones and Heat shock proteins
191	Uridylate kinase, PyrH	AAN67214	Nucleotide metabolism
192	Uroporphyrin-III C-methyltransferase, putative, HemX	AAN65821	Biosynthesis of cofactors, prosthetic groups, and carriers
193	UTP-glucose-1-phosphate uridylyltransferase, GalU	AAN69415	Cell envelope
194	VacJ lipoprotein	AAN67776	Cell envelope
195	Zinc-containing alcohol dehydrogenase, Adh1	AAN67341	Carbon compound metabolism