

Supplementary information

Genome-wide primary transcriptome analysis of H₂-producing archaeon *Thermococcus onnurineus* NA1

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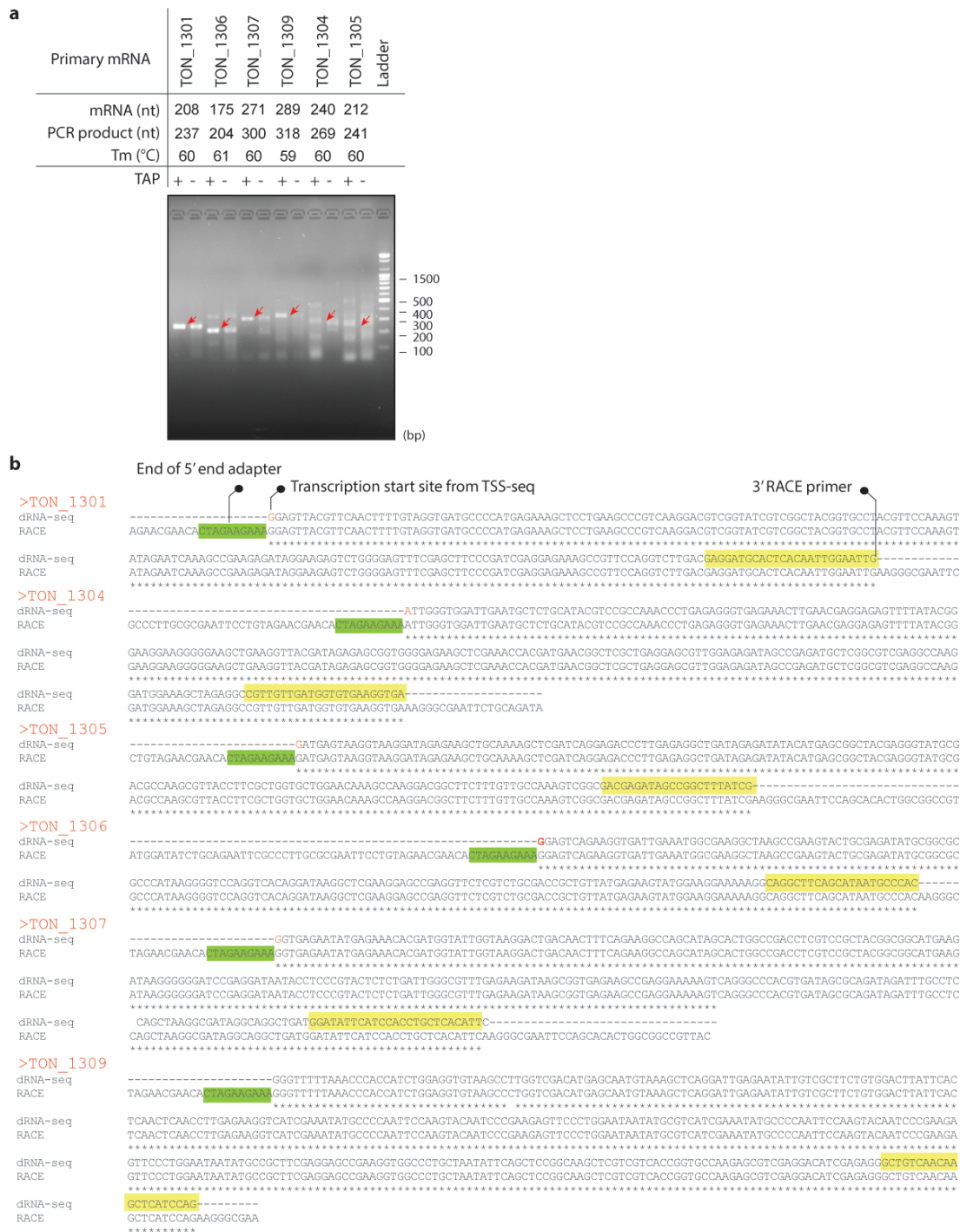
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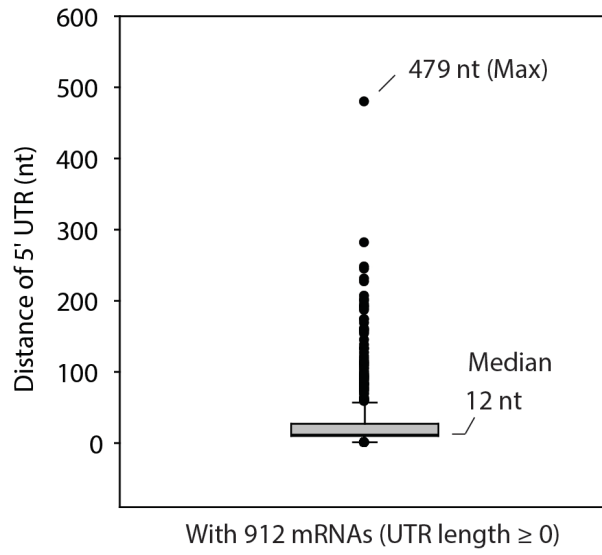
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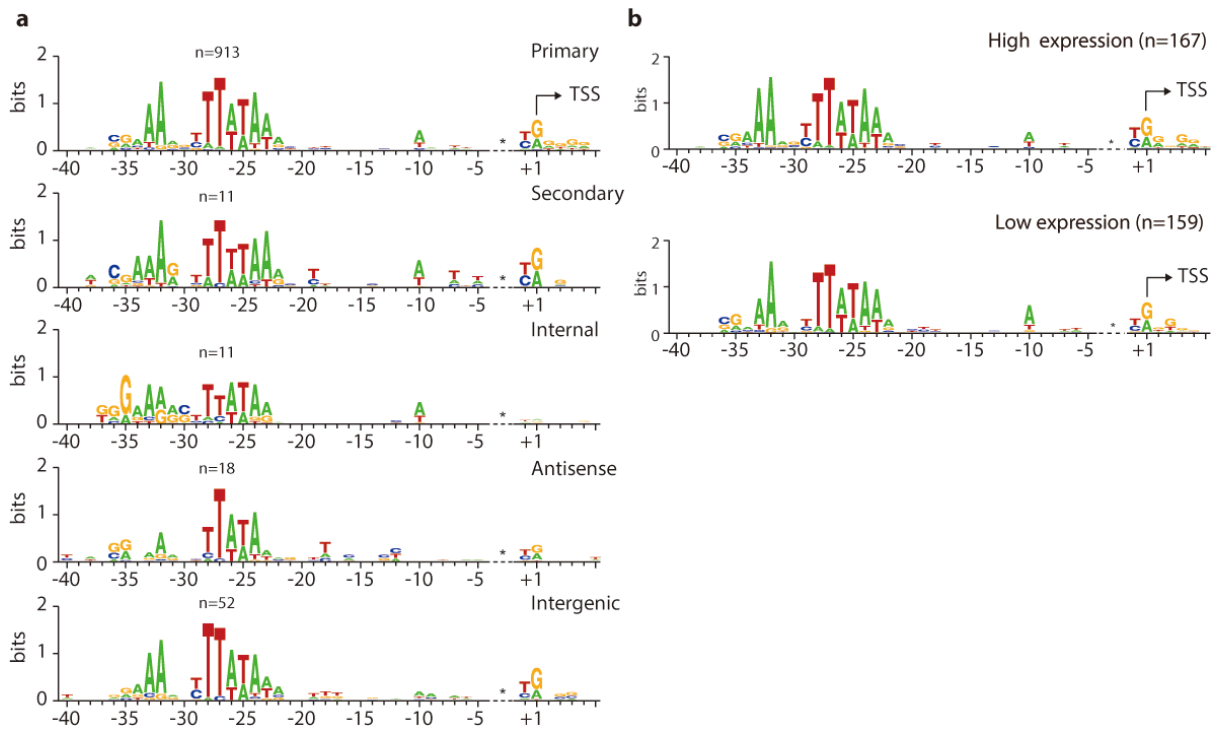
† These authors contributed equally to this work.



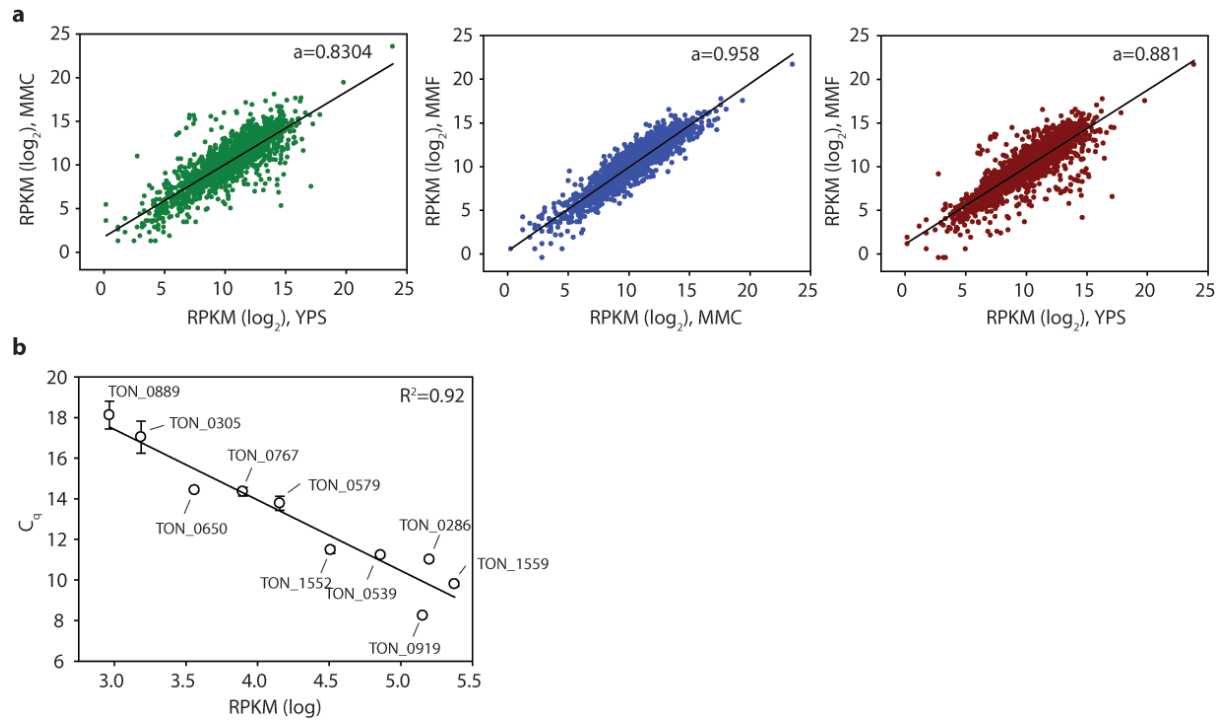
Supplementary Fig. S1. 5' Rapid Amplification of cDNA Ends (5'tagRACE). (a) The TSSs of 6 mRNAs found by dRNA-seq were confirmed using 5'tagRACE and targeted genes were separated by 2.5% agarose gel electrophoresis. (b) The 5' end of amplified DNA fragments was confirmed using pyrosequencing.



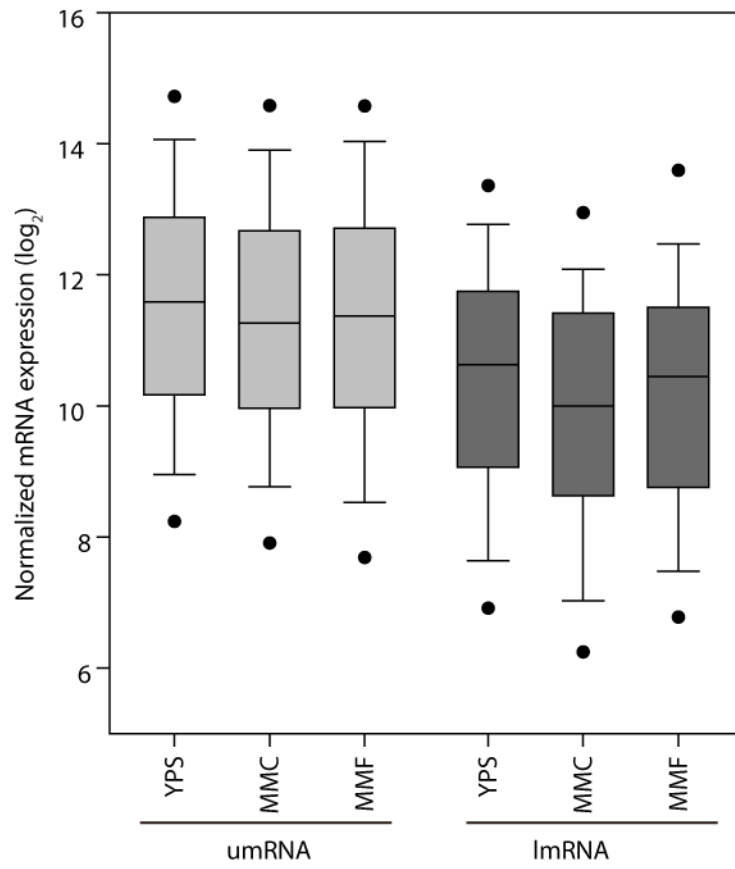
Supplementary Fig. S2. Distribution of 5' UTR length. The maximal and median length of 5' UTRs in *T. onnurineus* NA1.



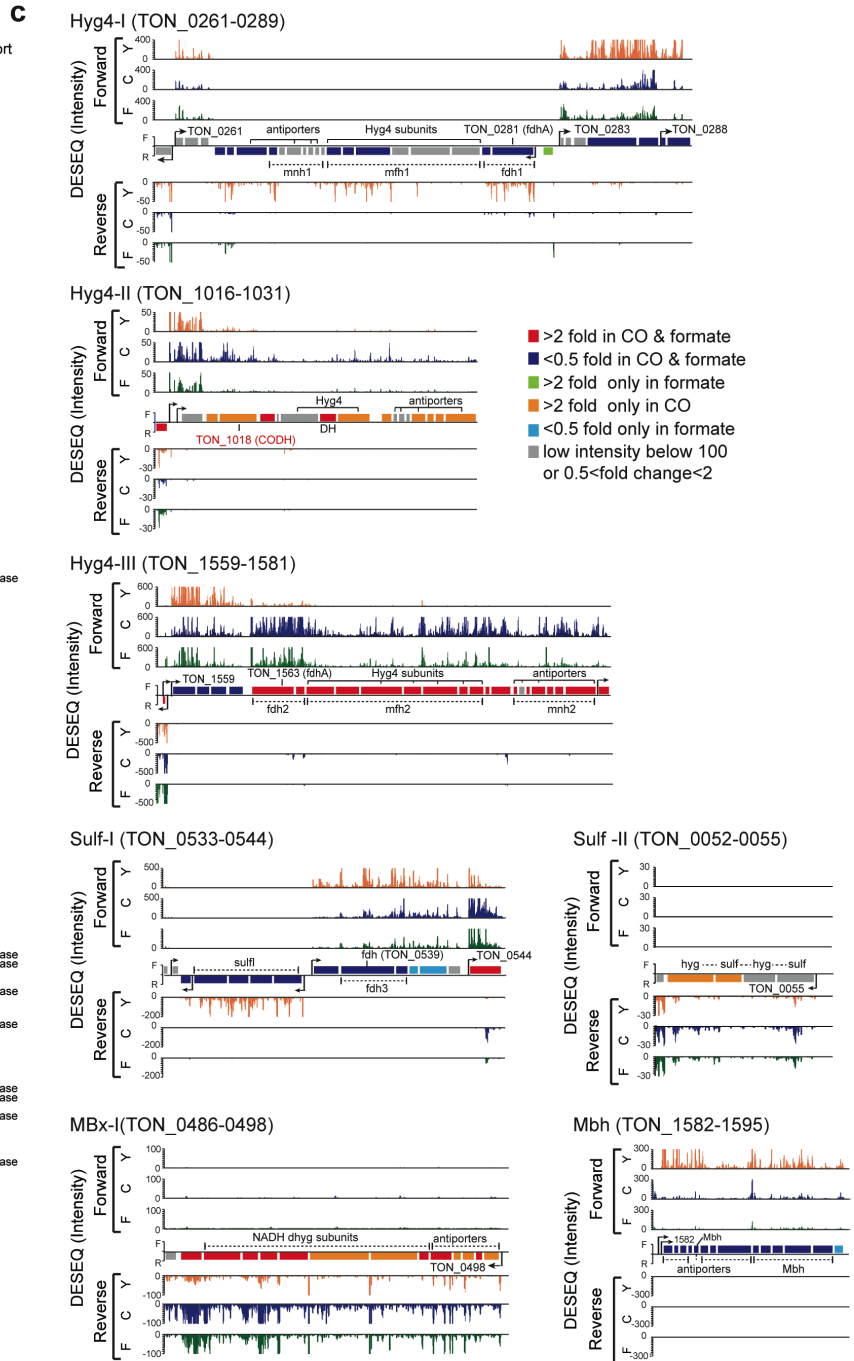
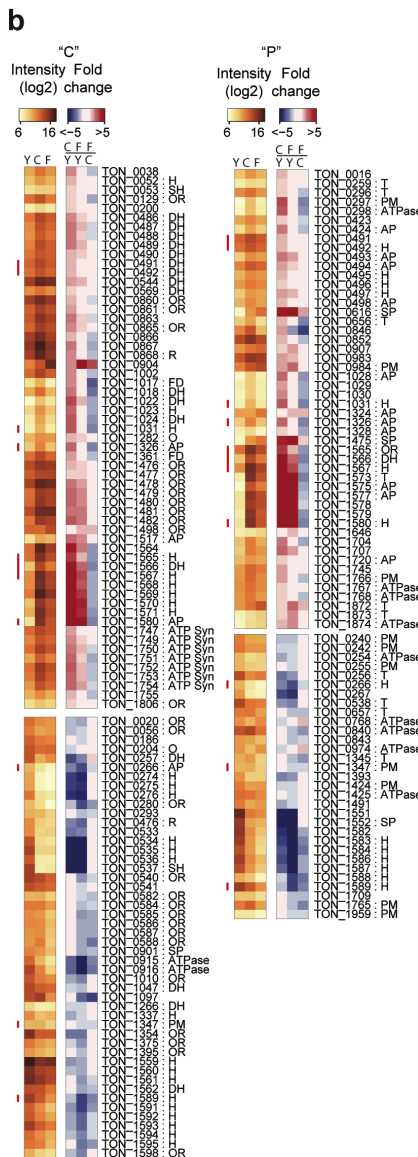
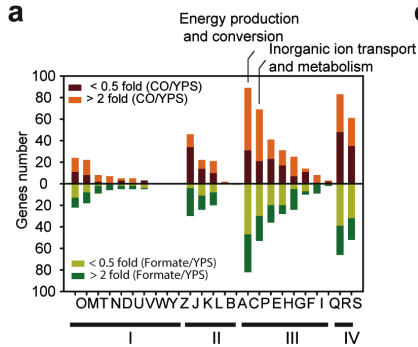
Supplementary Fig. S3. Promoter motifs upstream of transcription start sites. (a) The TATA boxes, BREs, and PPE motifs are shown between the TSS (+1) and 40 nt upstream according to primary, secondary, internal, antisense, and intergenic TSS location using MEME. **(b)** The promoter motifs according to promoter strength. The promoters and BRE motifs were compared for genes corresponding to high (high-ranked 167 genes) and low transcription levels (low-ranked 159 genes) using MEME.



Supplementary Fig. S4. Differential RNA expression. (a) Pairwise correlation of RNA expression between the growth conditions of YPS/MMC, MMC/MMF, and YPS/MMF were examined and illustrated with a scatter plot. (b) Quantitative analysis of cellular mRNAs by qRT-PCR. The correlation between C_q value from qPCR with RPKM from ssRNA-seq was examined for 10 specific mRNAs.

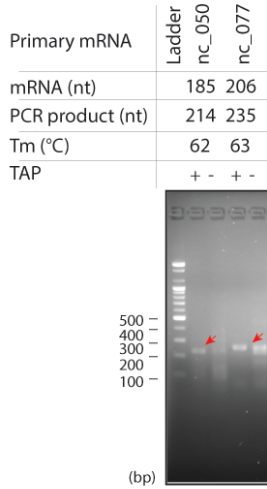


Supplementary Fig. S5. The box plot of normalized mRNA expression according to the culture media, YPS, MMC, and MMF in leadered mRNA and leaderless mRNA.

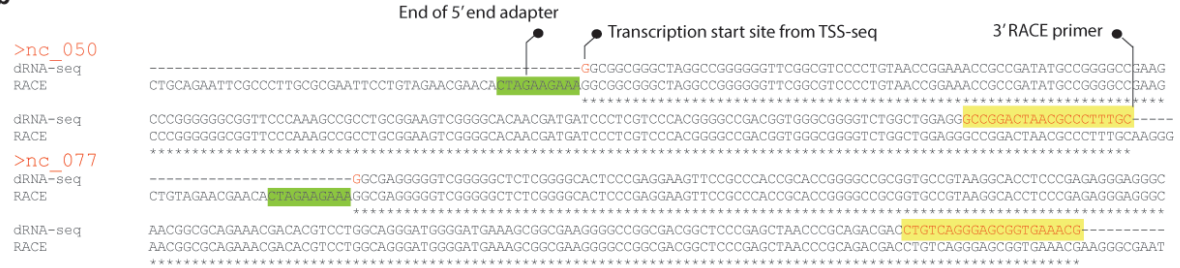


Supplementary Fig. S6. Differential gene expression. (a) The functional groups showing differential expression over 2-fold in MMC and MMF against YPS were categorized as I, II, III, and IV (cellular processes and signaling, information storage and processing, metabolism, and poorly characterized) by COG mapping, and further divided into subgroups of each functional group. Significant changes in gene expression were observed in diverse functions including energy production and inorganic ion transport/metabolism as shown in the COG mapping. (b) The changes in expression profiles of genes in various growth media of group C and group P, which were highly activated in (b) were displayed using a heat map with protein function. The left red bar in the heat map indicates the common genes involved in both groups C (energy production and conversion) and P (inorganic ion transport and metabolism). Abbreviations: H, hydrogenase; OR, oxidoreductase; DH, dehydrogenase; R, reductase; FD, ferredoxin; SH, Sulfhydrogenase; O, oxidase; AP, antiporter; PM, permease; T, transporter; SP, symporter. (c) the profile feature by ssRNA-seq. The hydrogenase 4 in three Hyg4 clusters showed differential gene expression in different growth conditions. In Hyg4-I, mfh1 with Hyg4 subunits, fdh1, and mnh1 with antiporters clusters were downregulated in CO and formate conditions. In contrast, all fdh2, mfh2, and mnh2 in Hyg4-III exhibited expression > 2-fold greater in CO and formate conditions but were scarcely expressed in YPS media. The Hyg4-II cluster was expressed only in the presence of CO, while not expressed in formate and YPS conditions. Especially, CO-responsive hydrogenase was substantially activated, and the catalytic subunit of CO dehydrogenase (TON_1018), a key CO metabolic enzyme, was significantly increased only in CO media. In addition, there are two clusters with sulfhydrogenase and cytosol hydrogenase, Sulf-I and Sulf-II. Their RNA expression was not occurred in the CO and formate media without sulfur but all genes in a Sulf-I cluster were fully activated > 2-fold by sulfur in YPS rich media. Especially, Sulf-I cluster was together with fdh cluster in different operon but at just near Sulf-I cluster. Moreover, fdh3 part was also highly expressed in all conditions but sulfl part activated by sulfur was totally deactivated in all conditions. Sulf-II consists of simple repeated Hyg and Sulf subunits, but entire expression level in all media was very low (RPKM < 30). Membrane bound oxidoreductase (MBx-I) subunits composing of NADH dependent dehydrogenase and antiporters were mostly activated > 2-fold in CO and formate against YPS. In contrast, membrane bound hydrogenase (Mbh) clusters with antiporters were poorly activated in CO and formate media for YPS. Taken together, high hydrogen production in CO and formate media seems to be driven by high expression of Hyg4-II and Hyg4-III clusters with the reduction of transcription of the other hydrogenase clusters.

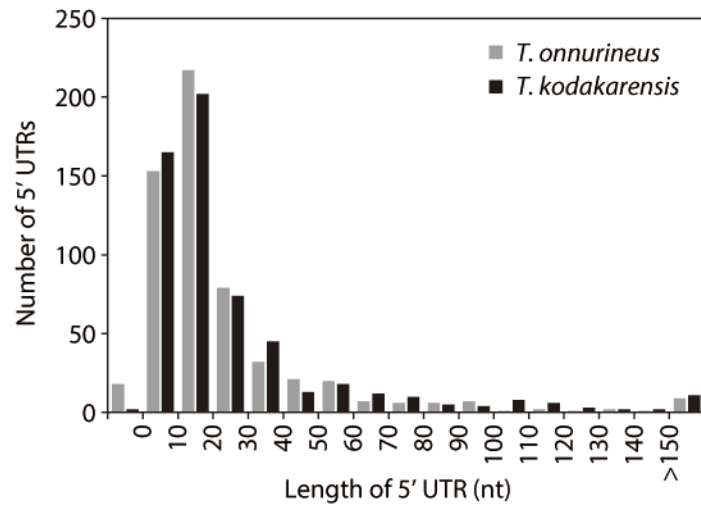
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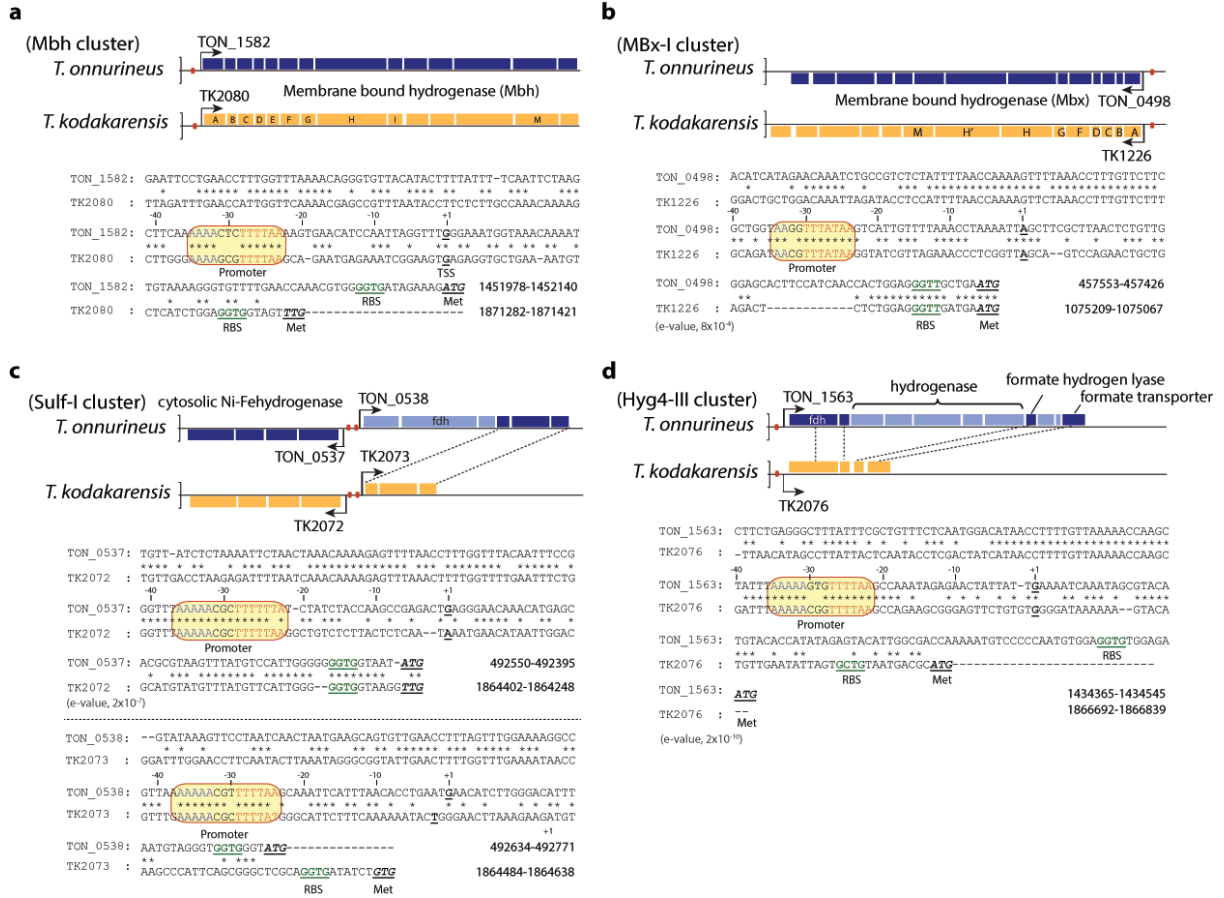
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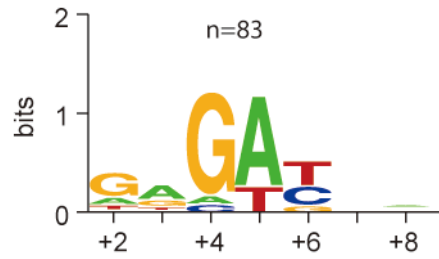
Supplementary Fig. S7. TSS determination of ncRNAs by 5' Rapid Amplification of cDNA Ends (5'RACE). (a) The TSSs of nc_050 and nc_077 corresponding to archaeal signal recognition particle RNA and Archaeal RNase P, respectively, were newly found by dRNA-seq and their DNA sizes were confirmed using agarose gel electrophoresis (2.5%). (b) The DNA sequence was determined by Sanger sequencing.



Supplementary Fig. S8. The distribution of 5' UTR length of *T. onnurineus* NA1 and *T. kodakarensis* orthologous genes.



Supplementary Fig. S9. The promoter, its regulatory upstream DNA sequence, and 5' UTR between orthologous genes in *T. onnurineus* and *T. kodakarensis*. Among Mbh, Mbx-I, and Sulf-I, and Hyg4-III clusters, the upstream sequences of orthologous genes were each aligned and compared. Their promoters, RBSs, and start codons were analyzed together.



Supplementary Fig. S10. The INR motif in 5' UTRs of *T. onnurineus* NA1. The initiator element (Inr) motif was searched from positions +2–+8 downstream of TSSs in 328 leadered RNAs which have a 5' UTR length > 19 nt. In result, 83 RNAs showed a conserved GAGAT motif (p-val < 0.05; MEME).

Supplementary Table 1. NGS Sequencing results

	dRNA-seq		ssRNA-seq		
	TEX+	TEX-	YPS	CO	Formate
Total reads	4,150,751	7,754,462	24,032,700	21,475,352	18,657,279
Total mapped reads	1,449,816	4,860,704	23,186,484	19,664,249	17,750,691
Uniquely mapped reads	1,448,204	4,857,961	23,127,009	19,634,732	17,703,832
% of mapped reads	34.89%	62.65%	96.23%	91.43%	94.89%
Average length	103.62	112.12	35.75	35.93	35.9
Number of bases	150,062,898	544,674,587	826,846,321	705,405,046	635,582,990

Supplementary Table 2. Determination of transcription units architecture

TU	TSS	Strand	Abundance	Category	Current Annotation Assembly	operon start	operon end	Gene start	Gene end	5'-UTR-length
TU0001	4783	-	-3	P	TON_0002	TON_0002	TON_0002	4774	4079	9
TU0002	6374	-	-5558	P	TON_0004; TON_0003	TON_0004	TON_0003	6473	4815	-99
TU0003	6426	+	69	P	TON_0005	TON_0005	TON_0005	6437	7906	11
TU0004	8069	+	25	P	TON_0006	TON_0006	TON_0006	8069	9247	0
TU0005	9257	+	44	P	TON_0007	TON_0007	TON_0007	9286	11511	29
TU0006	11555	+	122	P	TON_0008	TON_0008	TON_0008	11580	11834	25
TU0007	12474	+	5	P	TON_0009	TON_0009	TON_0009	12484	12699	10
TU0008	14671	-	-24	P	TON_0012	TON_0012	TON_0012	14661	14275	10
TU0009	14744	+	241	P	TON_0013	TON_0013	TON_0013	14754	15152	10
TU0010	15233	+	1	P	TON_0014	TON_0014	TON_0014	15273	16313	40
TU0011	16345	+	1	P	TON_0015; TON_0016	TON_0015	TON_0016	16353	17779	8
TU0012	19367	-	-28	P	TON_0017	TON_0017	TON_0017	19359	18313	8
TU0013	19403	+	24	P	TON_0018	TON_0018	TON_0018	19415	19738	12
TU0014	23264	-	-1	P	TON_0020	TON_0020	TON_0020	23269	21353	-5
TU0015	23885	-	-8	P	TON_0022	TON_0022	TON_0022	23875	23624	10
TU0016	23960	+	496	P	TON_0023	TON_0023	TON_0023	23969	24256	9
TU0017	25032	-	-990	P	TON_0025	TON_0025	TON_0025	25022	24573	10
TU0018	25333	+	3	P	TON_0027; TON_0028; TON_0029; TON_0030; TON_0031	TON_0027	TON_0031	25378	29206	45
TU0019	25830	+	10	I	TON_0027; TON_0028; TON_0029; TON_0030; TON_0031	TON_0027	TON_0031	25378	29206	-
TU0020	29564	+	277	P	TON_0033	TON_0033	TON_0033	29596	29994	32
TU0021	31229	-	-83	P	TON_0035	TON_0035	TON_0035	31220	30696	9
TU0022	33167	-	-23	P	TON_0037	TON_0037	TON_0037	33151	32309	16
TU0023	36831	-	-1139	P	TON_0041; TON_0040; TON_0039; TON_0038	TON_0041	TON_0038	36801	33235	30
TU0024	36882	+	200	N	TON_nc001	TON_nc001	TON_nc001	-	-	-
TU0025	37394	-	-801	P	TON_0042	TON_0042	TON_0042	37382	36951	12
TU0026	41339	-	-6	I	TON_0044; TON_0043	TON_0044	TON_0043	41418	37451	-
TU0027	41434	-	-7	P	TON_0044; TON_0043	TON_0044	TON_0043	41418	37451	16
TU0028	41518	+	153	P	TON_0045	TON_0045	TON_0045	41527	42039	9
TU0029	43552	-	-203	P	TON_0047	TON_0047	TON_0047	43543	42953	9

TU0030	44713	+	2309	P	TON_0049	TON_0049	TON_0049	44714	45553	1
TU0031	46757	-	-1	P	TON_0051	TON_0051	TON_0051	46742	46419	15
TU0032	50678	-	-11	P	TON_0055; TON_0054; TON_0053; TON_0052	TON_0055	TON_0052	50648	46791	30
TU0033	50789	+	3	P	TON_0056; TON_0057	TON_0056	TON_0057	50799	53059	10
TU0034	54045	-	-15	P	TON_0058	TON_0058	TON_0058	54034	53132	11
TU0035	54224	+	67	P	TON_0059	TON_0059	TON_0059	54235	54828	11
TU0036	55604	-	-166	P	TON_0060	TON_0060	TON_0060	55592	54831	12
TU0037	56789	-	-584	P	TON_0061	TON_0061	TON_0061	56777	55623	12
TU0038	58117	+	955	P	TON_0063	TON_0063	TON_0063	58197	58745	80
TU0039	58954	+	5	P	TON_0064	TON_0064	TON_0064	58963	60105	9
TU0040	60514	+	32	P	TON_0065; TON_0066; TON_0067; TON_0068; TON_0069; TON_0070; TON_0071; TON_0072; TON_0073; TON_0074; TON_0075; TON_0076; TON_0077; TON_0078; TON_0079; TON_0080; TON_0081; TON_0082; TON_0083; TON_0084; TON_0085;	TON_0065	TON_0089	60403	74583	-111
TU0041	74636	+	5262	P	TON_0090; TON_0091	TON_0090	TON_0091	74659	75769	23
TU0042	75181	+	8	P	TON_0091	TON_0091	TON_0091	75242	75769	61
TU0043	75800	+	326	P	TON_0092	TON_0092	TON_0092	75812	76084	12
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TU0045	77128	+	28	I	TON_0095	TON_0095	TON_0095	77020	77727	-
TU0046	77764	+	48	P	TON_0096	TON_0096	TON_0096	77788	78792	24
TU0047	78016	+	12	I	TON_0096	TON_0096	TON_0096	77788	78792	-
TU0048	79015	+	1	P	TON_0097; TON_0098	TON_0097	TON_0098	79038	80839	23
TU0049	81023	+	62	N	TON_nc002	TON_nc002	TON_nc002	-	-	-
TU0050	81382	+	1	P	TON_0099	TON_0099	TON_0099	81381	81683	-1
TU0051	82522	+	27	P	TON_0101; TON_1984	TON_0101	TON_1984	82480	83181	-42
TU0052	83221	+	5	P	TON_0102; TON_0103; TON_0104	TON_0102	TON_0104	83221	84639	0
TU0053	85449	+	201	P	TON_1985	TON_1985	TON_1985	85452	85539	-
TU0054	86364	+	5	P	TON_0108	TON_0108	TON_0108	86402	86809	38
TU0055	86538	+	10	I	TON_0108	TON_0108	TON_0108	86402	86809	-
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TU0091	133450	+	737	N	TON_nc005	TON_nc005	TON_nc005	-	-	-
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TU0097	147445	-	-14	P	TON_0169	TON_0169	TON_0169	147436	146837	9
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TU0111	167269	-	-13	P	TON_0190	TON_0190	TON_0190	167247	165961	22
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TU0113	171388	+	17	A	TON_nc007	TON_nc007	TON_nc007	-	-	-
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TU0115	172560	+	1099	P	TON_0194	TON_0194	TON_0194	172558	172758	-2
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TU0123	186637	-	-25	P	TON_0209	TON_0209	TON_0209	186637	185957	0
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TU0125	189274	+	10	P	TON_0213; TON_0214	TON_0213	TON_0214	189304	192153	30
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TU0128	205720	-	-1341	P	TON_0226; TON_0225	TON_0226	TON_0225	205622	205090	98
TU0129	206955	-	-18	P	TON_0227	TON_0227	TON_0227	206954	205689	1
TU0130	207172	+	16	P	TON_1993	TON_1993	TON_1993	207172	207246	-
TU0131	207505	+	41	P	TON_0228	TON_0228	TON_0228	207515	207718	10
TU0132	209468	-	-9	A	TON_nc009	TON_nc009	TON_nc009	-	-	-
TU0133	211496	-	-82	P	TON_0231	TON_0231	TON_0231	211486	210287	10
TU0134	211611	+	247	N	TON_nc010	TON_nc010	TON_nc010	211715	212541	-
TU0135	212580	+	6	P	TON_0234	TON_0234	TON_0234	212603	212782	23
TU0136	212920	+	1490	P	TON_0235; TON_0236	TON_0235	TON_0236	213001	213486	81
TU0137	213555	+	151	P	TON_0237; TON_0238; TON_0239	TON_0237	TON_0239	213583	215403	28
TU0138	215503	+	34	P	TON_U240; TON_U241; TON_U242; TON_0243	TON_0240	TON_0243	215538	217855	35
TU0139	220620	-	-87	P	TON_0245; TON_0244	TON_0245	TON_0244	220596	217845	24
TU0140	222046	-	-1	P	TON_0246	TON_0246	TON_0246	222033	220672	13
TU0141	223526	-	-214	P	TON_0249; TON_0248	TON_0249	TON_0248	223515	222743	11
TU0142	223751	-	-2229	P	TON_0250	TON_0250	TON_0250	223750	223565	1
TU0143	225380	-	-11	P	TON_0252; TON_0251; TON_0250	TON_0252	TON_0250	225380	223565	0
TU0144	225456	+	4027	P	TON_0253	TON_0253	TON_0253	225469	226428	13
TU0145	230054	-	-11	P	TON_U257; TON_U256; TON_U255; TON_0254	TON_0257	TON_0254	230045	226396	9
TU0146	230156	+	944	P	TON_0258	TON_0258	TON_0258	230165	230539	9
TU0147	232854	-	-8	P	TON_0260	TON_0260	TON_0260	232845	231958	9
TU0148	232988	+	176	P	TON_0261; TON_0262	TON_0261	TON_0262	232997	234159	9
TU0149	250426	-	-38	P	TON_0281; TON_0280; TON_0279; TON_0278; TON_0277; TON_0276; TON_0275; TON_0274; TON_0273; TON_0272; TON_0271; TON_0270; TON_0269; TON_0268; TON_0267;	TON_0281	TON_0264	250391	234875	35

TU0150	251610	+	76	P	TON_0283; TON_0284; TON_0285; TON_0286; TON_0287	TON_0283	TON_0287	251621	256432	11
TU0151	256502	+	62	P	TON_0288; TON_0289	TON_0288	TON_0289	256511	258000	9
TU0152	262074	-	-37	P	TON_0295; TON_0294; TON_0293	TON_0295	TON_0293	261880	260693	194
TU0153	266909	+	2	P	TON_0301; TON_0302; TON_0303	TON_0301	TON_0303	266920	269317	11
TU0154	267051	+	5	I	TON_0301; TON_0302; TON_0303	TON_0301	TON_0303	266920	269317	-
TU0155	272031	-	-18	P	TON_0305	TON_0305	TON_0305	272021	270696	10
TU0156	273258	-	-39	P	TON_0306	TON_0306	TON_0306	273247	272081	11
TU0157	273610	-	-76	P	TON_0307	TON_0307	TON_0307	273600	273301	10
TU0158	277948	-	-6	P	TON_0308	TON_0308	TON_0308	277922	273678	26
TU0159	278589	+	21	A	TON_nc011	TON_nc011	TON_nc011	-	-	-
TU0160	279211	-	-113	P	TON_0309	TON_0309	TON_0309	279202	278165	9
TU0161	279215	+	2	P	TON_0310	TON_0310	TON_0310	279260	281725	45
TU0162	281989	+	428	P	TON_0311	TON_0311	TON_0311	282016	284364	27
TU0163	284515	+	1	P	TON_0312	TON_0312	TON_0312	284522	285907	7
TU0164	285939	+	1	P	TON_0313	TON_0313	TON_0313	285947	287371	8
TU0165	287499	+	8	S	TON_0314	TON_0314	TON_0314	287594	288262	-
TU0166	287585	+	155	P	TON_0314	TON_0314	TON_0314	287594	288262	9
TU0167	288900	+	2	P	TON_0315	TON_0315	TON_0315	288910	291063	10
TU0168	293209	+	917	P	TON_0319	TON_0319	TON_0319	293284	293964	75
TU0169	293230	-	-1192	P	TON_0318; TON_0317; TON_0316	TON_0318	TON_0316	293148	291064	82
TU0170	295789	-	-83	N	TON_nc012	TON_nc012	TON_nc012	-	-	-
TU0171	298133	-	-30	P	TON_0322	TON_0322	TON_0322	297965	297243	168
TU0172	302937	-	-2734	P	TON_0327	TON_0327	TON_0327	302914	302216	23
TU0173	303051	+	13	P	TON_0328	TON_0328	TON_0328	303061	304359	10
TU0174	304599	-	-266	P	TON_0329	TON_0329	TON_0329	304589	304356	10
TU0175	304674	+	3	P	TON_0330	TON_0330	TON_0330	304686	305216	12
TU0176	305255	+	148	P	TON_0331	TON_0331	TON_0331	305268	308933	13
TU0177	309192	+	125	P	TON_0332	TON_0332	TON_0332	309336	310130	144
TU0178	310451	-	-4254	P	TON_0333	TON_0333	TON_0333	310418	310206	33
TU0179	311484	-	-6	P	TON_0335; TON_0334; TON_0333	TON_0335	TON_0333	311474	310206	10
TU0180	311590	+	47	P	TON_0336; TON_0337; TON_0338; TON_0339; TON_0340; TON_0341	TON_0336	TON_0341	311613	315859	23

TU0181	312832	+	87	P	TON_0337; TON_0338; TON_0339; TON_0340; TON_0341	TON_0337	TON_0341	312843	315859	11
TU0182	315921	+	5	P	TON_0342; TON_0343	TON_0342	TON_0343	315962	317820	41
TU0183	317853	+	24	P	TON_0344	TON_0344	TON_0344	317881	319929	28
TU0184	319979	+	1	P	TON_0345; TON_0346	TON_0345	TON_0346	319989	321599	10
TU0185	321653	+	22	P	TON_0347	TON_0347	TON_0347	321664	322371	11
TU0186	323711	-	-97	P	TON_0348	TON_0348	TON_0348	323702	322554	9
TU0187	324665	+	99	P	TON_0349	TON_0349	TON_0349	324677	324964	12
TU0188	324895	+	8	P	TON_0350	TON_0350	TON_0350	324977	325357	82
TU0189	326273	-	-2	P	TON_0351	TON_0351	TON_0351	326263	325364	10
TU0190	326370	+	5	P	TON_0352	TON_0352	TON_0352	326389	327990	19
TU0191	328887	-	-9	P	TON_0353	TON_0353	TON_0353	328877	327987	10
TU0192	328963	+	215	P	TON_0354	TON_0354	TON_0354	328995	329387	32
TU0193	329509	+	42	P	TON_0355	TON_0355	TON_0355	329520	330446	11
TU0194	332399	-	-54	P	TON_0357	TON_0357	TON_0357	332388	331582	11
TU0195	332436	+	3	P	TON_0358; TON_0359; TON_0360	TON_0358	TON_0360	332446	335623	10
TU0196	334794	-	-18	A	TON_nc013	TON_nc013	TON_nc013	-	-	-
TU0197	334908	-	-4	A	TON_nc014	TON_nc014	TON_nc014	-	-	-
TU0198	336823	-	-256	P	TON_0361	TON_0361	TON_0361	336807	335632	16
TU0199	336946	+	22	P	TON_1997	TON_1997	TON_1997	336950	337037	-
TU0200	338027	-	-61	P	TON_0362	TON_0362	TON_0362	338016	337129	11
TU0201	338106	+	7	P	TON_0363; TON_0364	TON_0363	TON_0364	338115	340447	9
TU0202	341825	-	-4	P	TON_0366; TON_0365	TON_0366	TON_0365	341775	340407	50
TU0203	342723	-	-589	P	TON_0368; TON_0367	TON_0368	TON_0367	342712	341772	11
TU0204	343914	-	-77	P	TON_0369	TON_0369	TON_0369	343889	342852	25
TU0205	345893	-	-43	P	TON_0371; TON_0370	TON_0371	TON_0370	345882	343965	11
TU0206	345944	+	1045	P	TON_0372; TON_0373	TON_0372	TON_0373	345954	347279	10
TU0207	347369	+	9945	P	TON_0374	TON_0374	TON_0374	347380	348060	11
TU0208	350753	-	-14	P	TON_0376	TON_0376	TON_0376	350742	348859	11
TU0209	350852	+	207	P	TON_0377; TON_0378; TON_0379	TON_0377	TON_0379	350863	352362	11
TU0210	353771	+	44	P	TON_0381	TON_0381	TON_0381	353781	354167	10
TU0211	354861	-	-4	I	TON_0382	TON_0382	TON_0382	354968	354162	-

TU0212	354978	-	-17	P	TON_0382	TON_0382	TON_0382	354968	354162	10
TU0213	355053	+	55	P	TON_0383; TON_0384; TON_0385	TON_0383	TON_0385	355063	357556	10
TU0214	358363	-	-80	P	TON_0386	TON_0386	TON_0386	358352	357534	11
TU0215	360597	+	1	P	TON_0390; TON_0391	TON_0390	TON_0391	360644	362433	47
TU0216	363724	-	-3	S	TON_0392	TON_0392	TON_0392	363754	362489	-
TU0217	363764	-	-8	P	TON_0392	TON_0392	TON_0392	363754	362489	10
TU0218	363814	+	8	P	TON_0393	TON_0393	TON_0393	363822	365198	8
TU0219	365972	-	-163	P	TON_0394	TON_0394	TON_0394	365972	365169	0
TU0220	366125	+	24	N	TON_nc015	TON_nc015	TON_nc015	-	-	-
TU0221	366207	+	4	N	TON_nc016	TON_nc016	TON_nc016	-	-	-
TU0222	369574	-	-202	P	TON_0396; TON_0395	TON_0396	TON_0395	369560	366326	14
TU0223	370708	-	-312	P	TON_0397	TON_0397	TON_0397	370684	369632	24
TU0224	370826	+	3	P	TON_0398; TON_0399; TON_0400	TON_0398	TON_0400	370845	372938	19
TU0225	373067	+	9	P	TON_0401	TON_0401	TON_0401	373079	373765	12
TU0226	377032	-	-33	P	TON_0403; TON_0402	TON_0403	TON_0402	377020	373803	12
TU0227	377421	-	-103	P	TON_0404	TON_0404	TON_0404	377504	377127	-83
TU0228	377422	+	831	P	TON_0405	TON_0405	TON_0405	377466	378626	44
TU0229	378661	+	68	P	TON_0406; TON_0407	TON_0406	TON_0407	378720	379435	59
TU0230	379493	+	83	P	TON_0408; TON_0409	TON_0408	TON_0409	379505	380940	12
TU0231	381538	-	-38	P	TON_0410	TON_0410	TON_0410	381528	380974	10
TU0232	381622	+	2	P	TON_0411	TON_0411	TON_0411	381622	383367	0
TU0233	384143	-	-21	P	TON_0412	TON_0412	TON_0412	384136	383357	7
TU0234	386096	-	-26	P	TON_0413	TON_0413	TON_0413	386038	384182	58
TU0235	387090	-	-9	P	TON_0414	TON_0414	TON_0414	387062	386238	28
TU0236	388122	-	-78	P	TON_0415; TON_0414	TON_0415	TON_0414	388111	386238	11
TU0237	390945	-	-41	P	TON_0418; TON_0417; TON_0416	TON_0418	TON_0416	390936	388137	9
TU0238	391969	-	-1	P	TON_0419	TON_0419	TON_0419	391962	391027	7
TU0239	394048	-	-1	P	TON_0421	TON_0421	TON_0421	394030	392765	18
TU0240	394086	+	873	P	TON_0422	TON_0422	TON_0422	394096	394566	10
TU0241	394587	+	16	P	TON_0423	TON_0423	TON_0423	394587	396308	0
TU0242	396068	-	-5	A	TON_nc017	TON_nc017	TON_nc017	-	-	-
TU0243	396263	+	45	P	TON_0424	TON_0424	TON_0424	396395	397735	132

TU0244	397415	-	-15	A	TON_nc018	TON_nc018	TON_nc018	-	-	-
TU0245	398613	-	-1	P	TON_0425	TON_0425	TON_0425	398601	397738	12
TU0246	399116	-	-9	P	TON_0426	TON_0426	TON_0426	399087	398677	29
TU0247	400588	-	-2	P	TON_0427	TON_0427	TON_0427	400542	399163	46
TU0248	402378	-	-57	P	TON_0429; TON_0428	TON_0429	TON_0428	402369	400644	9
TU0249	402428	+	1	P	TON_0430; TON_0431	TON_0430	TON_0431	402429	403969	1
TU0250	402973	+	11	P	TON_0431	TON_0431	TON_0431	403007	403969	34
TU0251	405258	-	-270	P	TON_0433; TON_0432	TON_0433	TON_0432	405235	403938	23
TU0252	407250	-	-4	P	TON_0435; TON_0434	TON_0435	TON_0434	407240	405296	10
TU0253	407463	+	31	P	TON_0436	TON_0436	TON_0436	407475	407981	12
TU0254	408057	+	21	P	TON_0437	TON_0437	TON_0437	408067	408804	10
TU0255	411394	+	148	P	TON_0440	TON_0440	TON_0440	411370	412101	-24
TU0256	412613	-	-334	P	TON_0441	TON_0441	TON_0441	412601	412098	12
TU0257	412723	+	327	P	TON_0442	TON_0442	TON_0442	412733	413965	10
TU0258	420659	-	-5	P	TON_0447; TON_0446	TON_0447	TON_0446	420645	418875	14
TU0259	421043	-	-23	P	TON_0448	TON_0448	TON_0448	421022	420696	21
TU0260	422728	-	-17	P	TON_0451	TON_0451	TON_0451	422701	422351	27
TU0261	423634	-	-100	P	TON_0453; TON_0452	TON_0453	TON_0452	423627	422765	7
TU0262	424162	-	-198	P	TON_0455	TON_0455	TON_0455	424126	423866	36
TU0263	424692	-	-25	N	TON_nc019	TON_nc019	TON_nc019	-	-	-
TU0264	424741	+	122	P	TON_0456	TON_0456	TON_0456	424751	425251	10
TU0265	426800	+	912	P	TON_0460; TON_0461	TON_0460	TON_0461	426893	428868	93
TU0266	432674	-	-57	P	TON_0466	TON_0466	TON_0466	432666	432205	8
TU0267	432789	+	146	P	TON_1970	TON_1970	TON_1970	432720	433067	-69
TU0268	433524	-	-5	P	TON_0468	TON_0468	TON_0468	433513	433262	11
TU0269	434088	-	-2	P	TON_0469	TON_0469	TON_0469	434078	433614	10
TU0270	434162	+	123	P	TON_0470	TON_0470	TON_0470	434172	434789	10
TU0271	434852	+	450	P	TON_0471	TON_0471	TON_0471	434852	435580	0
TU0272	435934	-	-16	P	TON_0472	TON_0472	TON_0472	435922	435572	12
TU0273	437394	-	-96	P	TON_0474	TON_0474	TON_0474	437383	436568	11
TU0274	437840	-	-183	P	TON_0475	TON_0475	TON_0475	437840	437454	0
TU0275	438147	+	20	P	TON_0476	TON_0476	TON_0476	438181	439545	34

TU0276	440143	+	894	P	TON_0479; TON_0480; TON_0481	TON_0479	TON_0481	440156	442889	13
TU0277	441478	+	506	P	TON_0480; TON_0481	TON_0480	TON_0481	441498	442889	20
TU0278	444869	+	24	P	TON_0484	TON_0484	TON_0484	444877	446178	8
TU0279	446804	-	-16	P	TON_0485	TON_0485	TON_0485	446793	446209	11
TU0280	456707	-	-97	P	TON_0498; TON_0497; TON_0496; TON_0495; TON_0494; TON_0493; TON_0492; TON_0491; TON_0490; TON_0489; TON_0488; TON_0487;	TON_0498	TON_0486	456653	446875	54
TU0281	457453	-	-841	P	TON_0499	TON_0499	TON_0499	457428	456928	25
TU0282	457498	-	-12	S	TON_0499	TON_0499	TON_0499	457428	456928	-
TU0283	459096	-	-21	N	TON_nc020	TON_nc020	TON_nc020	-	-	-
TU0284	461617	-	-169	P	TON_0502; TON_0501	TON_0502	TON_0501	461607	459188	10
TU0285	461882	+	95	P	TON_0503	TON_0503	TON_0503	461893	463020	11
TU0286	463827	-	-444	P	TON_0504; TON_1971	TON_0504	TON_1971	463817	462955	10
TU0287	463877	+	128	P	TON_0505	TON_0505	TON_0505	463887	465815	10
TU0288	468013	-	-97	P	TON_0507	TON_0507	TON_0507	467982	466735	31
TU0289	468809	-	-4	P	TON_0509	TON_0509	TON_0509	468805	468326	4
TU0290	469464	-	-220	P	TON_0510	TON_0510	TON_0510	469438	469262	26
TU0291	469516	+	7	P	TON_0511	TON_0511	TON_0511	469556	470119	40
TU0292	471373	-	-21	P	TON_0512	TON_0512	TON_0512	471359	470109	14
TU0293	472974	-	-7	P	TON_0514; TON_0513	TON_0514	TON_0513	472965	471403	9
TU0294	473065	+	1	P	TON_0515	TON_0515	TON_0515	473544	474248	479
TU0295	474326	+	5	P	TON_1998	TON_1998	TON_1998	474335	474412	-
TU0296	474682	+	4	P	TON_0516	TON_0516	TON_0516	474692	475237	10
TU0297	475275	+	474	P	TON_0517	TON_0517	TON_0517	475321	475776	46
TU0298	478178	+	12	P	TON_0521	TON_0521	TON_0521	478189	479244	11
TU0299	480092	-	-14	P	TON_0522	TON_0522	TON_0522	480085	479372	7
TU0300	480634	-	-1061	P	TON_0523	TON_0523	TON_0523	480612	480163	22
TU0301	481130	-	-296	P	TON_0524	TON_0524	TON_0524	481086	480784	44
TU0302	481480	-	-156	P	TON_0525; TON_0524	TON_0525	TON_0524	481469	480784	11
TU0303	483202	-	-80	P	TON_0528; TON_0527	TON_0528	TON_0527	483192	481929	10
TU0304	483287	+	64	P	TON_0529	TON_0529	TON_0529	483311	485218	24
TU0305	485322	+	26	P	TON_0530; TON_0531	TON_0530	TON_0531	485334	487410	12

TU0306	487505	+	15	P	TON_0532	TON_0532	TON_0532	487523	487816	18
TU0307	488292	-	-36	P	TON_0533	TON_0533	TON_0533	488280	487831	12
TU0308	492450	-	-62	P	TON_0537; TON_0536; TON_0535; TON_0534	TON_0537	TON_0534	492397	488328	53
TU0309	492734	+	62	P	TON_0538; TON_0539; TON_0540; TON_0541; TON_0542; TON_0543	TON_0538	TON_0543	492769	498286	35
TU0310	498551	+	203	P	TON_0544	TON_0544	TON_0544	498574	499794	23
TU0311	502213	-	-9	P	TON_0546	TON_0546	TON_0546	502189	500315	24
TU0312	503530	-	-40	P	TON_0547	TON_0547	TON_0547	503480	502293	50
TU0313	504419	-	-1555	N	TON_nc021	TON_nc021	TON_nc021	504170	503598	-
TU0314	505327	-	-24	P	TON_0549	TON_0549	TON_0549	505327	504458	0
TU0315	507140	-	-19	P	TON_0551	TON_0551	TON_0551	507127	506333	13
TU0316	507260	+	15	P	TON_0552	TON_0552	TON_0552	507269	508009	9
TU0317	508051	+	402	N	TON_nc022	TON_nc022	TON_nc022	-	-	-
TU0318	509870	+	3	P	TON_0554	TON_0554	TON_0554	509938	511401	68
TU0319	509881	-	-23	P	TON_0553	TON_0553	TON_0553	509824	508118	57
TU0320	511623	-	-622	P	TON_0555	TON_0555	TON_0555	511613	511404	10
TU0321	514034	-	-379	P	TON_0559	TON_0559	TON_0559	514025	513408	9
TU0322	514335	+	881	P	TON_0560	TON_0560	TON_0560	514360	515577	25
TU0323	515633	+	15	A	TON_nc023	TON_nc023	TON_nc023	-	-	-
TU0324	515850	-	-899	P	TON_0561	TON_0561	TON_0561	515898	515623	-48
TU0325	515958	+	4	P	TON_0562; TON_0563; TON_0564	TON_0562	TON_0564	515978	518045	20
TU0326	519221	-	-29	P	TON_0565	TON_0565	TON_0565	519211	518042	10
TU0327	520972	+	2091	P	TON_0567	TON_0567	TON_0567	520987	521373	15
TU0328	522910	-	-18	P	TON_0568	TON_0568	TON_0568	522899	521451	11
TU0329	523014	+	13	P	TON_0569; TON_0570	TON_0569	TON_0570	523025	525032	11
TU0330	526374	+	5	P	TON_0573	TON_0573	TON_0573	526374	527105	0
TU0331	527142	+	19	P	TON_0574	TON_0574	TON_0574	527152	527373	10
TU0332	529728	+	24218	P	TON_0577	TON_0577	TON_0577	529740	530981	12
TU0333	534214	-	-165	P	TON_0579	TON_0579	TON_0579	534204	532003	10
TU0334	534355	+	4	P	TON_0580	TON_0580	TON_0580	534384	534731	29
TU0335	535198	-	-17	P	TON_0581	TON_0581	TON_0581	535198	534728	0
TU0336	540666	-	-556	P	TON_0588; TON_0587; TON_0586; TON_0585; TON_0584; TON_0583;	TON_0588	TON_0582	540645	535259	21

TU0337	541778	-	-10	P	TON_0589	TON_0589	TON_0589	541767	540796	11
TU0338	541829	+	496	P	TON_0590	TON_0590	TON_0590	541829	542611	0
TU0339	544115	-	-36	P	TON_0592	TON_0592	TON_0592	544104	543199	11
TU0340	544214	-	-309	N	TON_nc024	TON_nc024	TON_nc024	-	-	-
TU0341	544701	-	-4	P	TON_0593	TON_0593	TON_0593	544694	544245	7
TU0342	544797	+	28	P	TON_0594; TON_0595; TON_0596;	TON_0594	TON_0597	544818	549534	21
TU0343	550580	-	-89	P	TON_0597	TON_0598	TON_0598	550567	549584	13
TU0344	552785	-	-142	P	TON_0600	TON_0600	TON_0600	552763	552428	22
TU0345	553435	-	-435	P	TON_0601	TON_0601	TON_0601	553423	552776	12
TU0346	554961	-	-4	P	TON_0602	TON_0602	TON_0602	554945	553515	16
TU0347	555041	+	10	P	TON_0603	TON_0603	TON_0603	555062	556111	21
TU0348	556149	+	11	P	TON_0604	TON_0604	TON_0604	556149	556751	0
TU0349	556787	+	19	P	TON_0605	TON_0605	TON_0605	556787	557539	0
TU0350	559435	-	-49	P	TON_0606	TON_0606	TON_0606	559424	557499	11
TU0351	560425	-	-11	P	TON_0607	TON_0607	TON_0607	560386	559928	39
TU0352	563238	-	-14	P	TON_0610; TON_0609; TON_0608	TON_0610	TON_0608	563238	560452	0
TU0353	563328	+	2	P	TON_0611	TON_0611	TON_0611	563339	565189	11
TU0354	565299	+	29	P	TON_0612	TON_0612	TON_0612	565310	566014	11
TU0355	570176	-	-124	P	TON_0613	TON_0613	TON_0613	570175	566006	1
TU0356	570257	+	19	P	TON_0614	TON_0614	TON_0614	570267	570542	10
TU0357	570567	+	7	P	TON_0615	TON_0615	TON_0615	570567	571616	0
TU0358	572673	+	44	P	TON_0617	TON_0617	TON_0617	572684	574426	11
TU0359	574466	+	108	P	TON_1999	TON_1999	TON_1999	574470	574546	-
TU0360	578314	-	-109	P	TON_0619	TON_0619	TON_0619	578313	577168	1
TU0361	578454	+	50	P	TON_0620	TON_0620	TON_0620	578484	579212	30
TU0362	579244	+	3224	P	TON_0621	TON_0621	TON_0621	579317	579970	73
TU0363	586728	-	-196	P	TON_0628	TON_0628	TON_0628	586728	585844	0
TU0364	586814	+	2	P	TON_0629; TON_0630	TON_0629	TON_0630	586852	588584	38
TU0365	591969	+	136	P	TON_0636	TON_0636	TON_0636	591980	594619	11
TU0366	596355	-	-23	P	TON_0638; TON_0637	TON_0638	TON_0637	596346	594677	9
TU0367	596492	+	5	P	TON_0639	TON_0639	TON_0639	596501	597505	9
TU0368	601325	-	-68	P	TON_0643	TON_0643	TON_0643	601314	599611	11

TU0369	601434	+	1675	P	TON_0644	TON_0644	TON_0644	601464	601700	30
TU0370	604533	-	-351	P	TON_0647	TON_0647	TON_0647	604521	603427	12
TU0371	606054	-	-32	P	TON_0649	TON_0649	TON_0649	606038	605772	16
TU0372	606743	-	-24	P	TON_0650	TON_0650	TON_0650	606743	606087	0
TU0373	606821	+	8	P	TON_0651	TON_0651	TON_0651	606831	607877	10
TU0374	607002	+	12	I	TON_0651	TON_0651	TON_0651	606831	607877	-
TU0375	610808	-	-48	P	TON_0654; TON_0653	TON_0654	TON_0653	610808	609019	0
TU0376	611270	-	-37	P	TON_0655	TON_0655	TON_0655	611244	610846	26
TU0377	614026	+	4	P	TON_0659	TON_0659	TON_0659	614035	615276	9
TU0378	616242	-	-128	P	TON_0660	TON_0660	TON_0660	616231	615428	11
TU0379	616322	+	50	P	TON_0661	TON_0661	TON_0661	616332	616817	10
TU0380	616826	+	150	P	TON_0662; TON_0663	TON_0662	TON_0663	616866	617870	40
TU0381	617898	+	9	P	TON_0664; TON_0665	TON_0664	TON_0665	617950	619295	52
TU0382	620485	-	-27	P	TON_0666	TON_0666	TON_0666	620475	619282	10
TU0383	620572	+	18	S	TON_0667	TON_0667	TON_0667	620716	620910	-
TU0384	620595	+	62	P	TON_0667	TON_0667	TON_0667	620716	620910	121
TU0385	622344	-	-14	P	TON_0670	TON_0670	TON_0670	622114	621770	230
TU0386	622438	+	11	P	TON_0671; TON_0672	TON_0671	TON_0672	622462	625165	24
TU0387	626254	-	-20	P	TON_0673	TON_0673	TON_0673	626244	625249	10
TU0388	626359	+	4	P	TON_2000	TON_2000	TON_2000	626359	626436	-
TU0389	626597	+	2294	P	TON_0674	TON_0674	TON_0674	626783	627535	186
TU0390	626775	+	12	S	TON_0674	TON_0674	TON_0674	626783	627535	-
TU0391	627638	+	5	P	TON_0675	TON_0675	TON_0675	627600	628757	-38
TU0392	629366	-	-63	P	TON_0676	TON_0676	TON_0676	629355	628774	11
TU0393	632197	-	-245	P	TON_0677	TON_0677	TON_0677	632166	629512	31
TU0394	635715	-	-68	P	TON_0680; TON_0679; TON_0678	TON_0680	TON_0678	635715	633150	0
TU0395	635749	+	96	P	TON_0681; TON_0682; TON_0683; TON_0684	TON_0681	TON_0684	635758	637756	9
TU0396	638885	-	-1	P	TON_0685	TON_0685	TON_0685	638885	637770	0
TU0397	640935	-	-1	P	TON_0687	TON_0687	TON_0687	640919	639465	16
TU0398	641032	+	19	P	TON_0688	TON_0688	TON_0688	640988	641995	-44
TU0399	642579	-	-4	P	TON_0689	TON_0689	TON_0689	642579	641992	0
TU0400	642682	+	42	P	TON_0690; TON_0691	TON_0690	TON_0691	642692	644400	10

TU0401	644706	-	-5940	P	TON_0692	TON_0692	TON_0692	644697	644476	9
TU0402	645021	-	-8	N	TON_nc025	TON_nc025	TON_nc025	-	-	-
TU0403	647218	-	-189	P	TON_0694; TON_0693	TON_0694	TON_0693	647218	645060	0
TU0404	647340	+	45	P	TON_0695	TON_0695	TON_0695	647359	648642	19
TU0405	648307	+	29	I	TON_0695	TON_0695	TON_0695	647359	648642	-
TU0406	650928	-	-18	P	TON_0697	TON_0697	TON_0697	650927	649968	1
TU0407	650959	+	621	P	TON_0698	TON_0698	TON_0698	650970	651503	11
TU0408	653988	-	-248	P	TON_0700	TON_0700	TON_0700	653988	652816	0
TU0409	655083	-	-116	P	TON_0701	TON_0701	TON_0701	655083	654076	0
TU0410	656336	+	701	P	TON_0703	TON_0703	TON_0703	656336	657142	0
TU0411	659693	-	-16	P	TON_0705	TON_0705	TON_0705	659664	658792	29
TU0412	662018	-	-77	P	TON_0707	TON_0707	TON_0707	661988	660336	30
TU0413	662154	+	67	P	TON_0708	TON_0708	TON_0708	662165	662476	11
TU0414	668921	-	-5	P	TON_0714	TON_0714	TON_0714	668910	667471	11
TU0415	670836	+	4	P	TON_0718; TON_0719	TON_0718	TON_0719	670847	672370	11
TU0416	673202	-	-13	P	TON_0720	TON_0720	TON_0720	673202	672360	0
TU0417	673423	+	10	P	TON_0721	TON_0721	TON_0721	673454	673879	31
TU0418	675156	+	71	P	TON_0723; TON_0724	TON_0723	TON_0724	675166	676233	10
TU0419	679055	+	54	P	TON_0726	TON_0726	TON_0726	679111	679326	56
TU0420	679411	+	50	P	TON_0727	TON_0727	TON_0727	679421	681196	10
TU0421	681314	+	4	P	TON_0728; TON_0729	TON_0728	TON_0729	681403	682334	89
TU0422	682547	+	23	P	TON_0730	TON_0730	TON_0730	682560	683744	13
TU0423	683946	+	26	P	TON_0731	TON_0731	TON_0731	683974	684804	28
TU0424	685389	+	28	P	TON_0734; TON_0735; TON_0736	TON_0734	TON_0736	685424	686914	35
TU0425	688531	-	-1510	P	TON_0738; TON_0737	TON_0738	TON_0737	688531	686911	0
TU0426	688589	+	21	P	TON_0739	TON_0739	TON_0739	688599	689390	10
TU0427	689425	+	16	P	TON_0740; TON_0741	TON_0740	TON_0741	689434	691358	9
TU0428	693542	-	-714	P	TON_0743	TON_0743	TON_0743	693533	692235	9
TU0429	693642	+	19	P	TON_0744	TON_0744	TON_0744	693681	693860	39
TU0430	693923	+	4	P	TON_0745	TON_0745	TON_0745	693931	694809	8
TU0431	695487	-	-1	P	TON_0746	TON_0746	TON_0746	695470	694826	17
TU0432	695581	-	-628	N	TON_nc026	TON_nc026	TON_nc026	-	-	-

TU0433	696018	-	-6768	P	TON_0747	TON_0747	TON_0747	695989	695654	29
TU0434	696116	+	20	P	TON_0748	TON_0748	TON_0748	696117	696956	1
TU0435	697194	-	-2	N	TON_nc027	TON_nc027	TON_nc027	-	-	-
TU0436	701463	-	-220	P	TON_0752	TON_0752	TON_0752	701437	700151	26
TU0437	701558	-	-58	N	TON_nc028	TON_nc028	TON_nc028	701437	700151	-
TU0438	705305	-	-75	P	TON_0755	TON_0755	TON_0755	705273	703075	32
TU0439	706499	-	-3	P	TON_0756	TON_0756	TON_0756	706482	705418	17
TU0440	707336	-	-63	P	TON_0757	TON_0757	TON_0757	707315	706509	21
TU0441	714521	-	-10	P	TON_0767; TON_0766; TON_0765; TON_0764; TON_0763; TON_0762	TON_0767	TON_0762	714500	708536	21
TU0442	714671	+	24	P	TON_0768; TON_0769; TON_0770	TON_0768	TON_0770	714681	716981	10
TU0443	718404	-	-663	P	TON_0771	TON_0771	TON_0771	718395	717010	9
TU0444	718455	+	3398	P	TON_0772	TON_0772	TON_0772	718455	719603	0
TU0445	719802	-	-17	P	TON_0773	TON_0773	TON_0773	719792	719598	10
TU0446	726288	-	-19	P	TON_0779; TON_0778; TON_0777	TON_0779	TON_0777	726278	725041	10
TU0447	727003	-	-868	P	TON_0780	TON_0780	TON_0780	726994	726320	9
TU0448	728091	-	-19	P	TON_0782	TON_0782	TON_0782	728091	727480	0
TU0449	728579	+	717	N	TON_nc029	TON_nc029	TON_nc029	-	-	-
TU0450	732734	-	-17	P	TON_0784; TON_0783	TON_0784	TON_0783	732713	730258	21
TU0451	733558	-	-8	I	TON_0785	TON_0785	TON_0785	734209	732788	-
TU0452	734220	-	-10	P	TON_0785	TON_0785	TON_0785	734209	732788	11
TU0453	734297	+	87	P	TON_0786	TON_0786	TON_0786	734306	734767	9
TU0454	735503	+	32	P	TON_0788	TON_0788	TON_0788	735506	735706	3
TU0455	737444	-	-1487	P	TON_0790	TON_0790	TON_0790	737433	736795	11
TU0456	740743	+	330	P	TON_0797	TON_0797	TON_0797	740787	741296	44
TU0457	741359	+	3	P	TON_0798	TON_0798	TON_0798	741380	742594	21
TU0458	742636	+	179	P	TON_0799	TON_0799	TON_0799	742731	743468	95
TU0459	746597	+	6	P	TON_0804; TON_0805	TON_0804	TON_0805	746619	749373	22
TU0460	753672	-	-362	P	TON_0811; TON_0810; TON_0809; TON_0808	TON_0811	TON_0808	753662	751740	10
TU0461	753846	+	3	P	TON_0812	TON_0812	TON_0812	753871	754386	25
TU0462	756952	+	11	N	TON_nc030	TON_nc030	TON_nc030	-	-	-
TU0463	759676	-	-25	P	TON_0818	TON_0818	TON_0818	759544	759128	132

TU0464	760293	-	-42	P	TON_0819	TON_0819	TON_0819	760293	759541	0
TU0465	760428	+	129	P	TON_0820	TON_0820	TON_0820	760441	761625	13
TU0466	761752	+	161	P	TON_0821	TON_0821	TON_0821	761764	763047	12
TU0467	763216	+	2769	P	TON_0822; TON_0823	TON_0822	TON_0823	763497	764368	281
TU0468	763651	-	-9	A	TON_nc031	TON_nc031	TON_nc031	-	-	-
TU0469	764411	+	363	P	TON_0824; TON_0825; TON_0826	TON_0824	TON_0826	764434	765682	23
TU0470	768394	+	723	P	TON_0829	TON_0829	TON_0829	768428	769078	34
TU0471	771420	-	-19	P	TON_0832; TON_0831; TON_0830	TON_0832	TON_0830	771411	769158	9
TU0472	775236	+	3	P	TON_0836	TON_0836	TON_0836	775247	775855	11
TU0473	776248	-	-3	P	TON_0837	TON_0837	TON_0837	776223	775888	25
TU0474	777311	-	-12	P	TON_0839	TON_0839	TON_0839	777229	776996	82
TU0475	779560	-	-56	P	TON_0840	TON_0840	TON_0840	779334	777406	226
TU0476	780664	+	14	N	TON_nc032	TON_nc032	TON_nc032	-	-	-
TU0477	781188	-	-10	I	TON_0842	TON_0842	TON_0842	781514	780711	-
TU0478	781618	-	-6	P	TON_0842	TON_0842	TON_0842	781514	780711	104
TU0479	782274	-	-1	P	TON_0843	TON_0843	TON_0843	782263	782057	11
TU0480	783120	-	-36	P	TON_0845; TON_0844	TON_0845	TON_0844	783109	782358	11
TU0481	784061	-	-4	P	TON_0846	TON_0846	TON_0846	784035	783178	26
TU0482	784888	-	-4344	P	TON_0847	TON_0847	TON_0847	784874	784305	14
TU0483	785007	+	841	P	TON_0848	TON_0848	TON_0848	785016	785591	9
TU0484	789111	-	-112	P	TON_0851; TON_0850; TON_0849	TON_0851	TON_0849	789086	785823	25
TU0485	791905	-	-123	P	TON_0854	TON_0854	TON_0854	791896	790922	9
TU0486	792845	+	3	P	TON_0857	TON_0857	TON_0857	792887	793216	42
TU0487	794839	+	252	P	TON_0860; TON_0861; TON_0862; TON_0863	TON_0860	TON_0863	794852	799166	13
TU0488	800939	+	439	P	TON_0866	TON_0866	TON_0866	800962	801477	23
TU0489	801548	+	2883	P	TON_0867	TON_0867	TON_0867	801560	801721	12
TU0490	801659	+	41	I	TON_0867	TON_0867	TON_0867	801560	801721	-
TU0491	802315	-	-5	A	TON_nc033	TON_nc033	TON_nc033	-	-	-
TU0492	802620	+	11	P	TON_0870	TON_0870	TON_0870	802660	803010	40
TU0493	802970	+	141	P	TON_0871	TON_0871	TON_0871	803014	803538	44
TU0494	804424	-	-4	P	TON_0873	TON_0873	TON_0873	804415	803936	9
TU0495	804460	+	48	P	TON_0874	TON_0874	TON_0874	804483	805007	23

TU0496	805990	-	-139	P	TON_0876	TON_0876	TON_0876	805979	805371	11
TU0497	806707	-	-1693	P	TON_0877	TON_0877	TON_0877	806766	806173	-59
TU0498	806903	+	1168	P	TON_0878; TON_0879; TON_0880; TON_0881; TON_0882; TON_0883; TON_0884; TON_0885; TON_0886;	TON_0878	TON_0888	807102	815439	199
TU0499	815652	+	17	P	TON_0889	TON_0889	TON_0889	815677	816381	25
TU0500	817328	+	26	P	TON_0891	TON_0891	TON_0891	817328	818323	0
TU0501	818787	+	161	N	TON_nc034	TON_nc034	TON_nc034	-	-	-
TU0502	831129	-	-1122	P	TON_0900	TON_0900	TON_0900	831103	829649	26
TU0503	832525	-	-12	P	TON_0901	TON_0901	TON_0901	832498	831224	27
TU0504	833345	-	-37	P	TON_0902	TON_0902	TON_0902	833624	832602	-279
TU0505	833362	+	5	P	TON_0903	TON_0903	TON_0903	833434	834279	72
TU0506	834371	+	43	P	TON_0904	TON_0904	TON_0904	834406	836190	35
TU0507	836350	+	6	P	TON_0905; TON_0906; TON_0907; TON_0908; TON_0909	TON_0905	TON_0909	836374	840323	24
TU0508	840388	+	16	P	TON_0910	TON_0910	TON_0910	840401	841192	13
TU0509	842216	-	-50	P	TON_0911	TON_0911	TON_0911	842208	841189	8
TU0510	842331	+	64	P	TON_0912	TON_0912	TON_0912	842343	843269	12
TU0511	844804	-	-10	P	TON_0913	TON_0913	TON_0913	844696	843254	108
TU0512	847301	+	4285	P	TON_0917	TON_0917	TON_0917	847311	847709	10
TU0513	848062	+	111	P	TON_0918	TON_0918	TON_0918	848076	848615	14
TU0514	848912	+	829	P	TON_0919	TON_0919	TON_0919	848935	849528	23
TU0515	849833	+	74	P	TON_0921	TON_0921	TON_0921	849845	850252	12
TU0516	850356	+	29	P	TON_0922	TON_0922	TON_0922	850366	850470	10
TU0517	851449	+	255	P	TON_0924	TON_0924	TON_0924	851459	852040	10
TU0518	852503	+	5	P	TON_0926	TON_0926	TON_0926	852513	853088	10
TU0519	853553	-	-52	P	TON_0927	TON_0927	TON_0927	853543	853085	10
TU0520	853642	+	72	P	TON_0928	TON_0928	TON_0928	853649	854005	7
TU0521	857164	+	204	P	TON_0930	TON_0930	TON_0930	857189	857464	25
TU0522	857565	+	107	P	TON_0931	TON_0931	TON_0931	857576	858205	11
TU0523	858241	+	27001	P	TON_0932	TON_0932	TON_0932	858255	858800	14
TU0524	859325	-	-73	P	TON_0933	TON_0933	TON_0933	859315	858797	10
TU0525	859360	+	111	P	TON_0934	TON_0934	TON_0934	859371	860441	11

TU0526	860675	-	-228	P	TON_0935	TON_0935	TON_0935	860674	860393	1
TU0527	861993	+	31	P	TON_0937	TON_0937	TON_0937	861993	864770	0
TU0528	865913	-	-4	P	TON_0938	TON_0938	TON_0938	865903	864851	10
TU0529	865963	+	48	P	TON_0939; TON_0940; TON_0941;	TON_0939	TON_0942	866053	868065	90
TU0530	869668	-	-32	P	TON_0942	TON_0943	TON_0943	869668	868088	0
TU0531	869759	+	11	P	TON_0944	TON_0944	TON_0944	869735	870481	-24
TU0532	871608	+	20	P	TON_0946	TON_0946	TON_0946	871634	872848	26
TU0533	876054	-	-134	P	TON_0948	TON_0948	TON_0948	876041	874248	13
TU0534	877119	-	-172	P	TON_0951	TON_0951	TON_0951	877110	876598	9
TU0535	877642	-	-213	P	TON_0953; TON_0952	TON_0953	TON_0952	877624	877200	18
TU0536	878114	-	-3359	P	TON_0954	TON_0954	TON_0954	878074	877703	40
TU0537	878873	-	-28	P	TON_0955	TON_0955	TON_0955	878863	878252	10
TU0538	884548	+	1641	P	TON_0961	TON_0961	TON_0961	884685	885977	137
TU0539	886393	+	7	N	TON_nc035	TON_nc035	TON_nc035	-	-	-
TU0540	889005	-	-17	P	TON_0964	TON_0964	TON_0964	888995	888060	10
TU0541	890103	-	-76	P	TON_0966; TON_0965	TON_0966	TON_0965	890055	889034	48
TU0542	893143	-	-3	P	TON_0968	TON_0968	TON_0968	893128	890696	15
TU0543	893246	+	9	P	TON_0969	TON_0969	TON_0969	893255	895150	9
TU0544	895326	+	4	P	TON_0970	TON_0970	TON_0970	895326	895916	0
TU0545	895989	+	4109	P	TON_0971; TON_0972	TON_0971	TON_0972	896097	897076	108
TU0546	897646	+	98	P	TON_0974; TON_0975	TON_0974	TON_0975	897647	899196	1
TU0547	897953	+	80	I	TON_0974; TON_0975	TON_0974	TON_0975	897647	899196	-
TU0548	899829	-	-472	P	TON_0976	TON_0976	TON_0976	899822	899193	7
TU0549	900284	-	-3	P	TON_0977	TON_0977	TON_0977	900281	899889	3
TU0550	900366	+	602	P	TON_0978	TON_0978	TON_0978	900376	901167	10
TU0551	900486	-	-9	A	TON_nc036	TON_nc036	TON_nc036	-	-	-
TU0552	905459	-	-73	P	TON_0981	TON_0981	TON_0981	905448	904321	11
TU0553	905563	+	3	P	TON_0982	TON_0982	TON_0982	905572	906690	9
TU0554	906720	+	14	P	TON_0983	TON_0983	TON_0983	906746	908197	26
TU0555	908306	+	110	P	TON_0984	TON_0984	TON_0984	908345	910189	39
TU0556	910119	+	19	P	TON_0985	TON_0985	TON_0985	910200	911264	81
TU0557	911289	+	55	P	TON_0986	TON_0986	TON_0986	911299	911898	10

TU0558	911957	+	3	P	TON_0987	TON_0987	TON_0987	911967	913985	10
TU0559	916869	-	-107	P	TON_0989	TON_0989	TON_0989	916838	914700	31
TU0560	916973	+	53	P	TON_0990	TON_0990	TON_0990	916982	918226	9
TU0561	918382	+	2	A	TON_nc037	TON_nc037	TON_nc037	-	-	-
TU0562	920757	-	-364	P	TON_0994; TON_0993; TON_0992; TON_0991	TON_0994	TON_0991	920747	918184	10
TU0563	923164	-	-237	P	TON_0998; TON_0997	TON_0998	TON_0997	923152	921973	12
TU0564	924454	+	22	P	TON_1000	TON_1000	TON_1000	924458	925210	4
TU0565	925285	+	41	P	TON_1001; TON_1002	TON_1001	TON_1002	925314	927489	29
TU0566	928675	+	21	N	TON_nc038	TON_nc038	TON_nc038	-	-	-
TU0567	928767	-	-83	P	TON_1004	TON_1004	TON_1004	928674	927853	93
TU0568	928954	+	62	S	TON_1005	TON_1005	TON_1005	929227	930207	-
TU0569	929039	+	107	P	TON_1005	TON_1005	TON_1005	929227	930207	188
TU0570	930889	-	-108	P	TON_1006	TON_1006	TON_1006	930889	930299	0
TU0571	932982	-	-44	P	TON_1009	TON_1009	TON_1009	932973	932647	9
TU0572	933633	-	-3997	P	TON_1010	TON_1010	TON_1010	933623	933015	10
TU0573	933709	+	116	P	TON_1011	TON_1011	TON_1011	933720	934433	11
TU0574	934510	+	11	P	TON_1012	TON_1012	TON_1012	934533	935912	23
TU0575	937684	-	-217	P	TON_1014	TON_1014	TON_1014	937656	936763	28
TU0576	938482	+	586	N	TON_nc039	TON_nc039	TON_nc039	-	-	-
TU0577	938893	+	3	P	TON_1016	TON_1016	TON_1016	939053	940156	160
TU0578	953574	+	12	P	TON_1032	TON_1032	TON_1032	953602	954648	28
TU0579	954820	+	938	P	TON_1033	TON_1033	TON_1033	954845	955219	25
TU0580	956993	-	-3	A	TON_nc040	TON_nc040	TON_nc040	-	-	-
TU0581	958375	+	15	P	TON_1038	TON_1038	TON_1038	958400	959104	25
TU0582	959457	-	-37	P	TON_1039	TON_1039	TON_1039	959497	959117	-40
TU0583	959496	+	28	P	TON_1040	TON_1040	TON_1040	959421	961421	-75
TU0584	962974	+	76	P	TON_2001	TON_2001	TON_2001	962981	963058	-
TU0585	965516	-	-192	P	TON_1043	TON_1043	TON_1043	965516	964335	0
TU0586	965981	-	-28	P	TON_2020	TON_2020	TON_2020	965970	965863	-
TU0587	968226	-	-482	P	TON_1046; TON_1045; TON_1044	TON_1046	TON_1044	968217	966022	9
TU0588	968277	+	111	P	TON_1047	TON_1047	TON_1047	968300	969331	23
TU0589	969186	+	397	P	TON_1048	TON_1048	TON_1048	969344	969793	158

TU0590	972265	-	-361	P	TON_1051	TON_1051	TON_1051	972255	971488	10
TU0591	972316	+	3	P	TON_1052	TON_1052	TON_1052	972316	972801	0
TU0592	972916	-	-319234	N	TON_nc041	TON_nc041	TON_nc041	-	-	-
TU0593	974503	-	-633	P	TON_1055; TON_1054	TON_1055	TON_1054	974502	973346	1
TU0594	974783	-	-313	P	TON_1056	TON_1056	TON_1056	974783	974484	0
TU0595	974864	+	72	P	TON_1057	TON_1057	TON_1057	974875	976200	11
TU0596	978647	+	1671	P	TON_1062	TON_1062	TON_1062	978673	980184	26
TU0597	980736	-	-126	P	TON_1063	TON_1063	TON_1063	980725	980336	11
TU0598	980787	+	37	P	TON_1064	TON_1064	TON_1064	980787	981230	0
TU0599	981216	+	131	P	TON_1065	TON_1065	TON_1065	981227	981994	11
TU0600	982246	-	-6553	P	TON_1066	TON_1066	TON_1066	982236	981997	10
TU0601	983391	+	15	P	TON_1068	TON_1068	TON_1068	983401	984144	10
TU0602	986495	-	-106	P	TON_1069	TON_1069	TON_1069	986495	984126	0
TU0603	986547	+	2	P	TON_1070	TON_1070	TON_1070	986545	986970	-2
TU0604	991268	+	1357	A	TON_nc042	TON_nc042	TON_nc042	-	-	-
TU0605	991725	-	-1403	P	TON_1073	TON_1073	TON_1073	991633	991250	92
TU0606	993227	-	-162	P	TON_1075	TON_1075	TON_1075	993216	992257	11
TU0607	993701	-	-62	P	TON_1076	TON_1076	TON_1076	993691	993251	10
TU0608	993813	+	65	P	TON_1077	TON_1077	TON_1077	993807	994457	-6
TU0609	998003	-	-13	N	TON_nc043	TON_nc043	TON_nc043	-	-	-
TU0610	998043	+	6	N	TON_nc044	TON_nc044	TON_nc044	-	-	-
TU0611	999027	-	-274	P	TON_1078	TON_1078	TON_1078	999027	998473	0
TU0612	999076	+	78	N	TON_nc045	TON_nc045	TON_nc045	-	-	-
TU0613	999361	-	-4	P	TON_1079	TON_1079	TON_1079	999333	999169	28
TU0614	1001256	-	-168	P	TON_1080	TON_1080	TON_1080	1001204	999396	52
TU0615	1001306	+	91	P	TON_1081	TON_1081	TON_1081	1001316	1002056	10
TU0616	1002875	+	8	P	TON_1083	TON_1083	TON_1083	1002918	1004360	43
TU0617	1004492	+	56	P	TON_1084	TON_1084	TON_1084	1004504	1005709	12
TU0618	1007873	+	457	P	TON_1087	TON_1087	TON_1087	1007910	1009091	37
TU0619	1009532	-	-16	P	TON_1088	TON_1088	TON_1088	1009522	1009103	10
TU0620	1009603	+	302	P	TON_1089	TON_1089	TON_1089	1009604	1010308	1
TU0621	1011700	-	-79	P	TON_1090	TON_1090	TON_1090	1011688	1010315	12

TU0622	1012978	-	-17	P	TON_1091	TON_1091	TON_1091	1012969	1011767	9
TU0623	1013195	-	-500	P	TON_1092	TON_1092	TON_1092	1013185	1013033	10
TU0624	1013316	+	383	P	TON_1093; TON_1094	TON_1093	TON_1094	1013262	1016590	-54
TU0625	1016643	+	27	P	TON_1095	TON_1095	TON_1095	1016668	1016985	25
TU0626	1019219	-	-174	P	TON_1097	TON_1097	TON_1097	1019194	1017809	25
TU0627	1019359	+	319	P	TON_1098	TON_1098	TON_1098	1019409	1019834	50
TU0628	1019782	+	4	P	TON_1099	TON_1099	TON_1099	1019834	1020859	52
TU0629	1023430	-	-10	P	TON_1104; TON_1103	TON_1104	TON_1103	1023397	1022525	33
TU0630	1023571	+	28	P	TON_1105	TON_1105	TON_1105	1023584	1024183	13
TU0631	1025633	-	-43	P	TON_1109; TON_1108	TON_1109	TON_1108	1025601	1025160	32
TU0632	1027428	-	-5	P	TON_1110	TON_1110	TON_1110	1027410	1025722	18
TU0633	1028443	+	255	P	TON_1112	TON_1112	TON_1112	1028454	1028939	11
TU0634	1029011	+	10	P	TON_1113	TON_1113	TON_1113	1029039	1029530	28
TU0635	1034841	-	-2	P	TON_1121	TON_1121	TON_1121	1034830	1034615	11
TU0636	1034884	+	109	P	TON_1122	TON_1122	TON_1122	1034893	1035720	9
TU0637	1036084	-	-25	P	TON_1123	TON_1123	TON_1123	1036074	1035739	10
TU0638	1037326	-	-35	P	TON_1125	TON_1125	TON_1125	1037326	1036865	0
TU0639	1038004	+	34	P	TON_1128	TON_1128	TON_1128	1038013	1038576	9
TU0640	1039534	+	707	P	TON_1130; TON_1131; TON_1132; TON_1133; TON_1134; TON_1135; TON_1136; TON_1137; TON_1138; TON_1139; TON_1140; TON_1141;	TON_1130	TON_1142	1039447	1049714	-87
TU0641	1050406	-	-8	P	TON_1143	TON_1143	TON_1143	1050397	1049954	9
TU0642	1052552	-	-327	P	TON_1147; TON_1146	TON_1147	TON_1146	1052552	1051747	0
TU0643	1053544	+	5	P	TON_1149	TON_1149	TON_1149	1053634	1054575	90
TU0644	1055988	+	1	P	TON_1152	TON_1152	TON_1152	1056098	1057888	110
TU0645	1058623	-	-110	P	TON_1154; TON_1153	TON_1154	TON_1153	1058611	1057902	12
TU0646	1059059	-	-14	P	TON_1155; TON_1154; TON_1153	TON_1155	TON_1153	1059059	1057902	0
TU0647	1065624	+	106	P	TON_1166	TON_1166	TON_1166	1065629	1067236	5
TU0648	1067177	+	274	P	TON_1167; TON_1168	TON_1167	TON_1168	1067233	1068339	56
TU0649	1069143	-	-31	P	TON_1169	TON_1169	TON_1169	1069133	1068423	10
TU0650	1070494	-	-1	P	TON_1172; TON_1171	TON_1172	TON_1171	1070463	1069555	31
TU0651	1070547	+	39	P	TON_1173; TON_1174	TON_1173	TON_1174	1070557	1071864	10

TU0652	1071899	+	77	N	TON_nc046	TON_nc046	TON_nc046	-	-	-
TU0653	1072676	-	-18	P	TON_1175	TON_1175	TON_1175	1072667	1072044	9
TU0654	1082328	-	-166	P	TON_1184	TON_1184	TON_1184	1082288	1081812	40
TU0655	1083461	+	30	A	TON_nc047	TON_nc047	TON_nc047	-	-	-
TU0656	1087986	-	-20	P	TON_1191; TON_1190	TON_1191	TON_1190	1087893	1086601	93
TU0657	1088223	+	130	P	TON_1192	TON_1192	TON_1192	1088246	1089325	23
TU0658	1091015	-	-15	P	TON_1194	TON_1194	TON_1194	1090993	1089767	22
TU0659	1091177	+	2	P	TON_1195; TON_1196; TON_1197; TON_1198; TON_1199; TON_1200;	TON_1195	TON_1202	1091237	1099995	60
TU0660	1100648	+	29	P	TON_1204	TON_1204	TON_1204	1100803	1101828	155
TU0661	1103195	+	1444	P	TON_1206	TON_1206	TON_1206	1103204	1103950	9
TU0662	1104996	-	-15	P	TON_1207	TON_1207	TON_1207	1104991	1103915	5
TU0663	1105243	+	206	P	TON_1208; TON_1209	TON_1208	TON_1209	1105241	1107188	-2
TU0664	1108354	-	-53	P	TON_1210	TON_1210	TON_1210	1108341	1107193	13
TU0665	1109156	-	-3	P	TON_1211	TON_1211	TON_1211	1109140	1108571	16
TU0666	1109185	+	351	P	TON_1212	TON_1212	TON_1212	1109195	1110460	10
TU0667	1110618	+	11	P	TON_1213	TON_1213	TON_1213	1110628	1111566	10
TU0668	1111564	-	-6	A	TON_nc048	TON_nc048	TON_nc048	-	-	-
TU0669	1113154	+	129	P	TON_1217	TON_1217	TON_1217	1113345	1113902	191
TU0670	1113320	-	-100	P	TON_1216; TON_1215	TON_1216	TON_1215	1113293	1112422	27
TU0671	1115926	-	-10	P	TON_1220; TON_1219; TON_1218	TON_1220	TON_1218	1115863	1113903	63
TU0672	1115979	+	317	P	TON_1221	TON_1221	TON_1221	1115979	1117073	0
TU0673	1117559	+	9	P	TON_1223	TON_1223	TON_1223	1117568	1118005	9
TU0674	1119017	-	-54	P	TON_1225	TON_1225	TON_1225	1119004	1118357	13
TU0675	1120484	-	-1	P	TON_1227	TON_1227	TON_1227	1120474	1119842	10
TU0676	1121584	-	-6	I	TON_1228	TON_1228	TON_1228	1121835	1120516	-
TU0677	1121988	-	-4	P	TON_1228	TON_1228	TON_1228	1121835	1120516	153
TU0678	1122508	-	-78	P	TON_1229	TON_1229	TON_1229	1122508	1122089	0
TU0679	1122585	+	491	P	TON_1230	TON_1230	TON_1230	1122619	1122822	34
TU0680	1123497	-	-172	P	TON_1231	TON_1231	TON_1231	1123473	1122877	24
TU0681	1123577	+	2	P	TON_1232	TON_1232	TON_1232	1123587	1124756	10
TU0682	1126780	-	-6619	P	TON_1234	TON_1234	TON_1234	1126763	1125429	17

TU0683	1127117	+	82	P	TON_1235	TON_1235	TON_1235	1127155	1127358	38
TU0684	1129146	-	-26	P	TON_1238; TON_1237	TON_1238	TON_1237	1129120	1127891	26
TU0685	1129229	+	5	P	TON_1239	TON_1239	TON_1239	1129244	1130083	15
TU0686	1130122	+	66	P	TON_1240; TON_1241	TON_1240	TON_1241	1130184	1131051	62
TU0687	1133284	-	-4	P	TON_1243; TON_1242	TON_1243	TON_1242	1133274	1131041	10
TU0688	1134834	-	-8	P	TON_1245; TON_1244	TON_1245	TON_1244	1134845	1133359	-11
TU0689	1134996	+	9	P	TON_1246	TON_1246	TON_1246	1135197	1135499	201
TU0690	1136226	-	-2	P	TON_1247	TON_1247	TON_1247	1136215	1135538	11
TU0691	1136262	+	179	P	TON_1248	TON_1248	TON_1248	1136309	1137586	47
TU0692	1136321	+	164	S	TON_1248	TON_1248	TON_1248	1136309	1137586	-
TU0693	1137628	+	35	P	TON_1249	TON_1249	TON_1249	1137647	1138795	19
TU0694	1138848	+	54	P	TON_1250; TON_1251; TON_1252;	TON_1250	TON_1253	1138860	1141089	12
TU0695	1143589	+	20	N	TON_nc049	TON_nc049	TON_nc049	-	-	-
TU0696	1143857	-	-2790	P	TON_1257	TON_1257	TON_1257	1143828	1143637	29
TU0697	1144028	+	21	P	TON_1258	TON_1258	TON_1258	1144038	1144445	10
TU0698	1144514	+	1	P	TON_1259	TON_1259	TON_1259	1144531	1145709	17
TU0699	1148205	-	-21	P	TON_2018	TON_2018	TON_2018	1148205	1148129	-
TU0700	1149033	-	-71	P	TON_1263	TON_1263	TON_1263	1149018	1148299	15
TU0701	1150345	-	-714	P	TON_nc050	TON_nc050	TON_nc050	-	-	-
TU0702	1156188	+	64	P	TON_1270	TON_1270	TON_1270	1156196	1156873	8
TU0703	1157007	+	30	P	TON_1271	TON_1271	TON_1271	1157017	1158336	10
TU0704	1161986	+	40	P	TON_1278	TON_1278	TON_1278	1161987	1162529	1
TU0705	1163527	-	-7	I	TON_1279	TON_1279	TON_1279	1163751	1162513	-
TU0706	1163752	-	-13	P	TON_1279	TON_1279	TON_1279	1163751	1162513	1
TU0707	1163802	+	14	N	TON_nc051	TON_nc051	TON_nc051	-	-	-
TU0708	1164994	-	-42	P	TON_1280	TON_1280	TON_1280	1164986	1163925	8
TU0709	1167732	-	-9	P	TON_1282; TON_1281	TON_1282	TON_1281	1167701	1165050	31
TU0710	1169113	-	-5	P	TON_1283	TON_1283	TON_1283	1169086	1167920	27
TU0711	1169190	+	30	P	TON_1284	TON_1284	TON_1284	1169205	1169657	15
TU0712	1169710	+	68	P	TON_1285	TON_1285	TON_1285	1169734	1170234	24
TU0713	1170302	+	3	P	TON_1286	TON_1286	TON_1286	1170314	1171039	12
TU0714	1171070	+	10	P	TON_1287; TON_1288; TON_1289	TON_1287	TON_1289	1171096	1172635	26

TU0715	1172909	-	-45	P	TON_1290	TON_1290	TON_1290	1172900	1172619	9
TU0716	1174092	+	21	P	TON_1293	TON_1293	TON_1293	1174092	1174934	0
TU0717	1175705	-	-46	P	TON_1973	TON_1973	TON_1973	1175694	1174861	11
TU0718	1177065	-	-50	P	TON_1295	TON_1295	TON_1295	1177013	1175757	52
TU0719	1177232	+	3397	P	TON_1296	TON_1296	TON_1296	1177252	1178220	20
TU0720	1180408	-	-25	P	TON_1298	TON_1298	TON_1298	1180382	1179126	26
TU0721	1180652	+	1	P	TON_1299; TON_1300	TON_1299	TON_1300	1180681	1182629	29
TU0722	1182769	+	248	P	TON_1301; TON_1302; TON_1303	TON_1301	TON_1303	1182802	1185431	33
TU0723	1185844	-	-60	P	TON_1304	TON_1304	TON_1304	1185830	1185537	14
TU0724	1186353	-	-75	P	TON_1305	TON_1305	TON_1305	1186352	1185849	1
TU0725	1186403	+	47	P	TON_1306	TON_1306	TON_1306	1186423	1186956	20
TU0726	1187377	-	-2140	P	TON_1307	TON_1307	TON_1307	1187368	1186961	9
TU0727	1188550	+	118	P	TON_1309; TON_1310	TON_1309	TON_1310	1188584	1190190	34
TU0728	1194156	-	-242	P	TON_1313; TON_1312; TON_1311	TON_1313	TON_1311	1194147	1190205	9
TU0729	1194322	+	74	P	TON_1314	TON_1314	TON_1314	1194334	1195008	12
TU0730	1195044	+	57	P	TON_1315	TON_1315	TON_1315	1195054	1196052	10
TU0731	1196285	-	-283	P	TON_1316	TON_1316	TON_1316	1196272	1196126	13
TU0732	1197143	-	-1340	P	TON_1317	TON_1317	TON_1317	1197133	1196321	10
TU0733	1198544	-	-66	P	TON_1319; TON_1318	TON_1319	TON_1318	1198534	1197177	10
TU0734	1201380	-	-14	P	TON_1322	TON_1322	TON_1322	1201367	1200519	13
TU0735	1201955	-	-24	P	TON_1323	TON_1323	TON_1323	1201937	1201419	18
TU0736	1203205	-	-10	P	TON_1324	TON_1324	TON_1324	1203205	1202057	0
TU0737	1203284	+	68	P	TON_1325	TON_1325	TON_1325	1203284	1203691	0
TU0738	1207651	+	201	P	TON_1334	TON_1334	TON_1334	1207661	1208065	10
TU0739	1208132	+	24	P	TON_1335	TON_1335	TON_1335	1208143	1208481	11
TU0740	1208556	-	-695	N	TON_nc052	TON_nc052	TON_nc052	-	-	-
TU0741	1211115	-	-4	P	TON_1337; TON_1336	TON_1337	TON_1336	1211076	1208759	39
TU0742	1211230	+	70	P	TON_1338	TON_1338	TON_1338	1211242	1211454	12
TU0743	1212831	-	-4	P	TON_1340; TON_1339	TON_1340	TON_1339	1212821	1211441	10
TU0744	1212868	+	141	P	TON_1341	TON_1341	TON_1341	1212879	1213223	11
TU0745	1213495	-	-694	P	TON_1342	TON_1342	TON_1342	1213469	1213224	26
TU0746	1213600	+	98	P	TON_1343	TON_1343	TON_1343	1213608	1215788	8

TU0747	1215829	+	16	P	TON_1344	TON_1344	TON_1344	1215836	1216393	7
TU0748	1217200	-	-3	P	TON_1345	TON_1345	TON_1345	1217188	1216379	12
TU0749	1221385	-	-39	P	TON_1352; TON_1351; TON_1350;	TON_1352	TON_1349	1221360	1219865	25
TU0750	1221950	-	-30	N	TON_1349 TON_nc053	TON_nc053	TON_nc053	-	-	-
TU0751	1222003	+	8	P	TON_1353	TON_1353	TON_1353	1222015	1223142	12
TU0752	1222419	+	8	I	TON_1353	TON_1353	TON_1353	1222015	1223142	-
TU0753	1223126	-	-554	A	TON_nc054	TON_nc054	TON_nc054	-	-	-
TU0754	1223327	+	163	P	TON_1354	TON_1354	TON_1354	1223352	1225169	25
TU0755	1227479	+	5	P	TON_1356	TON_1356	TON_1356	1227491	1229251	12
TU0756	1231004	-	-520	P	TON_1358; TON_1357	TON_1358	TON_1357	1230973	1229253	31
TU0757	1231083	+	74	P	TON_1359	TON_1359	TON_1359	1231033	1231824	-50
TU0758	1232539	+	39	P	TON_1361	TON_1361	TON_1361	1232550	1232753	11
TU0759	1234049	-	-23	I	TON_1362	TON_1362	TON_1362	1234110	1232938	-
TU0760	1234121	-	-19	P	TON_1362	TON_1362	TON_1362	1234110	1232938	11
TU0761	1235326	-	-10	P	TON_1363	TON_1363	TON_1363	1235316	1234414	10
TU0762	1236566	+	7	P	TON_1366	TON_1366	TON_1366	1236618	1237940	52
TU0763	1236573	-	-7	P	TON_1365	TON_1365	TON_1365	1236562	1235654	11
TU0764	1240041	-	-2	P	TON_1370; TON_1369; TON_1368	TON_1370	TON_1368	1240007	1238308	34
TU0765	1240156	+	164	P	TON_2003	TON_2003	TON_2003	1240162	1240239	-
TU0766	1241778	-	-3	P	TON_1372	TON_1372	TON_1372	1241768	1240974	10
TU0767	1242126	+	470	P	TON_1373	TON_1373	TON_1373	1242126	1242857	0
TU0768	1243665	-	-168	P	TON_1374	TON_1374	TON_1374	1243653	1242868	12
TU0769	1246715	-	-136	N	TON_nc055	TON_nc055	TON_nc055	1246635	1246171	-
TU0770	1246830	+	602	P	TON_1378	TON_1378	TON_1378	1246841	1247944	11
TU0771	1248212	-	-669	A	TON_nc056	TON_nc056	TON_nc056	-	-	-
TU0772	1248288	+	8	P	TON_1379; TON_1380	TON_1379	TON_1380	1248192	1252192	-96
TU0773	1253617	-	-148	N	TON_nc057	TON_nc057	TON_nc057	-	-	-
TU0774	1255533	+	2	P	TON_1382	TON_1382	TON_1382	1255554	1256738	21
TU0775	1259091	-	-237	P	TON_1384	TON_1384	TON_1384	1259065	1258589	26
TU0776	1259223	+	468	P	TON_1385	TON_1385	TON_1385	1259299	1260495	76
TU0777	1259282	+	499	S	TON_1385	TON_1385	TON_1385	1259299	1260495	-
TU0778	1261685	+	72	P	TON_1387	TON_1387	TON_1387	1261693	1262244	8

TU0779	1262276	+	91	P	TON_1388; TON_1389	TON_1388	TON_1389	1262287	1263703	11
TU0780	1264238	-	-14	I	TON_1390	TON_1390	TON_1390	1264640	1263693	-
TU0781	1264650	-	-16	P	TON_1390	TON_1390	TON_1390	1264640	1263693	10
TU0782	1267819	+	18	P	TON_1394	TON_1394	TON_1394	1267819	1268985	0
TU0783	1269706	+	411	P	TON_1396	TON_1396	TON_1396	1269706	1270392	0
TU0784	1271989	-	-29	P	TON_1397	TON_1397	TON_1397	1271978	1270398	11
TU0785	1273045	+	2914	P	TON_1399	TON_1399	TON_1399	1273057	1273665	12
TU0786	1274282	-	-51	P	TON_1400	TON_1400	TON_1400	1274228	1273662	54
TU0787	1274705	-	-62	P	TON_1401	TON_1401	TON_1401	1274461	1274306	244
TU0788	1277882	-	-11	P	TON_1980	TON_1980	TON_1980	1277847	1274841	-
TU0789	1279595	-	-70	P	TON_1979	TON_1979	TON_1979	1279595	1278100	-
TU0790	1279837	-	-8	N	TON_nc058	TON_nc058	TON_nc058	-	-	-
TU0791	1282518	-	-16	P	TON_1405; TON_1404	TON_1405	TON_1404	1282516	1281439	2
TU0792	1282603	+	5	P	TON_1406; TON_1407	TON_1406	TON_1407	1282616	1283937	13
TU0793	1286149	-	-52	P	TON_1409; TON_1408	TON_1409	TON_1408	1286136	1284009	13
TU0794	1286254	+	343	P	TON_1410	TON_1410	TON_1410	1286264	1287190	10
TU0795	1287219	+	8	P	TON_1411; TON_1412	TON_1411	TON_1412	1287229	1289125	10
TU0796	1291628	-	-8	P	TON_1414; TON_1413	TON_1414	TON_1413	1291612	1289130	16
TU0797	1291696	-	-3	S	TON_1414; TON_1413	TON_1414	TON_1413	1291612	1289130	-
TU0798	1291749	+	349	P	TON_1415	TON_1415	TON_1415	1291759	1292946	10
TU0799	1294380	-	-16	P	TON_1418; TON_1417; TON_1416	TON_1418	TON_1416	1294380	1292970	0
TU0800	1296090	+	548	N	TON_nc059	TON_nc059	TON_nc059	1296243	1303361	-
TU0801	1303402	+	7	P	TON_1424; TON_1425	TON_1424	TON_1425	1303402	1305140	0
TU0802	1305165	+	434	P	TON_1426	TON_1426	TON_1426	1305176	1305778	11
TU0803	1308366	+	3	P	TON_1430	TON_1430	TON_1430	1308426	1309214	60
TU0804	1309737	-	-58	P	TON_1431	TON_1431	TON_1431	1309729	1309274	8
TU0805	1309908	+	44	P	TON_1432	TON_1432	TON_1432	1309938	1311284	30
TU0806	1311364	+	40	P	TON_1433	TON_1433	TON_1433	1311374	1311616	10
TU0807	1311680	+	121	N	TON_nc060	TON_nc060	TON_nc060	-	-	-
TU0808	1312269	+	7	A	TON_nc061	TON_nc061	TON_nc061	-	-	-
TU0809	1313500	+	2	P	TON_1437; TON_1438	TON_1437	TON_1438	1313508	1314898	8
TU0810	1314937	+	108	P	TON_1439	TON_1439	TON_1439	1314946	1316508	9

TU0811	1317088	-	-19	P	TON_1440	TON_1440	TON_1440	1317078	1316485	10
TU0812	1317196	+	28	P	TON_1441; TON_1442	TON_1441	TON_1442	1317212	1318581	16
TU0813	1318605	+	135	P	TON_1443	TON_1443	TON_1443	1318605	1320347	0
TU0814	1322847	-	-125	P	TON_1445	TON_1445	TON_1445	1322825	1321476	22
TU0815	1325598	-	-876	P	TON_1448	TON_1448	TON_1448	1325407	1325015	191
TU0816	1326455	-	-17	P	TON_1449	TON_1449	TON_1449	1326444	1325659	11
TU0817	1326667	+	9	P	TON_1450	TON_1450	TON_1450	1326680	1327255	13
TU0818	1331621	-	-1	P	TON_1453	TON_1453	TON_1453	1331508	1330213	113
TU0819	1332875	-	-5	P	TON_1454	TON_1454	TON_1454	1332866	1331505	9
TU0820	1332913	+	33	P	TON_1455; TON_1456	TON_1455	TON_1456	1332949	1333709	36
TU0821	1336001	-	-19	P	TON_1459	TON_1459	TON_1459	1335991	1335446	10
TU0822	1336097	+	18	P	TON_1460	TON_1460	TON_1460	1336109	1338025	12
TU0823	1339297	-	-12	P	TON_1461	TON_1461	TON_1461	1339297	1338020	0
TU0824	1339334	+	10609	N	TON_nc062	TON_nc062	TON_nc062	-	-	-
TU0825	1340504	-	-9	P	TON_1462	TON_1462	TON_1462	1340494	1339388	10
TU0826	1342027	-	-28	P	TON_1463	TON_1463	TON_1463	1341945	1341022	82
TU0827	1342601	-	-150	P	TON_1464	TON_1464	TON_1464	1342589	1341942	12
TU0828	1343568	+	82	P	TON_1466; TON_1467	TON_1466	TON_1467	1343569	1344814	1
TU0829	1344617	+	4	P	TON_1468	TON_1468	TON_1468	1344790	1345827	173
TU0830	1348387	+	19	P	TON_1472	TON_1472	TON_1472	1348397	1348732	10
TU0831	1349142	-	-1722	P	TON_1473	TON_1473	TON_1473	1349132	1348773	10
TU0832	1349241	+	49	P	TON_1474	TON_1474	TON_1474	1349239	1350528	-2
TU0833	1351494	-	-16	P	TON_1475	TON_1475	TON_1475	1351470	1350508	24
TU0834	1351676	+	423	P	TON_1476	TON_1476	TON_1476	1351697	1352257	21
TU0835	1354778	+	6	P	TON_1480; TON_1481; TON_1482	TON_1480	TON_1482	1354815	1357334	37
TU0836	1357451	+	70	P	TON_1483	TON_1483	TON_1483	1357465	1358382	14
TU0837	1361233	-	-22220	P	TON_1486	TON_1486	TON_1486	1361173	1360637	60
TU0838	1361636	-	-463	P	TON_1487	TON_1487	TON_1487	1361600	1361316	36
TU0839	1361686	+	242	N	TON_nc063	TON_nc063	TON_nc063	-	-	-
TU0840	1362625	-	-20	P	TON_1488	TON_1488	TON_1488	1362605	1361712	20
TU0841	1362732	+	89	P	TON_1489	TON_1489	TON_1489	1362747	1363340	15
TU0842	1363615	-	-34	P	TON_1490	TON_1490	TON_1490	1363605	1363330	10

TU0843	1363666	+	9	P	TON_1491; TON_1492	TON_1491	TON_1492	1363679	1364574	13
TU0844	1364605	+	90	N	TON_nc064	TON_nc064	TON_nc064	-	-	-
TU0845	1367702	+	762	P	TON_2004	TON_2004	TON_2004	1367760	1367846	-
TU0846	1367953	+	491	P	TON_1496	TON_1496	TON_1496	1368053	1368289	100
TU0847	1368042	+	133	S	TON_1496	TON_1496	TON_1496	1368053	1368289	-
TU0848	1368385	+	5	P	TON_1497	TON_1497	TON_1497	1368397	1369524	12
TU0849	1369608	+	19	P	TON_1498	TON_1498	TON_1498	1369681	1371642	73
TU0850	1374525	+	8	P	TON_1501	TON_1501	TON_1501	1374537	1375799	12
TU0851	1376906	+	58	P	TON_1503	TON_1503	TON_1503	1376915	1377757	9
TU0852	1377851	+	35	P	TON_1504; TON_1505	TON_1504	TON_1505	1377906	1380524	55
TU0853	1384451	-	-6	P	TON_1508	TON_1508	TON_1508	1384434	1383799	17
TU0854	1384535	+	262	P	TON_1509	TON_1509	TON_1509	1384238	1385170	-297
TU0855	1387623	-	-1523	P	TON_1511	TON_1511	TON_1511	1387623	1386364	0
TU0856	1387721	+	262	P	TON_1512	TON_1512	TON_1512	1387731	1387946	10
TU0857	1388024	+	27	N	TON_nc065	TON_nc065	TON_nc065	-	-	-
TU0858	1389443	+	7	P	TON_1514	TON_1514	TON_1514	1389443	1390150	0
TU0859	1391838	-	-6	P	TON_1515	TON_1515	TON_1515	1391828	1390140	10
TU0860	1392773	-	-15	P	TON_1516	TON_1516	TON_1516	1392771	1391869	2
TU0861	1394526	-	-10	P	TON_1517	TON_1517	TON_1517	1394503	1392845	23
TU0862	1395779	-	-17	P	TON_1519; TON_1518	TON_1519	TON_1518	1395770	1394814	9
TU0863	1395903	+	196	P	TON_1520	TON_1520	TON_1520	1395932	1397704	29
TU0864	1399492	-	-41	P	TON_1522	TON_1522	TON_1522	1399483	1398035	9
TU0865	1399564	+	1325	P	TON_1523	TON_1523	TON_1523	1399564	1399917	0
TU0866	1401024	-	-5	P	TON_1525	TON_1525	TON_1525	1400993	1400553	31
TU0867	1401221	-	-219	P	TON_2014	TON_2014	TON_2014	1401205	1401128	-
TU0868	1401274	+	415	P	TON_1526; TON_1527	TON_1526	TON_1527	1401283	1402418	9
TU0869	1402777	-	-39	P	TON_1528	TON_1528	TON_1528	1402734	1402483	43
TU0870	1403382	-	-22	P	TON_1529	TON_1529	TON_1529	1403369	1402842	13
TU0871	1403465	+	16	P	TON_1530	TON_1530	TON_1530	1403465	1404352	0
TU0872	1405095	-	-120	P	TON_2013	TON_2013	TON_2013	1405094	1405018	-
TU0873	1405154	+	8	P	TON_1531	TON_1531	TON_1531	1405237	1405884	83
TU0874	1406845	-	-18	P	TON_1532	TON_1532	TON_1532	1406688	1405939	157

TU0875	1408596	-	-21	P	TON_1534; TON_1533	TON_1534	TON_1533	1408539	1407539	57
TU0876	1408601	+	1	P	TON_1535; TON_1536	TON_1535	TON_1536	1408604	1410628	3
TU0877	1410659	+	523	P	TON_1537; TON_1538; TON_1539	TON_1537	TON_1539	1410670	1412191	11
TU0878	1420999	-	-23	P	TON_1545	TON_1545	TON_1545	1420992	1420345	7
TU0879	1421035	+	506	P	TON_1546	TON_1546	TON_1546	1421045	1421272	10
TU0880	1421328	+	9	A	TON_nc066	TON_nc066	TON_nc066	-	-	-
TU0881	1425467	-	-651	P	TON_1552	TON_1552	TON_1552	1425466	1424246	1
TU0882	1427211	-	-166	P	TON_1553	TON_1553	TON_1553	1427200	1425563	11
TU0883	1427300	+	373	P	TON_1554	TON_1554	TON_1554	1427309	1427665	9
TU0884	1428680	-	-25	P	TON_1556	TON_1556	TON_1556	1428649	1428248	31
TU0885	1430101	-	-32	P	TON_1557	TON_1557	TON_1557	1430100	1428823	1
TU0886	1430266	+	65	A	TON_nc067	TON_nc067	TON_nc067	-	-	-
TU0887	1430483	-	-246	P	TON_1558	TON_1558	TON_1558	1430426	1430214	57
TU0888	1430670	+	2984	P	TON_1559; TON_1560; TON_1561	TON_1559	TON_1561	1430702	1433387	32
TU0889	1434465	+	1	P	TON_1563; TON_1564; TON_1565; TON_1566; TON_1567; TON_1568; TON_1569; TON_1570; TON_1571; TON_1572; TON_1573; TON_1574; TON_1575; TON_1576; TON_1577;	TON_1563	TON_1580	1434543	1451361	78
TU0890	1451396	+	6	P	TON_1581	TON_1581	TON_1581	1451413	1452000	17
TU0891	1452078	+	201	P	TON_1582; TON_1583; TON_1584; TON_1585; TON_1586; TON_1587; TON_1588; TON_1589; TON_1590; TON_1591; TON_1592; TON_1593;	TON_1582	TON_1595	1452138	1460402	60
TU0892	1461174	-	-228	P	TON_1596	TON_1596	TON_1596	1461164	1460676	10
TU0893	1462653	+	4	P	TON_1600; TON_1601; TON_1602	TON_1600	TON_1602	1462664	1464916	11
TU0894	1462655	-	-836	P	TON_1599	TON_1599	TON_1599	1462602	1462117	53
TU0895	1465245	+	87	P	TON_1603	TON_1603	TON_1603	1465349	1466341	104
TU0896	1466441	+	4	A	TON_nc068	TON_nc068	TON_nc068	-	-	-
TU0897	1469802	-	-13	P	TON_1608; TON_1607	TON_1608	TON_1607	1469795	1468841	7
TU0898	1470267	-	-3888	P	TON_1609	TON_1609	TON_1609	1470267	1469962	0
TU0899	1471526	-	-97	P	TON_1610	TON_1610	TON_1610	1471516	1470299	10
TU0900	1473876	-	-24	P	TON_1612	TON_1612	TON_1612	1473863	1472958	13
TU0901	1474027	+	3103	P	TON_1613	TON_1613	TON_1613	1474039	1475331	12

TU0902	1475398	+	5	P	TON_1614	TON_1614	TON_1614	1475513	1476343	115
TU0903	1476909	-	-698	P	TON_1615	TON_1615	TON_1615	1476875	1476423	34
TU0904	1478026	-	-117	P	TON_1617	TON_1617	TON_1617	1478016	1477528	10
TU0905	1478064	+	1346	P	TON_1618	TON_1618	TON_1618	1478074	1478991	10
TU0906	1480546	+	85	P	TON_1621	TON_1621	TON_1621	1480556	1481428	10
TU0907	1482399	-	-7	P	TON_1623; TON_1622	TON_1623	TON_1622	1482387	1481421	12
TU0908	1482982	-	-188	P	TON_1624	TON_1624	TON_1624	1482971	1482459	11
TU0909	1483572	-	-106	P	TON_1625	TON_1625	TON_1625	1483533	1483012	39
TU0910	1483609	+	102	P	TON_1626; TON_1627	TON_1626	TON_1627	1483639	1488266	30
TU0911	1491997	+	41	P	TON_1632	TON_1632	TON_1632	1491997	1492833	0
TU0912	1493357	+	36	A	TON_nc069	TON_nc069	TON_nc069	-	-	-
TU0913	1494576	-	-5	P	TON_1634; TON_1633	TON_1634	TON_1633	1494576	1492817	0
TU0914	1497785	+	570	P	TON_1638	TON_1638	TON_1638	1497785	1498267	0
TU0915	1498576	+	4	P	TON_1640	TON_1640	TON_1640	1498586	1499266	10
TU0916	1510259	-	-51	P	TON_1645	TON_1645	TON_1645	1510249	1509623	10
TU0917	1510583	-	-1469	N	TON_nc070	TON_nc070	TON_nc070	-	-	-
TU0918	1512094	+	572	P	TON_1647	TON_1647	TON_1647	1512120	1513181	26
TU0919	1516112	+	12	P	TON_1652	TON_1652	TON_1652	1516122	1516580	10
TU0920	1516634	+	7	P	TON_1653; TON_1654; TON_1655	TON_1653	TON_1655	1516653	1519451	19
TU0921	1523057	+	31	P	TON_1659	TON_1659	TON_1659	1523066	1524508	9
TU0922	1524067	+	27	I	TON_1659	TON_1659	TON_1659	1523066	1524508	-
TU0923	1527617	-	-13	P	TON_1663	TON_1663	TON_1663	1527536	1526961	81
TU0924	1527642	+	202	P	TON_1664	TON_1664	TON_1664	1527681	1528997	39
TU0925	1527871	-	-10	A	TON_nc071	TON_nc071	TON_nc071	-	-	-
TU0926	1528990	-	-21	A	TON_nc072	TON_nc072	TON_nc072	-	-	-
TU0927	1530491	+	145	P	TON_1666; TON_1667	TON_1666	TON_1667	1530586	1532430	95
TU0928	1533088	+	141	P	TON_1669; TON_1670	TON_1669	TON_1670	1533149	1535384	61
TU0929	1537746	-	-221	P	TON_1672; TON_1671	TON_1672	TON_1671	1537655	1535478	91
TU0930	1537991	+	15	P	TON_1673; TON_1674	TON_1673	TON_1674	1538036	1540461	45
TU0931	1540433	+	35	P	TON_1675; TON_1676; TON_1677	TON_1675	TON_1677	1540468	1544317	35
TU0932	1544806	-	-1919	P	TON_1678	TON_1678	TON_1678	1544782	1544291	24
TU0933	1545743	-	-30	P	TON_1680	TON_1680	TON_1680	1545732	1545238	11

TU0934	1545795	+	372	P	TON_1681	TON_1681	TON_1681	1545802	1546662	7
TU0935	1553800	-	-54	P	TON_1689	TON_1689	TON_1689	1553789	1552677	11
TU0936	1553841	+	8	P	TON_1690	TON_1690	TON_1690	1553851	1554453	10
TU0937	1554487	+	396	P	TON_1691	TON_1691	TON_1691	1554564	1556498	77
TU0938	1557233	-	-6	I	TON_1692	TON_1692	TON_1692	1557608	1556637	-
TU0939	1557617	-	-7	P	TON_1692	TON_1692	TON_1692	1557608	1556637	9
TU0940	1557705	+	3	P	TON_1693	TON_1693	TON_1693	1557715	1558443	10
TU0941	1559590	-	-249	P	TON_1694	TON_1694	TON_1694	1559579	1558440	11
TU0942	1561794	-	-5	P	TON_1696	TON_1696	TON_1696	1561783	1560512	11
TU0943	1561923	+	171	P	TON_1697	TON_1697	TON_1697	1561937	1563028	14
TU0944	1563091	+	118	P	TON_1698	TON_1698	TON_1698	1563114	1564316	23
TU0945	1563811	-	-71	A	TON_nc073	TON_nc073	TON_nc073	-	-	-
TU0946	1564214	+	82	P	TON_1699; TON_1700; TON_1701	TON_1699	TON_1701	1564267	1566859	53
TU0947	1574597	-	-9	P	TON_1708; TON_1707; TON_1706	TON_1708	TON_1706	1574562	1572205	35
TU0948	1574714	+	3409	N	TON_nc074	TON_nc074	TON_nc074	-	-	-
TU0949	1574802	+	11036	N	TON_nc075	TON_nc075	TON_nc075	1574986	1575849	-
TU0950	1574978	+	34	P	TON_1709	TON_1709	TON_1709	1574986	1575849	8
TU0951	1577004	-	-230	P	TON_1710	TON_1710	TON_1710	1576990	1575839	14
TU0952	1578455	-	-156	P	TON_1712; TON_1711	TON_1712	TON_1711	1578453	1577028	2
TU0953	1578527	+	109	P	TON_1713; TON_1714	TON_1713	TON_1714	1578527	1579826	0
TU0954	1583313	-	-47	P	TON_1715	TON_1715	TON_1715	1583280	1579867	33
TU0955	1587841	-	-487	P	TON_1718; TON_1717	TON_1718	TON_1717	1587832	1585419	9
TU0956	1587980	+	36	P	TON_1719; TON_1720	TON_1719	TON_1720	1587989	1589696	9
TU0957	1589836	+	4	P	TON_1721	TON_1721	TON_1721	1589836	1590453	0
TU0958	1590504	+	96	P	TON_1722	TON_1722	TON_1722	1590516	1591829	12
TU0959	1591133	+	157	I	TON_1722	TON_1722	TON_1722	1590516	1591829	-
TU0960	1591962	-	-29	P	TON_1723	TON_1723	TON_1723	1591953	1591834	9
TU0961	1592762	-	-16	P	TON_1724	TON_1724	TON_1724	1592757	1591993	5
TU0962	1593004	+	23	P	TON_1725	TON_1725	TON_1725	1593026	1593280	22
TU0963	1594997	+	67	P	TON_1727	TON_1727	TON_1727	1595089	1595256	92
TU0964	1595224	+	797	P	TON_1728	TON_1728	TON_1728	1595281	1595577	57
TU0965	1595618	+	10	P	TON_1729; TON_1730	TON_1729	TON_1730	1595636	1598772	18

TU0966	1599214	-	-61	P	TON_1731	TON_1731	TON_1731	1599203	1598736	11
TU0967	1600050	-	-35	P	TON_1732	TON_1732	TON_1732	1600040	1599285	10
TU0968	1600160	+	5	P	TON_1733	TON_1733	TON_1733	1600173	1601951	13
TU0969	1602488	-	-5	A	TON_nc076	TON_nc076	TON_nc076	-	-	-
TU0970	1603384	+	12	S	TON_1736	TON_1736	TON_1736	1603384	1603905	0
TU0971	1603408	+	12	P	TON_1736	TON_1736	TON_1736	1603384	1603905	-
TU0972	1603937	+	2802	P	TON_1737	TON_1737	TON_1737	1603938	1604447	1
TU0973	1608133	-	-143	P	TON_1742	TON_1742	TON_1742	1608121	1607696	12
TU0974	1608396	+	25	P	TON_1743; TON_1744; TON_1745	TON_1743	TON_1745	1608429	1611558	33
TU0975	1611645	+	1294	P	TON_1746; TON_1747; TON_1748; TON_1749; TON_1750; TON_1751; TON_1752; TON_1753; TON_1754	TON_1746	TON_1754	1611688	1620370	43
TU0976	1624225	-	-644	P	TON_1758	TON_1758	TON_1758	1624225	1623395	0
TU0977	1628166	+	247	P	TON_1764	TON_1764	TON_1764	1628221	1630653	55
TU0978	1630814	+	164	P	TON_1765; TON_1766; TON_1767; TON_1768; TON_1769	TON_1765	TON_1769	1630854	1635867	40
TU0979	1635776	+	17	P	TON_1770; TON_1771	TON_1770	TON_1771	1635864	1637504	88
TU0980	1638873	-	-1144	P	TON_1772	TON_1772	TON_1772	1638832	1637501	41
TU0981	1639052	+	20	P	TON_1773	TON_1773	TON_1773	1639052	1639459	0
TU0982	1639440	+	12	P	TON_1774	TON_1774	TON_1774	1639465	1639740	25
TU0983	1639771	+	3	P	TON_1775	TON_1775	TON_1775	1639782	1641389	11
TU0984	1641435	+	201	N	TON_nc077	TON_nc077	TON_nc077	-	-	-
TU0985	1644842	-	-4	P	TON_1778; TON_1777; TON_1776	TON_1778	TON_1776	1644829	1641743	13
TU0986	1645093	+	17	P	TON_1779	TON_1779	TON_1779	1645143	1645892	50
TU0987	1645974	+	4	P	TON_1780	TON_1780	TON_1780	1646085	1647140	111
TU0988	1648578	-	-308	P	TON_1782	TON_1782	TON_1782	1648569	1648261	9
TU0989	1648630	+	26	P	TON_1783	TON_1783	TON_1783	1648641	1649831	11
TU0990	1649856	+	45	N	TON_nc078	TON_nc078	TON_nc078	-	-	-
TU0991	1650668	-	-89	P	TON_1784	TON_1784	TON_1784	1650668	1649925	0
TU0992	1656799	-	-69	P	TON_1789	TON_1789	TON_1789	1656790	1655423	9
TU0993	1657224	-	-18	P	TON_1790	TON_1790	TON_1790	1657224	1656820	0
TU0994	1665991	-	-2677	P	TON_1795	TON_1795	TON_1795	1665963	1664644	28
TU0995	1668068	+	334	P	TON_1797; TON_1798	TON_1797	TON_1798	1668118	1670532	50

TU0996	1668073	-	-68	P	TON_1796	TON_1796	TON_1796	1668047	1666089	26
TU0997	1670958	+	65	P	TON_1800	TON_1800	TON_1800	1670980	1672062	22
TU0998	1672182	+	8	P	TON_1801	TON_1801	TON_1801	1672182	1672958	0
TU0999	1672996	+	876	P	TON_1802	TON_1802	TON_1802	1672996	1673178	0
TU1000	1676516	-	-93	P	TON_1803	TON_1803	TON_1803	1676398	1673201	118
TU1001	1677214	-	-10	P	TON_1804	TON_1804	TON_1804	1677202	1676828	12
TU1002	1678198	+	11	P	TON_1806	TON_1806	TON_1806	1678209	1678736	11
TU1003	1680921	+	208	P	TON_1809	TON_1809	TON_1809	1680932	1681363	11
TU1004	1681681	-	-633	P	TON_1810	TON_1810	TON_1810	1681672	1681364	9
TU1005	1685703	-	-30	P	TON_1813; TON_1812	TON_1813	TON_1812	1685693	1683769	10
TU1006	1688811	-	-22	P	TON_1814	TON_1814	TON_1814	1688800	1685834	11
TU1007	1689415	-	-1809	P	TON_1815	TON_1815	TON_1815	1689356	1688892	59
TU1008	1692280	-	-7	P	TON_1816	TON_1816	TON_1816	1692226	1689494	54
TU1009	1693666	-	-48	P	TON_1818; TON_1817	TON_1818	TON_1817	1693653	1692416	13
TU1010	1693742	+	106	P	TON_1819	TON_1819	TON_1819	1693755	1696085	13
TU1011	1697190	+	28	A	TON_nc079	TON_nc079	TON_nc079	-	-	-
TU1012	1698449	-	-45	P	TON_1820	TON_1820	TON_1820	1698436	1696082	13
TU1013	1698583	+	11	P	TON_1821	TON_1821	TON_1821	1698600	1699724	17
TU1014	1699628	+	4	P	TON_1822; TON_1823	TON_1822	TON_1823	1699714	1701923	86
TU1015	1702890	-	-33	N	TON_nc080	TON_nc080	TON_nc080	-	-	-
TU1016	1709196	+	3	P	TON_1825	TON_1825	TON_1825	1709207	1709929	11
TU1017	1709927	-	-277	A	TON_nc081	TON_nc081	TON_nc081	-	-	-
TU1018	1719562	-	-13	P	TON_1833	TON_1833	TON_1833	1719555	1717813	7
TU1019	1721528	-	-23	P	TON_1836	TON_1836	TON_1836	1721518	1720565	10
TU1020	1721577	+	120	P	TON_1837	TON_1837	TON_1837	1721579	1722601	2
TU1021	1724083	-	-8	N	TON_nc082	TON_nc082	TON_nc082	-	-	-
TU1022	1724170	+	3	N	TON_nc083	TON_nc083	TON_nc083	-	-	-
TU1023	1724396	-	-19	N	TON_nc084	TON_nc084	TON_nc084	-	-	-
TU1024	1724623	+	17	P	TON_1841	TON_1841	TON_1841	1724638	1725282	15
TU1025	1728171	+	11	P	TON_1846; TON_1847; TON_1848	TON_1846	TON_1848	1728181	1729344	10
TU1026	1729394	+	251	P	TON_1849; TON_1850; TON_1851	TON_1849	TON_1851	1729408	1730917	14
TU1027	1730936	+	10	P	TON_1852	TON_1852	TON_1852	1730948	1732372	12

TU1028	1732632	+	196	P	TON_1853; TON_1975	TON_1853	TON_1975	1732764	1733761	132
TU1029	1736587	-	-18	I	TON_1855; TON_1854	TON_1855	TON_1854	1737121	1734419	-
TU1030	1737280	-	-25	P	TON_1855; TON_1854	TON_1855	TON_1854	1737121	1734419	159
TU1031	1737498	+	45	N	TON_nc085	TON_nc085	TON_nc085	-	-	-
TU1032	1743596	-	-4	P	TON_1862; TON_1861; TON_1860; TON_1859; TON_1858; TON_1857;	TON_1862	TON_1856	1743512	1737726	84
TU1033	1744744	+	80	P	TON_1863; TON_1864	TON_1863	TON_1864	1744746	1746321	2
TU1034	1746375	+	143	P	TON_1865; TON_1866	TON_1865	TON_1866	1746411	1746885	36
TU1035	1749772	-	-599	P	TON_1869	TON_1869	TON_1869	1749760	1748735	12
TU1036	1750038	+	213	P	TON_1870; TON_1871	TON_1870	TON_1871	1750066	1752652	28
TU1037	1763353	+	15	P	TON_1878	TON_1878	TON_1878	1763378	1764445	25
TU1038	1767248	-	-14	P	TON_1881	TON_1881	TON_1881	1767173	1766586	75
TU1039	1769172	-	-43	P	TON_1882	TON_1882	TON_1882	1769162	1767180	10
TU1040	1769643	-	-78	P	TON_1883	TON_1883	TON_1883	1769585	1769295	58
TU1041	1769993	+	13	P	TON_1884	TON_1884	TON_1884	1770019	1771479	26
TU1042	1771548	+	21	P	TON_1885	TON_1885	TON_1885	1771558	1772958	10
TU1043	1774232	+	13	P	TON_1887	TON_1887	TON_1887	1774242	1775150	10
TU1044	1775228	+	248	P	TON_1888	TON_1888	TON_1888	1775228	1776538	0
TU1045	1779579	-	-27	P	TON_1892	TON_1892	TON_1892	1779569	1779399	10
TU1046	1781374	-	-158	N	TON_nc086	TON_nc086	TON_nc086	-	-	-
TU1047	1791063	-	-104	P	TON_1901; TON_1900; TON_1899; TON_1898; TON_1897; TON_1896;	TON_1901	TON_1895	1791050	1781711	13
TU1048	1795045	-	-179	P	TON_1904; TON_1903; TON_1902	TON_1904	TON_1902	1795034	1791090	11
TU1049	1796102	-	-29	P	TON_1905	TON_1905	TON_1905	1796091	1795105	11
TU1050	1796939	-	-60	P	TON_1906	TON_1906	TON_1906	1796939	1796355	0
TU1051	1797169	+	285	P	TON_1907	TON_1907	TON_1907	1797197	1798477	28
TU1052	1803130	-	-1	P	TON_1915	TON_1915	TON_1915	1803034	1802582	96
TU1053	1803350	-	-92	N	TON_nc087	TON_nc087	TON_nc087	-	-	-
TU1054	1803797	-	-15113	P	TON_2012	TON_2012	TON_2012	1803791	1803716	-
TU1055	1804848	-	-5	P	TON_2011	TON_2011	TON_2011	1804842	1804765	-
TU1056	1804900	+	245	P	TON_1918	TON_1918	TON_1918	1804922	1805980	22
TU1057	1808104	-	-120	P	TON_1920	TON_1920	TON_1920	1808070	1807729	34
TU1058	1808973	-	-745	P	TON_1922	TON_1922	TON_1922	1808947	1808834	26

TU1059	1810340	+	56	P	TON_1924	TON_1924	TON_1924	1810351	1810728	11
TU1060	1811557	-	-68	P	TON_1925	TON_1925	TON_1925	1811532	1810744	25
TU1061	1811612	+	138	P	TON_1926; TON_1927	TON_1926	TON_1927	1811628	1812705	16
TU1062	1815652	-	-112	P	TON_1933	TON_1933	TON_1933	1815625	1815296	27
TU1063	1815735	+	57	P	TON_1934; TON_1935	TON_1934	TON_1935	1815744	1817386	9
TU1064	1818540	+	75	P	TON_1937	TON_1937	TON_1937	1818543	1819340	3
TU1065	1819387	+	32	P	TON_1938	TON_1938	TON_1938	1819398	1820726	11
TU1066	1822446	-	-291	P	TON_1940; TON_1939	TON_1940	TON_1939	1822446	1820723	0
TU1067	1824532	-	-73	P	TON_1942	TON_1942	TON_1942	1824521	1823751	11
TU1068	1826309	-	-487	P	TON_1944; TON_1943	TON_1944	TON_1943	1826295	1824624	14
TU1069	1826845	-	-30	P	TON_1945	TON_1945	TON_1945	1826792	1826415	53
TU1070	1826923	+	680	P	TON_1946	TON_1946	TON_1946	1826937	1827107	14
TU1071	1827850	+	28	P	TON_1948	TON_1948	TON_1948	1827860	1828471	10
TU1072	1828994	-	-14	P	TON_1976	TON_1976	TON_1976	1828882	1828418	112
TU1073	1829046	+	22	P	TON_1949	TON_1949	TON_1949	1829046	1830113	0
TU1074	1830147	+	144	P	TON_1950; TON_1951	TON_1950	TON_1951	1830158	1831382	11
TU1075	1833684	-	-1067	P	TON_1954; TON_1953; TON_1952	TON_1954	TON_1952	1833672	1831427	12
TU1076	1834398	-	-12	P	TON_1955	TON_1955	TON_1955	1834384	1833797	14
TU1077	1835573	+	142	P	TON_1956	TON_1956	TON_1956	1835746	1836180	173
TU1078	1835735	+	147	S	TON_1956	TON_1956	TON_1956	1835746	1836180	-
TU1079	1840391	+	15	P	TON_1960	TON_1960	TON_1960	1840400	1841452	9
TU1080	1844879	+	14	P	TON_1965	TON_1965	TON_1965	1844891	1845508	12
TU1081	1846861	-	-16	P	TON_1966	TON_1966	TON_1966	1846861	1845509	0
TU1082	1846912	+	10	P	TON_1967	TON_1967	TON_1967	1846966	1847520	54

Supplementary Table 3. The selected gene information for qRT-PCR

Gene	Function	RPKM (log)	Primer position			Primer sequence (5')	
			F	W	bp		
TON_1559	Coenzyme F420 hydrogenase α subunit	5.375	562	661	100	F	ACCGATGAGGACATCCAGAC
						R	TGAACCTGTCCCCGTAGAAC
TON_0286	hydrogenase maturation protein HypF	5.200	1642	1742	101	F	TTGGCGAGCTACTACCCACT
						R	GCCTTTGGACAGCACTTCTC
TON_0919	iron-molybdenum cofactor-binding protein	5.153	63	175	113	F	AAGAGCTCCAGCTTTCGTCA
						R	TAGCAAATGGTCCTGCTCCT
TON_0539	formate dehydrogenase subunit alpha	4.859	1730	1831	102	F	GCCAGTACCACACACTCAGC
						R	CCAGCTTCTTTGCATCTTCC
TON_1552	sodium/phosphate symporter	4.509	24	140	117	F	TGATGCCGCAAATTCATATGA
						R	ACGCTCTTGCCGAAGAAGTA
TON_0579	metG methionyl-tRNA synthetase	4.155	1583	1700	118	F	GGGAGTTCATCGAGATTCCA
						R	GGGTTGCCTCTGGCTATGTA
TON_0767	translation initiation factor IF-1	3.896	150	256	107	F	AAAGGTCAGGAGATGCAGGA
						R	CTCTCTCGTCCGTCTGAACC
TON_0650	hydrolase	3.559	228	335	108	F	CAAGCTGATGCCGAAGTACA
						R	TAAGTGTGCTCGCCAGAGAA
TON_0305	NADH oxidase	3.186	183	299	117	F	CTATCCACCGGAGGTTTTCA
						R	TAGGTGTGTTCCCCGTCTTC
TON_0889	ATPase	2.965	38	140	103	F	AGATGCTTGAAGGTGGCCTA
						R	ACGCCTTCAGTGAGGAATTG

Supplementary Table 4. mRNA expression profiles according to the nutrient in *T. onnurineus NA1*

Gene	Start	End	Strand	Normalized mRNA expression			Fold Change		Function
				YPS	MMC	MMF	MMC/YPS	MMF/YPS	
TON_0001	1	3927	+	7706.56	10302.24	10380.35	1.34	1.35	family B-type DNA-dependent polymerase
TON_0002	4079	4774	-	1012.02	1387.26	1846.28	1.37	1.82	hydrolase
TON_0003	4815	5831	-	1977.47	1845.27	3460.85	0.93	1.75	hypothetical protein
TON_0004	5832	6473	-	1460.67	2009.96	2741.55	1.38	1.88	membrane protein
TON_0005	6437	7906	+	10501.82	9617.03	8496.68	0.92	0.81	S-layer protein
TON_0006	8069	9247	+	26.12	37.27	71.86	1.43	2.75	major facilitator superfamily permease
TON_0007	9286	11511	+	2034.26	4034.34	3471.85	1.98	1.71	RecJ-like exonuclease
TON_0008	11580	11834	+	494.08	797.01	435.54	1.61	0.88	hypothetical protein
TON_0009	12484	12699	+	85.19	238.02	156.91	2.79	1.84	hypothetical protein
TON_0010	12754	13932	-	42.03	108.19	57.93	2.57	1.38	Permease
TON_0011	13936	14226	-	47.70	104.59	49.86	2.19	1.05	hypothetical protein
TON_0012	14275	14661	-	92.00	205.56	256.63	2.23	2.79	thioesterase
TON_0013	14754	15152	+	2772.55	2907.95	1206.16	1.05	0.44	hypothetical protein
TON_0014	15273	16313	+	2938.38	8586.80	5103.29	2.92	1.74	tungsten ABC transporter substrate-binding protein
TON_0015	16353	17060	+	575.86	913.62	584.39	1.59	1.01	Binding-protein-dependent transport systems inner membrane component
TON_0016	17057	17779	+	545.20	1608.45	805.82	2.95	1.48	molybdenum-pterin binding domain-containing protein
TON_0017	18313	19359	-	730.33	910.01	1327.15	1.25	1.82	membrane protein
TON_0018	19415	19738	+	1586.75	2423.49	1118.91	1.53	0.71	hypothetical protein
TON_0019	20236	20919	+	822.34	893.18	2066.98	1.09	2.51	hypothetical protein
TON_0020	21353	23269	-	5137.33	2035.20	1545.65	0.40	0.30	indolepyruvate: ferredoxin oxidoreductase subunit alpha
TON_0021	23342	23551	-	9.09	9.62	9.53	1.06	1.05	hypothetical protein
TON_0022	23624	23875	-	37.48	36.06	18.33	0.96	0.49	membrane protein
TON_0023	23969	24256	+	480.45	919.63	470.00	1.91	0.98	hypothetical protein
TON_0024	24266	24583	+	407.76	223.60	266.90	0.55	0.65	nucleotide pyrophosphohydrolase
TON_0025	24573	25022	-	1669.66	1002.58	3268.01	0.60	1.96	bis(5'-adenosyl)-triphosphatase
TON_0026	25077	25313	+	616.75	1009.79	1089.58	1.64	1.77	membrane protein
TON_0027	25378	26160	+	15258.65	25744.79	29688.52	1.69	1.95	proteasome subunit alpha
TON_0028	26172	26882	+	5953.99	11355.31	18533.14	1.91	3.11	putative RNA-associated protein

TON_0029	26879	27649	+	7150.01	18616.16	24484.78	2.60	3.42	exosome complex RNA-binding protein Rrp4
TON_0030	27646	28395	+	6567.33	17739.81	16915.64	2.70	2.58	exosome complex exonuclease Rrp41
TON_0031	28388	29206	+	5709.79	16885.10	12132.77	2.96	2.12	exosome complex RNA-binding protein Rrp42
TON_0032	29247	29543	+	402.08	875.15	786.02	2.18	1.95	membrane protein
TON_0033	29596	29994	+	5233.87	3638.84	4701.48	0.70	0.90	hypothetical protein
TON_0034	30064	30699	+	4383.14	4410.61	4875.25	1.01	1.11	hypothetical protein
TON_0035	30696	31220	-	1394.79	1015.80	1722.36	0.73	1.23	hypothetical protein
TON_0036	31271	32272	-	4308.18	4794.09	6657.74	1.11	1.55	homoserine dehydrogenase
TON_0037	32309	33151	-	6978.50	10686.92	11420.80	1.53	1.64	hypothetical protein
TON_0038	33235	34362	-	1073.35	4239.91	1643.90	3.95	1.53	methylmalonyl-CoA decarboxylase beta chain
TON_0039	34369	34833	-	831.42	1293.49	1541.25	1.56	1.85	putative acetyl-CoA carboxylase biotin carboxyl carrier protein subunit
TON_0040	34836	35222	-	2245.52	3049.80	3325.94	1.36	1.48	methylmalonyl-CoA decarboxylase subunit delta
TON_0041	35233	36801	-	7289.72	4394.98	4789.46	0.60	0.66	methylmalonyl-CoA decarboxylase subunit alpha
TON_0042	36951	37382	-	10517.73	8223.76	6701.00	0.78	0.64	translation initiation factor IF-2
TON_0043	37451	40924	-	6560.52	8443.75	12059.45	1.29	1.84	cell division control protein
TON_0044	40924	41418	-	2061.52	1029.02	2383.00	0.50	1.16	hypothetical protein
TON_0045	41527	42039	+	7801.97	10531.85	5992.70	1.35	0.77	metallophosphoesterase
TON_0046	42118	42972	+	3104.21	3909.32	3502.64	1.26	1.13	hypothetical protein
TON_0047	42953	43543	-	1114.24	680.40	654.78	0.61	0.59	hypothetical protein
TON_0048	43637	44659	+	1149.45	752.53	553.59	0.65	0.48	RNA 3'-terminal-phosphate cyclase
TON_0049	44714	45553	+	365.74	387.09	143.71	1.06	0.39	Membrane protein
TON_0050	45563	46408	-	966.59	861.93	1165.84	0.89	1.21	metal-dependent hydrolase
TON_0051	46419	46742	-	1353.90	1146.83	1398.27	0.85	1.03	hypothetical protein
TON_0052	46791	48038	-	578.13	1503.86	821.95	2.60	1.42	hydrogenase subunit alpha
TON_0053	48035	48775	-	194.23	400.31	344.62	2.06	1.77	Sulfhydrogenase II, delta chain
TON_0054	48772	49647	-	230.57	382.28	288.16	1.66	1.25	cytochrome-c3 hydrogenase subunit gamma
TON_0055	49644	50648	-	681.49	1307.92	835.15	1.92	1.23	Sulfhydrogenase II, beta chain
TON_0056	50799	51635	+	3086.03	1216.55	1475.99	0.39	0.48	ferredoxin-NADP(+) reductase subunit alpha
TON_0057	51635	53059	+	3532.41	1597.63	1959.93	0.45	0.55	gltB-1 glutamate synthase small chain
TON_0058	53132	54034	-	8306.28	1204.53	1904.20	0.15	0.23	asparagine synthetase A
TON_0059	54235	54828	+	1684.43	1389.66	2138.10	0.83	1.27	ATPase

TON_0060	54831	55592	-	1780.97	1192.51	1901.27	0.67	1.07	hypothetical protein
TON_0061	55623	56777	-	11656.96	8449.76	7118.21	0.72	0.61	serine-glyoxylate aminotransferase
TON_0062	56942	58108	+	671.27	548.17	445.80	0.82	0.66	major facilitator superfamily permease
TON_0063	58197	58745	+	4873.82	3826.38	5425.18	0.79	1.11	rpl10e 50S ribosomal protein L10e
TON_0064	58963	60105	+	8949.15	6069.55	3688.88	0.68	0.41	hypothetical protein
TON_0065	60403	61320	+	10515.45	5922.89	12231.76	0.56	1.16	hypothetical protein
TON_0066	61322	62365	+	6642.30	6800.44	10490.33	1.02	1.58	rpl3p 50S ribosomal protein L3P
TON_0067	62376	63143	+	6228.86	6653.78	10474.20	1.07	1.68	rpl4lp 50S ribosomal protein L4P
TON_0068	63150	63410	+	11424.11	7289.71	14197.55	0.64	1.24	rplW 50S ribosomal protein L23
TON_0069	63424	64143	+	5008.98	6168.12	9905.95	1.23	1.98	rpl2p 50S ribosomal protein L2
TON_0070	64146	64547	+	1564.03	3482.57	3177.82	2.23	2.03	rps19p 30S ribosomal protein S19
TON_0071	64558	65028	+	1807.10	3054.61	3627.29	1.69	2.01	rpl22p 50S ribosomal protein L22
TON_0072	65034	65660	+	1927.49	4193.02	3841.40	2.18	1.99	rps3p 30S ribosomal protein S3
TON_0073	65657	65857	+	721.25	2255.19	1761.95	3.13	2.44	50S ribosomal protein L29
TON_0074	65864	66160	+	3583.52	11117.29	5603.35	3.10	1.56	translation initiation factor Sui1
TON_0075	66420	66755	+	2746.42	2611.02	3822.33	0.95	1.39	rps17p 30S ribosomal protein S17
TON_0076	66761	67186	+	4943.10	4244.72	7015.55	0.86	1.42	rpl14p 50S ribosomal protein L14
TON_0077	67197	67562	+	3619.87	4721.96	6021.29	1.30	1.66	rpl24p 50S ribosomal protein L24
TON_0078	67562	68293	+	2846.37	3595.57	4687.55	1.26	1.65	30S ribosomal protein S4e
TON_0079	68305	68856	+	3614.19	5438.43	7510.48	1.50	2.08	rpl5p 50S ribosomal protein L5
TON_0080	68858	69028	+	1907.05	2508.84	3254.08	1.32	1.71	rps14P 30S ribosomal protein S14
TON_0081	69040	69432	+	2621.48	4550.06	5532.96	1.74	2.11	rps8p 30S ribosomal protein S8
TON_0082	69443	69997	+	2986.08	6439.80	5557.89	2.16	1.86	rpl6p 50S ribosomal protein L6
TON_0083	70008	70388	+	2226.21	4105.27	4685.35	1.84	2.10	rpl32e 50S ribosomal protein L32e
TON_0084	70399	70845	+	5924.46	9297.26	11584.32	1.57	1.96	rpl19e 50S ribosomal protein L19e
TON_0085	70856	71461	+	3371.12	5939.72	5305.66	1.76	1.57	rpl18p 50S ribosomal protein L18
TON_0086	71458	72165	+	2823.66	6241.45	5515.36	2.21	1.95	rps5p 30S ribosomal protein S5
TON_0087	72177	72644	+	9755.59	17799.92	12275.75	1.82	1.26	rpl30p 50S ribosomal protein L30
TON_0088	72656	73102	+	12278.25	26725.72	19204.78	2.18	1.56	rpl15p 50S ribosomal protein L15
TON_0089	73138	74583	+	952.96	7024.04	4342.93	7.37	4.56	preprotein translocase subunit SecY
TON_0090	74659	75249	+	28088.92	14699.63	24359.40	0.52	0.87	adenylate kinase
TON_0091	75242	75769	+	7198.85	6378.49	7636.60	0.89	1.06	membrane protein

TON_0092	75812	76084	+	5930.13	8289.88	9925.01	1.40	1.67 rpl34e 50S ribosomal protein L34e
TON_0093	76094	76687	+	20382.35	21960.49	29978.15	1.08	1.47 cytidylate kinase
TON_0094	76688	76939	+	1936.58	1019.41	3908.12	0.53	2.02 50S ribosomal protein L14e
TON_0095	77020	77727	+	3351.82	2006.35	2509.85	0.60	0.75 short-chain alcohol dehydrogenase
TON_0096	77788	78792	+	3608.51	2255.19	3415.39	0.62	0.95 H/ACA RNA-protein complex component Cbf5p
TON_0097	79038	79868	+	673.54	427.96	378.35	0.64	0.56 hypothetical protein
TON_0098	79865	80839	+	506.58	1821.22	488.33	3.60	0.96 Kef-type K ⁺ transport system membrane protein
TON_0099	81381	81683	+	216.94	372.66	73.32	1.72	0.34 hypothetical protein
TON_0100	81899	82201	+	67.01	62.51	12.46	0.93	0.19 protein MmpL11
TON_0101	82480	83109	+	2688.49	924.44	3598.70	0.34	1.34 ribosomal RNA small subunit methyltransferase C
TON_0102	83221	83670	+	15226.85	10612.39	17649.60	0.70	1.16 rps13p 30S ribosomal protein S13
TON_0103	83681	84223	+	5258.86	6150.09	8085.34	1.17	1.54 rps4p 30S ribosomal protein S4
TON_0104	84220	84639	+	1767.34	3370.77	3317.14	1.91	1.88 rps11p 30S ribosomal protein S11
TON_0105	84668	85450	+	5367.90	7849.90	10732.30	1.46	2.00 DNA-directed RNA polymerase subunit D
TON_0106	85593	85955	+	6616.17	6709.08	10452.94	1.01	1.58 50S ribosomal protein L18e
TON_0107	85962	86390	+	11995.43	9210.71	15719.74	0.77	1.31 rpl13p 50S ribosomal protein L13
TON_0108	86402	86809	+	5196.39	5306.20	7976.09	1.02	1.53 rps9p 30S ribosomal protein S9
TON_0109	86843	87040	+	382.77	495.28	659.91	1.29	1.72 DNA-directed RNA polymerase subunit N
TON_0110	87156	87329	+	4772.73	3422.46	6044.02	0.72	1.27 rpoK DNA-directed RNA polymerase subunit K
TON_0111	87336	88361	+	3911.78	7195.94	5165.61	1.84	1.32 hypothetical protein
TON_0112	88376	88981	+	2168.29	3784.30	4069.43	1.75	1.88 rps2P 30S ribosomal protein S2
TON_0113	89168	89326	+	773.50	1087.93	2257.62	1.41	2.92 rpl40e 50S ribosomal protein L40e
TON_0114	89425	89751	-	405.49	1777.95	261.03	4.38	0.64 transcription regulator, PadR-like family
TON_0115	89876	90175	+	364.60	803.02	178.18	2.20	0.49 hypothetical protein
TON_0116	90200	91522	+	211.26	437.57	313.09	2.07	1.48 hypothetical protein
TON_0117	91494	92255	-	3514.24	958.10	2240.02	0.27	0.64 hypothetical protein
TON_0118	92811	93263	+	927.97	573.42	511.06	0.62	0.55 Lrp/AsnC family transcriptional regulator
TON_0119	93249	93575	-	728.06	549.37	665.77	0.75	0.91 hypothetical protein
TON_0120	93581	94297	-	2955.41	2303.28	2758.41	0.78	0.93 adenine phosphoribosyltransferase
TON_0121	94352	94852	-	1708.28	1874.12	1841.88	1.10	1.08 hypothetical protein
TON_0122	94857	95096	-	5843.81	4628.20	6966.43	0.79	1.19 Lrp/AsnC family transcription regulator
TON_0123	95093	96439	-	13339.11	12022.49	21528.39	0.90	1.61 signal recognition particle protein Srp54

TON_0124	96710	96817	+	4906.76	1511.08	3749.01	0.31	0.76	hypothetical protein
TON_0125	96859	97710	+	4990.81	4298.81	4089.96	0.86	0.82	hypothetical protein
TON_0126	97796	98005	+	1152.86	786.19	139.31	0.68	0.12	hypothetical protein
TON_0127	98098	99399	+	5493.98	5558.64	3242.35	1.01	0.59	hypothetical protein
TON_0128	99440	100243	+	3720.96	4319.25	4177.22	1.16	1.12	5'-methylthioadenosine phosphorylase
TON_0129	100367	101704	+	4539.89	11092.04	3403.66	2.44	0.75	NADH:polysulfide oxidoreductase
TON_0130	102152	102877	-	2191.00	3454.92	4912.65	1.58	2.24	hypothetical protein
TON_0131	103106	103939	-	5491.71	5647.60	4925.85	1.03	0.90	uridine phosphorylase
TON_0132	104050	104925	+	6237.94	4005.49	2513.52	0.64	0.40	hypothetical protein
TON_0133	104986	105990	+	4518.31	2971.66	2652.10	0.66	0.59	mevalonate kinase
TON_0134	105987	106763	+	2503.36	2336.94	2357.34	0.93	0.94	amino acid kinase
TON_0135	106821	107945	+	2572.64	1804.40	2836.14	0.70	1.10	isopentenyl pyrophosphate isomerase
TON_0136	108093	109415	+	1440.22	1757.51	2126.37	1.22	1.48	hydrolase
TON_0137	109485	110513	+	4111.68	4717.15	4908.25	1.15	1.19	bifunctional short-chain isoprenyl diphosphate synthase
TON_0138	110513	110806	+	47.70	144.26	103.39	3.02	2.17	hypothetical protein
TON_0139	110915	111121	+	0.00	7.21	2.20	-	-	membrane-associated metallopeptidase, M50 family
TON_0140	111142	111951	-	148.79	114.20	112.18	0.77	0.75	hypothetical protein
TON_0141	113674	116577	-	24782.53	19351.87	21045.19	0.78	0.85	leuS leucyl-tRNA synthetase
TON_0142	116865	118955	+	1256.22	2288.85	3560.57	1.82	2.83	hypothetical protein
TON_0143	118962	120032	-	1494.74	1114.37	1613.84	0.75	1.08	aminopeptidase P
TON_0144	120160	120744	+	5224.79	1645.71	7927.69	0.31	1.52	50S ribosomal protein L15e
TON_0145	120838	121293	+	2437.48	1573.59	2005.39	0.65	0.82	hypothetical protein
TON_0146	121290	121961	+	3599.42	1262.24	2882.33	0.35	0.80	ribonuclease P protein component 3
TON_0147	121958	123289	-	743.96	253.65	1195.17	0.34	1.61	tryptophan synthase subunit beta
TON_0148	123861	124868	+	382.77	239.22	456.07	0.62	1.19	hypothetical protein
TON_0149	124865	125311	-	3176.90	2116.95	2415.26	0.67	0.76	hypothetical protein
TON_0150	125393	125809	+	2679.41	1701.01	1305.15	0.63	0.49	nickel responsive regulator
TON_0151	125832	126245	+	1741.22	1095.14	757.43	0.63	0.43	amino acid permease
TON_0152	126242	128191	-	5221.38	3303.45	5366.52	0.63	1.03	fibronectin-binding protein
TON_0153	128316	130013	+	1386.84	1132.41	2729.09	0.82	1.97	alpha-amylase
TON_0154	130368	130685	+	2578.32	1804.40	920.94	0.70	0.36	nitrogen regulatory protein P-II
TON_0155	130682	131410	-	1340.27	891.98	1269.22	0.67	0.95	alpha-glucosidase

TON_0156	131567	133150	-	2237.57	2311.69	2927.79	1.03	1.31 sodium-dependent transporter
TON_0157	133762	135021	+	80776.36	202847.18	215542.76	2.51	2.67 glutamate dehydrogenase
TON_0158	135158	136186	-	550.87	1868.11	2737.88	3.39	4.97 branched-chain amino acid transport ATP-binding protein livM
TON_0159	136183	137088	-	169.24	592.65	720.03	3.50	4.25 branched-chain amino acid transport ATP-binding protein livH
TON_0160	137075	137848	-	387.32	774.17	1509.72	2.00	3.90 branched-chain amino acid transport ATP-binding protein livF
TON_0161	137851	138618	-	515.66	1026.62	2344.87	1.99	4.55 branched-chain amino acid transport ATP-binding protein livG
TON_0162	138666	139952	-	838.24	4244.72	8575.87	5.06	10.23 branched-chain amino acid ABC transporter substrate-binding protein
TON_0163	140219	141382	-	3379.08	1685.38	3645.62	0.50	1.08 hypothetical protein
TON_0164	141492	142103	+	6828.57	5080.20	3567.17	0.74	0.52 proteasome subunit beta
TON_0165	142114	144060	+	4805.67	8548.34	7728.99	1.78	1.61 cleavage and polyadenylation specificity factor subunit-like protein
TON_0166	144066	145400	+	806.43	2989.69	1835.28	3.71	2.28 threonine synthase
TON_0167	145449	145793	+	5906.28	2923.58	5227.20	0.49	0.89 membrane protein
TON_0168	145798	146481	+	2574.91	1854.88	2849.34	0.72	1.11 ribose-5-phosphate isomerase A
TON_0169	146837	147436	-	746.24	694.83	396.68	0.93	0.53 hypothetical protein
TON_0170	147490	148698	+	7117.07	4390.17	4818.06	0.62	0.68 hypothetical protein
TON_0171	148806	148976	+	798.48	872.75	312.36	1.09	0.39 hypothetical protein
TON_0172	148982	151303	-	283.96	1142.02	788.96	4.02	2.78 TRAP-type transporter
TON_0173	151305	151754	-	193.09	189.94	236.10	0.98	1.22 hypothetical protein
TON_0174	151769	152758	-	1231.23	3402.02	3817.93	2.76	3.10 TRAP-type transporter
TON_0175	152983	153801	+	669.00	631.12	676.77	0.94	1.01 hypothetical protein
TON_0176	153895	155043	+	19138.63	15505.05	24069.04	0.81	1.26 cell division protein FtsZ
TON_0177	155082	155267	+	6218.63	4812.12	8987.94	0.77	1.45 secE preprotein translocase subunit SecE
TON_0178	155288	155746	+	4240.03	6216.21	8831.03	1.47	2.08 nusG transcription antitermination protein NusG
TON_0179	155776	156267	+	5563.26	8181.69	12606.44	1.47	2.27 rpl11p 50S ribosomal protein L11
TON_0180	156347	156997	+	9529.56	12719.72	26331.05	1.33	2.76 rpl1P 50S ribosomal protein L1P
TON_0181	157003	158022	+	16922.64	12375.91	29997.21	0.73	1.77 rplP0 acidic ribosomal protein P0
TON_0182	158092	158409	+	3107.61	6138.07	6085.08	1.98	1.96 rpl12p 50S ribosomal protein L12
TON_0183	158447	158914	-	327.12	397.90	118.05	1.22	0.36 hypothetical protein
TON_0184	159674	160141	+	80.64	48.09	72.59	0.60	0.90 dcd deoxycytidine triphosphate deaminase
TON_0185	160492	160695	+	6799.04	19897.63	9438.88	2.93	1.39 histone A
TON_0186	160762	162036	+	6329.94	3197.66	2731.29	0.51	0.43 hypothetical protein

TON_0187	162111	162512	+	11736.46	19599.50	9710.18	1.67	0.83 hypothetical protein
TON_0188	162509	163903	+	20409.61	20198.16	27104.61	0.99	1.33 DNA primase
TON_0189	164188	165909	+	8088.20	5532.20	7551.55	0.68	0.93 gltX glutamyl-tRNA synthetase
TON_0190	165961	167247	-	319.17	390.69	478.80	1.22	1.50 membrane protein
TON_0191	167384	169885	-	3348.41	7238.02	14279.67	2.16	4.26 maltodextrin phosphorylase
TON_0192	169996	171873	-	6702.49	8533.91	8376.43	1.27	1.25 phosphoenolpyruvate carboxykinase
TON_0193	172012	172218	+	13.63	4.81	7.33	0.35	0.54 NDP-sugar synthase, N-terminus
TON_0194	172558	172758	+	2824.79	2797.35	4023.97	0.99	1.42 NDP-sugar synthase, C-terminus
TON_0195	172769	173476	+	2526.07	2793.75	4338.53	1.11	1.72 phosphomannomutase
TON_0196	173585	174202	+	1548.13	1179.29	2306.01	0.76	1.49 tmk thymidylate kinase
TON_0197	174424	175293	-	525.89	1636.10	850.55	3.11	1.62 hydrolase
TON_0198	175303	176613	-	316.89	742.92	651.84	2.34	2.06 permease
TON_0199	176708	178033	-	20.44	18.03	22.00	0.88	1.08 permease
TON_0200	178120	178857	+	121.53	289.71	154.71	2.38	1.27 glycerophosphoryl diester phosphodiesterase
TON_0201	178841	179590	+	713.30	1137.21	787.49	1.59	1.10 glycerophosphoryl diester phosphodiesterase
TON_0202	179650	181131	+	651.96	539.76	810.95	0.83	1.24 glpK glycerol kinase
TON_0203	181334	182824	+	7289.72	2377.81	3569.37	0.33	0.49 anaerobic glycerol 3-phosphate dehydrogenase
TON_0204	182821	184077	+	10265.57	5112.65	5702.34	0.50	0.56 NADH oxidase
TON_0205	184074	184424	+	4581.91	3048.60	3221.82	0.67	0.70 molybdopterin oxidoreductase
TON_0206	184469	184912	-	1021.11	976.13	398.14	0.96	0.39 hypothetical protein
TON_0207	184932	185138	-	1175.58	616.69	1025.79	0.52	0.87 hypothetical protein
TON_0208	185131	185838	-	1667.39	1726.26	1641.70	1.04	0.98 membrane protein
TON_0209	185957	186637	-	1602.65	1747.89	828.55	1.09	0.52 metallophosphoesterase
TON_0210	186729	187007	+	5394.03	3126.74	1995.85	0.58	0.37 hypothetical protein
TON_0211	186994	187683	-	458.87	300.53	442.87	0.65	0.97 HAD-superfamily hydrolase
TON_0212	187871	189157	+	263.51	332.99	1059.52	1.26	4.02 hypothetical protein
TON_0213	189304	190644	+	1520.87	2661.51	2215.09	1.75	1.46 glycine dehydrogenase subunit 1
TON_0214	190645	192153	+	4497.86	9821.39	5198.61	2.18	1.16 glycine dehydrogenase subunit 2
TON_0215	192267	192575	+	216.94	217.59	208.97	1.00	0.96 hypothetical protein
TON_0216	194333	194581	+	1893.42	1096.34	4664.08	0.58	2.46 rpoH DNA-directed RNA polymerase subunit H
TON_0217	194598	197960	+	11453.64	18420.22	39591.54	1.61	3.46 DNA-directed RNA polymerase subunit B
TON_0218	197966	200683	+	7414.66	13523.95	21202.10	1.82	2.86 DNA-directed RNA polymerase subunit A'

TON_0219	200689	201864	+	6816.08	8898.16	12597.64	1.31	1.85 DNA-directed RNA polymerase subunit A"
TON_0220	201878	202180	+	4103.73	3285.42	7439.36	0.80	1.81 50S ribosomal protein L30e
TON_0221	202180	202617	+	2949.73	3099.09	4390.59	1.05	1.49 transcription elongation factor NusA-like protein
TON_0222	202628	203071	+	3908.37	8247.80	8231.25	2.11	2.11 rps12P 30S ribosomal protein S12
TON_0223	203077	203724	+	5707.51	8502.66	12338.08	1.49	2.16 30S ribosomal protein S7
TON_0224	203960	205084	-	3233.69	10126.73	2862.53	3.13	0.89 phosphodiesterase
TON_0225	205090	205425	-	514.53	1461.79	581.45	2.84	1.13 hypothetical protein
TON_0226	205422	205622	-	2869.09	2518.46	2782.61	0.88	0.97 hypothetical protein
TON_0227	205689	206954	-	1813.91	3107.50	2841.27	1.71	1.57 hypothetical protein
TON_0228	207515	207718	+	1091.53	183.93	137.85	0.17	0.13 sulfur carrier protein ThiS
TON_0229	207885	209315	+	18229.97	3690.53	2426.99	0.20	0.13 hypothetical protein
TON_0230	209322	210239	+	1432.27	1341.58	445.80	0.94	0.31 hypothetical protein
TON_0231	210287	211486	-	3551.72	1994.33	2312.61	0.56	0.65 alanine aminotransferase
TON_0232	211715	211963	+	84.05	120.21	66.72	1.43	0.79 membrane protein
TON_0233	211960	212541	+	243.07	199.55	214.10	0.82	0.88 membrane protein
TON_0234	212603	212782	+	1515.19	9827.40	5128.22	6.49	3.38 hypothetical protein
TON_0235	213001	213285	+	11177.64	7515.71	9310.57	0.67	0.83 rpl44e 50S ribosomal protein L44e
TON_0236	213289	213486	+	370.28	513.31	457.54	1.39	1.24 rps27e 30S ribosomal protein S27e
TON_0237	213583	214410	+	12776.88	12444.44	10917.81	0.97	0.85 translation initiation factor IF-2
TON_0238	214422	214598	+	1607.19	2095.31	1972.39	1.30	1.23 H/ACA RNA-protein complex component Nop10p
TON_0239	214603	215403	+	10948.20	10878.06	10426.54	0.99	0.95 hypothetical protein
TON_0240	215538	216152	+	3000.85	1151.64	1035.32	0.38	0.35 cobalt ABC transporter permease CbiM
TON_0241	216149	216397	+	345.29	194.74	153.98	0.56	0.45 membrane protein
TON_0242	216399	217058	+	3666.44	1679.37	1704.76	0.46	0.46 cobalt ABC transporter permease CbiQ
TON_0243	217055	217855	+	3636.91	2668.73	2296.48	0.73	0.63 cobalt ABC transporter ATPase
TON_0244	217845	219212	-	2386.37	3159.19	4094.36	1.32	1.72 phosphohexomutase
TON_0245	219214	220596	-	1414.10	1707.02	1962.13	1.21	1.39 bifunctional mannose-6-phosphate isomerase/mannose-1-phosphate guanylyl transferase
TON_0246	220672	222033	-	1161.95	2758.89	2700.49	2.37	2.32 ADP-dependent glucokinase
TON_0247	222108	222677	-	2183.05	5951.74	3564.97	2.73	1.63 glucose-6-phosphate isomerase
TON_0248	222743	223339	-	3752.76	3611.19	6309.45	0.96	1.68 peptidase
TON_0249	223336	223515	-	1148.32	1524.30	1451.80	1.33	1.26 RNA-binding protein

TON_0250	223565	223750	-	2947.46	2931.99	3125.76	0.99	1.06	hypothetical protein
TON_0251	223747	224448	-	1832.08	2110.94	1945.99	1.15	1.06	signaling protein
TON_0252	224445	225380	-	2772.55	2134.98	2346.34	0.77	0.85	ribonuclease Z
TON_0253	225469	226428	+	33538.60	33552.61	26744.60	1.00	0.80	hypothetical protein
TON_0254	226396	227172	-	805.30	234.42	347.55	0.29	0.43	ABC-type iron(III)-siderophore transport system, ATPase component
TON_0255	227169	228203	-	791.67	421.95	329.95	0.53	0.42	ABC-type iron(III)-siderophore transport system permease
TON_0256	228209	229345	-	13410.67	2079.68	3214.48	0.16	0.24	hemV-3 iron (III) ABC transporter ATP-binding protein
TON_0257	229347	230045	-	10939.12	976.13	2097.77	0.09	0.19	fwdE-like tungsten formylmethanofuran dehydrogenase
TON_0258	230165	230539	+	3394.98	8479.82	6257.39	2.50	1.84	iron-molybdenum cofactor-binding protein
TON_0259	230598	231623	+	127.21	269.28	231.70	2.12	1.82	mae1-like C4-dicarboxylate transporter
TON_0260	231958	232845	-	2127.40	1675.77	1768.55	0.79	0.83	cobalt/zinc/cadmium cation efflux pump protein
TON_0261	232997	233416	+	10949.34	6326.80	6901.90	0.58	0.63	hypA hydrogenase nickel incorporation protein
TON_0262	233413	234159	+	6225.45	3941.78	3264.34	0.63	0.52	chromosome partitioning ATPase
TON_0263	234185	234661	+	4877.23	2680.75	2747.42	0.55	0.56	hydrogenase maturation protease Hycl
TON_0264	234875	235456	-	1080.17	135.84	461.94	0.13	0.43	mobA molybdopterin-guanine dinucleotide biosynthesis protein MobA
TON_0265	235453	235893	-	1257.36	339.00	491.26	0.27	0.39	nucleotidyltransferase
TON_0266	235919	237484	-	849.60	171.90	69.66	0.20	0.08	putative monovalent cation/H+ antiporter subunit D
TON_0267	237495	237980	-	1601.51	134.64	87.25	0.08	0.05	hypothetical protein
TON_0268	237977	238369	-	132.89	15.63	4.40	0.12	0.03	hypothetical protein
TON_0269	238366	239139	-	131.76	33.66	11.73	0.26	0.09	Multisubunit Na+/H+ antiporter, putative MnhB subunit
TON_0270	239140	239394	-	43.16	3.61	3.67	0.08	0.08	hypothetical protein
TON_0271	239387	239743	-	115.85	10.82	5.87	0.09	0.05	Na+/H+ antiporter subunit
TON_0272	239740	240024	-	379.37	31.26	16.86	0.08	0.04	Na+/H+ antiporter subunit MnhF
TON_0273	240029	240334	-	350.97	28.85	19.06	0.08	0.05	hypothetical protein
TON_0274	240285	241085	-	1224.42	88.96	49.13	0.07	0.04	Hydrogenase 4, component I or formate hydrogen lyase subunit 7
TON_0275	241082	241699	-	1258.49	85.35	62.32	0.07	0.05	Formate hydrogen lyase subunit 6
TON_0276	241699	243450	-	3844.76	213.98	151.78	0.06	0.04	Hydrogenase 4, component G or formate hydrogen lyase subunit 5
TON_0277	243454	244356	-	938.19	52.89	12.46	0.06	0.01	Hydrogenase 4, component C or formate hydrogen lyase subunit 4

TON_0278	244367	246346	-	695.12	66.12	23.46	0.10	0.03	Hydrogenase 4, component B or formate hydrogen lyase subunit 3
TON_0279	246353	247804	-	241.93	69.72	5.13	0.29	0.02	hydrogenase 4 subunit D
TON_0280	247819	248316	-	683.77	226.00	50.59	0.33	0.07	Oxidoreductase iron-sulfur protein
TON_0281	248322	250391	-	7470.31	982.14	123.18	0.13	0.02	fdhA formate dehydrogenase subunit alpha
TON_0282	250786	251337	-	112.45	219.99	404.74	1.96	3.60	putative transcriptional regulator
TON_0283	251621	251866	+	10024.78	5973.38	8386.70	0.60	0.84	hydrogenase expression/formation protein HypC
TON_0284	251868	252224	+	5337.23	3982.65	5552.76	0.75	1.04	hydrogenase expression/formation protein hypD
TON_0285	252278	252970	+	5194.12	6163.31	6751.59	1.19	1.30	hydrogenase expression/formation protein HypD
TON_0286	252934	255375	+	158479.19	25614.96	21920.67	0.16	0.14	hydrogenase maturation protein HypF
TON_0287	255422	256432	+	66971.56	38619.58	17851.24	0.58	0.27	hydrogenase expression/formation protein HypE
TON_0288	256511	256804	+	7373.77	438.78	352.68	0.06	0.05	hypothetical protein
TON_0289	256801	258000	+	58950.38	5991.41	5292.46	0.10	0.09	cysteine desulfurase
TON_0290	258042	259178	-	1589.02	3858.83	2064.78	2.43	1.30	ATP-NAD kinase
TON_0291	259183	260628	-	4180.97	3530.65	4286.47	0.84	1.03	membrane protein
TON_0293	260693	261037	-	900.71	717.67	324.09	0.80	0.36	hypothetical protein
TON_0294	261034	261276	-	404.35	678.00	512.53	1.68	1.27	protein Plut_1211
TON_0295	261281	261880	-	5111.21	7552.97	6721.53	1.48	1.32	hypothetical protein
TON_0296	262215	263825	+	2109.22	4352.91	1631.44	2.06	0.77	iron(III)-siderophore ABC transporter periplasmic protein
TON_0297	263822	264766	+	57.93	580.63	112.92	10.02	1.95	ABC-type iron(III)-siderophore transport system, pernease component
TON_0298	264753	265532	+	76.10	653.96	141.51	8.59	1.86	ABC-type iron(III)-siderophore transport system, ATPase component
TON_0299	265571	266404	+	321.44	894.38	464.87	2.78	1.45	hypothetical protein
TON_0300	266361	266732	-	73.83	31.26	60.12	0.42	0.81	hypothetical protein
TON_0301	266920	267771	+	1573.12	14365.44	17574.08	9.13	11.17	reductase 1
TON_0302	267776	268567	+	332.80	6166.92	5742.66	18.53	17.26	hypothetical protein
TON_0303	268577	269317	+	178.32	2253.99	1662.97	12.64	9.33	hypothetical protein
TON_0304	269443	270687	+	212.40	305.34	606.38	1.44	2.85	permease
TON_0305	270696	272021	-	1534.50	2674.74	2902.86	1.74	1.89	NADH oxidase
TON_0306	272081	273247	-	3071.27	2175.85	3707.22	0.71	1.21	nonsense-mediated mRNA decay protein
TON_0307	273301	273600	-	274.87	435.17	373.95	1.58	1.36	hypothetical protein
TON_0308	273678	277922	-	689.44	501.29	535.26	0.73	0.78	stetterlysin

TON_0309	278165	279202	-	329.39	551.78	463.40	1.68	1.41	membrane protein
TON_0310	279260	281725	+	3626.68	5449.25	5824.79	1.50	1.61	membrane-bound dolichyl-phosphate-mannose-protein mannosyltransferase
TON_0311	282016	284364	+	12035.19	28358.21	39078.27	2.36	3.25	phosphoenolpyruvate synthase
TON_0312	284522	285907	+	297.59	492.87	465.60	1.66	1.56	sodium-driven multidrug efflux pump protein
TON_0313	285947	287371	+	226.03	311.35	361.48	1.38	1.60	sodium-driven multidrug efflux pump protein
TON_0314	287594	288262	+	3854.99	6317.19	3788.60	1.64	0.98	upp uracil phosphoribosyltransferase
TON_0315	288910	291063	+	2867.95	1624.08	4724.21	0.57	1.65	topA
TON_0316	291064	292254	-	8090.47	12645.19	10582.72	1.56	1.31	geranylgeranyl hydrogenase
TON_0317	292251	292454	-	1369.80	1681.78	2061.11	1.23	1.50	ferredoxin 2
TON_0318	292438	293148	-	9197.90	8048.25	9275.37	0.88	1.01	putative transcriptional regulator
TON_0319	293284	293964	+	5604.15	6353.25	20001.07	1.13	3.57	protein disulfide oxidoreductase
TON_0320	296280	296537	+	10.22	26.45	16.13	2.59	1.58	hypothetical protein
TON_0321	296530	297198	-	446.38	408.72	574.12	0.92	1.29	hypothetical protein
TON_0322	297243	297965	-	103.36	176.71	161.31	1.71	1.56	hypothetical protein
TON_0323	298165	299160	-	1230.10	2244.37	1684.23	1.82	1.37	hypothetical protein
TON_0324	299157	299519	-	102.22	545.77	406.94	5.34	3.98	hypothetical protein
TON_0325	299497	301260	-	335.07	472.44	367.35	1.41	1.10	hypothetical protein
TON_0326	301262	302053	-	1065.40	621.50	527.93	0.58	0.50	hypothetical protein
TON_0327	302216	302914	-	8473.24	10583.54	11529.32	1.25	1.36	acetyl-CoA synthetase I subunit beta
TON_0328	303061	304359	+	4991.94	5240.08	5550.56	1.05	1.11	hypothetical protein
TON_0329	304356	304589	-	895.03	2232.35	309.42	2.49	0.35	hypothetical protein
TON_0330	304686	305216	+	1248.27	998.97	1555.92	0.80	1.25	hypothetical protein
TON_0331	305268	308933	+	12564.48	20025.06	23570.44	1.59	1.88	reverse gyrase
TON_0332	309336	310130	+	12165.81	12990.20	5903.24	1.07	0.49	putative transcriptional regulator
TON_0333	310206	310418	-	4386.55	1377.64	2800.94	0.31	0.64	hypothetical protein
TON_0334	310415	310744	-	4478.55	1299.50	2899.19	0.29	0.65	hypothetical protein
TON_0335	310749	311474	-	1010.88	436.37	764.76	0.43	0.76	arginase
TON_0336	311613	312833	+	3837.95	7918.42	3075.90	2.06	0.80	bifunctional D-arabino 3-hexulose-6-phosphate formaldehyde lyase/phosphohexuloisomerase
TON_0337	312843	313598	+	5491.71	8710.62	5299.79	1.59	0.97	hypothetical protein
TON_0338	313600	314244	+	2598.76	4075.22	2020.78	1.57	0.78	hydrolase
TON_0339	314241	314420	+	4199.14	4119.69	2471.72	0.98	0.59	hypothetical protein

TON_0340	314424	315230	+	3300.70	6746.35	6480.29	2.04	1.96	hypothetical protein
TON_0341	315239	315859	+	2494.27	7953.28	4712.48	3.19	1.89	metal-dependent phosphohydrolase
TON_0342	315962	316474	+	6061.89	3667.69	5360.65	0.61	0.88	transcription elongation factor NusA-like protein
TON_0343	316489	317820	+	5676.85	7364.24	8545.07	1.30	1.51	aspC aspartyl-tRNA synthetase
TON_0344	317881	319929	+	5788.16	12713.71	11703.10	2.20	2.02	membrane protein
TON_0345	319989	320345	+	1184.66	1185.30	2044.25	1.00	1.73	peptidyl-tRNA hydrolase
TON_0346	320349	321599	+	1501.56	1035.03	2194.56	0.69	1.46	truD tRNA pseudouridine synthase D
TON_0347	321664	322371	+	5613.24	3906.92	3232.82	0.70	0.58	phosphoglycolate phosphatase
TON_0348	322554	323702	-	823.47	492.87	301.36	0.60	0.37	bifunctional carboxypeptidase/aminocyclase
TON_0349	324677	324964	+	2156.93	1099.95	2898.46	0.51	1.34	hypothetical protein
TON_0350	324977	325357	+	2817.98	1078.31	3259.94	0.38	1.16	hypothetical protein
TON_0351	325364	326263	-	36.35	45.68	50.59	1.26	1.39	transmembrane efflux pump
TON_0352	326389	327990	+	6090.29	3309.46	6602.74	0.54	1.08	pyrG CTP synthetase
TON_0353	327987	328877	-	1561.76	1948.65	1427.60	1.25	0.91	membrane protein
TON_0354	328995	329387	+	12770.06	10274.59	19218.72	0.80	1.50	30S ribosomal protein S8e
TON_0355	329520	330446	+	8706.09	6055.12	5645.14	0.70	0.65	hypothetical protein
TON_0356	330443	331519	-	3279.12	2214.32	3691.82	0.68	1.13	GTPase
TON_0357	331582	332388	-	1763.93	1270.65	1183.43	0.72	0.67	hydrolase
TON_0358	332446	333261	+	464.55	687.62	527.93	1.48	1.14	bacitracin resistance protein bacA-like protein
TON_0359	333258	334517	+	3441.55	6200.58	4768.93	1.80	1.39	sugar-phosphate nucleotidyltransferase
TON_0360	334514	335623	+	1202.84	3554.69	2031.78	2.96	1.69	membrane protein
TON_0361	335632	336807	-	47066.26	31113.49	31290.63	0.66	0.66	hypothetical protein
TON_0362	337129	338016	-	2185.32	1327.15	1702.56	0.61	0.78	methionine aminopeptidase
TON_0363	338115	339596	+	1687.83	2320.11	2320.68	1.37	1.37	Trk-type potassium transport system, membrane component
TON_0364	339593	340447	+	892.76	1411.30	1224.50	1.58	1.37	cobalt transport ATP-binding protein
TON_0365	340407	341237	-	2080.83	3807.14	2542.11	1.83	1.22	hypothetical protein
TON_0366	341221	341775	-	3904.96	4760.43	3683.75	1.22	0.94	adenylate cyclase, class 2
TON_0367	341772	342326	-	3238.23	2147.00	2471.72	0.66	0.76	archaemetzincin-like protein
TON_0368	342323	342712	-	981.35	1041.04	656.97	1.06	0.67	hypothetical protein
TON_0369	342852	343889	-	2624.89	4398.59	4506.44	1.68	1.72	deblocking aminopeptidase
TON_0370	343965	345491	-	969.99	2061.65	1998.05	2.13	2.06	membrane protein
TON_0371	345481	345882	-	913.20	1493.04	994.26	1.63	1.09	Holliday junction resolvase

TON_0372	345954	346478	+	10792.60	4141.33	7093.28	0.38	0.66 acetyltransferase
TON_0373	346485	347279	+	3256.41	3507.81	3650.02	1.08	1.12 undecaprenyl diphosphate synthase
TON_0374	347380	348060	+	13799.12	14381.06	11055.66	1.04	0.80 TBP-interacting protein
TON_0375	348135	348869	+	705.35	534.95	922.40	0.76	1.31 hypothetical protein
TON_0376	348859	350742	-	5812.01	8775.54	9933.81	1.51	1.71 threonyl-tRNA synthetase
TON_0377	350863	351450	+	5874.48	2048.43	5079.09	0.35	0.86 exosome complex RNA-binding protein Csl4
TON_0378	351453	352085	+	11484.31	5973.38	11997.86	0.52	1.04 hypothetical protein
TON_0379	352075	352362	+	2718.03	1435.34	3021.64	0.53	1.11 DNA-directed RNA polymerase subunit L
TON_0380	352465	353784	+	171.51	415.94	143.71	2.43	0.84 hypothetical protein
TON_0381	353781	354167	+	540.65	388.29	450.20	0.72	0.83 hypothetical protein
TON_0382	354162	354968	-	414.58	607.07	629.11	1.46	1.52 AP endonuclease
TON_0383	355063	356070	+	5834.73	4001.89	6942.23	0.69	1.19 endopeptidase IV
TON_0384	356083	356565	+	3987.88	2335.74	3435.19	0.59	0.86 hypothetical protein
TON_0385	356555	357556	+	308.94	769.36	564.59	2.49	1.83 membrane protein
TON_0386	357534	358352	-	444.11	739.31	1014.79	1.66	2.29 dihydropteroate synthase
TON_0387	358349	358732	-	24.99	114.20	46.19	4.57	1.85 membrane protein
TON_0388	358754	359731	+	1238.05	778.98	922.40	0.63	0.75 GHMP kinase
TON_0389	359728	360519	+	328.25	322.17	329.95	0.98	1.01 N-glycosylase/DNA lyase
TON_0390	360644	361510	+	500.90	894.38	645.98	1.79	1.29 membrane protein
TON_0391	361516	362433	+	2119.45	4155.76	1588.18	1.96	0.75 multidrug ABC transporter ATPase
TON_0392	362489	363754	-	3717.55	2889.92	2978.38	0.78	0.80 3-octaprenyl-4-hydroxybenzoate carboxy-lyase
TON_0393	363822	365198	+	3619.87	4862.61	12745.75	1.34	3.52 DNA/RNA repair helicase
TON_0394	365169	365972	-	1919.54	2659.11	2198.23	1.39	1.15 truA tRNA pseudouridine synthase A
TON_0395	366326	368044	-	15099.64	15496.64	20755.57	1.03	1.37 pheT phenylalanyl-tRNA synthetase subunit beta
TON_0396	368058	369560	-	12400.92	8769.53	16616.48	0.71	1.34 pheS phenylalanyl-tRNA synthetase subunit alpha
TON_0397	369632	370684	-	2074.01	2465.57	1651.24	1.19	0.80 tdh L-threonine 3-dehydrogenase
TON_0398	370845	371588	+	1721.91	2568.95	2563.38	1.49	1.49 ATPase
TON_0399	371606	372832	+	6490.10	16500.42	8818.57	2.54	1.36 3-hydroxy-3-methylglutaryl-CoA reductase
TON_0400	372822	372938	+	55.66	162.29	52.06	2.92	0.94 hypothetical protein
TON_0401	373079	373765	+	1842.31	2131.37	1216.43	1.16	0.66 hypothetical protein
TON_0402	373803	375695	-	5881.29	4929.93	8362.50	0.84	1.42 glutamyl-tRNA(Gln) amidotransferase subunit E
TON_0403	375701	377020	-	9296.72	4105.27	12346.14	0.44	1.33 glutamyl-tRNA(Gln) amidotransferase subunit D

TON_0404	377127	377504	-	1044.96	753.73	1717.23	0.72	1.64	hypothetical protein
TON_0405	377466	378626	+	1576.52	973.72	2650.63	0.62	1.68	putative pseudouridylate synthase
TON_0406	378720	379070	+	16077.58	8701.01	10242.50	0.54	0.64	50S ribosomal protein L21e
TON_0407	379073	379435	+	7873.53	6447.02	4289.40	0.82	0.54	DNA-directed RNA polymerase subunit F
TON_0408	379505	380125	+	30242.44	19722.12	12299.95	0.65	0.41	hypothetical protein
TON_0409	380122	380940	+	4881.77	5167.95	4172.82	1.06	0.85	ksgA dimethyladenosine transferase
TON_0410	380974	381528	-	6327.67	6027.47	4289.40	0.95	0.68	rubrerythrin-like protein
TON_0411	381622	383367	+	2184.19	1947.45	4289.40	0.89	1.96	hypothetical protein
TON_0412	383357	384136	-	2732.79	3203.67	3455.72	1.17	1.26	membrane protein
TON_0413	384182	386038	-	76480.68	154354.51	80758.05	2.02	1.06	S-layer protein
TON_0414	386238	387062	-	11346.88	11909.49	12985.52	1.05	1.14	hypothetical protein
TON_0415	387065	388111	-	5727.96	4134.12	5374.58	0.72	0.94	pyruvate formate-lyase activating enzyme-related protein
TON_0416	388137	388859	-	387.32	1247.81	1057.32	3.22	2.73	polysaccharide deacetylase
TON_0417	388859	390082	-	1241.46	2460.76	2855.93	1.98	2.30	glycosyltransferase
TON_0418	390058	390936	-	647.42	638.33	857.88	0.99	1.33	hypothetical protein
TON_0419	391027	391962	-	1989.96	1574.79	2503.25	0.79	1.26	thiamine monophosphate kinase
TON_0420	392104	392712	+	279.41	861.93	2450.46	3.08	8.77	hypothetical protein
TON_0421	392765	394030	-	2853.19	805.43	2284.75	0.28	0.80	phosphohydrolase
TON_0422	394096	394566	+	6342.44	5920.48	4912.65	0.93	0.77	hypothetical protein
TON_0423	394587	396308	+	1127.87	2506.44	1248.69	2.22	1.11	Voltage-gated chloride channel protein
TON_0424	396395	397735	+	218.08	1166.06	399.61	5.35	1.83	nhaP type Na ⁺ /H ⁺ and K ⁺ /H ⁺ antiporter
TON_0425	397738	398601	-	3876.57	2798.56	5063.69	0.72	1.31	Agmatinase
TON_0426	398677	399087	-	7524.83	9857.45	17893.77	1.31	2.38	translation initiation factor IF-5A
TON_0427	399163	400542	-	1164.22	3405.63	1278.75	2.93	1.10	membrane protein
TON_0428	400644	401303	-	799.62	1117.98	1079.32	1.40	1.35	ribosome biogenesis protein
TON_0429	401281	402369	-	2294.36	2178.26	3380.19	0.95	1.47	Saccharopine reductase
TON_0430	402429	403007	+	645.15	557.79	2109.51	0.86	3.27	metallophosphoesterase
TON_0431	403007	403969	+	1310.74	1597.63	4355.39	1.22	3.32	hypothetical protein
TON_0432	403938	404609	-	982.49	860.72	1635.84	0.88	1.66	hypothetical protein
TON_0433	404606	405235	-	4678.46	1859.69	1908.60	0.40	0.41	hypothetical protein
TON_0434	405296	406411	-	789.40	524.13	485.40	0.66	0.61	tRNA/rRNA cytosine-C5-methylase
TON_0435	406293	407240	-	2325.03	5708.91	5047.56	2.46	2.17	ornithine carbamoyltransferase

TON_0436	407475	407981	+	732.61	2038.81	582.92	2.78	0.80 hypothetical protein
TON_0437	408067	408804	+	4068.52	2856.26	4502.77	0.70	1.11 thyX FAD-dependent thymidylate synthase
TON_0438	408855	409511	+	281.68	298.13	897.47	1.06	3.19 hypothetical protein
TON_0439	409669	411300	+	303.26	568.61	299.16	1.87	0.99 hypothetical protein
TON_0440	411370	412101	+	6040.31	217.59	722.97	0.04	0.12 hypothetical protein
TON_0441	412098	412601	-	5303.16	2716.81	3639.02	0.51	0.69 bis(5'-adenosyl)-triphosphatase
TON_0442	412733	413965	+	14756.62	6634.55	9807.70	0.45	0.66 cofactor-independent phosphoglycerate mutase
TON_0443	414074	414910	+	3394.98	3751.84	3487.98	1.11	1.03 oxidoreductase
TON_0444	414910	416766	+	12800.73	11007.89	10271.10	0.86	0.80 tungsten-containing oxidoreductase
TON_0445	417286	418620	-	1427.73	1737.08	1200.30	1.22	0.84 hypothetical protein
TON_0446	418875	419600	-	812.11	2023.18	2072.84	2.49	2.55 putative tRNA-binding protein
TON_0447	419527	420645	-	2980.40	6199.38	5955.30	2.08	2.00 hypothetical protein
TON_0448	420696	421022	-	237.39	1343.98	1283.15	5.66	5.41 hypothetical protein
TON_0449	421025	422011	-	1566.30	2535.29	4562.16	1.62	2.91 phosphohydrolase
TON_0450	421989	422321	-	3310.93	2077.28	5303.46	0.63	1.60 hypothetical protein
TON_0451	422351	422701	-	3795.92	3632.83	4791.66	0.96	1.26 prefoldin subunit beta
TON_0452	422765	423043	-	196.50	158.68	472.93	0.81	2.41 hypothetical protein
TON_0453	422986	423627	-	950.68	575.82	1901.27	0.61	2.00 ribosomal biogenesis protein
TON_0454	423683	423832	-	3008.80	1890.95	4240.27	0.63	1.41 DNA-directed RNA polymerase subunit P
TON_0455	423866	424126	-	6445.80	5420.40	8075.81	0.84	1.25 rpl37ae 50S ribosomal protein L37Ae
TON_0456	424751	425251	+	1417.51	979.73	1655.64	0.69	1.17 hypothetical protein
TON_0457	425305	425568	+	848.46	649.15	1440.07	0.77	1.70 hypothetical protein
TON_0458	425565	426326	+	654.23	875.15	1351.34	1.34	2.07 organic radical activating enzyme
TON_0459	426336	426770	+	73.83	111.80	156.91	1.51	2.13 Permease
TON_0460	426893	427924	+	2440.88	2609.82	2135.90	1.07	0.88 membrane protein
TON_0461	427921	428868	+	699.67	932.85	1110.11	1.33	1.59 hypothetical protein
TON_0462	428937	430259	+	977.94	1743.09	1140.17	1.78	1.17 TBP-interacting protein
TON_0463	430264	431268	-	708.75	1406.49	1163.64	1.98	1.64 hypothetical protein
TON_0464	431252	431746	-	264.65	439.98	440.67	1.66	1.67 hypothetical protein
TON_0465	431743	432144	-	85.19	109.39	124.65	1.28	1.46 hypothetical protein
TON_0466	432205	432666	-	872.31	676.80	670.17	0.78	0.77 hypothetical protein
TON_0467	433116	433223	+	679.22	690.02	498.60	1.02	0.73 hypothetical protein

TON_0468	433262	433513	-	124.94	62.51	51.33	0.50	0.41	membrane protein
TON_0469	433614	434078	-	201.04	292.12	185.51	1.45	0.92	hypothetical protein
TON_0470	434172	434789	+	5570.08	5755.79	2497.38	1.03	0.45	glutaredoxin-like protein
TON_0471	434852	435580	+	1548.13	548.17	349.75	0.35	0.23	transmembrane electron transport protein
TON_0472	435572	435922	-	1791.19	947.28	907.01	0.53	0.51	glutaredoxin/thioredoxin-like protein
TON_0473	435984	436556	-	828.02	1120.38	639.38	1.35	0.77	hypothetical protein
TON_0474	436568	437383	-	6316.31	2840.63	1935.73	0.45	0.31	hypothetical protein
TON_0475	437454	437840	-	2619.21	1226.17	715.63	0.47	0.27	hypothetical protein
TON_0476	438181	439545	+	2204.63	389.49	253.70	0.18	0.12	hydroxylamine reductase
TON_0477	439542	439796	-	245.34	90.16	65.99	0.37	0.27	hypothetical protein
TON_0478	439757	439975	-	1110.84	617.89	244.90	0.56	0.22	hypothetical protein
TON_0479	440156	441496	+	5547.36	5494.93	1705.50	0.99	0.31	hypothetical protein
TON_0480	441498	441809	+	2545.38	1488.24	1401.94	0.58	0.55	carbohydrate-binding protein
TON_0481	441810	442889	+	2353.43	1838.05	1948.19	0.78	0.83	pepQ-1 X-pro dipeptidase
TON_0482	442886	443347	-	76.10	74.53	71.12	0.98	0.93	transcriptional regulator
TON_0483	443467	444798	+	2218.26	1646.92	878.41	0.74	0.40	4-aminobutyrate aminotransferase
TON_0484	444877	446178	+	1713.96	2098.92	503.73	1.22	0.29	xanthine/uracilpermease
TON_0485	446209	446793	-	2356.83	5070.58	1695.23	2.15	0.72	membrane protein
TON_0486	446875	447573	-	3660.76	16758.87	8693.92	4.58	2.37	NADH dehydrogenase subunit I
TON_0487	447579	448754	-	2044.48	11635.40	5741.20	5.69	2.81	NADH dehydrogenase subunit D
TON_0488	448765	449298	-	1790.06	8777.94	3888.32	4.90	2.17	NADH dehydrogenase subunit C
TON_0489	449304	449876	-	2769.14	13866.55	7462.82	5.01	2.69	NADH dehydrogenase subunit B
TON_0490	449887	450816	-	3810.69	9990.89	7715.79	2.62	2.02	NADH dehydrogenase subunit
TON_0491	450820	452682	-	6053.94	16585.77	8741.58	2.74	1.44	NADH dehydrogenase subunit M
TON_0492	452679	454166	-	4204.82	11120.89	6164.27	2.64	1.47	NADH dehydrogenase subunit N
TON_0493	454163	454507	-	404.35	2060.45	1275.09	5.10	3.15	putative monovalent cation/H ⁺ antiporter subunit C
TON_0494	454504	455214	-	2732.79	9320.10	6043.29	3.41	2.21	putative monovalent cation/H ⁺ antiporter subunit B
TON_0495	455208	455492	-	800.76	2153.01	1550.05	2.69	1.94	hypothetical protein
TON_0496	455489	455899	-	1407.29	3232.52	2267.88	2.30	1.61	putative monovalent cation/H ⁺ antiporter subunit G
TON_0497	455896	456150	-	453.19	1579.60	1173.90	3.49	2.59	putative monovalent cation/H ⁺ antiporter subunit F
TON_0498	456147	456653	-	799.62	2185.47	1283.15	2.73	1.60	putative monovalent cation/H ⁺ antiporter subunit E
TON_0499	456928	457428	-	3012.20	3517.43	3301.01	1.17	1.10	regulator of amino acid metabolism

TON_0500	457619	458878	+	536.11	424.35	1685.70	0.79	3.14 molybdenum cofactor biosynthesis protein A
TON_0501	459188	460321	-	14242.09	25590.91	14001.04	1.80	0.98 UDP-N-acetylglucosamine 2-epimerase
TON_0502	460318	461607	-	17839.24	25800.08	18207.59	1.45	1.02 UDP-N-acetyl-D-mannosaminuronate dehydrogenase
TON_0503	461893	463020	+	18998.92	31527.02	10494.73	1.66	0.55 hypothetical protein
TON_0504	463539	463817	-	1608.33	2885.11	2408.66	1.79	1.50 lipoate-protein ligase A
TON_0505	463887	465815	+	12310.06	4934.74	7316.18	0.40	0.59 argS arginyl-tRNA synthetase
TON_0506	465860	466741	+	512.26	1054.27	647.44	2.06	1.26 dihydrodipicolinate synthase
TON_0507	466735	467982	-	15411.99	8200.92	17579.21	0.53	1.14 peptide chain release factor 1
TON_0508	468080	468316	-	1882.06	2478.79	2149.10	1.32	1.14 membrane protein
TON_0509	468326	468805	-	4059.43	3880.47	1555.18	0.96	0.38 hypothetical protein
TON_0510	469262	469438	-	29768.80	51500.39	41266.97	1.73	1.39 hypothetical protein
TON_0511	469556	470119	+	531.57	1404.09	1009.66	2.64	1.90 hypothetical protein
TON_0512	470109	471359	-	4069.66	5505.75	4263.00	1.35	1.05 membrane-associated metallopeptidase
TON_0513	471403	471795	-	2586.27	3622.01	4216.81	1.40	1.63 hypothetical protein
TON_0514	471805	472965	-	4254.80	4318.05	5356.98	1.01	1.26 hypothetical protein
TON_0515	473544	474248	+	785.99	294.52	92.39	0.37	0.12 hypothetical protein
TON_0516	474692	475237	+	5006.71	5877.21	3842.13	1.17	0.77 competence-like protein
TON_0517	475321	475776	+	24260.06	7849.90	30167.32	0.32	1.24 rps15p 30S ribosomal protein S15
TON_0518	475806	477236	+	21579.51	5475.70	32446.93	0.25	1.50 ssDNA-specific exonuclease
TON_0519	477226	477477	+	8401.69	2968.06	10765.30	0.35	1.28 hypothetical protein
TON_0520	477496	478098	+	10259.89	5313.41	17482.42	0.52	1.70 30S ribosomal protein S3Ae
TON_0521	478189	479244	+	9739.69	3940.58	8756.24	0.40	0.90 RNA-binding protein
TON_0522	479372	480085	-	2456.79	1484.63	2916.06	0.60	1.19 membrane protein
TON_0523	480163	480612	-	4266.15	1353.60	1333.01	0.32	0.31 putative transcriptional regulator
TON_0524	480784	481086	-	4753.42	5510.56	5238.93	1.16	1.10 nucleotide pyrophosphohydrolase
TON_0525	481092	481469	-	4116.22	5068.17	4512.30	1.23	1.10 transcriptional regulator
TON_0526	481526	481897	-	241.93	306.54	310.16	1.27	1.28 metalloprotease
TON_0527	481929	482312	-	1300.52	1426.93	1637.30	1.10	1.26 hypothetical protein
TON_0528	482389	483192	-	3527.87	3732.61	3204.95	1.06	0.91 hypothetical protein
TON_0529	483311	485218	+	23108.33	21611.87	24091.77	0.94	1.04 ATP-dependent protease Lon
TON_0530	485334	486080	+	12588.33	8598.83	7496.55	0.68	0.60 Fe-S cluster assembly ABC transporter ATPase
TON_0531	486073	487410	+	21679.46	14099.77	11254.36	0.65	0.52 Fe-S cluster assembly ABC transporter permease

TON_0532	487523	487816	+	188.55	240.43	151.78	1.28	0.80	hypothetical protein
TON_0533	487831	488280	-	2031.99	290.92	396.68	0.14	0.20	hydrogenase-specific maturation endopeptidase
TON_0534	488328	489617	-	10363.25	224.80	170.84	0.02	0.02	cytosolic NiFe-hydrogenase subunit alpha
TON_0535	489614	490411	-	20711.74	311.35	318.22	0.02	0.02	cytosolic NiFe-hydrogenase subunit delta
TON_0536	490422	491297	-	9345.56	134.64	144.45	0.01	0.02	cytochrome-c3 hydrogenase subunit gamma
TON_0537	491294	492397	-	22357.55	113.00	156.18	0.01	0.01	sulfhydrogenase subunit beta
TON_0538	492769	493758	+	16819.28	3720.59	2895.53	0.22	0.17	formate transporter
TON_0539	493791	495833	+	72289.49	27798.02	15914.04	0.38	0.22	formate dehydrogenase subunit alpha
TON_0540	495836	496327	+	26006.95	16228.74	6717.86	0.62	0.26	Oxidoreductase iron-sulfur protein
TON_0541	496333	496710	+	11944.32	8406.49	5165.61	0.70	0.43	4Fe-4S binding protein
TON_0542	496716	497774	+	28832.88	22477.40	13127.03	0.78	0.46	putative glutamate synthase subunit beta
TON_0543	497780	498286	+	6311.77	9005.15	4105.36	1.43	0.65	4Fe-4S binding protein
TON_0544	498574	499794	+	24171.46	91048.02	63473.60	3.77	2.63	alcohol dehydrogenase
TON_0545	500077	500250	-	270.33	126.22	53.53	0.47	0.20	membrane protein
TON_0546	500315	502189	-	22845.95	29500.24	20210.04	1.29	0.88	putative vitamin B12 transport protein
TON_0547	502293	503480	-	1865.02	2147.00	2489.32	1.15	1.33	hypothetical protein
TON_0548	503598	504170	-	726.93	522.93	788.22	0.72	1.08	putative transcriptional regulator
TON_0549	504458	505327	-	586.08	1624.08	557.26	2.77	0.95	permease
TON_0550	505386	506213	-	224.89	456.81	107.05	2.03	0.48	ubiA prenyltransferase
TON_0551	506333	507127	-	4252.52	10433.27	4565.83	2.45	1.07	hypothetical protein
TON_0552	507269	508009	+	357.78	426.76	364.42	1.19	1.02	hypothetical protein
TON_0553	508118	509824	-	3931.09	2680.75	7770.78	0.68	1.98	hypothetical protein
TON_0554	509938	511401	+	1390.25	1383.65	908.47	1.00	0.65	phosphoesterase
TON_0555	511404	511613	-	1210.79	2767.30	2010.52	2.29	1.66	hypothetical protein
TON_0556	511655	512179	-	354.38	675.60	841.02	1.91	2.37	hypothetical protein
TON_0557	512176	512811	-	2682.82	2243.17	3872.93	0.84	1.44	putative transcriptional regulator
TON_0558	512808	513377	-	1915.00	1023.01	1558.12	0.53	0.81	endonuclease V
TON_0559	513408	514025	-	1098.34	490.47	668.71	0.45	0.61	haloacid dehalogenase superfamily protein
TON_0560	514360	515577	+	8431.22	4957.58	4207.28	0.59	0.50	S-adenosylmethionine synthetase
TON_0561	515623	515898	-	1102.88	5915.67	15479.97	5.36	14.04	hypothetical protein
TON_0562	515978	516520	+	2915.66	4152.15	2910.93	1.42	1.00	putative kinase
TON_0563	516523	517380	+	2005.86	3064.23	2877.93	1.53	1.43	zinc-dependent protease

TON_0564	517395	518045	+	1056.32	1800.79	1885.87	1.70	1.79 metallophosphoesterase
TON_0565	518042	519211	-	5943.76	7203.15	6449.50	1.21	1.09 aspartate aminotransferase
TON_0566	519291	520895	-	1584.47	1339.17	1164.37	0.85	0.73 carbamoyl transferase
TON_0567	520987	521373	+	949.55	1900.57	1049.25	2.00	1.11 pyrolysin
TON_0568	521451	522899	-	9520.47	5776.23	20505.54	0.61	2.15 prolyl-tRNA synthetase
TON_0569	523025	524026	+	1974.06	4094.45	2110.24	2.07	1.07 D-isomer specific 2-hydroxyacid dehydrogenase
TON_0570	524037	525032	+	1874.11	2809.37	2199.69	1.50	1.17 endoglucanase
TON_0571	525061	525825	+	1123.33	1298.30	1276.56	1.16	1.14 membrane protein
TON_0572	525810	526328	-	30.67	58.90	20.53	1.92	0.67 membrane protein
TON_0573	526374	527105	+	540.65	552.98	594.65	1.02	1.10 membrane protein
TON_0574	527152	527373	+	357.78	278.89	264.70	0.78	0.74 hypothetical protein
TON_0575	527497	528699	+	3240.50	1725.05	1389.47	0.53	0.43 hypothetical protein
TON_0576	528737	529585	+	236.25	211.57	123.18	0.90	0.52 membrane protein
TON_0577	529740	530981	+	132727.80	51535.25	22735.29	0.39	0.17 hypothetical protein
TON_0578	531042	531995	+	11483.18	3279.41	3726.28	0.29	0.32 membrane protein
TON_0579	532003	534204	-	14298.88	7367.85	13734.15	0.52	0.96 metG methionyl-tRNA synthetase
TON_0580	534384	534731	+	845.05	409.93	282.29	0.49	0.33 6-pyruvoyl-tetrahydropterin synthase
TON_0581	534728	535198	-	489.54	304.14	541.12	0.62	1.11 hypothetical protein
TON_0582	535259	535819	-	770.09	904.00	345.35	1.17	0.45 2-oxoglutarate ferredoxin oxidoreductase subunit gamma
TON_0583	535816	536661	-	971.13	1668.55	576.32	1.72	0.59 2-oxoglutarate ferredoxin oxidoreductase subunit beta
TON_0584	536662	537810	-	3375.67	3216.90	1332.28	0.95	0.39 2-oxoglutarate ferredoxin oxidoreductase subunit alpha
TON_0585	537807	538319	-	1870.70	1538.72	439.94	0.82	0.24 2-oxoglutarate ferredoxin oxidoreductase subunit gamma
TON_0586	538325	539179	-	2305.72	2108.53	662.84	0.91	0.29 2-oxoglutarate ferredoxin oxidoreductase subunit beta
TON_0587	539179	540369	-	1640.13	1929.42	529.39	1.18	0.32 2-oxoglutarate ferredoxin oxidoreductase subunit alpha
TON_0588	540373	540645	-	1556.08	3044.99	435.54	1.96	0.28 2-oxoacid:ferredoxin oxidoreductase subunit delta
TON_0589	540796	541767	-	2130.80	1787.57	3405.86	0.84	1.60 hypothetical protein
TON_0590	541829	542611	+	3025.83	2239.57	4162.55	0.74	1.38 surE stationary phase survival protein SurE
TON_0591	542670	543167	+	37.48	105.79	81.39	2.82	2.17 membrane protein
TON_0592	543199	544104	-	3073.54	5591.10	4434.58	1.82	1.44 signal recognition particle GTPase
TON_0593	544245	544694	-	670.14	1560.36	783.09	2.33	1.17 hypothetical protein
TON_0594	544818	546041	+	58137.13	200147.20	131422.11	3.44	2.26 sugar binding protein
TON_0595	546088	547614	+	11070.87	39794.06	32285.62	3.59	2.92 ABC transporter ATPase

TON_0596	547607	548641	+	3755.03	23293.65	11018.26	6.20	2.93 ABC transporter permease
TON_0597	548638	549534	+	1755.98	9185.46	4572.43	5.23	2.60 ABC transporter permease
TON_0598	549584	550567	-	655.37	1075.91	404.74	1.64	0.62 ABC-type manganese/zinc transport system periplasmic protein
TON_0599	550659	552449	+	1155.13	1798.38	1441.53	1.56	1.25 hypothetical protein
TON_0600	552428	552763	-	23519.50	11257.93	24076.37	0.48	1.02 hypothetical protein
TON_0601	552776	553423	-	24925.65	15370.42	33125.91	0.62	1.33 hypoxanthine/guanine phosphoribosyltransferase
TON_0602	553515	554945	-	12430.45	9166.23	10491.07	0.74	0.84 cysS cysteinyl-tRNA synthetase
TON_0603	555062	556111	+	14686.20	15536.31	22001.33	1.06	1.50 FKBP-type peptidyl-prolyl cis-trans isomerase
TON_0604	556149	556751	+	84.05	87.76	115.85	1.04	1.38 membrane-associated metalloprotease
TON_0605	556787	557539	+	170.37	138.24	335.09	0.81	1.97 hypothetical protein
TON_0606	557499	559424	-	3932.22	3970.63	3534.91	1.01	0.90 ABC-type transporter, ATPase component
TON_0607	559928	560386	-	594.04	502.49	335.09	0.85	0.56 ribH 6,7-dimethyl-8-ribityllumazine synthase
TON_0608	560452	561618	-	931.38	698.44	1001.59	0.75	1.08 bifunctional 3,4-dihydroxy-2-butanone 4-phosphate synthase/GTP cyclohydrolase II protein
TON_0609	561615	562172	-	137.43	175.51	244.17	1.28	1.78 riboflavin synthase subunit alpha
TON_0610	562153	563238	-	141.98	307.74	229.50	2.17	1.62 riboflavin biosynthesis protein RibD
TON_0611	563339	565189	+	2463.60	5000.85	2894.80	2.03	1.18 prolyl endopeptidase
TON_0612	565310	566014	+	6181.15	6667.01	5431.77	1.08	0.88 ATPase
TON_0613	566006	570175	-	6574.15	11338.48	13324.27	1.72	2.03 large helicase-like protein
TON_0614	570267	570542	+	362.33	1240.60	738.36	3.42	2.04 hypothetical protein
TON_0615	570567	571616	+	959.77	2222.74	1355.74	2.32	1.41 glycosyltransferase
TON_0616	571725	572642	+	70.42	1627.68	5085.69	23.11	72.22 sodium/phosphate symporter
TON_0617	572684	574426	+	1723.04	3278.20	6659.20	1.90	3.86 7-cyano-7-deazaguanine tRNA-ribosyltransferase
TON_0618	574828	577053	-	3112.16	3204.87	1617.51	1.03	0.52 hypothetical protein
TON_0619	577168	578313	-	3908.37	3215.69	3691.08	0.82	0.94 hypothetical protein
TON_0620	578484	579212	+	1099.48	2119.35	802.89	1.93	0.73 chromosome partitioning protein
TON_0621	579317	579970	+	922.29	1077.11	940.74	1.17	1.02 phosphoglycolate phosphatase
TON_0622	580158	581144	+	3726.64	2928.39	3164.62	0.79	0.85 membrane protein
TON_0623	581147	582040	+	806.43	1230.98	1325.68	1.53	1.64 hypothetical protein
TON_0624	582052	582546	+	397.54	1609.65	1380.67	4.05	3.47 hypothetical protein
TON_0625	582548	583531	+	424.80	1293.49	1093.25	3.04	2.57 hypothetical protein
TON_0626	583575	584633	-	79.51	119.01	171.58	1.50	2.16 protein MJECL37

TON_0627	584768	585790	-	882.53	567.40	540.39	0.64	0.61	deblocking aminopeptidase
TON_0628	585844	586728	-	159.02	234.42	104.12	1.47	0.65	permease
TON_0629	586852	587256	+	213.53	128.63	68.92	0.60	0.32	transcriptional regulator
TON_0630	587253	588584	+	1266.44	1206.94	471.47	0.95	0.37	membrane protein
TON_0631	588679	589359	+	491.81	442.38	294.76	0.90	0.60	hypothetical protein
TON_0632	589349	589627	+	243.07	245.23	169.38	1.01	0.70	hypothetical protein
TON_0633	589701	590006	+	74.96	198.35	81.39	2.65	1.09	hypothetical protein
TON_0634	590079	591314	+	85.19	114.20	65.26	1.34	0.77	permease
TON_0635	591326	591841	-	550.87	839.09	852.75	1.52	1.55	cobalamin adenosyltransferase
TON_0636	591980	594619	+	7505.52	12532.19	16081.95	1.67	2.14	hypothetical protein
TON_0637	594677	595504	-	1543.58	697.23	1212.76	0.45	0.79	translation initiation factor IF-2
TON_0638	595588	596346	-	881.40	797.01	990.59	0.90	1.12	competence damage-inducible protein A
TON_0639	596501	597505	+	595.17	4229.09	466.33	7.11	0.78	glyceraldehyde-3-phosphate dehydrogenase
TON_0640	597575	598681	-	1510.65	1387.26	755.23	0.92	0.50	aromatic amino acid permease
TON_0641	598786	599070	-	2952.01	3630.43	9177.12	1.23	3.11	hypothetical protein
TON_0642	599067	599573	-	3098.53	4154.56	9902.28	1.34	3.20	hypothetical protein
TON_0643	599611	601314	-	9695.39	6201.78	24151.89	0.64	2.49	glycyl-tRNA synthetase
TON_0644	601464	601700	+	20092.72	15342.77	15760.07	0.76	0.78	small nuclear ribonucleoprotein
TON_0645	601725	601913	+	8779.92	3428.47	5485.30	0.39	0.62	rpl37e 50S ribosomal protein L37e
TON_0646	602029	603396	+	442.97	195.95	260.30	0.44	0.59	sodium-driven multidrug efflux pump protein
TON_0647	603427	604521	-	1635.59	2005.15	1368.94	1.23	0.84	hypothetical protein
TON_0648	604606	605739	-	2376.14	834.28	1417.34	0.35	0.60	N(2),N(2)-dimethylguanosine tRNA methyltransferase
TON_0649	605772	606038	-	637.20	162.29	221.44	0.25	0.35	50S ribosomal protein L35
TON_0650	606087	606743	-	3625.55	3362.35	2954.92	0.93	0.82	hydrolase
TON_0651	606831	607877	+	3933.36	4833.76	4103.89	1.23	1.04	Xaa-Pro aminopeptidase
TON_0652	607942	609015	+	3705.06	3811.95	4170.62	1.03	1.13	cell division protein
TON_0653	609019	610017	-	1753.71	1745.49	2094.84	1.00	1.19	HypE protein
TON_0654	610014	610808	-	991.57	711.66	1279.49	0.72	1.29	ATPase
TON_0655	610846	611244	-	260.10	260.86	523.53	1.00	2.01	hypothetical protein
TON_0656	611467	611694	+	387.32	1156.45	210.44	2.99	0.54	iron(II) transport protein A
TON_0657	611706	613682	+	3382.48	3805.94	1295.62	1.13	0.38	iron(II) transport protein B
TON_0658	613693	613947	+	61.33	163.49	53.53	2.67	0.87	LexA-related DNA-binding protein

TON_0659	614035	615276	+	10589.28	159855.45	18393.83	15.10	1.74	sugar-phosphate nucleotidyltransferase
TON_0660	615428	616231	-	1340.27	1710.63	2501.78	1.28	1.87	hypothetical protein
TON_0661	616332	616817	+	1206.24	552.98	1106.45	0.46	0.92	aromatic acid decarboxylase
TON_0662	616866	617348	+	9938.46	8002.57	5653.21	0.81	0.57	putative transcriptional regulator
TON_0663	617349	617870	+	3041.74	4392.58	2753.28	1.44	0.91	adenylate cyclase
TON_0664	617950	618345	+	808.71	1066.29	645.24	1.32	0.80	hypothetical protein
TON_0665	618303	619295	+	775.77	830.67	475.87	1.07	0.61	TM1410 -related protein
TON_0666	619282	620475	-	4304.77	3398.42	3911.05	0.79	0.91	translation-associated GTPase
TON_0667	620716	620910	+	244.20	74.53	103.39	0.31	0.42	Metal-dependent hydrolase
TON_0668	620964	621083	+	30.67	7.21	21.26	0.24	0.69	magnesium and cobalt transporter
TON_0669	621078	621767	-	5847.22	1523.10	2052.31	0.26	0.35	aspartate racemase
TON_0670	621770	622114	-	4836.34	974.93	1365.28	0.20	0.28	hypothetical protein
TON_0671	622462	623829	+	3998.10	2928.39	2817.07	0.73	0.70	zinc-dependent protease
TON_0672	623840	625165	+	3044.01	3665.29	2334.61	1.20	0.77	zinc-dependent protease
TON_0673	625249	626244	-	2225.08	1728.66	4586.36	0.78	2.06	Met-10+ like protein
TON_0674	626783	627535	+	16282.03	15759.91	14370.59	0.97	0.88	hypothetical protein
TON_0675	627600	628757	+	4571.69	2815.39	9136.79	0.62	2.00	tRNA m1G methyltransferase
TON_0676	628774	629355	-	10412.09	9120.55	5870.98	0.88	0.56	hypothetical protein
TON_0677	629512	632166	-	8892.36	8851.27	10122.25	1.00	1.14	valS valyl-tRNA synthetase
TON_0678	633150	634112	-	1188.07	1497.85	1580.11	1.26	1.33	putative aminotransferase
TON_0679	634097	634981	-	1351.63	2376.61	1743.62	1.76	1.29	cobD cobalamin biosynthesis protein
TON_0680	634969	635715	-	473.64	619.10	657.71	1.31	1.39	uracil-DNA glycosylase
TON_0681	635758	636006	+	1489.06	2415.08	1156.31	1.62	0.78	hypothetical protein
TON_0682	636003	636644	+	2253.47	2032.80	1556.65	0.90	0.69	ATPase
TON_0683	636641	637051	+	621.30	711.66	395.94	1.15	0.64	hypothetical protein
TON_0684	637055	637756	+	164.69	382.28	185.51	2.32	1.13	cobS cobalamin synthase
TON_0685	637770	638885	-	1944.53	1279.06	2771.61	0.66	1.43	hypothetical protein
TON_0686	638945	639490	+	89.73	27.65	55.73	0.31	0.62	GTP:adenosylcobinamide-phosphate guanylyltransferase
TON_0687	639465	640919	-	2137.62	698.44	1049.25	0.33	0.49	cobyric acid synthase
TON_0688	640988	641995	+	3692.56	3194.06	4092.89	0.86	1.11	hypothetical protein
TON_0689	641992	642579	-	2354.56	985.75	1023.59	0.42	0.43	adenosylcobinamide amidohydrolase
TON_0690	642692	643207	+	1300.52	2778.12	2003.92	2.14	1.54	molybdenum cofactor biosynthesis protein B

TON_0691	643210	644400	+	9783.98	18581.30	13938.72	1.90	1.42 molybdenum cofactor biosynthesis protein MoeA
TON_0692	644476	644697	-	7872.39	3917.74	3420.52	0.50	0.43 hypothetical protein
TON_0693	645060	646199	-	3682.34	16835.81	12461.26	4.57	3.38 membrane protein
TON_0694	646160	647218	-	10583.60	15009.78	32235.76	1.42	3.05 hypothetical protein
TON_0695	647359	648642	+	2430.66	2139.79	1055.85	0.88	0.43 coenzyme F390 synthetase I
TON_0696	648725	649975	+	16400.16	7571.01	8549.47	0.46	0.52 metal-dependent phosphohydrolase
TON_0697	649968	650927	-	7554.36	6746.35	6288.19	0.89	0.83 hypothetical protein
TON_0698	650970	651503	+	1035.87	1416.11	706.10	1.37	0.68 N-acetyltransferase
TON_0699	651536	652819	+	1405.01	1299.50	2366.14	0.92	1.68 nucleic acid-binding protein
TON_0700	652816	653988	-	1921.81	665.98	691.44	0.35	0.36 ATPase
TON_0701	654076	655083	-	6110.73	3686.93	5269.00	0.60	0.86 putative deoxyhypusine synthase
TON_0702	655119	656165	-	436.16	651.55	145.18	1.49	0.33 putative glutamate synthase subunit beta
TON_0703	656336	657142	+	3406.33	3079.85	2370.54	0.90	0.70 glucose-1-dehydrogenase
TON_0704	657511	658653	-	1288.02	1519.49	879.88	1.18	0.68 Imidazolonepropionase-like amidohydrolase
TON_0705	658792	659664	-	3525.60	9817.78	11884.94	2.78	3.37 heat shock protein HtpX
TON_0706	659703	660263	-	1211.92	1578.39	10481.54	1.30	8.65 hypothetical protein
TON_0707	660336	661988	-	7663.40	14800.61	55554.71	1.93	7.25 chaperonin subunit alpha
TON_0708	662165	662476	+	895.03	566.20	426.74	0.63	0.48 hypothetical protein
TON_0709	662483	663145	+	2586.27	1151.64	1803.75	0.45	0.70 serine/threonine protein kinase
TON_0710	663203	664462	-	700.80	670.79	673.84	0.96	0.96 methyl-accepting chemotaxis protein
TON_0711	664576	666306	-	712.16	946.08	1056.59	1.33	1.48 MutS-like DNA mismatch repair ATPase
TON_0712	666449	666955	+	339.61	812.64	645.24	2.39	1.90 hypothetical protein
TON_0713	666969	667439	-	2501.08	3635.24	2289.88	1.45	0.92 putative molybdenum cofactor biosynthesis protein MoeA
TON_0714	667471	668910	-	8974.14	10197.66	7520.02	1.14	0.84 RNA terminal phosphate cyclase
TON_0715	668970	669416	-	926.83	671.99	778.69	0.73	0.84 hypothetical protein
TON_0716	669413	670351	-	1983.15	1685.38	1697.43	0.85	0.86 tRNA/rRNA cytosine-C5-methylase
TON_0717	670361	671254	-	934.78	722.48	684.10	0.77	0.73 hypothetical protein
TON_0718	670847	671704	+	2522.66	1325.95	1849.94	0.53	0.73 panB 3-methyl-2-oxobutanoate hydroxymethyltransferase
TON_0719	671705	672370	+	4263.88	2481.19	3556.90	0.58	0.83 dolichol-phosphate mannosyltransferase
TON_0720	672360	673202	-	247.61	274.09	250.76	1.11	1.01 hypothetical protein
TON_0721	673454	673879	+	2502.22	4213.46	2113.17	1.68	0.84 hypothetical protein
TON_0722	674212	675027	-	272.60	357.03	283.76	1.31	1.04 membrane-bound phosphoesterase

TON_0723	675166	675612	+	2116.04	774.17	1283.89	0.37	0.61 hypothetical protein
TON_0724	675616	676233	+	1227.83	501.29	959.80	0.41	0.78 hypothetical protein
TON_0725	676288	678963	-	1066.54	1922.20	1520.72	1.80	1.43 DEAD/DEAH box helicase
TON_0726	679111	679326	+	48.84	36.06	41.79	0.74	0.86 hypothetical protein
TON_0727	679421	681196	+	12073.80	9379.01	9796.70	0.78	0.81 putative ATPase RIL
TON_0728	681403	682110	+	1029.06	3125.53	1841.88	3.04	1.79 hypothetical protein
TON_0729	682110	682334	+	40.89	228.40	84.32	5.59	2.06 hypothetical protein
TON_0730	682560	683744	+	25550.35	6844.92	4151.55	0.27	0.16 hypothetical protein
TON_0731	683974	684804	+	5140.74	3125.53	1262.62	0.61	0.25 hypothetical protein
TON_0732	684858	685160	+	2504.49	848.70	475.87	0.34	0.19 hypothetical protein
TON_0733	685163	685348	+	683.77	349.82	178.18	0.51	0.26 hypothetical protein
TON_0734	685424	685720	+	881.40	1382.45	1213.50	1.57	1.38 Transcriptional regulator
TON_0735	685723	685920	+	1986.56	2169.84	4106.83	1.09	2.07 hypothetical protein
TON_0736	685922	686914	+	2247.79	2455.95	4620.09	1.09	2.06 HypE protein
TON_0737	686911	687783	-	5976.70	4275.97	5063.69	0.72	0.85 restriction endonuclease
TON_0738	687785	688531	-	9002.54	7146.65	7048.55	0.79	0.78 hypothetical protein
TON_0739	688599	689390	+	1824.13	1942.64	1296.35	1.06	0.71 glutamine amidotransferase
TON_0740	689434	689841	+	1002.93	514.51	522.79	0.51	0.52 hypothetical protein
TON_0741	689847	691358	+	989.30	741.71	775.76	0.75	0.78 metallophosphoesterase
TON_0742	691348	692238	-	5250.91	2665.12	2519.38	0.51	0.48 2-phosphoglycerate kinase
TON_0743	692235	693533	-	6760.42	3097.89	3121.36	0.46	0.46 cyclic 2,3-diphosphoglycerate synthetase
TON_0744	693681	693860	+	3193.94	8146.83	18313.18	2.55	5.73 hypothetical protein
TON_0745	693931	694809	+	400.95	1456.98	1005.26	3.63	2.51 zinc-dependent hydrolase
TON_0746	694826	695470	-	6149.35	967.71	1423.20	0.16	0.23 exonuclease
TON_0747	695654	695989	-	4809.08	17605.17	4393.52	3.66	0.91 hypothetical protein
TON_0748	696117	696956	+	1482.25	889.58	1904.20	0.60	1.28 hypothetical protein
TON_0749	697357	699222	+	1589.02	2008.76	1247.23	1.26	0.78 formaldehyde:ferredoxin oxidoreductase
TON_0750	699287	699517	+	147.66	125.02	141.51	0.85	0.96 hypothetical protein
TON_0751	699796	700104	-	14170.53	13786.01	12167.23	0.97	0.86 rps10p 30S ribosomal protein S10P
TON_0752	700151	701437	-	30022.09	35807.80	39410.43	1.19	1.31 elongation factor 1-alpha
TON_0753	701688	702080	-	140.84	54.10	28.60	0.38	0.20 DEXX-box atpase, C-terminus
TON_0754	702389	702925	-	208.99	488.06	350.48	2.34	1.68 DEXX-box atpase, N-terminus

TON_0755	703075	705273	-	13280.05	20039.48	33679.50	1.51	2.54 elongation factor EF-2
TON_0756	705418	706482	-	2225.08	2650.69	2921.19	1.19	1.31 metal-dependent phosphohydrolase
TON_0757	706509	707315	-	7614.56	6005.83	6596.15	0.79	0.87 GTP cyclohydrolase
TON_0758	707341	707508	-	126.08	314.96	109.98	2.50	0.87 hypothetical protein
TON_0759	707512	707637	-	15.90	158.68	27.86	9.98	1.75 hypothetical protein
TON_0760	707732	708133	-	107.90	349.82	228.03	3.24	2.11 general substrate transporter
TON_0761	708121	708531	-	421.39	2607.42	1085.18	6.19	2.58 DNA-binding protein
TON_0762	708536	709783	-	2725.98	12125.87	8139.60	4.45	2.99 hypothetical protein
TON_0763	709780	710940	-	3082.63	12807.48	9229.18	4.15	2.99 DNA topoisomerase VI subunit A
TON_0764	710933	712624	-	4589.86	19109.04	13498.05	4.16	2.94 DNA topoisomerase VI subunit B
TON_0765	712627	713331	-	3446.09	7262.06	7437.16	2.11	2.16 putative RNA-processing protein
TON_0766	713337	714116	-	2236.44	3409.24	3578.90	1.52	1.60 serine/threonine protein kinase
TON_0767	714144	714500	-	7878.07	5496.13	7630.73	0.70	0.97 translation initiation factor IF-1
TON_0768	714681	715475	+	1808.23	770.56	2169.63	0.43	1.20 ABC-type manganese/zinc transport system, ATPase component
TON_0769	715472	716293	+	491.81	817.45	630.58	1.66	1.28 manganese/zinc ABC transporter permease
TON_0770	716298	716981	+	1276.67	3055.81	1863.87	2.39	1.46 rnhB ribonuclease HII
TON_0771	717010	718395	-	1010.88	1193.71	835.88	1.18	0.83 membrane-bound dolichyl-phosphate-mannose-protein mannosyltransferase
TON_0772	718455	719603	+	4784.09	1333.16	4283.53	0.28	0.90 hypothetical protein
TON_0773	719598	719792	-	449.79	361.84	258.10	0.80	0.57 hypothetical protein
TON_0774	719961	721769	+	3926.54	4588.52	9094.26	1.17	2.32 glucosamine--fructose-6-phosphate aminotransferase
TON_0775	721780	724644	+	2614.67	8280.26	9118.46	3.17	3.49 oligosaccharyl transferase
TON_0776	724641	724835	-	52.25	98.57	27.86	1.89	0.53 inosine-5'-monophosphate dehydrogenase-like protein III
TON_0777	725041	725712	-	895.03	2204.70	858.61	2.46	0.96 UbiE/COQ5 methyltransferase
TON_0778	725713	725994	-	1305.06	2672.33	1250.16	2.05	0.96 hypothetical protein
TON_0779	725994	726278	-	2889.54	2568.95	1545.65	0.89	0.53 molybdopterin converting factor protein subunit 1
TON_0780	726320	726994	-	4043.53	5922.89	1701.10	1.46	0.42 adk adenylate kinase
TON_0781	727050	727496	+	314.62	477.25	224.37	1.52	0.71 hypothetical protein
TON_0782	727480	728091	-	538.38	278.89	454.60	0.52	0.84 hypothetical protein
TON_0783	730258	732516	-	1554.94	4340.89	8073.61	2.79	5.19 cationic amino acid transporter (cat-1)
TON_0784	732519	732713	-	114.72	161.09	270.56	1.40	2.36 hypothetical protein
TON_0785	732788	734209	-	2045.62	2235.96	2731.29	1.09	1.34 pyruvate kinase

TON_0786	734306	734767	+	10485.92	23917.55	3655.16	2.28	0.35 peroxiredoxin, bacterioferritin comigratory protein
TON_0787	734929	735396	-	1007.48	774.17	790.42	0.77	0.78 hypothetical protein
TON_0788	735506	735706	+	123.80	116.61	184.77	0.94	1.49 hypothetical protein
TON_0789	735703	736755	-	4563.74	2174.65	2078.71	0.48	0.46 pyruvate formate lyase activating protein-like protein
TON_0790	736795	737433	-	1235.78	539.76	539.66	0.44	0.44 putative zinc-dependent protease
TON_0791	737617	738474	+	850.73	431.56	666.51	0.51	0.78 hypothetical protein
TON_0792	738507	739166	+	182.87	138.24	113.65	0.76	0.62 hypothetical protein
TON_0793	739157	739456	+	104.50	85.35	78.46	0.82	0.75 hypothetical protein
TON_0794	739453	739878	+	205.58	193.54	326.29	0.94	1.59 hypothetical protein
TON_0795	739912	740283	+	47.70	67.32	51.33	1.41	1.08 camphor resistance protein CrcB
TON_0796	740288	740668	+	333.93	234.42	313.09	0.70	0.94 hypothetical protein
TON_0797	740787	741296	+	8299.46	7345.01	2578.04	0.88	0.31 hypothetical protein
TON_0798	741380	742594	+	15851.55	28739.29	13279.54	1.81	0.84 bifunctional phosphopantothenoylcysteine decarboxylase/phosphopantothenate synthase
TON_0799	742731	743468	+	3455.18	7519.31	6560.22	2.18	1.90 small-conductance mechanosensitive channel
TON_0800	743555	744277	+	751.92	2398.25	1543.45	3.19	2.05 ATPase
TON_0801	744330	745010	+	4068.52	2185.47	1424.67	0.54	0.35 aspartate racemase
TON_0802	745052	745345	+	398.67	597.46	471.47	1.50	1.18 nucleotide pyrophosphohydrolase
TON_0803	745342	746478	-	432.75	729.69	784.56	1.69	1.81 permease
TON_0804	746619	748040	+	884.81	647.95	443.60	0.73	0.50 zinc-dependent protease
TON_0805	748051	749373	+	741.69	628.71	462.67	0.85	0.62 zinc-dependent protease
TON_0806	749627	750235	+	30.67	26.45	25.66	0.86	0.84 membrane protein
TON_0807	750255	751712	+	757.59	724.88	665.04	0.96	0.88 hypothetical protein
TON_0808	751740	752207	-	148.79	456.81	381.28	3.07	2.56 membrane protein
TON_0809	752200	752850	-	241.93	455.61	508.13	1.88	2.10 membrane-associated phosphatase
TON_0810	752843	753127	-	258.97	543.36	682.64	2.10	2.64 hypothetical protein
TON_0811	753129	753662	-	3965.16	2750.47	4027.64	0.69	1.02 regulatory protein
TON_0812	753871	754386	+	18123.20	5319.42	7972.42	0.29	0.44 hypothetical protein
TON_0813	754452	755324	+	729.20	253.65	324.82	0.35	0.45 membrane protein
TON_0814	755300	756523	+	796.21	371.46	533.06	0.47	0.67 N-acetylglucosaminyl-phosphatidylinositol biosynthetic protein
TON_0815	757004	757261	-	916.61	1846.47	1337.41	2.01	1.46 hypothetical protein
TON_0816	757828	758409	-	8217.68	4819.33	4179.42	0.59	0.51 hypothetical protein

TON_0817	758366	759094	-	11599.03	8101.14	4837.86	0.70	0.42 hydrolase
TON_0818	759128	759544	-	10764.20	4956.38	2965.92	0.46	0.28 hypothetical protein
TON_0819	759541	760293	-	6635.48	3858.83	1497.99	0.58	0.23 NAD-dependent deacetylase
TON_0820	760441	761625	+	24831.37	7587.84	9379.49	0.31	0.38 aromatic amino acid permease
TON_0821	761764	763047	+	4775.00	5486.51	2454.12	1.15	0.51 glyA serine hydroxymethyltransferase
TON_0822	763497	763949	+	2694.17	579.43	665.77	0.22	0.25 hypothetical protein
TON_0823	763946	764368	+	1355.04	191.14	264.70	0.14	0.20 hypothetical protein
TON_0824	764434	764766	+	4012.86	1918.60	3007.71	0.48	0.75 DNA-directed RNA polymerase subunit M
TON_0825	764763	764930	+	1358.44	1126.39	1389.47	0.83	1.02 hypothetical protein
TON_0826	764933	765682	+	2685.09	2698.78	3838.46	1.01	1.43 DNA polymerase sliding clamp
TON_0827	765717	766286	+	1917.27	1116.78	2297.95	0.58	1.20 hypothetical protein
TON_0828	766292	768202	+	955.23	1132.41	1231.09	1.19	1.29 molybdopterin oxidoreductase, molybdopterin-binding subunit
TON_0829	768428	769078	+	27135.96	61539.37	65814.07	2.27	2.43 peroxiredoxin
TON_0830	769158	769862	-	465.69	592.65	303.56	1.27	0.65 permease
TON_0831	769859	770563	-	906.39	711.66	527.93	0.79	0.58 membrane protein
TON_0832	770560	771411	-	3760.71	3450.11	1858.01	0.92	0.49 ATP-binding transport protein
TON_0833	771663	772019	-	52.25	39.67	24.20	0.76	0.46 methyltransferase
TON_0834	772400	772717	-	182.87	900.39	331.42	4.92	1.81 hypothetical protein
TON_0835	772728	775130	-	793.94	1120.38	1198.83	1.41	1.51 heavy-metal transporting P-type ATPase
TON_0836	775247	775855	+	1665.12	1479.82	1031.66	0.89	0.62 transcriptional regulatory protein
TON_0837	775888	776223	-	880.26	4677.48	1635.84	5.31	1.86 hypothetical protein
TON_0838	776366	776980	+	290.77	244.03	186.97	0.84	0.64 ubiquinone/menaquinone biosynthesis methyltransferase
TON_0839	776996	777229	-	1424.32	6202.98	2300.15	4.36	1.61 hypothetical protein
TON_0840	777406	779334	-	11091.32	18646.22	4308.46	1.68	0.39 copper-transporting ATPase
TON_0841	780424	780540	-	5.68	2.40	6.60	0.42	1.16 Transcription regulatory protein
TON_0842	780711	781514	-	168.10	263.27	250.03	1.57	1.49 putative transport protein
TON_0843	782057	782263	-	1598.10	1192.51	591.72	0.75	0.37 hypothetical protein
TON_0844	782358	782735	-	897.30	500.09	494.93	0.56	0.55 hypothetical protein
TON_0845	782741	783109	-	701.94	861.93	357.08	1.23	0.51 hypothetical protein
TON_0846	783178	784035	-	2586.27	9802.16	666.51	3.79	0.26 hypothetical protein
TON_0847	784305	784874	-	26240.93	100473.91	25896.98	3.83	0.99 alkyl hydroperoxide reductase subunit c
TON_0848	785016	785591	+	1468.62	2731.24	2192.36	1.86	1.49 hypothetical protein

TON_0849	785823	786938	-	2104.68	1128.80	1163.64	0.54	0.55 hypothetical protein
TON_0850	786938	788365	-	4894.26	2475.18	3323.00	0.51	0.68 hypothetical protein
TON_0851	788343	789086	-	4219.58	1995.53	2099.97	0.47	0.50 ATP-dependent transporter
TON_0852	789237	789761	-	15174.60	43163.63	14774.60	2.84	0.97 hypothetical protein
TON_0853	789829	790920	-	10479.11	2062.85	2492.99	0.20	0.24 thil
TON_0854	790922	791896	-	18621.83	1501.46	2641.10	0.08	0.14 MoeB protein
TON_0855	792029	792568	+	591.76	614.29	634.24	1.04	1.07 NAD(P)H oxidase
TON_0856	792678	792884	+	213.53	227.20	206.77	1.06	0.97 hypothetical protein
TON_0857	792887	793216	+	447.51	532.54	579.25	1.19	1.29 hypothetical protein
TON_0858	793276	794571	+	461.14	929.25	308.69	2.02	0.67 cytochrome c-type biogenesis protein
TON_0859	794589	794705	+	20.44	64.91	16.13	3.18	0.79 hypothetical protein
TON_0860	794852	796564	+	24194.18	66968.18	33362.74	2.77	1.38 2-oxoacid:ferredoxin oxidoreductase subunit alpha
TON_0861	796561	797442	+	6454.89	23252.77	12178.97	3.60	1.89 2-oxoacid:ferredoxin oxidoreductase subunit beta
TON_0862	797444	797896	+	4261.61	20133.25	12942.99	4.72	3.04 thioredoxin peroxidase
TON_0863	797937	799166	+	9350.10	44925.95	21546.72	4.80	2.30 type A flavoprotein
TON_0864	799239	799778	+	1892.28	7490.46	3174.89	3.96	1.68 hypothetical protein
TON_0865	799788	800873	+	6219.77	24608.77	14004.71	3.96	2.25 NAD(P)H:rubredoxin oxidoreductase
TON_0866	800962	801477	+	23003.83	68127.03	23125.37	2.96	1.01 rubrerythrin
TON_0867	801560	801721	+	35701.21	169797.06	44799.67	4.76	1.25 rubredoxin
TON_0868	801732	802079	+	24170.33	101734.94	37012.03	4.21	1.53 sor superoxide reductase
TON_0869	802297	802656	+	873.45	3923.75	604.92	4.49	0.69 hypothetical protein
TON_0870	802660	803010	+	3653.94	7141.85	2666.03	1.95	0.73 hypothetical protein
TON_0871	803014	803538	+	6392.41	12148.71	5010.17	1.90	0.78 rubrerythrin-like protein
TON_0872	803592	803906	-	1707.14	3206.08	1201.77	1.88	0.70 hypothetical protein
TON_0873	803936	804415	-	812.11	1808.00	739.83	2.23	0.91 rubrerythrin-like protein
TON_0874	804483	805007	+	1259.63	1810.41	1039.72	1.44	0.83 N-acetyltransferase
TON_0875	804995	805348	-	1954.75	1048.26	1175.37	0.54	0.60 hypothetical protein
TON_0876	805371	805979	-	8067.75	10933.36	7092.54	1.36	0.88 hypothetical protein
TON_0877	806173	806766	-	14883.83	17349.12	10050.40	1.17	0.68 hypothetical protein
TON_0878	807102	807989	+	29964.16	3405.63	25567.76	0.11	0.85 ATP phosphoribosyltransferase
TON_0879	807989	808606	+	2382.96	538.55	3721.15	0.23	1.56 hisG ATP phosphoribosyltransferase catalytic subunit
TON_0880	808596	809729	+	12037.46	3424.86	12629.17	0.28	1.05 hisD histidinol dehydrogenase

TON_0881	809726	810256	+	3324.56	873.95	4919.98	0.26	1.48 hisB imidazoleglycerol-phosphate dehydratase
TON_0882	810256	810843	+	3961.75	1167.27	5794.72	0.29	1.46 hisH imidazole glycerol phosphate synthase subunit HisH
TON_0883	810845	811534	+	3736.86	815.04	5732.40	0.22	1.53 phosphoribosylamino)methylideneamino] imidazole-4-carboxamide isomerase
TON_0884	811528	812286	+	1863.89	569.81	2579.51	0.31	1.38 imidazole glycerol phosphate synthase subunit HisF
TON_0885	812296	812922	+	1929.76	685.21	2619.10	0.36	1.36 bifunctional phosphoribosyl-AMP cyclohydrolase/phosphoribosyl-ATP pyrophosphatase
TON_0886	812919	813926	+	2231.89	823.46	2474.65	0.37	1.11 histidinol-phosphate aminotransferase
TON_0887	813923	814645	+	947.28	378.67	1168.04	0.40	1.23 hydrolase
TON_0888	814651	815439	+	952.96	667.18	1343.28	0.70	1.41 pyrroline-5-carboxylate reductase
TON_0889	815677	816381	+	923.42	1460.59	1585.98	1.58	1.72 ATPase
TON_0890	816496	816990	+	210.13	390.69	641.58	1.86	3.05 DNA topoisomerase VI subunit B
TON_0891	817328	818323	+	690.58	962.91	1703.30	1.39	2.47 N2, N2-dimethylguanosine tRNA methyltransferase
TON_0892	820128	820841	+	1535.63	424.35	464.87	0.28	0.30 hypothetical protein
TON_0893	820846	823179	+	840.51	396.70	321.16	0.47	0.38 hypothetical protein
TON_0894	823185	823745	+	101.09	176.71	116.58	1.75	1.15 hypothetical protein
TON_0895	823745	824617	+	374.82	454.40	407.68	1.21	1.09 hypothetical protein
TON_0896	824617	825486	+	233.98	292.12	315.29	1.25	1.35 hypothetical protein
TON_0897	825483	826676	+	516.80	760.95	743.50	1.47	1.44 hypothetical protein
TON_0898	826673	827971	+	312.35	461.62	514.73	1.48	1.65 hypothetical protein
TON_0899	828943	829587	-	3203.02	2653.10	2943.92	0.83	0.92 alanyl-tRNA synthetase
TON_0900	829649	831103	-	8048.45	7347.41	9158.79	0.91	1.14 hypothetical protein
TON_0901	831224	832498	-	2472.69	1634.89	654.04	0.66	0.26 proton/glutamate symporter
TON_0902	832602	833624	-	245.34	324.57	284.49	1.32	1.16 biotin--protein ligase
TON_0903	833434	834279	+	904.12	984.54	4385.45	1.09	4.85 fructose-bisphosphate aldolase
TON_0904	834406	836190	+	2656.69	10261.37	91765.31	3.86	34.54 pyruvate carboxylase subunit B
TON_0905	836374	838074	+	897.30	7716.46	4962.51	8.60	5.53 cstA
TON_0906	838098	838379	+	116.99	560.19	727.37	4.79	6.22 hypothetical protein
TON_0907	838389	839381	+	1568.57	3704.96	5576.95	2.36	3.56 arsA protein
TON_0908	839371	839664	+	533.84	2092.91	2252.49	3.92	4.22 hypothetical protein
TON_0909	839667	840323	+	1177.85	4711.14	4886.98	4.00	4.15 membrane protein
TON_0910	840401	841192	+	1790.06	3469.34	4661.15	1.94	2.60 lysophospholipase

TON_0911	841189	842208	-	3830.00	1400.48	1557.38	0.37	0.41	adenylosuccinate synthetase
TON_0912	842343	843269	+	5640.50	5861.58	4864.25	1.04	0.86	UDP-glucose 4-epimerase
TON_0913	843254	844696	-	15291.59	15325.94	10398.68	1.00	0.68	hypothetical protein
TON_0914	844895	845338	-	885.94	1369.22	1050.72	1.55	1.19	prefoldin subunit alpha
TON_0915	845483	846370	-	6013.05	786.19	163.51	0.13	0.03	ATPase, N-terminus
TON_0916	846370	847239	-	17972.14	2440.32	340.95	0.14	0.02	ATPase C-terminus
TON_0917	847311	847709	+	3301.84	313.76	75.52	0.10	0.02	iron-molybdenum cofactor-binding protein
TON_0918	848076	848615	+	1068.81	438.78	689.24	0.41	0.64	hypothetical protein
TON_0919	848935	849528	+	142389.11	181.52	92.39	0.00	0.00	iron-molybdenum cofactor-binding protein
TON_0920	849562	849789	+	25621.91	39.67	17.60	0.00	0.00	hypothetical protein
TON_0921	849845	850252	+	11974.99	611.88	53.53	0.05	0.00	iron-molybdenum cofactor-binding protein
TON_0922	850366	850470	+	16108.25	1544.74	357.08	0.10	0.02	short-chain alcohol dehydrogenase
TON_0923	850542	851156	+	8191.56	308.95	135.65	0.04	0.02	short-chain alcohol dehydrogenase
TON_0924	851459	852040	+	4016.27	1555.55	766.96	0.39	0.19	membrane protein
TON_0925	852037	852456	-	1074.49	417.14	225.84	0.39	0.21	DNA-binding protein
TON_0926	852513	853088	+	1506.10	585.44	881.34	0.39	0.59	hypothetical protein
TON_0927	853085	853543	-	3592.61	3590.76	2374.20	1.00	0.66	6-pyruvoyl-tetrahydropterin synthase
TON_0928	853649	854005	+	6100.51	12726.94	8404.29	2.09	1.38	hypothetical protein
TON_0929	855641	856996	-	252.15	199.55	326.29	0.79	1.29	adenylosuccinate lyase
TON_0930	857189	857464	+	6449.21	7108.19	15533.50	1.10	2.41	DNA/RNA-binding protein alba
TON_0931	857576	858205	+	3633.50	1386.05	1360.14	0.38	0.37	transcriptional regulator
TON_0932	858255	858800	+	19130.68	4499.57	8484.21	0.24	0.44	hypothetical protein
TON_0933	858797	859315	-	575.86	235.62	410.61	0.41	0.71	putative NTPase
TON_0934	859371	860441	+	3444.95	1801.99	2868.40	0.52	0.83	translation initiation factor IF-2
TON_0935	860393	860674	-	194.23	10.82	5.87	0.06	0.03	hypothetical protein
TON_0936	860830	861963	+	1790.06	2082.09	1167.30	1.16	0.65	Fe-containing alcohol dehydrogenase
TON_0937	861993	864770	+	4073.06	2726.43	5670.81	0.67	1.39	large helicase-like protein
TON_0938	864851	865903	-	2092.19	1942.64	2051.58	0.93	0.98	acetylornithine deacetylase
TON_0939	866053	866754	+	3493.79	2090.50	4858.39	0.60	1.39	hydrolase
TON_0940	866754	867017	+	3120.11	1579.60	4035.70	0.51	1.29	hypothetical protein
TON_0941	867010	867768	+	5108.93	2631.46	6030.09	0.52	1.18	TatD-related deoxyribonuclease
TON_0942	867772	868065	+	1439.09	827.06	1875.60	0.57	1.30	hypothetical protein

TON_0943	868088	869668	-	2782.77	815.04	1094.71	0.29	0.39 Pterin-binding protein
TON_0944	869735	870481	+	1987.69	1020.61	1937.20	0.51	0.97 hypothetical protein
TON_0945	870555	871559	-	313.49	299.33	219.97	0.95	0.70 glyoxylate reductase
TON_0946	871634	872848	+	2389.77	2547.31	803.62	1.07	0.34 alanine glyoxylate transaminase
TON_0947	872985	874244	+	417.98	388.29	899.67	0.93	2.15 23S rRNA (uracil-5-)-methyltransferase
TON_0948	874248	876041	-	10029.32	6198.18	10060.66	0.62	1.00 translation initiation factor IF-2
TON_0949	876141	876419	+	17.04	12.02	13.93	0.71	0.82 hypothetical protein
TON_0950	876422	876595	+	23.85	14.43	12.46	0.60	0.52 hypothetical protein
TON_0951	876598	877110	-	4913.57	2689.16	4394.99	0.55	0.89 ndk nucleoside diphosphate kinase
TON_0952	877200	877406	-	2678.27	2239.57	4120.76	0.84	1.54 50S ribosomal protein L24e
TON_0953	877412	877624	-	11231.02	8001.37	14519.44	0.71	1.29 rps28e 30S ribosomal protein S28e
TON_0954	877703	878074	-	27606.19	28964.09	33128.11	1.05	1.20 rpl7ae 50S ribosomal protein L7Ae
TON_0955	878252	878863	-	3907.23	1628.88	1902.73	0.42	0.49 hypothetical protein
TON_0956	878905	879852	-	1693.51	1981.11	3850.20	1.17	2.27 hypothetical protein
TON_0957	879804	881696	-	5269.09	4431.05	6953.96	0.84	1.32 hypothetical protein
TON_0958	881811	882767	+	136.30	866.73	546.99	6.36	4.01 membrane protease subunit
TON_0959	882787	883200	+	153.34	146.66	161.31	0.96	1.05 membrane protein
TON_0960	883181	884443	-	3140.55	1532.71	1750.22	0.49	0.56 metal-dependent amidohydrolase
TON_0961	884685	885977	+	36006.74	17571.51	25201.15	0.49	0.70 asnC asparaginyl-tRNA synthetase
TON_0962	886004	886240	-	169.24	58.90	54.26	0.35	0.32 hypothetical protein
TON_0963	886790	887932	-	72.69	119.01	134.18	1.64	1.85 thiamin-binding periplasmic protein
TON_0964	888060	888995	-	1044.96	819.85	1053.65	0.78	1.01 Ca ²⁺ /Na ⁺ antiporter
TON_0965	889034	889546	-	664.46	585.44	657.71	0.88	0.99 hypothetical protein
TON_0966	889543	890055	-	2273.92	2457.15	2083.84	1.08	0.92 hypothetical protein
TON_0967	890268	890642	+	68.15	44.48	33.73	0.65	0.49 hypothetical protein
TON_0968	890696	893128	-	2234.16	1597.63	2275.22	0.72	1.02 ATPase
TON_0969	893255	895150	+	2351.15	1832.04	884.28	0.78	0.38 acylamino acid-releasing protein
TON_0970	895326	895916	+	146.52	121.41	174.51	0.83	1.19 molybdopterin-guanine dinucleotide biosynthesis protein A
TON_0971	896097	896462	+	1256.22	68.52	360.75	0.05	0.29 hypothetical protein
TON_0972	896429	897076	+	1039.28	44.48	83.59	0.04	0.08 pyrolysin-related protein
TON_0973	897084	897599	-	194.23	206.77	255.16	1.06	1.31 hypothetical protein
TON_0974	897647	898438	+	1504.97	645.54	1616.04	0.43	1.07 cobalt ABC transporter ATPase

TON_0975	898435	899196	+	349.83	269.28	470.00	0.77	1.34 cobalt ABC transporter permease
TON_0976	899193	899822	-	544.06	412.33	426.74	0.76	0.78 hypothetical protein
TON_0977	899889	900281	-	1495.88	3472.95	734.70	2.32	0.49 hypothetical protein
TON_0978	900376	901167	+	717.84	757.34	1015.52	1.06	1.41 membrane protein
TON_0979	901246	903786	-	2739.61	6600.89	6327.78	2.41	2.31 DEAD/DEAH box helicase
TON_0980	903834	904295	-	871.18	1223.77	2209.22	1.40	2.54 transcriptional regulator
TON_0981	904321	905448	-	9531.83	5732.95	8440.95	0.60	0.89 tyrosyl-tRNA synthetase
TON_0982	905572	906690	+	11921.60	22602.42	13641.76	1.90	1.14 hypothetical protein
TON_0983	906746	908197	+	9941.86	35390.67	26067.09	3.56	2.62 iron(III) ABC transporter periplasmic protein
TON_0984	908345	910189	+	2931.56	10085.86	17159.07	3.44	5.85 iron(III) ABC transporter permease
TON_0985	910200	911264	+	3752.76	10361.15	18082.94	2.76	4.82 ABC-type iron(III) transport system, ATPase component
TON_0986	911299	911898	+	513.39	757.34	891.61	1.48	1.74 hypothetical protein
TON_0987	911967	913985	+	8438.03	17130.33	14097.10	2.03	1.67 metallophosphoesterase
TON_0988	914076	914699	+	6060.75	2267.21	5257.27	0.37	0.87 hypothetical protein
TON_0989	914700	916838	-	4068.52	5467.28	4502.77	1.34	1.11 type II restriction endonuclease
TON_0990	916982	918226	+	708.75	328.18	517.66	0.46	0.73 pgk phosphoglycerate kinase
TON_0991	918184	918528	-	1410.69	32.46	43.99	0.02	0.03 hypothetical protein
TON_0992	918541	919305	-	5658.67	122.62	192.11	0.02	0.03 ABC type transporter permease
TON_0993	919310	920296	-	29773.34	467.63	629.85	0.02	0.02 ABC-type multidrug transporter, ATPase component
TON_0994	920298	920747	-	20457.32	203.16	486.87	0.01	0.02 hypothetical protein
TON_0995	920844	921275	+	345.29	697.23	423.81	2.02	1.23 hypothetical protein
TON_0996	921241	921972	+	1347.09	1845.27	1269.22	1.37	0.94 endonuclease III
TON_0997	921973	922551	-	14300.02	2995.70	4918.51	0.21	0.34 phosphate transport system regulator
TON_0998	922544	923152	-	37256.15	4248.32	9206.45	0.11	0.25 phosphate transport system regulator
TON_0999	923272	924441	+	203.31	328.18	329.95	1.61	1.62 hypothetical protein
TON_1000	924458	925210	+	236.25	305.34	398.14	1.29	1.69 hypothetical protein
TON_1001	925314	926732	+	19437.35	25325.24	18136.47	1.30	0.93 acyl-CoA synthetase large subunit
TON_1002	926764	927489	+	5216.84	19933.70	7666.66	3.82	1.47 acetyl-CoA synthetase II subunit beta
TON_1003	927521	927856	-	626.97	212.78	203.84	0.34	0.33 hypothetical protein
TON_1004	927853	928674	-	52814.66	5499.74	15766.66	0.10	0.30 cysteine synthase
TON_1005	929227	930207	+	1072.22	1656.53	1361.61	1.54	1.27 hypothetical protein
TON_1006	930299	930889	-	9838.50	1543.53	843.22	0.16	0.09 hypothetical protein

TON_1007	930932	931486	-	34.07	163.49	74.79	4.80	2.19	membrane protein
TON_1008	931496	932647	-	9914.60	5830.32	7490.69	0.59	0.76	thiamine biosynthesis protein Thil
TON_1009	932647	932973	-	1507.24	640.73	1179.04	0.43	0.78	membrane protein
TON_1010	933015	933623	-	10806.23	3311.86	2040.58	0.31	0.19	NAD(P)H-flavin oxidoreductase
TON_1011	933720	934433	+	3443.82	2699.98	4922.18	0.78	1.43	maleate cis-trans isomerase
TON_1012	934533	935912	+	316.89	355.83	926.07	1.12	2.92	ADP-specific phosphofructokinase
TON_1013	935913	936761	-	2005.86	1247.81	1398.27	0.62	0.70	integrase/recombinase
TON_1014	936763	937656	-	8194.97	6366.47	7367.50	0.78	0.90	hypothetical protein
TON_1015	937706	938428	-	659.91	621.50	768.43	0.94	1.16	sugar fermentation stimulation protein A
TON_1016	939053	940156	+	4314.99	6537.18	2363.94	1.51	0.55	putative transcriptional regulator
TON_1017	940254	940892	+	180.60	817.45	91.65	4.53	0.51	4Fe-4S ferredoxin
TON_1018	940903	942795	+	997.25	4937.14	733.96	4.95	0.74	carbon-monoxide dehydrogenase, catalytic subunit
TON_1019	942863	943672	+	77.24	801.82	195.04	10.38	2.53	ATP-binding protein
TON_1020	943673	943867	+	13.63	195.95	44.73	14.38	3.28	RNA-binding protein
TON_1021	943872	945776	+	34.07	519.32	109.98	15.24	3.23	Hydrogenase 4 subunit 3
TON_1022	945773	946654	+	60.20	549.37	152.51	9.13	2.53	Respiratory-chain NADH dehydrogenase, subunit 1
TON_1023	946658	948280	+	277.14	1795.98	479.53	6.48	1.73	Hydrogenase 4 subunit 5
TON_1024	948784	949359	+	137.43	1075.91	245.63	7.83	1.79	NADH dehydrogenase (ubiquinone), 20 kDa subunit
TON_1025	949349	949633	+	31.80	211.57	79.19	6.65	2.49	Na ⁺ /H ⁺ antiporter subunit MnhF
TON_1026	949630	949989	+	36.35	282.50	74.06	7.77	2.04	Na ⁺ /H ⁺ antiporter subunit
TON_1027	949982	950236	+	1.14	43.28	3.67	38.10	3.23	hypothetical protein
TON_1028	950237	951007	+	69.29	431.56	101.19	6.23	1.46	Multisubunit Na ⁺ /H ⁺ antiporter, MnhB subunit
TON_1029	951000	951404	+	134.03	421.95	126.85	3.15	0.95	hypothetical protein
TON_1030	951401	951886	+	93.14	413.53	110.72	4.44	1.19	hypothetical protein
TON_1031	951897	953459	+	105.63	798.21	145.18	7.56	1.37	putative monovalent cation/H ⁺ antiporter subunit D
TON_1032	953602	954648	+	3918.59	5588.70	3848.73	1.43	0.98	deblocking aminopeptidase
TON_1033	954845	955219	+	2561.28	1000.17	1041.92	0.39	0.41	hypothetical protein
TON_1034	955262	956338	+	63.61	86.55	45.46	1.36	0.71	hypothetical protein
TON_1035	956367	957080	+	7.95	20.44	11.73	2.57	1.48	membrane protein
TON_1036	957092	957538	+	39.75	85.35	52.06	2.15	1.31	hypothetical protein
TON_1037	957535	958188	+	327.12	557.79	666.51	1.71	2.04	multidrug ABC transporter ATPase
TON_1038	958400	959104	+	313.49	215.18	170.84	0.69	0.54	hypothetical protein

TON_1039	959117	959497	-	1510.65	815.04	1372.61	0.54	0.91	membrane protein
TON_1040	959421	961421	+	2566.96	1969.09	5058.56	0.77	1.97	ERCC2/XPD/Rad3-related DNA repair helicase
TON_1041	962122	962868	-	1409.56	1044.65	678.97	0.74	0.48	hypothetical protein
TON_1042	963130	964341	+	13047.21	2803.36	28043.15	0.21	2.15	DEAD/DEAH box helicase
TON_1043	964335	965516	-	4416.08	1437.75	2080.91	0.33	0.47	hypothetical protein
TON_1044	966022	966630	-	849.60	1151.64	1456.93	1.36	1.71	integral membrane protein
TON_1045	966620	967402	-	5922.18	6521.55	7465.02	1.10	1.26	bifunctional inositol-1 monophosphatase/fructose-1,6-bisphosphatase
TON_1046	967408	968217	-	4660.28	4939.55	4756.47	1.06	1.02	membrane protein
TON_1047	968300	969331	+	16729.55	7258.45	5624.61	0.43	0.34	egsA NAD(P)-dependent glycerol-1-phosphate dehydrogenase
TON_1048	969344	969793	+	15982.17	23216.71	10793.89	1.45	0.68	hypothetical protein
TON_1049	969803	970804	-	1566.30	1704.62	849.08	1.09	0.54	Allophanate hydrolase, subunit 2
TON_1050	970797	971483	-	304.40	316.16	153.25	1.04	0.50	hypothetical protein
TON_1051	971488	972255	-	2284.14	1574.79	865.21	0.69	0.38	LamB/YcsF family protein
TON_1052	972316	972801	+	529.29	381.07	380.55	0.72	0.72	hypothetical protein
TON_1053	972923	973318	-	2721.43	7425.55	2553.11	2.73	0.94	hypothetical protein
TON_1054	973346	973678	-	3142.82	3827.58	2641.83	1.22	0.84	hypothetical protein
TON_1055	973675	974502	-	5587.12	5808.69	5706.74	1.04	1.02	3-methyladenine DNA glycosylase
TON_1056	974484	974783	-	2385.23	3404.43	2473.19	1.43	1.04	hypothetical protein
TON_1057	974875	976200	+	31731.50	30112.12	15140.48	0.95	0.48	nodulation protein nfeD
TON_1058	976202	977008	+	27416.51	67509.14	23660.63	2.46	0.86	membrane protease subunit
TON_1059	977179	977958	+	1183.53	1949.85	886.48	1.65	0.75	ATPase
TON_1060	977955	978206	+	430.48	1026.62	359.28	2.38	0.83	hypothetical protein
TON_1061	978297	978545	+	173.78	111.80	53.53	0.64	0.31	hypothetical protein
TON_1062	978673	980184	+	8418.72	4807.31	22170.70	0.57	2.63	thymidine phosphorylase
TON_1063	980336	980725	-	12456.58	3759.06	8559.00	0.30	0.69	hypothetical protein
TON_1064	980787	981230	+	1928.63	552.98	1613.84	0.29	0.84	hypothetical protein
TON_1065	981227	981994	+	3207.57	1351.19	2050.85	0.42	0.64	geranylgeranylglyceryl phosphate synthase
TON_1066	981997	982236	-	20008.67	13610.50	26596.48	0.68	1.33	hypothetical protein
TON_1067	982389	983231	+	1620.82	1551.95	510.33	0.96	0.31	D-aminopeptidase
TON_1068	983401	984144	+	1102.88	266.87	233.90	0.24	0.21	hypothetical protein
TON_1069	984126	986495	-	4111.68	6449.42	5864.38	1.57	1.43	Hef nuclease

TON_1070	986545	986970	+	182.87	158.68	325.55	0.87	1.78 hypothetical protein
TON_1071	986967	987629	-	4983.99	8725.05	9087.66	1.75	1.82 hypothetical protein
TON_1072	987635	991201	-	24170.33	41032.26	46674.55	1.70	1.93 chromosome segregation ATPase
TON_1073	991250	991633	-	2210.31	2312.90	5240.40	1.05	2.37 hypothetical protein
TON_1074	991856	992260	-	6133.45	7377.46	10628.92	1.20	1.73 methylmalonyl-CoA epimerase
TON_1075	992257	993216	-	9907.79	13472.26	18153.33	1.36	1.83 lysine/arginine/ornithine transport system kinase
TON_1076	993251	993691	-	1795.74	5526.19	4788.00	3.08	2.67 methylmalony-CoA mutase
TON_1077	993807	994457	+	740.56	834.28	973.00	1.13	1.31 hypothetical protein
TON_1078	998473	999027	-	304.40	183.93	404.74	0.60	1.33 Maf-like protein
TON_1079	999169	999333	-	915.47	708.05	1085.91	0.77	1.19 hypothetical protein
TON_1080	999396	1001204	-	19257.89	14486.85	22613.57	0.75	1.17 ATPase
TON_1081	1001316	1002056	+	7271.54	7658.76	8628.66	1.05	1.19 ATPase
TON_1082	1002053	1002796	+	6148.21	5821.91	5936.24	0.95	0.97 GTPase
TON_1083	1002918	1004360	+	429.34	459.21	538.92	1.07	1.26 asparagine synthase
TON_1084	1004504	1005709	+	36550.80	5005.66	3548.84	0.14	0.10 hypothetical protein
TON_1085	1005748	1006785	+	6297.01	526.53	994.99	0.08	0.16 glycosyltransferase
TON_1086	1006818	1007837	+	2765.73	828.27	1662.23	0.30	0.60 putative translation factor
TON_1087	1007910	1009091	+	5698.43	2944.01	6704.66	0.52	1.18 hypothetical protein
TON_1088	1009103	1009522	-	3347.27	2228.75	4400.85	0.67	1.31 hypothetical protein
TON_1089	1009604	1010308	+	6123.22	2377.81	5070.29	0.39	0.83 nucleotidyltransferase
TON_1090	1010315	1011688	-	12458.85	13418.16	21466.80	1.08	1.72 seryl-tRNA synthetase
TON_1091	1011767	1012969	-	7482.81	12419.19	9042.94	1.66	1.21 molybdenum cofactor biosynthesis protein MoeA
TON_1092	1013033	1013185	-	380.50	354.63	406.94	0.93	1.07 hypothetical protein
TON_1093	1013262	1014077	+	3466.53	1568.78	2184.29	0.45	0.63 hypothetical protein
TON_1094	1014074	1016590	+	24007.90	29924.59	26123.55	1.25	1.09 CDC48/VCP
TON_1095	1016668	1016985	+	772.36	1490.64	798.49	1.93	1.03 hypothetical protein
TON_1096	1016998	1017705	-	1681.02	1616.86	376.15	0.96	0.22 metallophosphoesterase
TON_1097	1017809	1019194	-	14036.51	26481.69	1903.47	1.89	0.14 acetyl-CoA synthetase I subunit alpha
TON_1098	1019409	1019834	+	497.49	710.46	530.13	1.43	1.07 hypothetical protein
TON_1099	1019834	1020859	+	916.61	1067.49	992.06	1.16	1.08 flap endonuclease-1
TON_1100	1020872	1021771	-	5553.04	2400.65	7348.44	0.43	1.32 tfb transcription initiation factor IIB
TON_1101	1021810	1022091	-	1430.00	1245.41	2563.38	0.87	1.79 hypothetical protein

TON_1102	1022109	1022447	-	5893.79	3549.89	6554.35	0.60	1.11 hypothetical protein
TON_1103	1022525	1022977	-	11407.08	5450.45	18499.42	0.48	1.62 30S ribosomal protein S19e
TON_1104	1022981	1023397	-	11637.65	3750.64	13478.98	0.32	1.16 RNA-binding protein
TON_1105	1023584	1024183	+	5269.09	1542.33	3990.98	0.29	0.76 hypothetical protein
TON_1106	1024192	1024425	-	4506.95	5379.53	10194.84	1.19	2.26 rplX 50S ribosomal protein LX
TON_1107	1024439	1025125	-	5976.70	7396.70	13875.66	1.24	2.32 translation initiation factor IF-6
TON_1108	1025160	1025435	-	8193.83	4162.97	12097.58	0.51	1.48 50S ribosomal protein L31e
TON_1109	1025446	1025601	-	14636.22	7318.56	11005.80	0.50	0.75 rpl39e 50S ribosomal protein L39e
TON_1110	1025722	1027410	-	2376.14	8959.46	6115.15	3.77	2.57 methylmalonyl-CoA mutase, N-terminus of large subunit
TON_1111	1027556	1028413	+	31.80	45.68	51.33	1.44	1.61 hypothetical protein
TON_1112	1028454	1028939	+	299.86	399.11	235.37	1.33	0.78 mechanosensitive ion channel MscS
TON_1113	1029039	1029530	+	1682.15	2568.95	1439.33	1.53	0.86 small heat shock protein
TON_1114	1029624	1032017	+	5247.50	20824.47	6381.31	3.97	1.22 CDC48/VCP
TON_1115	1032108	1032611	+	319.17	661.17	354.15	2.07	1.11 Transposase ISC1173
TON_1116	1032643	1032765	+	202.18	219.99	156.91	1.09	0.78 hypothetical protein
TON_1117	1032825	1032974	-	30.67	4.81	9.53	0.16	0.31 hypothetical protein
TON_1118	1033168	1033617	-	35.21	36.06	15.40	1.02	0.44 hypothetical protein
TON_1119	1033382	1033828	+	139.71	191.14	109.25	1.37	0.78 metalloprotease
TON_1120	1033871	1034605	-	693.99	638.33	783.82	0.92	1.13 putative molybdopterin-guanine dinucleotide biosynthesis protein MobB/FeS domain-containing protein
TON_1121	1034615	1034830	-	427.07	125.02	274.23	0.29	0.64 hypothetical protein
TON_1122	1034893	1035720	+	4810.21	6640.56	6041.09	1.38	1.26 hypothetical protein
TON_1123	1035739	1036074	-	556.55	1614.46	428.94	2.90	0.77 membrane protein
TON_1124	1036116	1036832	-	1675.34	1017.00	1929.13	0.61	1.15 hypothetical protein
TON_1125	1036865	1037326	-	2559.01	764.55	2899.19	0.30	1.13 hypothetical protein
TON_1126	1037390	1037530	+	10.22	85.35	50.59	8.35	4.95 phosphonate metabolism protein PhnP
TON_1127	1037770	1037973	-	10.22	0.00	0.73	0.00	0.07 hypothetical protein
TON_1128	1038013	1038576	+	2415.90	2293.66	1835.28	0.95	0.76 NAD(P)H-flavin oxidoreductase
TON_1129	1038640	1039023	-	137.43	58.90	90.92	0.43	0.66 hypothetical protein
TON_1130	1039447	1039869	+	968.86	821.05	1480.39	0.85	1.53 hypothetical protein
TON_1131	1039862	1040512	+	1264.17	513.31	1481.86	0.41	1.17 transketolase, N-terminal section
TON_1132	1040509	1041429	+	909.79	464.02	1028.72	0.51	1.13 transketolase

TON_1133	1041426	1042226	+	519.07	444.79	497.86	0.86	0.96 3-deoxy-7-phosphoheptulonate synthase
TON_1134	1042214	1043191	+	1056.32	1113.17	1242.83	1.05	1.18 aroB 3-dehydroquinate synthase
TON_1135	1043188	1043835	+	287.36	571.01	593.92	1.99	2.07 aroD 3-dehydroquinate dehydratase
TON_1136	1043825	1044652	+	249.88	284.90	372.48	1.14	1.49 aroE shikimate 5-dehydrogenase
TON_1137	1044615	1045427	+	128.35	197.15	360.75	1.54	2.81 shikimate kinase
TON_1138	1045434	1046642	+	199.90	115.40	258.83	0.58	1.29 3-phosphoshikimate 1-carboxyvinyltransferase
TON_1139	1046639	1047709	+	212.40	191.14	321.89	0.90	1.52 chorismate synthase
TON_1140	1047699	1047941	+	140.84	109.39	203.10	0.78	1.44 chorismate mutase
TON_1141	1047925	1049019	+	246.47	593.85	526.46	2.41	2.14 aromatic aminotransferase
TON_1142	1048944	1049714	+	186.28	342.61	380.55	1.84	2.04 prephenate dehydrogenase
TON_1143	1049954	1050397	-	346.43	265.67	629.85	0.77	1.82 protein-tyrosine phosphatase
TON_1144	1050548	1051285	+	3224.60	6610.51	3465.25	2.05	1.07 hypothetical protein
TON_1145	1051298	1051525	-	201.04	128.63	125.38	0.64	0.62 carbon-nitrogen hydrolase
TON_1146	1051747	1051857	-	411.17	207.97	467.80	0.51	1.14 membrane protein
TON_1147	1051854	1052552	-	2155.79	1613.26	2476.12	0.75	1.15 hypothetical protein
TON_1148	1052670	1053440	+	1773.02	2168.64	1888.80	1.22	1.07 hypothetical protein
TON_1149	1053634	1054575	+	860.95	897.99	615.18	1.04	0.71 hypothetical protein
TON_1150	1054591	1054743	+	13.63	21.64	22.73	1.59	1.67 ribosomal protein-serine acetyltransferase RimL
TON_1151	1054779	1055924	+	81.78	74.53	40.33	0.91	0.49 hypothetical protein
TON_1152	1056098	1057888	+	1554.94	551.78	214.10	0.35	0.14 hypothetical protein
TON_1153	1057902	1058123	-	335.07	252.45	2213.62	0.75	6.61 hypothetical protein
TON_1154	1058120	1058611	-	2381.82	3099.09	13661.56	1.30	5.74 hypothetical protein
TON_1155	1058622	1059059	-	1436.82	2542.50	4266.67	1.77	2.97 hypothetical protein
TON_1156	1059085	1059693	-	563.37	510.90	519.13	0.91	0.92 SAM-dependent methyltransferase
TON_1157	1059717	1060217	-	570.18	822.26	476.60	1.44	0.84 hypothetical protein
TON_1158	1060286	1061098	+	562.23	656.36	502.26	1.17	0.89 Acetyltransferase (GNAT) family protein
TON_1159	1061150	1061620	+	166.97	155.07	52.79	0.93	0.32 hypothetical protein
TON_1160	1061659	1062846	+	94.27	87.76	66.72	0.93	0.71 hypothetical protein
TON_1161	1062858	1063442	+	74.96	70.93	101.92	0.95	1.36 phosphoserine phosphatase
TON_1162	1063420	1063791	-	82.92	37.27	33.00	0.45	0.40 hypothetical protein
TON_1163	1063778	1064185	-	584.95	224.80	292.56	0.38	0.50 nucleotidyltransferase
TON_1164	1064230	1064793	-	682.63	405.12	547.72	0.59	0.80 nicotinamide-nucleotide adenyltransferase

TON_1165	1064806	1065579	-	1226.69	1307.92	1064.65	1.07	0.87	hypothetical protein
TON_1166	1065629	1067236	+	19840.57	11400.99	11042.46	0.57	0.56	hypothetical protein
TON_1167	1067233	1067772	+	13238.02	7694.83	6060.89	0.58	0.46	tRNA 2'-O-methylase
TON_1168	1067776	1068339	+	5710.92	9326.11	3501.18	1.63	0.61	CDP-alcohol phosphatidyltransferase
TON_1169	1068423	1069133	-	1323.23	1061.48	1904.93	0.80	1.44	hydrolase
TON_1170	1068651	1069574	+	17919.89	11736.38	57139.22	0.65	3.19	hypothetical protein
TON_1171	1069555	1070124	-	1507.24	530.14	2397.67	0.35	1.59	hypothetical protein
TON_1172	1070128	1070463	-	962.04	524.13	1307.35	0.54	1.36	hypothetical protein
TON_1173	1070557	1070724	+	905.25	2457.15	953.20	2.71	1.05	hypothetical protein
TON_1174	1070734	1071864	+	7111.39	7823.45	6571.95	1.10	0.92	signal peptidase
TON_1175	1072044	1072667	-	1107.43	917.22	1451.80	0.83	1.31	phosphoserine phosphatase
TON_1176	1072706	1073368	-	81.78	73.33	63.06	0.90	0.77	pcm protein-L-isoaspartate O-methyltransferase
TON_1177	1073418	1075340	-	72.69	345.01	144.45	4.75	1.99	membrane protein
TON_1178	1075349	1077079	-	42.03	120.21	31.53	2.86	0.75	flagellar assembly protein J
TON_1179	1077093	1078733	-	177.19	322.17	238.30	1.82	1.34	flagella-related protein I
TON_1180	1078735	1079433	-	52.25	58.90	40.33	1.13	0.77	flagellar accessory protein FlaH
TON_1181	1079489	1079968	-	24.99	64.91	22.73	2.60	0.91	flagella-related protein G
TON_1182	1079968	1080444	-	19.31	38.47	26.40	1.99	1.37	flagella-related protein
TON_1183	1080477	1081808	-	742.83	692.43	596.85	0.93	0.80	flagella-related protein D
TON_1184	1081812	1082288	-	152.20	219.99	189.91	1.45	1.25	flagella-related protein C
TON_1185	1082302	1083099	-	106.77	169.50	80.66	1.59	0.76	flagellin
TON_1186	1083110	1083775	-	115.85	152.67	99.72	1.32	0.86	flagellin
TON_1187	1083830	1084570	-	399.81	348.62	164.24	0.87	0.41	flagellin
TON_1188	1084607	1085638	-	152.20	200.76	101.19	1.32	0.66	flagellin B
TON_1189	1085678	1086385	-	32.94	62.51	30.80	1.90	0.93	flagellin
TON_1190	1086601	1087554	-	962.04	2118.15	1564.71	2.20	1.63	SAM-dependent methyltransferase
TON_1191	1087564	1087893	-	876.86	887.17	945.13	1.01	1.08	hypothetical protein
TON_1192	1088246	1089325	+	7597.52	4428.64	6237.60	0.58	0.82	hypothetical protein
TON_1193	1089322	1089762	-	116.99	213.98	96.05	1.83	0.82	purine-binding chemotaxis protein (cheW)
TON_1194	1089767	1090993	-	466.82	801.82	550.66	1.72	1.18	Methyl-accepting chemotaxis protein
TON_1195	1091237	1092100	+	316.89	426.76	527.93	1.35	1.67	cheR chemotaxis protein methyltransferase
TON_1196	1092075	1092437	+	368.01	605.87	489.07	1.65	1.33	chemotaxis response regulator

TON_1197	1092449	1093561	+	899.57	1701.01	885.74	1.89	0.98	chemotaxis-specific methyltransferase
TON_1198	1093533	1095878	+	1458.40	6479.47	4134.69	4.44	2.84	cheA chemotaxis histidine kinase
TON_1199	1095868	1096500	+	272.60	1878.93	915.07	6.89	3.36	histidine kinase
TON_1200	1096497	1097222	+	184.00	913.62	567.52	4.97	3.08	chemotaxis protein cheC
TON_1201	1097226	1097714	+	143.11	1452.17	509.60	10.15	3.56	chemoreceptor glutamine deamidase CheD
TON_1202	1097752	1099995	+	2256.88	7645.54	4704.41	3.39	2.08	methyl-accepting chemotaxis protein
TON_1203	1100033	1100782	+	1441.36	1692.60	1693.03	1.17	1.17	hypothetical protein
TON_1204	1100803	1101828	+	3221.20	1890.95	2528.91	0.59	0.79	hypothetical protein
TON_1205	1101851	1103134	-	1436.82	836.68	812.42	0.58	0.57	membrane protein
TON_1206	1103204	1103950	+	796.21	552.98	274.96	0.69	0.35	hypothetical protein
TON_1207	1103915	1104991	-	7939.41	3311.86	5199.34	0.42	0.65	hypothetical protein
TON_1208	1105241	1106779	+	3397.25	2680.75	4298.93	0.79	1.27	hypothetical protein
TON_1209	1106784	1107188	+	246.47	210.37	300.62	0.85	1.22	ribonuclease P protein component 4
TON_1210	1107193	1108341	-	84897.13	7694.83	6407.70	0.09	0.08	hypothetical protein
TON_1211	1108571	1109140	-	2739.61	1979.91	1340.35	0.72	0.49	cyclase-related protein
TON_1212	1109195	1110460	+	4486.50	4550.06	6587.35	1.01	1.47	S-adenosyl-L-homocysteine hydrolase
TON_1213	1110628	1111566	+	964.31	346.21	1146.04	0.36	1.19	polysaccharide deacetylase
TON_1214	1111608	1112267	+	3951.53	2755.28	1239.89	0.70	0.31	hypothetical protein
TON_1215	1112422	1112967	-	650.83	1084.32	1088.85	1.67	1.67	metal-dependent phosphohydrolase
TON_1216	1112979	1113293	-	791.67	738.11	1055.12	0.93	1.33	hypothetical protein
TON_1217	1113345	1113902	+	2318.22	596.26	845.42	0.26	0.36	GTP-binding protein
TON_1218	1113903	1114307	-	160.15	223.60	358.55	1.40	2.24	hypothetical protein
TON_1219	1114308	1114601	-	377.09	455.61	603.45	1.21	1.60	hypothetical protein
TON_1220	1114580	1115863	-	2261.42	2130.17	2755.48	0.94	1.22	hypothetical protein
TON_1221	1115979	1117073	+	3121.24	1530.31	5519.76	0.49	1.77	DNA methylase
TON_1222	1117070	1117231	-	102.22	64.91	38.13	0.64	0.37	CoA-binding protein
TON_1223	1117568	1118005	+	1938.85	650.35	1041.92	0.34	0.54	membrane protein
TON_1224	1117977	1118360	-	528.16	430.36	420.87	0.81	0.80	Membrane protein
TON_1225	1118357	1119004	-	380.50	229.61	262.50	0.60	0.69	putative zinc-dependent protease
TON_1226	1119042	1119803	+	256.70	103.38	67.46	0.40	0.26	hypothetical protein
TON_1227	1119842	1120474	-	772.36	669.59	639.38	0.87	0.83	hypothetical protein
TON_1228	1120516	1121835	-	540.65	199.55	200.17	0.37	0.37	glycerate kinase

TON_1229	1122089	1122508	-	509.98	123.82	341.69	0.24	0.67	hypothetical protein
TON_1230	1122619	1122822	+	5086.22	2416.28	8285.51	0.48	1.63	rps17E 30S ribosomal protein S17e
TON_1231	1122877	1123473	-	5491.71	3261.37	3684.49	0.59	0.67	heat shock regulator
TON_1232	1123587	1124756	+	1621.96	1709.43	2851.53	1.05	1.76	threonine synthase (TS)
TON_1233	1124753	1125331	-	1382.30	932.85	963.47	0.67	0.70	thymidine kinase
TON_1234	1125429	1126763	-	38488.52	25986.41	58352.71	0.68	1.52	rbcL ribulose bisophosphate carboxylase
TON_1235	1127155	1127358	+	2619.21	2948.82	3856.79	1.13	1.47	histone B
TON_1236	1127387	1127881	-	373.69	640.73	766.96	1.71	2.05	metallophosphoesterase
TON_1237	1127891	1128802	-	6881.95	15710.62	12742.82	2.28	1.85	tfb transcription initiation factor IIB
TON_1238	1128809	1129120	-	16856.76	21646.73	29835.17	1.28	1.77	H/ACA RNA-protein complex component Gar1
TON_1239	1129244	1130083	+	1159.68	351.02	2295.01	0.30	1.98	carbohydrate/pyrimidine kinase
TON_1240	1130184	1130693	+	1922.95	1377.64	1069.78	0.72	0.56	ADP-ribose pyrophosphatase
TON_1241	1130698	1131051	+	1424.32	753.73	819.02	0.53	0.58	hypothetical protein
TON_1242	1131041	1132504	-	1216.47	1776.75	1127.71	1.46	0.93	membrane protein
TON_1243	1132513	1133274	-	1658.30	1703.42	1506.06	1.03	0.91	ABC transporter
TON_1244	1133359	1134669	-	1774.16	5404.77	1447.40	3.05	0.82	putative transposase
TON_1245	1134666	1134845	-	1614.01	4320.45	2255.42	2.68	1.40	hypothetical protein
TON_1246	1135197	1135499	+	30.67	10.82	16.13	0.35	0.53	hypothetical protein
TON_1247	1135538	1136215	-	1218.74	435.17	1564.71	0.36	1.28	ATP-binding protein
TON_1248	1136309	1137586	+	2581.73	1594.02	1004.53	0.62	0.39	bifunctional sugar nucleotidyltransferase/CDP-alcohol phosphatidyltransferase synthase
TON_1249	1137647	1138795	+	850.73	19389.13	2861.80	22.79	3.36	myo-inositol-1-phosphate synthase
TON_1250	1138860	1139462	+	2564.69	2151.81	1498.72	0.84	0.58	hypothetical protein
TON_1251	1139467	1140114	+	2608.99	1707.02	1613.11	0.65	0.62	orotidine 5'-phosphate decarboxylase
TON_1252	1140117	1140635	+	2223.94	1990.72	1794.95	0.90	0.81	putative RNA-binding protein
TON_1253	1140637	1141089	+	1947.94	1880.13	1731.16	0.97	0.89	glycerol-3-phosphate cytidyltransferase
TON_1254	1141186	1141530	-	4501.27	5537.00	2454.86	1.23	0.55	putative transcriptional regulator
TON_1255	1141517	1142287	-	1693.51	2612.23	2010.52	1.54	1.19	ATPase
TON_1256	1142321	1143571	-	11750.09	22449.75	12299.22	1.91	1.05	cell division protein FtsZ
TON_1257	1143637	1143828	-	12563.34	11809.71	7774.45	0.94	0.62	hypothetical protein
TON_1258	1144038	1144445	+	2682.82	419.54	825.62	0.16	0.31	hypothetical protein
TON_1259	1144531	1145709	+	1966.11	1691.39	1945.26	0.86	0.99	aspartate aminotransferase

TON_1260	1145723	1145986	+	421.39	702.04	742.03	1.67	1.76	membrane protein
TON_1261	1145999	1147204	+	313.49	724.88	485.40	2.31	1.55	permease
TON_1262	1147194	1147520	+	9.09	46.88	32.26	5.16	3.55	membrane protein
TON_1263	1148299	1149018	-	1785.51	2165.03	2370.54	1.21	1.33	putative transcriptional regulator
TON_1264	1149064	1149966	-	1186.94	572.21	559.46	0.48	0.47	dihydroorotate dehydrogenase 1B
TON_1265	1150468	1151904	+	879.13	248.84	283.76	0.28	0.32	proline dehydrogenase subunit alpha
TON_1266	1151901	1152407	+	297.59	121.41	138.58	0.41	0.47	proline dehydrogenase subunit gamma
TON_1267	1152613	1152885	+	229.44	155.07	136.38	0.68	0.59	hypothetical protein
TON_1268	1152878	1154044	+	739.42	427.96	313.82	0.58	0.42	sarcosine oxidase subunit beta
TON_1269	1154207	1156117	+	1364.12	992.96	942.20	0.73	0.69	putative UPF0069 protein
TON_1270	1156196	1156873	+	1975.20	1220.16	1873.40	0.62	0.95	pyrH uridylyate kinase
TON_1271	1157017	1158336	+	3438.14	3266.18	3722.61	0.95	1.08	NADH oxidase
TON_1272	1158402	1158596	+	2.27	6.01	8.80	2.65	3.87	membrane-bound metal-dependent hydrolase, N-terminus
TON_1273	1158620	1158922	+	3.41	4.81	1.47	1.41	0.43	membrane-bound metal-dependent hydrolase
TON_1274	1159107	1159451	+	47.70	16.83	12.46	0.35	0.26	membrane-bound metal-dependent hydrolase
TON_1275	1159482	1159652	+	22.72	8.41	27.86	0.37	1.23	membrane-bound metal-dependent hydrolase, C-terminus
TON_1276	1159737	1160900	+	168.10	435.17	310.89	2.59	1.85	Heat shock protein/ Zn-dependent protease with chaperone function, family M48
TON_1277	1161095	1161949	+	99.95	476.04	579.25	4.76	5.80	hypothetical protein
TON_1278	1161987	1162529	+	534.97	177.92	428.21	0.33	0.80	RNA 2'-phosphotransferase-like protein
TON_1279	1162513	1163751	-	87.46	97.37	177.44	1.11	2.03	multidrug-efflux transporter
TON_1280	1163925	1164986	-	143.11	180.32	197.24	1.26	1.38	galactokinase
TON_1281	1165050	1166210	-	528.16	1127.60	846.88	2.13	1.60	sarcosine oxidase, beta subunit
TON_1282	1166217	1167701	-	771.22	1918.60	1569.85	2.49	2.04	sarcosine oxidase, alpha subunit
TON_1283	1167920	1169086	-	1693.51	1416.11	3014.31	0.84	1.78	GTPase
TON_1284	1169205	1169657	+	874.58	2856.26	920.20	3.27	1.05	transcriptional regulator
TON_1285	1169734	1170234	+	1184.66	1080.71	1530.25	0.91	1.29	intracellular protease I
TON_1286	1170314	1171039	+	3669.85	3427.27	3489.45	0.93	0.95	hypothetical protein
TON_1287	1171096	1171509	+	988.17	568.61	1059.52	0.58	1.07	transcriptional regulator
TON_1288	1171511	1171738	+	157.88	152.67	192.84	0.97	1.22	membrane protein
TON_1289	1171739	1172635	+	1066.54	599.86	850.55	0.56	0.80	ATP:dephospho-CoA triphosphoribosyl transferase
TON_1290	1172619	1172900	-	354.38	816.25	250.76	2.30	0.71	hypothetical protein

TON_1291	1172944	1173585	-	538.38	360.64	261.76	0.67	0.49	small neutral amino acid transporter A
TON_1292	1173626	1174033	-	1527.68	705.65	648.91	0.46	0.42	stress-inducible protein
TON_1293	1174092	1174934	+	116.99	67.32	225.84	0.58	1.93	hypothetical protein
TON_1294	1175500	1175718	+	2.27	2.40	0.00	1.06	0.00	hypothetical protein
TON_1295	1175757	1177013	-	8620.90	16858.65	8125.66	1.96	0.94	multiple substrate aminotransferase
TON_1296	1177252	1178220	+	10114.51	8096.34	14636.02	0.80	1.45	translation initiation factor IF-2
TON_1297	1178275	1179057	-	544.06	938.86	449.47	1.73	0.83	hypothetical protein
TON_1298	1179126	1180382	-	963.18	1491.84	618.85	1.55	0.64	hypothetical protein
TON_1299	1180681	1181943	+	7644.09	5058.56	5765.39	0.66	0.75	C/D box methylation guide ribonucleoprotein complex aNOP56 subunit
TON_1300	1181949	1182629	+	5757.49	2627.85	5466.97	0.46	0.95	fibrillarin
TON_1301	1182802	1183854	+	2386.37	8042.24	12888.00	3.37	5.40	hypothetical protein
TON_1302	1183865	1185025	+	1643.54	9649.49	12830.81	5.87	7.81	acetyl-CoA acetyltransferase
TON_1303	1185027	1185431	+	2394.32	6951.91	11334.28	2.90	4.73	hypothetical protein
TON_1304	1185537	1185830	-	2049.03	1108.36	1180.50	0.54	0.58	hypothetical protein
TON_1305	1185849	1186352	-	2522.66	739.31	948.07	0.29	0.38	N-acetyltransferase
TON_1306	1186423	1186956	+	5329.28	3810.75	4155.95	0.72	0.78	transcription factor
TON_1307	1186961	1187368	-	6097.10	5101.83	6114.41	0.84	1.00	hypothetical protein
TON_1308	1188031	1188366	+	414.58	94.97	140.05	0.23	0.34	hypothetical protein
TON_1309	1188584	1189162	+	3314.33	2891.12	4769.67	0.87	1.44	transcription factor
TON_1310	1189183	1190190	+	2499.95	3561.91	4941.98	1.42	1.98	acetyl polyamine aminohydrolase
TON_1311	1190205	1190813	-	3812.96	7007.21	4780.67	1.84	1.25	indolepyruvate oxidoreductase subunit beta
TON_1312	1190810	1192756	-	58259.80	69605.65	49546.61	1.19	0.85	indolepyruvate: ferredoxin oxidoreductase subunit alpha
TON_1313	1192768	1194147	-	48058.97	34865.34	35380.59	0.73	0.74	acetyl-CoA synthetase II subunit alpha
TON_1314	1194334	1195008	+	3949.26	6592.47	3593.56	1.67	0.91	metal-dependent hydrolase
TON_1315	1195054	1196052	+	13660.55	7325.77	11809.42	0.54	0.86	putative transcriptional regulator
TON_1316	1196126	1196272	-	4763.64	1792.37	4059.90	0.38	0.85	nucleic acid-binding protein
TON_1317	1196321	1197133	-	8874.19	7140.64	5135.55	0.80	0.58	hypothetical protein
TON_1318	1197177	1197818	-	2162.61	1162.46	1352.81	0.54	0.63	membrane protein
TON_1319	1197818	1198534	-	3941.31	2834.62	2573.64	0.72	0.65	amidase
TON_1320	1198545	1199687	-	339.61	916.02	733.23	2.70	2.16	glycosyltransferase
TON_1321	1199688	1200476	-	101.09	193.54	139.31	1.91	1.38	4-hydroxybenzoate octaprenyltransferase

TON_1322	1200519	1201367	-	1674.20	1037.44	1783.22	0.62	1.07 spermidine synthase
TON_1323	1201419	1201937	-	1014.29	816.25	599.78	0.80	0.59 pyruvoyl-dependent arginine decarboxylase
TON_1324	1202057	1203205	-	1333.46	1265.84	3817.20	0.95	2.86 NapA-type sodium/hydrogen antiporter
TON_1325	1203284	1203691	+	1582.20	1054.27	2144.70	0.67	1.36 hypothetical protein
TON_1326	1203674	1205176	-	427.07	2655.50	515.46	6.22	1.21 putative monovalent cation/H+ antiporter subunit D
TON_1327	1205173	1205430	-	34.07	176.71	25.66	5.19	0.75 putative monovalent cation/H+ antiporter subunit C
TON_1328	1205456	1205857	-	115.85	275.29	79.19	2.38	0.68 putative monovalent cation/H+ antiporter subunit B
TON_1329	1205854	1206096	-	197.63	280.10	145.91	1.42	0.74 multisubunit sodium/hydrogen antiporter subunit
TON_1330	1206093	1206323	-	79.51	189.94	46.93	2.39	0.59 multisubunit sodium/hydrogen antiporter, MnhG subunit
TON_1331	1206304	1206618	-	124.94	215.18	67.46	1.72	0.54 putative monovalent cation/H+ antiporter subunit G
TON_1332	1206611	1206883	-	290.77	445.99	230.23	1.53	0.79 putative monovalent cation/H+ antiporter subunit F
TON_1333	1206859	1207464	-	592.90	860.72	475.87	1.45	0.80 putative monovalent cation/H+ antiporter subunit E
TON_1334	1207661	1208065	+	971.13	1281.47	654.78	1.32	0.67 glycine cleavage system protein H
TON_1335	1208143	1208481	+	1461.80	2269.62	866.68	1.55	0.59 hypothetical protein
TON_1336	1208759	1210210	-	3066.72	891.98	1439.33	0.29	0.47 putative oxidoreductase
TON_1337	1210210	1211076	-	1942.26	577.02	813.15	0.30	0.42 ferredoxin-NADP(+) reductase subunit alpha
TON_1338	1211242	1211454	+	213.53	213.98	217.04	1.00	1.02 membrane protein
TON_1339	1211441	1212202	-	1868.43	932.85	1442.27	0.50	0.77 tRNA (1-methyladenosine) methyltransferase
TON_1340	1212183	1212821	-	7254.51	2098.92	2081.64	0.29	0.29 hypothetical protein
TON_1341	1212879	1213223	+	7157.96	6355.65	4499.10	0.89	0.63 signal recognition particle protein Srp19
TON_1342	1213224	1213469	-	9953.22	29144.41	20801.03	2.93	2.09 putative transcriptional regulator
TON_1343	1213608	1215788	+	5841.54	3779.49	15333.32	0.65	2.62 ski2-like helicase
TON_1344	1215836	1216393	+	2627.16	2341.75	7048.55	0.89	2.68 hypothetical protein
TON_1345	1216379	1217188	-	942.73	1477.42	330.69	1.57	0.35 heavy-metal cation transporter
TON_1346	1217259	1217666	+	1065.40	542.16	887.21	0.51	0.83 hypothetical protein
TON_1347	1217677	1218954	-	798.48	922.03	380.55	1.15	0.48 ABC-type sodium efflux pump system permease
TON_1348	1218951	1219709	-	364.60	385.88	167.18	1.06	0.46 ABC-type sodium efflux pump system, ATPase component
TON_1349	1219865	1220071	-	56.79	68.52	19.80	1.21	0.35 putative transcriptional regulator
TON_1350	1220083	1220382	-	180.60	168.30	35.93	0.93	0.20 hypothetical protein
TON_1351	1220383	1220751	-	208.99	128.63	57.19	0.62	0.27 hypothetical protein
TON_1352	1220752	1221360	-	341.88	175.51	63.79	0.51	0.19 hypothetical protein

TON_1353	1222015	1223142	+	3627.82	2484.80	6296.99	0.68	1.74	cmo tungsten-containing aldehyde ferredoxin oxidoreductase cofactor modifying protein
TON_1354	1223352	1225169	+	53766.48	8688.99	8029.61	0.16	0.15	aor-2 tungsten-containing aldehyde ferredoxin oxidoreductase
TON_1355	1225480	1227450	+	233.98	106.99	110.72	0.46	0.47	subtilisin-like serine protease
TON_1356	1227491	1229251	+	1202.84	595.05	1457.66	0.49	1.21	membrane protein
TON_1357	1229253	1229924	-	809.84	763.35	1100.58	0.94	1.36	hypothetical protein
TON_1358	1229921	1230973	-	5512.15	3399.62	4963.24	0.62	0.90	hypothetical protein
TON_1359	1231033	1231824	+	992.71	780.18	2098.51	0.79	2.11	hypothetical protein
TON_1360	1231888	1232418	+	1169.90	1893.35	1016.99	1.62	0.87	hypothetical protein
TON_1361	1232550	1232753	+	4280.92	14885.96	5901.04	3.48	1.38	4Fe-4S ferredoxin
TON_1362	1232938	1234110	-	11706.93	7363.04	7899.83	0.63	0.67	nicotinate phosphoribosyltransferase
TON_1363	1234414	1235316	-	1840.03	670.79	710.50	0.36	0.39	hypothetical protein
TON_1364	1235368	1235697	+	582.68	1675.77	717.83	2.88	1.23	hypothetical protein
TON_1365	1235654	1236562	-	682.63	393.10	366.62	0.58	0.54	UDP-N-acetylglucosamine--dolichyl-phosphate N-acetylglucosaminophosphotransferase
TON_1366	1236618	1237940	+	2773.68	3287.82	2848.60	1.19	1.03	bifunctional phosphatase/dolichol-phosphate glucosyltransferase
TON_1367	1237946	1238311	+	240.79	1258.63	394.48	5.23	1.64	hypothetical protein
TON_1368	1238308	1238853	-	4236.62	9555.72	2242.95	2.26	0.53	deoxycytidylate deaminase
TON_1369	1238853	1239635	-	1702.60	3287.82	1213.50	1.93	0.71	zinc-dependent protease
TON_1370	1239642	1240007	-	1333.46	1443.76	526.46	1.08	0.39	putative transcriptional regulator
TON_1371	1240483	1240587	+	20.44	25.24	0.00	1.23	0.00	hypothetical protein
TON_1372	1240974	1241768	-	1525.41	687.62	1076.38	0.45	0.71	diphthine synthase
TON_1373	1242126	1242857	+	18536.64	8434.13	20787.83	0.45	1.12	putative transcriptional regulator
TON_1374	1242868	1243653	-	3839.08	1505.06	1409.27	0.39	0.37	hypothetical protein
TON_1375	1243858	1244706	+	3513.10	1594.02	871.08	0.45	0.25	ferredoxin-NADP(+) reductase subunit alpha
TON_1376	1244707	1246155	+	3793.65	1601.24	1212.03	0.42	0.32	putative oxidoreductase
TON_1377	1246171	1246635	-	1959.30	768.16	2558.24	0.39	1.31	hypothetical protein
TON_1378	1246841	1247944	+	742.83	373.86	309.42	0.50	0.42	putative tyrosine recombinase
TON_1379	1248192	1250594	+	2329.57	1250.21	1047.79	0.54	0.45	hypothetical protein
TON_1380	1250591	1252192	+	2892.94	1233.38	1113.78	0.43	0.38	UvrD/REP helicase
TON_1381	1254314	1254889	-	128.35	73.33	55.73	0.57	0.43	hypothetical protein
TON_1382	1255554	1256738	+	630.38	476.04	806.55	0.76	1.28	Type II restriction enzyme Accl

TON_1383	1256859	1258358	+	1281.21	1648.12	2218.02	1.29	1.73 Adenine-specific DNA methylase
TON_1384	1258589	1259065	-	1507.24	3377.98	1696.70	2.24	1.13 hypothetical protein
TON_1385	1259299	1260495	+	22760.77	11209.85	19751.04	0.49	0.87 proteasome-activating nucleotidase
TON_1386	1260482	1261609	-	257.83	119.01	76.26	0.46	0.30 permease
TON_1387	1261693	1262244	+	1710.55	1109.56	1159.24	0.65	0.68 hypothetical protein
TON_1388	1262287	1263222	+	5238.42	3482.57	8498.15	0.66	1.62 serine/threonine protein kinase
TON_1389	1263212	1263703	+	3954.94	2758.89	6176.74	0.70	1.56 hypothetical protein
TON_1390	1263693	1264640	-	1852.53	1270.65	675.31	0.69	0.36 biotin synthase
TON_1391	1264643	1265827	-	897.30	665.98	332.89	0.74	0.37 hypothetical protein
TON_1392	1265828	1266748	-	1922.95	728.49	479.53	0.38	0.25 L-asparaginase
TON_1393	1266815	1267729	-	1788.92	357.03	395.21	0.20	0.22 transcriptional regulator
TON_1394	1267819	1268985	+	56.79	43.28	35.93	0.76	0.63 permease
TON_1395	1268989	1269570	-	1548.13	925.64	582.92	0.60	0.38 indolepyruvate oxidoreductase subunit B
TON_1396	1269706	1270392	+	9342.15	4126.91	5527.09	0.44	0.59 SAM-dependent methyltransferase
TON_1397	1270398	1271978	-	12991.55	6354.45	7301.51	0.49	0.56 lysK lysyl-tRNA synthetase
TON_1398	1272111	1272986	+	973.40	378.67	387.15	0.39	0.40 PhoI-related type II restriction endonuclease
TON_1399	1273057	1273665	+	1442.50	2560.53	4592.96	1.78	3.18 membrane protein
TON_1400	1273662	1274228	-	22396.17	4144.94	6643.07	0.19	0.30 hypothetical protein
TON_1401	1274306	1274461	-	9330.79	1424.52	2812.67	0.15	0.30 hypothetical protein
TON_1402	1279974	1280240	-	2.27	7.21	0.00	3.18	0.00 hypothetical protein
TON_1403	1280533	1281372	-	1601.51	1993.13	1725.29	1.24	1.08 ribose-phosphate pyrophosphokinase
TON_1404	1281439	1282143	-	3237.10	4322.85	3303.94	1.34	1.02 membrane protein
TON_1405	1282133	1282516	-	42405.97	14080.53	22089.31	0.33	0.52 hypothetical protein
TON_1406	1282616	1283251	+	1691.24	791.00	1148.24	0.47	0.68 hydrolase
TON_1407	1283263	1283937	+	651.96	216.38	477.33	0.33	0.73 radB DNA repair and recombination protein RadB
TON_1408	1284009	1285424	-	7226.11	9329.72	9622.92	1.29	1.33 RNA-binding protein FAU-1
TON_1409	1285390	1286136	-	4268.42	3486.17	3998.31	0.82	0.94 hypothetical protein
TON_1410	1286264	1287190	+	2788.45	17428.46	9679.38	6.25	3.47 moaA molybdenum cofactor biosynthesis protein A
TON_1411	1287229	1288176	+	7505.52	9490.81	5628.28	1.26	0.75 hypothetical protein
TON_1412	1288112	1289125	+	2721.43	4081.23	3048.77	1.50	1.12 Met-10+ like protein
TON_1413	1289130	1290632	-	5247.50	6692.25	4848.12	1.28	0.92 replication factor C large subunit
TON_1414	1290632	1291612	-	4670.51	5565.86	3023.11	1.19	0.65 DNA replication ATPase

TON_1415	1291759	1292946	+	13108.54	18316.83	7449.63	1.40	0.57 2-amino-3-ketobutyrate coenzyme A ligase
TON_1416	1292970	1293365	-	185.14	298.13	193.57	1.61	1.05 adenylyl cyclase class-3/4/guanylyl cyclase
TON_1417	1293365	1293880	-	3950.39	1684.18	2678.49	0.43	0.68 tRNA-splicing endonuclease subunit alpha
TON_1418	1293877	1294380	-	4719.35	2143.40	3449.85	0.45	0.73 ribosomal protein-alanine acetyltransferase
TON_1419	1294418	1295986	-	194.23	401.51	333.62	2.07	1.72 protein cytosolic protein
TON_1420	1296243	1298003	+	9527.29	7533.74	11720.70	0.79	1.23 bipolar DNA helicase
TON_1421	1298013	1299383	+	4981.72	4309.63	5738.27	0.87	1.15 DNA repair exonuclease
TON_1422	1299380	1302034	+	5148.69	9619.43	10850.35	1.87	2.11 chromosome segregation protein
TON_1423	1302027	1303361	+	1959.30	3147.17	3028.98	1.61	1.55 5'-3' nuclease
TON_1424	1303402	1304418	+	3209.84	1301.91	1410.74	0.41	0.44 ABC-type iron(III)-siderophore transport system permease
TON_1425	1304418	1305140	+	4893.13	4021.12	2084.58	0.82	0.43 ABC-type iron(III)-siderophore transport system, ATPase component
TON_1426	1305176	1305778	+	20721.96	36514.66	13091.84	1.76	0.63 proteasome subunit beta 2
TON_1427	1305818	1306906	+	21906.63	8551.94	17085.75	0.39	0.78 hypothetical protein
TON_1428	1306914	1308047	+	6210.68	5062.16	6360.78	0.82	1.02 threonine synthase
TON_1429	1308031	1308303	-	27.26	39.67	12.46	1.46	0.46 membrane protein
TON_1430	1308426	1309214	+	589.49	131.03	85.05	0.22	0.14 hypothetical protein
TON_1431	1309274	1309729	-	620.16	431.56	874.01	0.70	1.41 alanyl-tRNA synthetase
TON_1432	1309938	1311284	+	4209.36	2476.38	1303.68	0.59	0.31 hypothetical protein
TON_1433	1311374	1311616	+	823.47	4036.75	612.25	4.90	0.74 hypothetical protein
TON_1434	1311808	1312221	-	244.20	241.63	132.71	0.99	0.54 hypothetical protein
TON_1435	1312208	1312501	-	115.85	171.90	65.26	1.48	0.56 hypothetical protein
TON_1436	1312498	1313388	-	93.14	153.87	87.99	1.65	0.94 putative transcriptional regulator
TON_1437	1313508	1314440	+	1487.93	328.18	457.54	0.22	0.31 pyrB aspartate carbamoyltransferase catalytic subunit
TON_1438	1314443	1314898	+	858.68	286.11	228.77	0.33	0.27 aspartate carbamoyltransferase regulatory subunit
TON_1439	1314946	1316508	+	1621.96	919.63	1974.59	0.57	1.22 hypothetical protein
TON_1440	1316485	1317078	-	90.87	554.18	208.24	6.10	2.29 membrane protein
TON_1441	1317212	1318012	+	502.03	525.33	549.19	1.05	1.09 hypothetical protein
TON_1442	1318009	1318581	+	885.94	782.59	1099.11	0.88	1.24 hypothetical protein
TON_1443	1318605	1320347	+	1484.52	1652.93	1363.08	1.11	0.92 TPR repeat protein
TON_1444	1320904	1321479	+	374.82	421.95	307.22	1.13	0.82 hypothetical protein
TON_1445	1321476	1322825	-	909.79	2358.58	1651.97	2.59	1.82 glmM phosphoglucosamine mutase

TON_1446	1322884	1323267	-	2096.73	2981.28	4017.37	1.42	1.92	hypothetical protein
TON_1447	1323272	1324975	-	4046.94	6142.88	7295.65	1.52	1.80	hypothetical protein
TON_1448	1325015	1325407	-	7410.11	2840.63	3004.05	0.38	0.41	hypothetical protein
TON_1449	1325659	1326444	-	338.48	508.50	357.82	1.50	1.06	hypothetical protein
TON_1450	1326680	1327255	+	640.60	620.30	622.51	0.97	0.97	hypothetical protein
TON_1451	1327289	1329445	-	205.58	227.20	413.54	1.11	2.01	cyclomalto-dextrin glucanotransferase
TON_1452	1329486	1330148	-	101.09	241.63	217.04	2.39	2.15	hypothetical protein
TON_1453	1330213	1331508	-	1656.03	1614.46	1745.09	0.97	1.05	zinc-dependent protease
TON_1454	1331505	1332866	-	5499.66	2356.17	3762.21	0.43	0.68	zinc-dependent protease
TON_1455	1332949	1333458	+	8637.94	6177.74	13123.37	0.72	1.52	hypothetical protein
TON_1456	1333455	1333709	+	1243.73	1111.97	2101.44	0.89	1.69	hypothetical protein
TON_1457	1333706	1334155	-	1527.68	3023.35	1738.49	1.98	1.14	universal stress protein
TON_1458	1334159	1335436	-	1418.64	1896.96	1495.79	1.34	1.05	arsenical pump membrane protein
TON_1459	1335446	1335991	-	2430.66	1454.58	2874.27	0.60	1.18	hypothetical protein
TON_1460	1336109	1338025	+	20039.33	18205.04	16839.38	0.91	0.84	serine protease
TON_1461	1338020	1339297	-	1213.06	807.83	1416.60	0.67	1.17	hypothetical protein
TON_1462	1339388	1340494	-	2095.59	1319.94	1370.41	0.63	0.65	ArgE/DapE-related deacylase
TON_1463	1341022	1341945	-	11818.24	7746.52	6997.22	0.66	0.59	D-3-phosphoglycerate dehydrogenase
TON_1464	1341942	1342589	-	12714.41	8751.50	8028.15	0.69	0.63	phosphate transport system regulator PhoU
TON_1465	1342624	1343523	-	11171.96	6658.59	8451.95	0.60	0.76	2-dehydropantoate 2-reductase
TON_1466	1343569	1344288	+	674.68	546.97	1219.36	0.81	1.81	putative tRNA/rRNA methyltransferase
TON_1467	1344275	1344814	+	1927.49	1745.49	1954.06	0.91	1.01	methylated-DNA--protein-cysteine methyltransferase
TON_1468	1344790	1345827	+	16643.22	28741.69	19602.93	1.73	1.18	membrane protein
TON_1469	1345861	1346340	+	80.64	114.20	65.26	1.42	0.81	hypothetical protein
TON_1470	1346347	1347513	+	56.79	76.94	28.60	1.35	0.50	NapA-type sodium/hydrogen antiporter
TON_1471	1347538	1348290	-	1506.10	373.86	896.74	0.25	0.60	hypothetical protein
TON_1472	1348397	1348732	+	2095.59	809.03	2597.84	0.39	1.24	nac nascent polypeptide-associated complex protein
TON_1473	1348773	1349132	-	1643.54	605.87	222.17	0.37	0.14	carboxymuconolactone decarboxylase-related protein
TON_1474	1349239	1350528	+	7420.34	2296.07	4804.86	0.31	0.65	HflX-related GTP-binding protein
TON_1475	1350508	1351470	-	82.92	1626.48	3695.48	19.62	44.57	sodium/phosphate symporter
TON_1476	1351697	1352257	+	13645.78	38131.52	29776.51	2.79	2.18	pyruvate/ketoisovalerate ferredoxin oxidoreductase subunit gamma

TON_1477	1352305	1352613	+	7966.67	17135.14	18169.46	2.15	2.28	vorD 2-ketoisovalerate ferredoxin oxidoreductase subunit delta
TON_1478	1352624	1353811	+	20879.84	103667.96	72377.22	4.96	3.47	vorA 2-ketoisovalerate ferredoxin oxidoreductase subunit alpha
TON_1479	1353817	1354752	+	4728.43	28518.10	20656.58	6.03	4.37	2-ketoisovalerate ferredoxin oxidoreductase subunit beta
TON_1480	1354815	1355132	+	5208.89	37366.97	19846.36	7.17	3.81	porD pyuvate ferredoxin oxidoreductase subunit delta
TON_1481	1355144	1356328	+	14315.92	79211.86	75788.21	5.53	5.29	porA pyruvate ferredoxin oxidoreductase subunit alpha
TON_1482	1356339	1357334	+	3951.53	31969.41	21297.42	8.09	5.39	pyruvate ferredoxin oxidoreductase subunit beta
TON_1483	1357465	1358382	+	30810.35	14479.64	8395.49	0.47	0.27	ATPase
TON_1484	1358513	1359877	+	429.34	353.43	215.57	0.82	0.50	membrane protein
TON_1485	1359861	1360595	-	9735.14	2168.64	4524.03	0.22	0.46	hypothetical protein
TON_1486	1360637	1361173	-	53298.52	14724.87	46636.42	0.28	0.88	transcription initiation factor E subunit alpha
TON_1487	1361316	1361600	-	1876.38	1220.16	1523.65	0.65	0.81	hypothetical protein
TON_1488	1361712	1362605	-	3356.36	2140.99	8597.13	0.64	2.56	carbohydrate/pyrimidine kinase
TON_1489	1362747	1363340	+	4362.70	1606.04	3545.90	0.37	0.81	hypothetical protein
TON_1490	1363330	1363605	-	467.96	295.72	371.01	0.63	0.79	acylphosphatase
TON_1491	1363679	1363993	+	3182.58	1030.22	1473.06	0.32	0.46	divalent cation tolerance protein
TON_1492	1363966	1364574	+	1614.01	891.98	556.52	0.55	0.34	hypothetical protein
TON_1493	1364668	1365504	-	180.60	174.31	137.11	0.97	0.76	universal stress protein
TON_1494	1365607	1366803	+	3676.66	4809.72	3368.46	1.31	0.92	gcvT glycine cleavage system aminomethyltransferase T
TON_1495	1366836	1367663	+	663.32	168.30	156.18	0.25	0.24	permease
TON_1496	1368053	1368289	+	4441.07	7292.11	4018.84	1.64	0.90	hypothetical protein
TON_1497	1368397	1369524	+	1482.25	12220.84	1362.34	8.24	0.92	thermophile-specific fructose-1,6-bisphosphatase
TON_1498	1369681	1371642	+	6024.41	5151.12	15339.92	0.86	2.55	tungsten-containing glyceraldehyde-3-phosphate:ferredoxin oxidoreductase
TON_1499	1371745	1373418	-	207.86	162.29	197.97	0.78	0.95	hypothetical protein
TON_1500	1373454	1374305	-	115.85	348.62	368.08	3.01	3.18	hypothetical protein
TON_1501	1374537	1375799	+	2119.45	997.77	1596.24	0.47	0.75	oxidoreductase
TON_1502	1375920	1376867	+	475.91	209.17	249.30	0.44	0.52	carbamate kinase-like carbamoyl phosphate synthetase
TON_1503	1376915	1377757	+	4566.01	5302.59	1949.66	1.16	0.43	hypothetical protein
TON_1504	1377906	1378808	+	28422.85	16050.82	21916.27	0.56	0.77	hypothetical protein
TON_1505	1378818	1380524	+	3580.12	6790.82	5991.23	1.90	1.67	RNA-binding protein
TON_1506	1380525	1382825	-	1067.67	1572.38	1196.63	1.47	1.12	hypothetical protein

TON_1507	1382924	1383220	+	715.57	376.27	725.90	0.53	1.01	hypothetical protein
TON_1508	1383799	1384434	-	2052.43	904.00	1261.89	0.44	0.61	hypothetical protein
TON_1509	1384238	1385170	+	751.92	670.79	322.62	0.89	0.43	ubiE ubiquinone/menaquinone biosynthesis methyltransferase
TON_1510	1385875	1386300	-	14110.34	23758.87	7964.35	1.68	0.56	transcriptional regulator
TON_1511	1386364	1387623	-	6763.83	2921.17	4514.50	0.43	0.67	23S rRNA (uracil-5-)-methyltransferase
TON_1512	1387731	1387946	+	4230.94	6610.51	1629.97	1.56	0.39	hypothetical protein
TON_1513	1388778	1389335	-	547.47	221.19	286.69	0.40	0.52	pyrE orotate phosphoribosyltransferase
TON_1514	1389443	1390150	+	472.50	131.03	309.42	0.28	0.65	membrane protein
TON_1515	1390140	1391828	-	6481.01	5410.78	6882.11	0.83	1.06	ATP-dependent DNA ligase
TON_1516	1391869	1392771	-	1470.89	1023.01	1797.15	0.70	1.22	GHMP kinase
TON_1517	1392845	1394503	-	170.37	1023.01	731.03	6.00	4.29	NhaC-type sodium/hydrogen antiporter
TON_1518	1394814	1395401	-	2741.88	1753.91	3952.85	0.64	1.44	uracil-DNA glycosylase
TON_1519	1395411	1395770	-	4591.00	1898.16	4409.65	0.41	0.96	hypothetical protein
TON_1520	1395932	1397704	+	103014.65	62350.80	14833.99	0.61	0.14	hypothetical protein
TON_1521	1397715	1398020	+	48022.62	33389.12	8124.20	0.70	0.17	hypothetical protein
TON_1522	1398035	1399483	-	1233.50	839.09	802.15	0.68	0.65	hypothetical protein
TON_1523	1399564	1399917	+	887.08	395.50	618.85	0.45	0.70	effector of murein hydrolase
TON_1524	1399914	1400588	+	817.79	284.90	612.25	0.35	0.75	effector of murein hydrolase
TON_1525	1400553	1400993	-	27368.80	3985.06	7666.66	0.15	0.28	tfx putative transcriptional regulator
TON_1526	1401283	1401864	+	1826.40	1428.13	3162.42	0.78	1.73	hypothetical protein
TON_1527	1401861	1402418	+	2739.61	1565.17	5523.43	0.57	2.02	L-fucose phosphate aldolase
TON_1528	1402483	1402734	-	489.54	659.97	420.14	1.35	0.86	hypothetical protein
TON_1529	1402842	1403369	-	1573.12	1357.20	1555.92	0.86	0.99	cob(I)yrinic acid a,c-diamide adenosyltransferase
TON_1530	1403465	1404352	+	199.90	64.91	89.45	0.32	0.45	hypothetical protein
TON_1531	1405237	1405884	+	456.60	224.80	461.20	0.49	1.01	hypothetical protein
TON_1532	1405939	1406688	-	902.98	425.55	1039.72	0.47	1.15	lipoate-protein ligase A, N-terminal section
TON_1533	1407539	1408015	-	2850.92	1899.36	1493.59	0.67	0.52	signal peptidase I
TON_1534	1407988	1408539	-	2492.00	1566.37	1795.68	0.63	0.72	hypothetical protein
TON_1535	1408604	1409683	+	1985.42	2137.38	5475.77	1.08	2.76	hypothetical protein
TON_1536	1409693	1410628	+	1142.64	1432.94	3017.25	1.25	2.64	microsomal dipeptidase
TON_1537	1410670	1410870	+	8155.21	5484.11	4414.05	0.67	0.54	hypothetical protein
TON_1538	1410861	1411337	+	1709.41	1709.43	2760.61	1.00	1.61	nucleic acid-binding protein

TON_1539	1411343	1412191	+	4128.72	2541.30	5961.17	0.62	1.44 SAM-dependent methyltransferase
TON_1540	1412197	1413594	-	1845.71	1208.14	4155.95	0.65	2.25 membrane protein
TON_1541	1413601	1414923	-	614.48	477.25	1897.60	0.78	3.09 membrane protein
TON_1542	1414934	1417909	-	3293.89	1853.68	6489.83	0.56	1.97 hypothetical protein
TON_1543	1418111	1419982	-	590.63	1585.61	643.78	2.68	1.09 acylamino acid-releasing protein
TON_1544	1420051	1420377	+	366.87	240.43	841.75	0.66	2.29 membrane protein
TON_1545	1420345	1420992	-	1050.64	565.00	1610.18	0.54	1.53 hypothetical protein
TON_1546	1421045	1421272	+	5503.07	15753.90	6580.75	2.86	1.20 regulatory protein AsnC
TON_1547	1421316	1422170	-	17.04	42.07	28.60	2.47	1.68 hypothetical protein
TON_1548	1422170	1422832	-	20.44	12.02	7.33	0.59	0.36 hypothetical protein
TON_1549	1422874	1423023	+	96.55	10.82	16.13	0.11	0.17 hypothetical protein
TON_1550	1423097	1423444	-	1620.82	270.48	139.31	0.17	0.09 hypothetical protein
TON_1551	1423567	1424241	-	91262.29	3125.53	1919.60	0.03	0.02 phosphate transport system regulator PhoU
TON_1552	1424246	1425466	-	32303.96	1166.06	838.82	0.04	0.03 sodium/phosphate symporter
TON_1553	1425563	1427200	-	28493.27	20017.85	15382.45	0.70	0.54 metallophosphoesterase
TON_1554	1427309	1427665	+	2180.78	1630.09	4315.06	0.75	1.98 hypothetical protein
TON_1555	1427662	1428228	-	93.14	50.49	116.58	0.54	1.25 signal sequence peptidase
TON_1556	1428248	1428649	-	1048.37	776.58	1830.14	0.74	1.75 hypothetical protein
TON_1557	1428823	1430100	-	10399.60	6456.63	16202.94	0.62	1.56 2-methylthioadenine synthetase
TON_1558	1430214	1430426	-	8427.81	18397.38	33056.98	2.18	3.92 RNA-binding protein
TON_1559	1430702	1431880	+	236952.10	53840.94	70785.38	0.23	0.30 Coenzyme F420 hydrogenase subunit alpha
TON_1560	1431883	1432560	+	60792.68	22274.24	17063.02	0.37	0.28 Coenzyme F420 hydrogenase subunit gamma
TON_1561	1432557	1433387	+	70409.70	39566.86	18512.61	0.56	0.26 Coenzyme F420 hydrogenase/dehydrogenase beta subunit
TON_1562	1433434	1434192	+	12145.36	11296.40	3808.40	0.93	0.31 TonB-dependent receptor protein:Formate dehydrogenase subunit FdhD
TON_1563	1434543	1436678	+	17227.04	273948.28	93744.30	15.90	5.44 formate dehydrogenase subunit alpha
TON_1564	1436684	1437184	+	4849.97	119564.91	26014.30	24.65	5.36 4Fe-4S binding protein
TON_1565	1437189	1438631	+	4461.51	55593.64	13598.50	12.46	3.05 hydrogenase 4 subunit D
TON_1566	1438635	1439849	+	474.77	16049.62	3401.46	33.80	7.16 NADH dehydrogenase (quinone)
TON_1567	1439852	1441924	+	1988.83	69397.68	19387.36	34.89	9.75 Hydrogenase 4, component B or formate hydrogen lyase subunit 3
TON_1568	1441935	1442858	+	2041.07	61219.60	17851.97	29.99	8.75 Hydrogenase 4, component C or formate hydrogen lyase subunit 4

TON_1569	1442869	1444623	+	3414.29	141446.06	40054.94	41.43	11.73	Hydrogenase 4, component G or formate hydrogen lyase subunit 5
TON_1570	1444625	1445122	+	616.75	37018.35	11769.82	60.02	19.08	Formate hydrogen lyase subunit 6 (hydrogenase 3 component F)
TON_1571	1445119	1445940	+	984.76	63079.29	15411.05	64.06	15.65	Hydrogenase 4, component I or formate hydrogen lyase subunit 7
TON_1572	1445900	1446181	+	461.14	47109.02	22054.85	102.16	47.83	hypothetical protein
TON_1573	1446187	1447215	+	136.30	51505.20	10462.47	377.88	76.76	formate transporter
TON_1574	1447258	1447539	+	74.96	12625.96	2710.75	168.43	36.16	Na ⁺ /H ⁺ antiporter subunit MnhF
TON_1575	1447536	1447895	+	64.74	10875.66	2908.73	167.98	44.93	Na ⁺ /H ⁺ antiporter subunit MnhG
TON_1576	1447888	1448142	+	6.81	2003.95	556.52	294.05	81.66	hypothetical protein
TON_1577	1448143	1448898	+	185.14	36900.54	12571.24	199.31	67.90	Multisubunit Na ⁺ /H ⁺ antiporter MnhB subunit
TON_1578	1448895	1449299	+	170.37	26070.56	12952.52	153.02	76.02	hypothetical protein
TON_1579	1449296	1449781	+	134.03	40966.14	8894.09	305.66	66.36	hypothetical protein
TON_1580	1449793	1451361	+	173.78	50970.25	10375.95	293.30	59.71	putative monovalent cation/H ⁺ antiporter subunit D
TON_1581	1451413	1452000	+	113.58	18630.59	3484.31	164.03	30.68	mobA molybdopterin-guanine dinucleotide biosynthesis protein MobA
TON_1582	1452138	1452644	+	36470.16	1862.10	526.46	0.05	0.01	putative monovalent cation/H ⁺ antiporter subunit E
TON_1583	1452641	1452904	+	25617.36	1603.64	302.82	0.06	0.01	putative monovalent cation/H ⁺ antiporter subunit F
TON_1584	1452901	1453272	+	13333.43	1446.16	238.30	0.11	0.02	putative monovalent cation/H ⁺ antiporter subunit G
TON_1585	1453269	1453535	+	6607.09	699.64	167.18	0.11	0.03	hypothetical protein
TON_1586	1453532	1453828	+	25466.30	2221.53	677.51	0.09	0.03	membrane bound hydrogenase subunit MbhE
TON_1587	1453825	1454271	+	13140.34	1544.74	417.21	0.12	0.03	putative monovalent cation/H ⁺ antiporter subunit B
TON_1588	1454268	1454627	+	976.81	455.61	66.72	0.47	0.07	putative monovalent cation/H ⁺ antiporter subunit C
TON_1589	1454624	1456222	+	27034.87	9053.23	1840.41	0.33	0.07	putative monovalent cation/H ⁺ antiporter subunit D
TON_1590	1456224	1456571	+	24218.03	7424.35	1759.02	0.31	0.07	membrane bound hydrogenase subunit MbhI
TON_1591	1456576	1457103	+	7178.40	1875.32	493.46	0.26	0.07	membrane bound hydrogenase, NiFe-hydrogenase small subunit
TON_1592	1457103	1457672	+	9221.75	2630.26	1066.85	0.29	0.12	membrane bound hydrogenase, NiFe-hydrogenase large subunit 1
TON_1593	1457669	1458949	+	25392.47	7717.67	3338.40	0.30	0.13	membrane bound hydrogenase, NiFe-hydrogenase large subunit 2
TON_1594	1458955	1459947	+	5153.23	2032.80	914.34	0.39	0.18	membrane bound hydrogenase, MbhM subunit
TON_1595	1459944	1460402	+	4145.76	2882.70	664.31	0.70	0.16	NADH-plastoquinone oxidoreductase subunit
TON_1596	1460676	1461164	-	1127.87	1490.64	1237.69	1.32	1.10	rubrerythrin-like protein

TON_1597	1461211	1461384	-	1.14	12.02	2.20	10.58	1.94	membrane protein
TON_1598	1461381	1462079	-	993.85	330.59	197.97	0.33	0.20	NAD(P)H-flavin oxidoreductase
TON_1599	1462117	1462602	-	2355.70	720.08	544.79	0.31	0.23	RNA-binding protein
TON_1600	1462664	1463869	+	2371.60	2977.67	1867.54	1.26	0.79	ATPase
TON_1601	1463866	1464393	+	1436.82	1286.28	1118.18	0.90	0.78	membrane-bound metal-dependent hydrolase
TON_1602	1464413	1464916	+	1928.63	821.05	898.21	0.43	0.47	hypothetical protein
TON_1603	1465349	1466341	+	9501.16	3351.53	3479.18	0.35	0.37	thioredoxin reductase
TON_1604	1466361	1466552	-	19.31	2.40	6.60	0.12	0.34	hypothetical protein
TON_1605	1466833	1468170	+	1113.11	489.27	934.14	0.44	0.84	4-aminobutyrate aminotransferase
TON_1606	1468245	1468844	+	435.02	364.24	616.65	0.84	1.42	membrane protein
TON_1607	1468841	1469125	-	6550.29	4613.77	3199.82	0.70	0.49	hypothetical protein
TON_1608	1469112	1469795	-	22304.17	15043.44	11518.32	0.67	0.52	deoxyribose-phosphate aldolase
TON_1609	1469962	1470267	-	3128.06	1687.79	1442.27	0.54	0.46	hypothetical protein
TON_1610	1470299	1471516	-	1773.02	877.55	508.13	0.49	0.29	hypothetical protein
TON_1611	1471678	1472895	-	77.24	48.09	50.59	0.62	0.66	permease
TON_1612	1472958	1473863	-	139.71	233.21	132.71	1.67	0.95	arylsulfatase regulator (Fe-S oxidoreductase)
TON_1613	1474039	1475331	+	9094.54	12611.53	11117.25	1.39	1.22	eno phosphopyruvate hydratase
TON_1614	1475513	1476343	+	3773.21	1952.26	4491.77	0.52	1.19	biotin synthase
TON_1615	1476423	1476875	-	18981.88	12404.76	13447.45	0.65	0.71	transcriptional regulator
TON_1616	1476931	1477485	-	1225.55	1501.46	1050.72	1.23	0.86	putative deoxyribonucleotide triphosphate pyrophosphatase
TON_1617	1477528	1478016	-	3150.77	4605.35	2806.81	1.46	0.89	hypothetical protein
TON_1618	1478074	1478991	+	3830.00	1440.15	3413.19	0.38	0.89	hypothetical protein
TON_1619	1478988	1479920	-	806.43	286.11	424.54	0.35	0.53	hypothetical protein
TON_1620	1480028	1480456	-	6519.63	3359.95	2323.61	0.52	0.36	molybdopterin converting factor subunit 2
TON_1621	1480556	1481428	+	3559.67	2782.93	3939.65	0.78	1.11	hypothetical protein
TON_1622	1481421	1482119	-	3201.89	1871.71	2433.59	0.58	0.76	hypothetical protein
TON_1623	1482121	1482387	-	4982.86	3069.03	3173.42	0.62	0.64	molybdopterin converting factor subunit 1
TON_1624	1482459	1482971	-	8876.46	2126.57	3223.28	0.24	0.36	hypothetical protein
TON_1625	1483012	1483533	-	5472.40	907.61	769.16	0.17	0.14	putative transcriptional regulator
TON_1626	1483639	1485897	+	24355.46	1156.45	101.19	0.05	0.00	membrane protein
TON_1627	1485894	1488266	+	37498.08	3629.23	445.80	0.10	0.01	hypothetical protein
TON_1628	1488321	1489220	+	38992.82	7221.19	11659.10	0.19	0.30	hypothetical protein

TON_1629	1489266	1489784	+	5319.06	1007.38	2817.81	0.19	0.53 hypothetical protein
TON_1630	1489794	1490945	+	4748.88	2179.46	3504.11	0.46	0.74 tRNA/rRNA cytosine-C5-methylase
TON_1631	1490948	1491994	+	1218.74	1622.87	1649.04	1.33	1.35 membrane protein
TON_1632	1491997	1492833	+	3435.87	2978.87	3062.71	0.87	0.89 ppnK inorganic polyphosphate/ATP-NAD kinase
TON_1633	1492817	1493608	-	2464.74	3195.26	5000.63	1.30	2.03 membrane protein
TON_1634	1493599	1494576	-	3240.50	3646.06	6335.85	1.13	1.96 putative DNA-binding/iron metalloprotein/AP endonuclease
TON_1635	1494608	1495141	-	1030.19	1491.84	1112.31	1.45	1.08 hypothetical protein
TON_1636	1495190	1496506	-	3547.18	2899.53	2490.05	0.82	0.70 acyl-CoA synthetase large subunit
TON_1637	1496507	1497712	-	4038.99	2302.08	2623.50	0.57	0.65 hypothetical protein
TON_1638	1497785	1498267	+	935.92	247.64	255.16	0.26	0.27 phosphopantetheine adenylyltransferase
TON_1639	1498245	1498472	-	22.72	6.01	18.33	0.26	0.81 hypothetical protein
TON_1640	1498586	1499266	+	1013.15	979.73	860.08	0.97	0.85 triosephosphate isomerase
TON_1641	1499968	1500654	-	156.74	197.15	309.42	1.26	1.97 hypothetical protein
TON_1642	1500693	1506008	-	2979.27	19295.37	9732.91	6.48	3.27 DNA polymerase II large subunit
TON_1643	1506011	1508116	-	927.97	5267.73	3512.18	5.68	3.78 DNA polymerase II small subunit
TON_1644	1508116	1509363	-	667.86	996.56	815.35	1.49	1.22 cdc6 cell division control protein 6
TON_1645	1509623	1510249	-	2756.64	5806.28	2282.55	2.11	0.83 hypothetical protein
TON_1646	1510927	1511943	+	113.58	167.10	294.76	1.47	2.60 calcium-gated potassium channel protein
TON_1647	1512120	1513181	+	34749.39	18640.21	25850.79	0.54	0.74 radA DNA repair and recombination protein RadA
TON_1648	1513217	1513969	+	1154.00	557.79	1100.58	0.48	0.95 hypothetical protein
TON_1649	1513966	1514346	-	950.68	797.01	412.81	0.84	0.43 hypothetical protein
TON_1650	1514356	1515084	-	1083.58	1412.50	555.79	1.30	0.51 hypothetical protein
TON_1651	1515202	1515975	+	2916.79	1198.52	1716.49	0.41	0.59 5'-methylthioadenosine phosphorylase
TON_1652	1516122	1516580	+	205.58	281.30	145.18	1.37	0.71 nuclease
TON_1653	1516653	1517927	+	2331.85	1829.64	4010.04	0.78	1.72 N-ethylmeline chlorohydrolase
TON_1654	1517924	1518883	+	654.23	1632.49	1946.73	2.50	2.98 hypothetical protein
TON_1655	1518894	1519451	+	389.59	848.70	435.54	2.18	1.12 hypothetical protein
TON_1656	1519547	1520119	+	48.84	51.69	35.20	1.06	0.72 daunorubicin resistance ATP-binding protein drrA
TON_1657	1520112	1520819	+	11.36	12.02	5.87	1.06	0.52 hypothetical protein
TON_1658	1520990	1523023	+	218.08	372.66	258.10	1.71	1.18 S-layer protein
TON_1659	1523066	1524508	+	1568.57	1622.87	1670.30	1.03	1.06 putative YjeF-ralted carbohydrate kinase
TON_1660	1524547	1525923	-	2690.77	2308.09	3314.94	0.86	1.23 alpha-amylase

TON_1661	1526073	1526630	-	2260.29	2512.45	2547.98	1.11	1.13 transcriptional regulator
TON_1662	1526631	1526936	-	8259.71	5714.92	7341.11	0.69	0.89 hypothetical protein
TON_1663	1526961	1527536	-	10554.07	5498.54	6744.99	0.52	0.64 transcriptional regulator
TON_1664	1527681	1528997	+	1407.29	1557.96	1010.39	1.11	0.72 cation transporter
TON_1665	1529056	1530465	+	7096.63	10796.32	5766.13	1.52	0.81 succinyl-CoA synthetase large subunit
TON_1666	1530586	1531740	+	2729.38	2778.12	3957.98	1.02	1.45 tryptophanyl-tRNA synthetase
TON_1667	1531753	1532430	+	362.33	632.32	646.71	1.75	1.78 2-hydroxyhepta-2,4-diene-1,7-dioate isomerase
TON_1668	1532405	1532791	+	21.58	111.80	42.53	5.18	1.97 hypothetical protein
TON_1669	1533149	1534861	+	5814.28	17892.48	6746.46	3.08	1.16 oligopeptide transporter
TON_1670	1534872	1535384	+	1399.33	6930.27	1657.10	4.95	1.18 Cell division GTPase
TON_1671	1535478	1536575	-	1093.80	1808.00	3050.24	1.65	2.79 N6-adenine-specific DNA methylase
TON_1672	1536582	1537655	-	2184.19	1340.37	3389.73	0.61	1.55 GTPase
TON_1673	1538036	1539466	+	23992.00	22527.89	29626.19	0.94	1.23 hypothetical protein
TON_1674	1539478	1540461	+	5172.54	5987.80	7426.16	1.16	1.44 hypothetical protein
TON_1675	1540468	1542327	+	7469.18	12363.89	9231.38	1.66	1.24 type II/IV secretion system ATPase
TON_1676	1542339	1543406	+	2280.73	6907.43	2556.04	3.03	1.12 hypothetical protein
TON_1677	1543403	1544317	+	834.83	3133.95	1640.24	3.75	1.96 hypothetical protein
TON_1678	1544291	1544782	-	7881.48	16574.95	14017.18	2.10	1.78 FKBP-type peptidyl-prolyl cis-trans isomerase
TON_1679	1544905	1545198	+	90.87	117.81	102.65	1.30	1.13 hypothetical protein
TON_1680	1545238	1545732	-	2611.26	2964.45	1928.40	1.14	0.74 hypothetical protein
TON_1681	1545802	1546662	+	127.21	84.15	44.73	0.66	0.35 hypothetical protein
TON_1682	1546649	1547101	+	74.96	82.95	91.65	1.11	1.22 hypothetical protein
TON_1683	1547070	1548023	+	208.99	278.89	288.16	1.33	1.38 hypothetical protein
TON_1684	1548033	1549340	+	155.61	147.86	181.84	0.95	1.17 hypothetical protein
TON_1685	1549337	1549762	+	3.41	14.43	14.66	4.23	4.30 hypothetical protein
TON_1686	1549759	1550592	-	1857.07	972.52	1766.35	0.52	0.95 carbohydrate/pyrimidine kinase
TON_1687	1550749	1552248	+	2796.40	1850.08	783.82	0.66	0.28 carboxypeptidase
TON_1688	1552317	1552667	-	4489.91	2618.24	3213.75	0.58	0.72 hypothetical protein
TON_1689	1552677	1553789	-	3432.46	2440.32	2399.86	0.71	0.70 geranylgeranyl hydrogenase
TON_1690	1553851	1554453	+	697.40	528.94	857.15	0.76	1.23 pyrrolidone-carboxylate peptidase
TON_1691	1554564	1556498	+	7143.19	3618.41	3320.80	0.51	0.46 hypothetical protein
TON_1692	1556637	1557608	-	2827.06	1465.39	2730.55	0.52	0.97 ATPase

TON_1693	1557715	1558443	+	475.91	450.80	231.70	0.95	0.49	hypothetical protein
TON_1694	1558440	1559579	-	5918.78	3680.92	5337.92	0.62	0.90	membrane-associated metalloprotease
TON_1695	1559631	1560515	-	545.20	504.89	824.15	0.93	1.51	glycosyltransferase
TON_1696	1560512	1561783	-	1198.29	762.15	1767.82	0.64	1.48	hypothetical protein
TON_1697	1561937	1563028	+	2649.88	3226.51	2349.27	1.22	0.89	glycosyltransferase
TON_1698	1563114	1564316	+	679.22	2026.79	1761.22	2.98	2.59	glycosyltransferase protein
TON_1699	1564267	1564704	+	1301.65	1896.96	2743.02	1.46	2.11	o-acetyltransferase
TON_1700	1564701	1565834	+	3055.37	5742.57	5774.19	1.88	1.89	Pleiotropic regulatory protein degT
TON_1701	1565834	1566859	+	3174.63	9276.83	8091.94	2.92	2.55	hypothetical protein
TON_1702	1567851	1569401	-	85.19	876.35	265.43	10.29	3.12	polysaccharide biosynthesis-like protein
TON_1703	1569422	1570165	-	208.99	635.93	377.61	3.04	1.81	permease
TON_1704	1570184	1570729	-	544.06	3044.99	874.01	5.60	1.61	cysC adenylylsulfate kinase
TON_1705	1570769	1572199	-	563.37	2386.23	1201.77	4.24	2.13	mitomycin biosynthesis protein
TON_1706	1572205	1573140	-	1005.20	3792.72	2033.98	3.77	2.02	hypothetical protein
TON_1707	1573170	1574309	-	436.16	3102.69	1552.98	7.11	3.56	sat sulfate adenylyltransferase
TON_1708	1574335	1574562	-	300.99	1489.44	1374.81	4.95	4.57	hypothetical protein
TON_1709	1574986	1575849	+	504.31	560.19	197.24	1.11	0.39	cobalt/zinc/cadmium cation efflux pump protein
TON_1710	1575839	1576990	-	5634.82	2840.63	4398.65	0.50	0.78	L-tyrosine decarboxylase
TON_1711	1577028	1578203	-	968.86	1503.86	494.93	1.55	0.51	NapA-type sodium/hydrogen antiporter
TON_1712	1578205	1578453	-	332.80	247.64	172.31	0.74	0.52	hypothetical protein
TON_1713	1578527	1579225	+	750.78	659.97	751.56	0.88	1.00	hydrolase
TON_1714	1579197	1579826	+	381.64	506.10	462.67	1.33	1.21	hypothetical protein
TON_1715	1579867	1583280	-	4188.92	7823.45	9895.68	1.87	2.36	hypothetical protein
TON_1716	1583391	1585349	+	315.76	542.16	2322.14	1.72	7.35	4-alpha-Glucanotransferase
TON_1717	1585419	1586336	-	20191.54	2963.25	2329.47	0.15	0.12	ATPase
TON_1718	1586378	1587832	-	54462.74	9013.56	3240.88	0.17	0.06	dehydrogenase
TON_1719	1587989	1588534	+	1991.10	3433.28	2357.34	1.72	1.18	hypothetical protein
TON_1720	1588554	1589696	+	654.23	1455.78	1077.12	2.23	1.65	NapA-type sodium/hydrogen antiporter
TON_1721	1589836	1590453	+	461.14	435.17	995.73	0.94	2.16	hypothetical protein
TON_1722	1590516	1591829	+	7426.01	4138.93	7264.85	0.56	0.98	hisS histidyl-tRNA synthetase
TON_1723	1591834	1591953	-	35.21	68.52	33.00	1.95	0.94	hypothetical protein
TON_1724	1591993	1592757	-	450.92	694.83	354.88	1.54	0.79	phospholipase D-related protein

TON_1725	1593026	1593280	+	19.31	18.03	8.07	0.93	0.42	hypothetical protein
TON_1726	1593266	1594894	-	2445.43	1996.74	1266.29	0.82	0.52	hypothetical protein
TON_1727	1595089	1595256	+	775.77	751.33	624.71	0.97	0.81	hypothetical protein
TON_1728	1595281	1595577	+	1202.84	556.59	809.49	0.46	0.67	hypothetical protein
TON_1729	1595636	1598365	+	8725.40	8908.97	14623.56	1.02	1.68	alaS alanyl-tRNA synthetase
TON_1730	1598383	1598772	+	193.09	378.67	641.58	1.96	3.32	hypothetical protein
TON_1731	1598736	1599203	-	1618.55	812.64	1212.03	0.50	0.75	hypothetical protein
TON_1732	1599285	1600040	-	960.91	760.95	1050.72	0.79	1.09	NGG1p interacting factor 3
TON_1733	1600173	1601951	+	2899.76	882.36	2649.16	0.30	0.91	histone acetyltransferase Elp3
TON_1734	1602228	1602803	+	219.21	283.70	167.18	1.29	0.76	hypothetical protein
TON_1735	1602825	1603352	+	1294.84	346.21	857.15	0.27	0.66	hypothetical protein
TON_1736	1603384	1603905	+	3954.94	2564.14	4854.72	0.65	1.23	hypothetical protein
TON_1737	1603938	1604447	+	3320.01	1108.36	2514.25	0.33	0.76	hypothetical protein
TON_1738	1604546	1605454	-	241.93	343.81	310.16	1.42	1.28	protein DppA
TON_1739	1605464	1606114	-	908.66	935.26	1067.58	1.03	1.17	hypothetical protein
TON_1740	1606317	1607063	+	114.72	100.98	63.06	0.88	0.55	hypothetical protein
TON_1741	1607084	1607692	+	204.45	181.52	107.78	0.89	0.53	putative transcriptional regulator
TON_1742	1607696	1608121	-	2145.57	1078.31	1753.89	0.50	0.82	S-adenosylmethionine decarboxylase
TON_1743	1608429	1609346	+	1804.82	2722.82	1605.04	1.51	0.89	preprotein translocase subunit SecF
TON_1744	1609343	1610866	+	2053.57	5107.84	4118.56	2.49	2.01	secD preprotein translocase subunit SecD
TON_1745	1610866	1611558	+	1573.12	5647.60	3067.10	3.59	1.95	Trk-type potassium transport system, NAD-binding component
TON_1746	1611688	1611999	+	3682.34	3825.17	3878.06	1.04	1.05	V-type ATP synthase subunit H
TON_1747	1612001	1613980	+	5453.09	17263.77	9641.99	3.17	1.77	V-type ATP synthase subunit I
TON_1748	1613996	1614484	+	1017.70	8245.40	2691.69	8.10	2.64	V-type ATP synthase subunit K
TON_1749	1614522	1615133	+	2420.44	9962.04	5859.98	4.12	2.42	V-type ATP synthase subunit E
TON_1750	1615139	1616239	+	4302.50	22722.63	10788.03	5.28	2.51	V-type ATP synthase subunit C
TON_1751	1616236	1616544	+	1092.66	7551.77	2457.79	6.91	2.25	V-type ATP synthase subunit F
TON_1752	1616550	1618307	+	4369.51	32239.89	12217.83	7.38	2.80	V-type ATP synthase subunit A
TON_1753	1618307	1619704	+	3093.98	21709.24	7767.11	7.02	2.51	V-type ATP synthase subunit B
TON_1754	1619732	1620370	+	1585.61	11378.15	5347.45	7.18	3.37	V-type ATP synthase subunit D
TON_1755	1620478	1621245	+	849.60	2246.78	875.48	2.64	1.03	flavoprotein
TON_1756	1621256	1622029	+	739.42	1346.38	863.01	1.82	1.17	Methyl-accepting chemotaxis protein

TON_1757	1622035	1623249	+	499.76	2126.57	743.50	4.26	1.49 hypothetical protein
TON_1758	1623395	1624225	-	793.94	699.64	2114.64	0.88	2.66 ATPase
TON_1759	1624248	1624490	-	68.15	18.03	11.73	0.26	0.17 hypothetical protein
TON_1760	1624670	1624885	-	21.58	7.21	16.13	0.33	0.75 hypothetical protein
TON_1761	1625000	1625902	-	1733.27	888.37	1814.75	0.51	1.05 hypothetical protein
TON_1762	1625951	1626652	-	435.02	282.50	688.50	0.65	1.58 dihydroorotate dehydrogenase electron transfer subunit
TON_1763	1626636	1627862	-	1246.00	573.42	1767.09	0.46	1.42 dihydroorotase
TON_1764	1628221	1630653	+	24270.28	46990.00	24437.85	1.94	1.01 dipeptide/oligopeptide ABC transporter
TON_1765	1630854	1631897	+	3355.22	6442.21	1280.95	1.92	0.38 oligopeptide transport system permease protein appB
TON_1766	1631909	1633369	+	1679.88	5173.96	2087.51	3.08	1.24 dipeptide/oligopeptide ABC transporter permease
TON_1767	1633380	1634339	+	2070.61	4275.97	2144.70	2.07	1.04 dipeptide/oligopeptide ABC transporter ATPase
TON_1768	1634350	1635357	+	1548.13	3653.27	1440.80	2.36	0.93 dipeptide/oligopeptide ABC transporter ATPase
TON_1769	1635391	1635867	+	1381.16	2988.49	1215.70	2.16	0.88 membrane protein
TON_1770	1635864	1636625	+	2334.12	4434.65	2536.98	1.90	1.09 NAD synthetase
TON_1771	1636635	1637504	+	149.93	473.64	140.05	3.16	0.93 permease
TON_1772	1637501	1638832	-	17052.12	4972.00	18446.62	0.29	1.08 glnA glutamine synthetase
TON_1773	1639052	1639459	+	1339.14	1816.42	1104.25	1.36	0.82 hypothetical protein
TON_1774	1639465	1639740	+	110.17	455.61	181.11	4.14	1.64 membrane protein
TON_1775	1639782	1641389	+	2732.79	3126.74	2102.17	1.14	0.77 membrane protein
TON_1776	1641743	1642594	-	138.57	449.60	450.20	3.24	3.25 permease
TON_1777	1642591	1643631	-	2184.19	2817.79	4292.33	1.29	1.97 DNA primase small subunit
TON_1778	1643624	1644829	-	3907.23	3647.26	5670.07	0.93	1.45 DNA primase large subunit
TON_1779	1645143	1645892	+	11117.44	18421.42	22418.53	1.66	2.02 ATPase
TON_1780	1646085	1647140	+	344.15	489.27	701.70	1.42	2.04 hypothetical protein
TON_1781	1647122	1648249	+	17.04	57.70	22.73	3.39	1.33 membrane protein
TON_1782	1648261	1648569	-	3145.10	3944.18	2283.28	1.25	0.73 hypothetical protein
TON_1783	1648641	1649831	+	6399.23	6673.02	5943.57	1.04	0.93 putative tRNA/rRNA methyltransferase
TON_1784	1649925	1650668	-	830.29	506.10	1398.27	0.61	1.68 hypothetical protein
TON_1785	1650705	1651973	-	1579.93	1370.43	2100.71	0.87	1.33 diaminopimelate aminotransferase
TON_1786	1651987	1652322	-	204.45	189.94	247.10	0.93	1.21 hypothetical protein
TON_1787	1652362	1654239	-	354.38	360.64	221.44	1.02	0.62 oligopeptide transporter
TON_1788	1654575	1655420	+	4057.16	1988.32	2917.53	0.49	0.72 hydrolase

TON_1789	1655423	1656790	-	6260.66	7143.05	6541.15	1.14	1.04 phosphopentomutase
TON_1790	1656820	1657224	-	598.58	621.50	880.61	1.04	1.47 hypothetical protein
TON_1791	1657257	1658384	-	415.71	2192.68	1607.24	5.27	3.87 ABC-type maltodextrin transport system, ATPase component
TON_1792	1658415	1662449	-	1964.97	10666.49	7344.04	5.43	3.74 pullulanase
TON_1793	1662459	1663706	-	395.27	2042.42	1447.40	5.17	3.66 ABC-type maltodextrin transport system permease
TON_1794	1663706	1664605	-	187.41	543.36	536.73	2.90	2.86 sugar transport inner membrane protein (malF-like)
TON_1795	1664644	1665963	-	945.01	2948.82	2954.92	3.12	3.13 ABC-type maltodextrin transport system
TON_1796	1666089	1668047	-	2101.27	2540.10	3087.64	1.21	1.47 cyclomaltodextrinase
TON_1797	1668118	1669140	+	2265.97	5748.58	5071.76	2.54	2.24 putative transcriptional regulator
TON_1798	1669180	1670532	+	947.28	3153.18	3965.31	3.33	4.19 glycogen synthase
TON_1799	1670535	1670897	-	178.32	113.00	390.81	0.63	2.19 ribonuclease P protein component 2
TON_1800	1670980	1672062	+	1926.36	772.97	1820.61	0.40	0.95 hypothetical protein
TON_1801	1672182	1672958	+	369.14	284.90	130.52	0.77	0.35 membrane protein
TON_1802	1672996	1673178	+	460.01	241.63	317.49	0.53	0.69 hypothetical protein
TON_1803	1673201	1676398	-	46053.10	20449.41	16624.54	0.44	0.36 ileS isoleucyl-tRNA synthetase
TON_1804	1676828	1677202	-	638.33	512.11	333.62	0.80	0.52 hypothetical protein
TON_1805	1677265	1678095	-	320.30	266.87	347.55	0.83	1.09 permease
TON_1806	1678209	1678736	+	210.13	515.71	305.76	2.45	1.46 oxidoreductase, Fe-S subunit
TON_1807	1678741	1680612	+	1606.05	2411.47	2090.44	1.50	1.30 formaldehyde:ferredoxin oxidoreductase wor5
TON_1808	1680637	1680858	+	46.57	179.12	91.65	3.85	1.97 hypothetical protein
TON_1809	1680932	1681363	+	26830.42	12770.21	5241.13	0.48	0.20 hypothetical protein
TON_1810	1681364	1681672	-	2234.16	1157.65	1051.45	0.52	0.47 hypothetical protein
TON_1811	1681789	1683525	+	6995.54	1840.46	4524.03	0.26	0.65 hypothetical protein
TON_1812	1683769	1685133	-	4757.96	2852.65	5498.50	0.60	1.16 tRNA CCA-pyrophosphorylase
TON_1813	1685139	1685693	-	3338.19	2666.32	3042.91	0.80	0.91 2'-5' RNA ligase
TON_1814	1685834	1688800	-	2570.37	3547.48	2574.37	1.38	1.00 thiol protease
TON_1815	1688892	1689356	-	4656.88	2328.52	3164.62	0.50	0.68 xanthine/guanine phosphoribosyltransferase
TON_1816	1689494	1692226	-	6093.69	19018.88	21267.36	3.12	3.49 ribonucleotide reductase subunit alpha
TON_1817	1692416	1692850	-	392.99	329.38	484.67	0.84	1.23 hypothetical protein
TON_1818	1692847	1693653	-	3161.00	2095.31	3478.45	0.66	1.10 sugar phosphatase
TON_1819	1693755	1696085	+	987.03	2523.27	1244.29	2.56	1.26 dolichyl-phosphate-mannose-protein mannosyltransferase
TON_1820	1696082	1698436	-	4581.91	8651.72	6255.19	1.89	1.37 oligosaccharyl transferase

TON_1821	1698600	1699724	+	1130.14	954.49	1462.80	0.84	1.29	Ips biosynthesis rfbU related protein
TON_1822	1699714	1700832	+	3564.21	3447.70	4259.34	0.97	1.20	dolichol-phosphate mannosyltransferase
TON_1823	1700832	1701923	+	621.30	3733.81	2009.05	6.01	3.23	glycosyltransferase
TON_1824	1703315	1709128	+	408.90	471.23	349.02	1.15	0.85	hypothetical protein
TON_1825	1709207	1709929	+	1484.52	658.77	901.87	0.44	0.61	hypothetical protein
TON_1826	1709932	1712184	+	1897.96	5004.46	1444.46	2.64	0.76	hypothetical protein
TON_1827	1712287	1712883	-	135.16	234.42	170.11	1.73	1.26	hypothetical protein
TON_1828	1712968	1713957	-	574.73	923.23	1051.45	1.61	1.83	hypothetical protein
TON_1829	1714069	1714623	-	328.25	815.04	607.85	2.48	1.85	hypothetical protein
TON_1830	1714620	1715903	-	1576.52	3963.42	2665.29	2.51	1.69	hypothetical protein
TON_1831	1715900	1716820	-	648.56	2321.31	1412.94	3.58	2.18	hypothetical protein
TON_1832	1716822	1717820	-	2531.75	2725.23	3177.82	1.08	1.26	hypothetical protein
TON_1833	1717813	1719555	-	1008.61	1059.08	1322.75	1.05	1.31	hypothetical protein
TON_1834	1719614	1720333	+	598.58	403.92	489.07	0.67	0.82	hypothetical protein
TON_1835	1720324	1720563	+	104.50	44.48	105.59	0.43	1.01	hypothetical protein
TON_1836	1720565	1721518	-	2103.55	2112.14	2208.49	1.00	1.05	galE-2 UDP-glucose 4-epimerase
TON_1837	1721579	1722601	+	1298.25	1288.68	1286.82	0.99	0.99	sugar-phosphate nucleotidyltransferase
TON_1838	1722829	1723050	+	35.21	21.64	19.80	0.61	0.56	hypothetical protein
TON_1839	1723160	1723423	+	15.90	12.02	11.00	0.76	0.69	hypothetical protein
TON_1840	1723469	1723873	+	198.77	96.17	45.46	0.48	0.23	hypothetical protein
TON_1841	1724638	1725282	+	2220.54	1976.30	1519.25	0.89	0.68	hypothetical protein
TON_1842	1725405	1726463	+	2556.74	1924.61	1684.23	0.75	0.66	nucleotidyltransferase
TON_1843	1726473	1727474	+	2146.71	2116.95	1753.16	0.99	0.82	rfbB dTDP-glucose 4,6-dehydratase
TON_1844	1727520	1727807	+	922.29	1452.17	666.51	1.57	0.72	hypothetical protein
TON_1845	1727765	1728106	+	406.62	833.08	398.14	2.05	0.98	hypothetical protein
TON_1846	1728181	1728384	+	646.28	561.39	346.82	0.87	0.54	hypothetical protein
TON_1847	1728384	1728782	+	498.63	750.13	415.74	1.50	0.83	nucleic acid-binding protein
TON_1848	1728787	1729344	+	835.97	1628.88	1101.31	1.95	1.32	dTDP-4-dehydrorhamnose 3,5-epimerase
TON_1849	1729408	1729596	+	842.78	1258.63	947.33	1.49	1.12	hypothetical protein
TON_1850	1729584	1730054	+	388.45	782.59	618.11	2.01	1.59	nucleic acid-binding protein
TON_1851	1730051	1730917	+	982.49	2544.91	2383.73	2.59	2.43	dTDP-4-dehydrorhamnose reductase
TON_1852	1730948	1732372	+	445.24	3998.28	669.44	8.98	1.50	lipopolysaccharide O-side chain biosynthesis protein

TON_1853	1732764	1733333	+	442.97	1695.00	508.13	3.83	1.15 hypothetical protein
TON_1854	1734419	1735939	-	595.17	4755.62	1386.54	7.99	2.33 hypothetical protein
TON_1855	1735946	1737121	-	875.72	3255.36	2159.37	3.72	2.47 glycosyltransferase
TON_1856	1737726	1738394	-	249.88	1538.72	670.91	6.16	2.68 hypothetical protein
TON_1857	1738401	1739576	-	524.75	3029.36	1630.71	5.77	3.11 membrane-bound galactosyl-transferase
TON_1858	1739589	1740710	-	826.88	3594.36	2690.22	4.35	3.25 phosphatidylinositol glycantransferase-class A
TON_1859	1740707	1741186	-	922.29	1161.26	1426.13	1.26	1.55 beta-1,4-galactosyltransferase
TON_1860	1741183	1741626	-	570.18	1505.06	906.27	2.64	1.59 capsular polysaccharide biosynthesis protein
TON_1861	1741623	1742618	-	1378.89	2406.66	1522.92	1.75	1.10 glycosyltransferase
TON_1862	1742622	1743512	-	2031.99	1371.63	1099.11	0.68	0.54 Glycosyl transferase
TON_1863	1744746	1745537	+	1774.16	955.69	1630.71	0.54	0.92 hypothetical protein
TON_1864	1745530	1746321	+	1392.52	730.89	1077.12	0.52	0.77 hypothetical protein
TON_1865	1746411	1746590	+	1659.44	1168.47	2644.03	0.70	1.59 hypothetical protein
TON_1866	1746610	1746885	+	605.39	337.80	952.47	0.56	1.57 ef1B elongation factor 1-beta
TON_1867	1746996	1748003	+	649.69	587.84	601.98	0.90	0.93 hypothetical protein
TON_1868	1747978	1748721	+	240.79	268.07	306.49	1.11	1.27 hypothetical protein
TON_1869	1748735	1749760	-	16480.80	6307.57	19977.61	0.38	1.21 hypothetical protein
TON_1870	1750066	1751910	+	13318.67	2435.51	1365.28	0.18	0.10 anaerobic ribonucleoside triphosphate reductase
TON_1871	1751939	1752652	+	1059.72	450.80	126.12	0.43	0.12 anaerobic ribonucleoside-triphosphate reductase activating enzyme
TON_1872	1752785	1753915	+	1633.31	3944.18	11276.36	2.41	6.90 putative vitamin B12 transport protein
TON_1873	1753918	1754964	+	93.14	194.74	378.35	2.09	4.06 iron(III) ABC transporter permease
TON_1874	1754957	1755730	+	82.92	234.42	314.56	2.83	3.79 ABC transporter ATPase
TON_1875	1755727	1759485	+	1026.78	3117.12	5172.94	3.04	5.04 cobalamin biosynthesis protein
TON_1876	1759461	1761383	+	785.99	1995.53	2777.48	2.54	3.53 magnesium chelatase subunit ChII
TON_1877	1761620	1763254	+	400.95	1174.48	789.69	2.93	1.97 chaperonin beta subunit
TON_1878	1763378	1764445	+	1261.90	1494.25	1488.46	1.18	1.18 hypothetical protein
TON_1879	1764762	1765724	+	105.63	76.94	59.39	0.73	0.56 hypothetical protein
TON_1880	1765781	1766572	+	36.35	48.09	33.73	1.32	0.93 hypothetical protein
TON_1881	1766586	1767173	-	4066.25	1179.29	1797.15	0.29	0.44 hypothetical protein
TON_1882	1767180	1769162	-	27294.98	3091.87	5510.23	0.11	0.20 DNA helicase
TON_1883	1769295	1769585	-	9898.70	3323.89	6901.17	0.34	0.70 hypothetical protein

TON_1884	1770019	1771479	+	1784.38	923.23	1319.82	0.52	0.74 inosine 5'-monophosphate dehydrogenase
TON_1885	1771558	1772958	+	3122.38	1265.84	1454.73	0.41	0.47 L-aspartate oxidase
TON_1886	1773009	1774196	+	111.31	42.07	27.86	0.38	0.25 hypothetical protein
TON_1887	1774242	1775150	+	779.17	694.83	621.05	0.89	0.80 quinolinate synthetase
TON_1888	1775228	1776538	+	2990.62	1535.12	2704.16	0.51	0.90 hypothetical protein
TON_1889	1776525	1777358	+	1827.54	1487.03	1867.54	0.81	1.02 nicotinate-nucleotide pyrophosphorylase
TON_1890	1777491	1778498	+	294.18	170.70	211.90	0.58	0.72 pyridoxal biosynthesis lyase PdxS
TON_1891	1778531	1779124	+	57.93	48.09	84.32	0.83	1.46 glutamine amidotransferase subunit PdxT
TON_1892	1779399	1779569	-	49.98	52.89	67.46	1.06	1.35 hypothetical protein
TON_1893	1779817	1780740	+	346.43	177.92	384.95	0.51	1.11 GMP synthase
TON_1894	1780751	1781317	+	115.85	61.31	101.19	0.53	0.87 GMP synthase
TON_1895	1781711	1782448	-	2540.84	7370.25	3288.54	2.90	1.29 hypothetical protein
TON_1896	1782453	1785872	-	14234.14	38483.74	21448.47	2.70	1.51 hypothetical protein
TON_1897	1785872	1788040	-	4561.47	13264.29	4910.45	2.91	1.08 hypothetical protein
TON_1898	1788037	1789518	-	8279.02	11578.90	6418.70	1.40	0.78 hypothetical protein
TON_1899	1789515	1789988	-	3003.12	2175.85	1734.82	0.72	0.58 hypothetical protein
TON_1900	1789969	1790412	-	4246.84	1990.72	2028.85	0.47	0.48 hypothetical protein
TON_1901	1790415	1791050	-	9001.40	6730.72	4083.36	0.75	0.45 membrane protein
TON_1902	1791090	1791719	-	3480.16	4057.18	2656.50	1.17	0.76 hypothetical protein
TON_1903	1791716	1792807	-	9283.09	9960.84	5661.28	1.07	0.61 cell division GTPase
TON_1904	1792815	1795034	-	17132.76	13255.87	10372.28	0.77	0.61 hypothetical protein
TON_1905	1795105	1796091	-	2572.64	1759.92	1440.80	0.68	0.56 tRNA-modifying protein
TON_1906	1796355	1796939	-	832.56	312.55	431.87	0.38	0.52 N5-glutamine methyltransferase
TON_1907	1797197	1798477	+	765.55	274.09	1539.05	0.36	2.01 subtilisin-like serine protease
TON_1908	1798778	1800058	+	59.06	86.55	78.46	1.47	1.33 subtilisin-like serine protease
TON_1909	1800169	1800324	-	2183.05	2859.86	2535.51	1.31	1.16 30S ribosomal protein S27ae
TON_1910	1800327	1800623	-	3843.63	4824.14	4887.72	1.26	1.27 rps24e 30S ribosomal protein S24e
TON_1911	1800613	1801146	-	6185.70	6773.99	10683.91	1.10	1.73 hypothetical protein
TON_1912	1801146	1801331	-	905.25	1348.79	1918.13	1.49	2.12 DNA-directed RNA polymerase subunit E''
TON_1913	1801328	1801894	-	2069.47	3428.47	4279.14	1.66	2.07 DNA-directed RNA polymerase subunit E'
TON_1914	1801934	1802470	-	817.79	858.32	1067.58	1.05	1.31 inorganic pyrophosphatase
TON_1915	1802582	1803034	-	3056.50	271.68	487.60	0.09	0.16 hypothetical protein

TON_1916	1803162	1803278	+	23.85	16.83	22.73	0.71	0.95	hypothetical protein
TON_1917	1803917	1804174	+	31.80	22.84	1.47	0.72	0.05	membrane protein
TON_1918	1804922	1805980	+	567.91	429.16	294.03	0.76	0.52	dolichol-phosphate mannosyltransferase
TON_1919	1806044	1807732	+	2087.64	2512.45	2475.39	1.20	1.19	putative leucine aminopeptidase
TON_1920	1807729	1808070	-	5087.35	1880.13	570.45	0.37	0.11	transcriptional regulator
TON_1921	1808140	1808790	-	2322.76	1293.49	2992.32	0.56	1.29	exonuclease SbcD
TON_1922	1808834	1808947	-	1528.82	1637.30	2033.25	1.07	1.33	50S ribosomal protein L41
TON_1923	1809305	1810099	+	3045.14	2799.76	1446.66	0.92	0.48	carbon-nitrogen hydrolase
TON_1924	1810351	1810728	+	3542.63	556.59	657.71	0.16	0.19	drug exporter
TON_1925	1810744	1811532	-	397.54	501.29	451.67	1.26	1.14	SAM-dependent methyltransferase
TON_1926	1811628	1812332	+	13105.13	329.38	140.78	0.03	0.01	hypothetical protein
TON_1927	1812316	1812705	+	3100.80	217.59	76.26	0.07	0.02	hypothetical protein
TON_1928	1812728	1813219	-	15.90	10.82	15.40	0.68	0.97	membrane protein
TON_1929	1813243	1813443	-	18.17	48.09	31.53	2.65	1.73	membrane protein
TON_1930	1813448	1814224	-	78.37	185.13	109.25	2.36	1.39	membrane protein
TON_1931	1814212	1814580	-	228.30	406.32	255.90	1.78	1.12	transcriptional regulator
TON_1932	1814586	1815290	-	809.84	920.83	730.30	1.14	0.90	membrane protein
TON_1933	1815296	1815625	-	1038.14	668.38	568.99	0.64	0.55	hypothetical protein
TON_1934	1815744	1816778	+	2415.90	1418.51	2468.79	0.59	1.02	diphthine synthase, DPH2 subunit
TON_1935	1816775	1817386	+	392.99	239.22	338.02	0.61	0.86	DNA methylase
TON_1936	1817464	1818423	+	654.23	168.30	240.50	0.26	0.37	hypothetical protein
TON_1937	1818543	1819340	+	736.01	2044.82	1247.23	2.78	1.69	hypothetical protein
TON_1938	1819398	1820726	+	2354.56	1256.22	2741.55	0.53	1.16	tRNA/rRNA cytosine-C5-methylase
TON_1939	1820723	1821805	-	3776.61	4102.86	4021.77	1.09	1.06	small-conductance mechanosensitive channel
TON_1940	1821808	1822446	-	743.96	778.98	885.01	1.05	1.19	hypothetical protein
TON_1941	1823067	1823729	-	897.30	561.39	953.20	0.63	1.06	hypothetical protein
TON_1942	1823751	1824521	-	1720.77	772.97	1289.02	0.45	0.75	metal-dependent phosphohydrolase
TON_1943	1824624	1825034	-	709.89	526.53	1005.99	0.74	1.42	nucleic acid-binding protein
TON_1944	1825063	1826295	-	28481.91	32330.05	16215.40	1.14	0.57	translation initiation factor IF-2
TON_1945	1826415	1826792	-	22619.93	7530.13	37928.57	0.33	1.68	30S ribosomal protein S6e
TON_1946	1826937	1827107	+	288.50	474.84	327.75	1.65	1.14	preprotein translocase subunit SecG
TON_1947	1827104	1827766	-	4048.08	4027.13	5255.07	0.99	1.30	hypothetical protein

TON_1948	1827860	1828471	+	1040.41	246.44	805.82	0.24	0.77 GTP-binding protein
TON_1949	1829046	1830113	+	1222.15	998.97	1090.31	0.82	0.89 hypothetical protein
TON_1950	1830158	1830988	+	4953.33	6177.74	1371.88	1.25	0.28 ubiA prenyltransferase UbiA-like protein
TON_1951	1831002	1831382	+	16797.69	14465.21	4974.97	0.86	0.30 hypothetical protein
TON_1952	1831427	1832233	-	4602.36	6026.27	5634.15	1.31	1.22 replication factor A complex, RPA32 subunit
TON_1953	1832230	1832607	-	6124.36	7209.17	9424.22	1.18	1.54 replication factor A complex, RPA14 subunit
TON_1954	1832608	1833672	-	21262.62	17915.32	25745.20	0.84	1.21 replication factor A
TON_1955	1833797	1834384	-	967.72	1383.65	1368.94	1.43	1.41 putative transcriptional regulator
TON_1956	1835746	1836180	+	1475.43	2008.76	1394.61	1.36	0.95 manganese-dependent transcription regulator
TON_1957	1836231	1837565	-	111.31	171.90	52.06	1.54	0.47 xanthine/uracilpermease
TON_1958	1837698	1838702	-	458.87	479.65	199.44	1.05	0.43 sugar-binding transport ATP-binding protein
TON_1959	1838696	1840315	-	162.42	164.69	70.39	1.01	0.43 iron(III) ABC transporter permease
TON_1960	1840400	1841452	+	1228.96	1020.61	937.80	0.83	0.76 D-aminopeptidase
TON_1961	1841442	1842287	-	5439.46	14441.17	11689.17	2.65	2.15 endonuclease IV
TON_1962	1842330	1843391	-	3284.80	7024.04	23026.38	2.14	7.01 hypothetical protein
TON_1963	1843369	1844502	-	5060.09	6766.78	20203.44	1.34	3.99 membrane protein
TON_1964	1844495	1844797	-	790.53	1488.24	3238.68	1.88	4.10 hypothetical protein
TON_1965	1844891	1845508	+	571.32	476.04	3985.84	0.83	6.98 hypothetical protein
TON_1966	1845509	1846861	-	2093.32	1162.46	2656.50	0.56	1.27 tRNA/rRNA cytosine-C5-methylase
TON_1967	1846966	1847520	+	386.18	473.64	480.27	1.23	1.24 hypothetical protein
TON_1968	17841	18380	+	739.42	1464.19	854.95	1.98	1.16 nicotinamidase-like amidase
TON_1969	66046	66423	+	9274.00	13046.70	14342.00	1.41	1.55 ribonuclease P protein component 1
TON_1970	432720	433067	+	645.15	974.93	497.13	1.51	0.77 phospholipid-binding protein
TON_1971	462955	463527	-	940.46	1398.08	1605.04	1.49	1.71 membrane protein
TON_1972	632410	633228	+	139.71	182.72	211.90	1.31	1.52 SAM-dependent methyltransferase
TON_1973	1174861	1175694	-	5419.01	4286.79	4757.20	0.79	0.88 glutamine amidotransferase
TON_1974	1187582	1188121	+	505.44	213.98	228.03	0.42	0.45 hypothetical protein
TON_1975	1733339	1733761	+	1021.11	2381.42	808.75	2.33	0.79 glycosyltransferase family protein
TON_1976	1828418	1828882	-	579.27	896.79	1102.05	1.55	1.90 putative transcriptional regulator
TON_1977	1105064	1105189	+	3.41	0.00	5.13	0.00	1.51 7S ribosomal RNA
TON_1978	1150028	1150345	+	323.71	673.19	472.20	2.08	1.46 7S ribosomal RNA
TON_1979	1278100	1279595	-	914807.06	696223.59	187065.53	0.76	0.20 16S ribosomal RNA

TON_1980	1274841	1277847	-	15084033.26	12099865.45	3331711.04	0.80	0.22	23S ribosomal RNA
TON_1981	1834483	1834608	+	55.66	54.10	29.33	0.97	0.53	5S ribosomal RNA
TON_1982	92666	92743	-	365.74	75.73	6.60	0.21	0.02	Arg tRNA
TON_1983	101858	101935	-	40.89	145.46	35.20	3.56	0.86	Gly tRNA
TON_1984	83095	83181	+	552.01	224.80	1215.70	0.41	2.20	Ser tRNA
TON_1985	85452	85539	+	612.21	602.27	1144.57	0.98	1.87	Leu tRNA
TON_1986	87057	87134	+	1275.53	641.94	2306.01	0.50	1.81	Pro tRNA
TON_1987	89022	89109	+	717.84	590.25	1297.82	0.82	1.81	Leu tRNA
TON_1988	102041	102118	+	14.77	2.40	18.33	0.16	1.24	Arg tRNA
TON_1989	158981	159056	+	18.17	7.21	5.87	0.40	0.32	Arg tRNA
TON_1990	192832	192907	+	7.95	3.61	11.00	0.45	1.38	Asn tRNA
TON_1991	192913	192990	+	29.53	14.43	38.13	0.49	1.29	Met tRNA
TON_1992	207066	207151	+	81.78	43.28	43.99	0.53	0.54	Ser tRNA
TON_1993	207172	207246	+	1206.24	116.61	190.64	0.10	0.16	Cys tRNA
TON_1994	288355	288442	+	21.58	33.66	32.26	1.56	1.49	Leu tRNA
TON_1995	323818	323895	+	84.05	25.24	45.46	0.30	0.54	Ala tRNA
TON_1996	323906	323983	+	584.95	169.50	593.18	0.29	1.01	Val tRNA
TON_1997	336950	337037	+	12.49	12.02	8.07	0.96	0.65	Ser tRNA
TON_1998	474335	474412	+	110.17	34.86	695.10	0.32	6.31	Met tRNA
TON_1999	574470	574546	+	78.37	24.04	103.39	0.31	1.32	Val tRNA
TON_2000	626359	626436	+	157.88	50.49	44.73	0.32	0.28	Glu tRNA
TON_2001	962981	963058	+	146.52	156.28	592.45	1.07	4.04	Lys tRNA
TON_2002	1221460	1221547	+	10.22	8.41	37.39	0.82	3.66	Leu tRNA
TON_2003	1240162	1240239	+	174.92	82.95	19.06	0.47	0.11	Arg tRNA
TON_2004	1367760	1367846	+	1015.43	908.81	1219.36	0.90	1.20	Xaa tRNA
TON_2005	1385181	1385258	+	48.84	60.11	31.53	1.23	0.65	Gly tRNA
TON_2006	1499342	1499417	+	23.85	21.64	4.40	0.91	0.18	Gln tRNA
TON_2007	1743948	1744025	+	39.75	22.84	50.59	0.57	1.27	Glu tRNA
TON_2008	1744039	1744116	+	43.16	15.63	27.13	0.36	0.63	Ile tRNA
TON_2009	1834615	1834692	+	477.05	78.14	160.58	0.16	0.34	Asp tRNA
TON_2010	1835049	1835126	+	36.35	31.26	5.87	0.86	0.16	Lys tRNA
TON_2011	1804765	1804842	-	109.04	48.09	236.83	0.44	2.17	Pro tRNA

TON_2012	1803716	1803791	-	94.27	54.10	103.39	0.57	1.10	Gln tRNA
TON_2013	1405018	1405094	-	12876.83	1643.31	12338.81	0.13	0.96	His tRNA
TON_2014	1401128	1401205	-	604.26	105.79	43.99	0.18	0.07	Tyr tRNA
TON_2015	1340837	1340914	-	26.12	21.64	15.40	0.83	0.59	Ala tRNA
TON_2016	1277980	1278056	-	893.89	1710.63	962.73	1.91	1.08	Ala tRNA
TON_2017	1240854	1240931	-	27.26	14.43	52.79	0.53	1.94	Val tRNA
TON_2018	1148129	1148205	-	24.99	26.45	46.93	1.06	1.88	Phe tRNA
TON_2019	1148039	1148116	-	29.53	32.46	15.40	1.10	0.52	Gly tRNA
TON_2020	965863	965970	-	219.21	32.46	324.82	0.15	1.48	Xaa tRNA
TON_2021	961960	962047	-	831.42	384.68	698.77	0.46	0.84	Leu tRNA
TON_2022	886650	886726	-	6.81	7.21	0.73	1.06	0.11	Arg tRNA
TON_2023	699691	699777	-	120.40	19.23	58.66	0.16	0.49	Ser tRNA
TON_2024	674095	674171	-	9.09	7.21	0.73	0.79	0.08	Thr tRNA
TON_2025	192581	192657	-	0.00	1.20	1.47	-	-	Thr tRNA
TON_2026	146734	146810	-	18.17	44.48	38.86	2.45	2.14	Thr tRNA
TON_2027	146629	146706	-	1585.61	437.57	733.96	0.28	0.46	Thr tRNA

Supplementary Table 5. The list of non-coding RNAs

Gene	TSS position	Strand	TSS abundance	Category	Located	Normalized mRNA expression		
						YPS	MMC	MMF
TON_nc001	36882	+	200	N	TON_0041 / TON_0042	276.8556165	489.0442927	268.9715698
TON_nc002	81023	+	62	N	TON_0098 / TON_0099	130.5498029	408.339939	153.6980399
TON_nc003	112251	+	6	N	TON_0140 / TON_0141	43.89174407	28.90902223	21.42905364
TON_nc004	112601	+	102	N	TON_0140 / TON_0141	1150.188781	262.5902852	234.2417242
TON_nc005	133450	+	549	N	TON_0156 / TON_0157	184.570411	271.0220834	233.5027914
TON_nc006	159404	-	-95	N	TON_1989 / TON_0184	74.27833612	34.93173519	20.69012075
TON_nc007	171388	+	17	A	TON_0192	12.37972269	8.43179815	39.90237574
TON_nc008	174325	+	363	N	TON_0196 / TON_0197	2300.377561	1080.474706	551.2439315
TON_nc009	209468	-	-9	A	TON_0230	42.76631474	19.27268149	19.95118787
TON_nc010	211611	+	247	N	TON_0231 / TON_0232	961.1166523	693.8165335	485.4789048
TON_nc011	278589	+	21	A	TON_0309	69.77661878	36.13627779	71.67648975
TON_nc012	295789	-	-73	N	TON_0319 / TON_0320	9947.669894	3100.492634	705.6809043
TON_nc013	334794	-	-18	A	TON_0360	181.194123	28.90902223	21.42905364
TON_nc014	334908	-	-4	A	TON_0360	534.5789342	89.13615187	97.53914069
TON_nc015	366125	+	24	N	TON_0394 / TON_0395	156.4346776	128.8860574	255.6707779
TON_nc016	366207	+	4	N	TON_0394 / TON_0395	618.9861344	140.9314834	748.5390115
TON_nc017	396068	-	-5	A	TON_0423	177.817835	140.9314834	90.88874474
TON_nc018	397415	-	-15	A	TON_0424	96.78692283	25.29539445	42.85810727
TON_nc019	424692	-	-25	N	TON_0455 / TON_0456	230.7130137	72.27255557	11.82292614
TON_nc020	459096	-	-21	N	TON_0500 / TON_0501	2633.504644	2799.356986	933.2722325
TON_nc021	504419	-	-77	N	TON_0548 / TON_0549	124.9226562	114.4315463	266.0158383
TON_nc022	508051	+	355	N	TON_0552 / TON_0553	47.26803208	31.31810741	33.25197978
TON_nc023	515633	+	15	A	TON_0561	28.13573338	66.24984261	39.90237574
TON_nc024	544214	-	-304	N	TON_0592 / TON_0593	157.5601069	340.8855538	217.2462679
TON_nc025	645021	-	-8	N	TON_0692 / TON_0693	1928.985881	1149.133634	823.1712328
TON_nc026	695581	-	-327	N	TON_0746 / TON_0747	12985.20367	2993.288343	4995.186296
TON_nc027	697194	-	-2	N	TON_0748 / TON_0749	58.52232543	79.49981113	16.25652345
TON_nc028	701558	-	-54	N	TON_0752 / TON_0753	9145.238778	3476.309923	13205.46957
TON_nc029	728579	+	702	N	TON_0782 / TON_0783	1467.559853	522.7714853	140.397248

TON_nc030	756952	+	11	N	TON_0814 / TON_0815	64.14947211	122.8633445	42.11917439
TON_nc031	763651	-	-9	A	TON_0822	74.27833612	97.56795002	122.6628588
TON_nc032	780664	+	14	N	TON_0841 / TON_0842	41.6408854	15.65905371	13.30079191
TON_nc033	802315	-	-5	A	TON_0869	289.2353392	2494.60771	532.0316765
TON_nc034	818787	+	155	N	TON_0891 / TON_0892	2360.025316	855.2252409	1773.438922
TON_nc035	886393	+	7	N	TON_0962 / TON_2022	347.7576646	257.7721149	29.55731536
TON_nc036	900486	-	-9	A	TON_0978	57.3968961	28.90902223	36.9466442
TON_nc037	918382	+	2	A	TON_0991	39.39002673	19.27268149	16.25652345
TON_nc038	928675	+	21	N	TON_1004 / TON_1005	82.15634147	8.43179815	10.34506038
TON_nc039	938482	+	583	N	TON_1015 / TON_1016	4186.597127	2127.222219	704.9419714
TON_nc040	956993	-	-3	A	TON_1035	94.53606416	36.13627779	49.50850323
TON_nc041	972916	-	-254407	N	TON_1052 / TON_1053	17359.7475	32221.51436	17502.36429
TON_nc042	991268	+	1342	A	TON_1073	56.27146676	71.06801298	42.11917439
TON_nc043	998003	-	-12	N	TON_1077 / TON_1078	10536.26944	3484.741721	1594.617164
TON_nc044	998043	+	6	N	TON_1077 / TON_1078	69.77661878	20.47722408	28.07944959
TON_nc045	999076	+	77	N	TON_1078 / TON_1079	163.1872536	162.61325	83.4994159
TON_nc046	1071899	+	2	N	TON_1174 / TON_1175	129.4243736	57.81804446	104.9284695
TON_nc047	1083461	+	15	A	TON_1186	186.8212696	62.63621483	26.60158383
TON_nc048	1111564	-	-6	A	TON_1213	101.2886402	61.43167224	79.06581859
TON_nc049	1143589	+	20	N	TON_1256 / TON_1257	38.2645974	77.09072594	28.07944959
TON_nc050*	1150345	-	-27	P	TON_1264/TON_1265	510244.9011	178531.2804	278584.3477
TON_nc051	1163802	+	14	N	TON_1279 / TON_1280	9.003434682	20.47722408	8.128261724
TON_nc052	1208556	-	-657	N	TON_1335 / TON_1336	398.4019847	325.2265001	1408.406077
TON_nc053	1221950	-	-20	N	TON_2002 / TON_1353	405.1545607	204.7722408	472.9170458
TON_nc054	1223126	-	-519	A	TON_1353	151.9329603	154.1814519	129.3132547
TON_nc055	1246715	-	-114	N	TON_1377 / TON_1378	1917.731587	685.3847353	2234.533041
TON_nc056	1248212	-	-665	A	TON_1379	467.0531741	778.134515	47.29170458
TON_nc057	1253617	-	-148	N	TON_1380 / TON_1381	1906.477294	381.8400019	207.6401404
TON_nc058	1279837	-	-2	N	TON_1979/TON_1402	561.5892383	872.0888372	847.556018
TON_nc059	1296090	+	103	N	TON_1419 / TON_1420	48.39346141	27.70447964	21.42905364
TON_nc060	1311680	+	66	N	TON_1433 / TON_1434	388.2731207	319.2037871	48.76957035
TON_nc061	1312269	+	7	A	TON_1435	1993.135353	119.2497167	227.5913283

TON_nc062	1339334	+	8902	N	TON_1461 / TON_1462	7.878005347	12.04542593	2.216798652
TON_nc063	1361686	+	221	N	TON_1487 / TON_1488	27.01030405	15.65905371	10.34506038
TON_nc064	1364605	+	87	N	TON_1492 / TON_1493	535.7043636	314.3856167	720.4595619
TON_nc065	1388024	+	27	N	TON_1512 / TON_1513	6816.725483	2188.653891	1729.102949
TON_nc066	1421328	+	9	A	TON_1547	1969.501337	796.2026539	710.1145016
TON_nc067	1430266	+	58	A	TON_1558	292.6116272	1198.51988	2208.67039
TON_nc068	1466441	+	4	A	TON_1604	40.51545607	13.24996852	8.128261724
TON_nc069	1493357	+	28	A	TON_1633	72.02747745	59.02258705	19.95118787
TON_nc070	1510583	-	-1466	N	TON_1645 / TON_1646	169.9398296	142.136026	19.21225498
TON_nc071	1527871	-	-10	A	TON_1664	31.51202139	19.27268149	26.60158383
TON_nc072	1528990	-	-21	A	TON_1664	192.4484163	115.6360889	174.3881606
TON_nc073	1563811	-	-71	A	TON_1698	75.40376546	33.7271926	11.82292614
TON_nc074	1574714	+	2993	N	TON_1708 / TON_1709	28.13573338	55.40895927	15.51759056
TON_nc075	1574802	+	4588	N	TON_1708 / TON_1709	68.65118945	225.2494649	25.12371806
TON_nc076	1602488	-	-5	A	TON_1734	127.1735149	42.15899075	59.11463072
TON_nc077	1641435	+	46	N	TON_1775 / TON_1776	80892.48433	39587.29231	44282.76987
TON_nc078	1649856	+	45	N	TON_1783 / TON_1784	131.6752322	130.0906	82.76048301
TON_nc079	1697190	+	28	A	TON_1820	79.9054828	89.13615187	52.46423477
TON_nc080	1702890	-	-33	N	TON_1823 / TON_1824	1115.300471	1135.883665	999.7761921
TON_nc081	1709927	-	-277	A	TON_1825	28.13573338	2.409085186	10.34506038
TON_nc082	1724083	-	-8	N	TON_1840 / TON_1841	965.6183696	1592.405308	1610.134754
TON_nc083	1724170	+	3	N	TON_1840 / TON_1841	29.26116272	15.65905371	17.73438922
TON_nc084	1724396	-	-11	N	TON_1840 / TON_1841	910.4723322	1100.95193	1682.550177
TON_nc085	1737498	+	45	N	TON_1855 / TON_1856	28.13573338	34.93173519	11.82292614
TON_nc086	1781374	-	-109	N	TON_1894 / TON_1895	213.8315737	397.4990556	182.5164224
TON_nc087	1803350	-	-90	N	TON_1916 / TON_1917	749.5359373	457.7261853	490.651435

*In our study, the direction of genome annotation of TON_1978 was proven as reverse strand, unlikely annotated as positive strand in current NCBI genome database. Although TON_nc050 corresponding in reverse strand of TON_1978 was classified to the ncRNAs (Primary) here, we did not count TON_nc050 in the number of total 86 ncRNAs .

Supplementary Table 6. The function of ncRNAs from Rfam database in *T. onnurineus* NA1

RNA name	Accession	Query name	Mdl	Score	E-value	Description
sR58	RF01308	TON_nc005	cm	71.1	9.00E-18	Small nucleolar RNA sR58
sR34	RF01273	TON_nc008	cm	76.5	1.20E-15	Small nucleolar RNA sR34
CRISPR-DR6	RF01319	TON_nc012	cm	39.4	1.10E-06	CRISPR RNA direct repeat element
HgcF	RF00058	TON_nc021	cm	112.8	1.00E-27	HgcF RNA
sR28	RF01136	TON_nc024	cm	57.3	5.50E-15	Small nucleolar RNA sR28
HgcG	RF00064	TON_nc025	cm	180.6	1.50E-53	HgcG RNA
snoPyro_CD	RF00095	TON_nc026	cm	45.6	1.10E-09	Pyrococcus C/D box small nucleolar RNA
SscA	RF00063	TON_nc028	cm	75.4	1.90E-14	SscA RNA
CRISPR-DR6	RF01319	TON_nc029	cm	48.2	3.20E-09	CRISPR RNA direct repeat element
tRNA	RF00005	TON_nc035	cm	74.2	1.10E-11	tRNA
CRISPR-DR6	RF01319	TON_nc043	cm	48.4	5.90E-09	CRISPR RNA direct repeat element
sR39	RF01122	TON_nc045	cm	69.2	4.20E-17	Small nucleolar RNA sR39
snoR9	RF00065	TON_nc046	cm	98.2	1.80E-24	Small nucleolar RNA snoR9
Archaea_SRP	RF01857	TON_nc050	cm	220.8	2.70E-26	Archaeal signal recognition particle RNA
sR55	RF01307	TON_nc055	cm	56.6	6.80E-15	Small nucleolar RNA sR55
sR5	RF01304	TON_nc059	cm	49.2	2.20E-11	Small nucleolar RNA sR5
snoPyro_CD	RF00095	TON_nc062	cm	49.9	8.10E-11	Pyrococcus C/D box small nucleolar RNA
sR22	RF01275	TON_nc064	cm	44.2	1.00E-09	Small nucleolar RNA sR22
sR1	RF01152	TON_nc074	cm	49.4	1.30E-12	Small nucleolar RNA sR1
sR60	RF01309	TON_nc075	cm	60.5	1.90E-15	Small nucleolar RNA sR60
RNaseP_arch	RF00373	TON_nc077	cm	190.6	1.00E-27	Archaeal RNase P
sR43	RF01128	TON_nc078	cm	67.3	4.30E-11	Small nucleolar RNA sR43

Supplementary Table 7. BlastP result of *T. kodakarensis* for *T. onnurineus* in coding region*

Query id	Subject id	% identity	e-value	bit score	Function
TON_0002	TK0110	73.85	3.00E-89	320	hydrolase
TON_0003	TK0109	67.26	1.00E-116	412	hypothetical protein
TON_0004	TK0108	62.78	5.00E-61	226	membrane protein
TON_0006	TK1992	59.48	5.00E-125	439	major facilitator superfamily permease
TON_0007	TK0155	91.63	0	1410	RecJ-like exonuclease
TON_0008	TK1658	66.27	4.00E-23	98.2	hypothetical protein
TON_0009	TK1657	84.48	1.00E-14	70.1	hypothetical protein
TON_0010	TK1655	76.78	3.00E-153	533	Permease
TON_0012	TK1652	73.91	6.00E-53	198	thioesterase
TON_0013	TK1651	66.15	2.00E-33	133	hypothetical protein
TON_0016	TK1868	35.2	1.00E-33	135	molybdenum-pterin binding domain-containing protein
TON_1968	TK1650	82.02	2.00E-88	317	nicotinamidase-like amidase
TON_0017	TK1649	59.65	3.00E-113	400	membrane protein
TON_0018	TK1648	45.71	2.00E-20	89.4	hypothetical protein
TON_0019	TK1646	78.85	5.00E-100	355	hypothetical protein
TON_0020	TK1643	88.35	0	1096	indolepyruvate: ferredoxin oxidoreductase subunit alpha
TON_0022	TK1642	37.35	1.00E-13	67	membrane protein
TON_0023	TK1641	69.47	4.00E-35	138	hypothetical protein
TON_0024	TK1640	79.61	2.00E-36	142	nucleotide pyrophosphohydrolase
TON_0025	TK1639	68.71	5.00E-50	189	bis(5'-adenosyl)-triphosphatase
TON_0026	TK1638	49.32	1.00E-11	60.1	membrane protein
TON_0027	TK1637	89.36	3.00E-115	406	proteasome subunit alpha
TON_0028	TK1636	94.07	3.00E-130	456	putative RNA-associated protein
TON_0029	TK1635	86.33	2.00E-119	421	exosome complex RNA-binding protein Rrp4
TON_0030	TK1634	93.98	3.00E-136	476	exosome complex exonuclease Rrp41
TON_0031	TK1633	80.37	3.00E-127	446	exosome complex RNA-binding protein Rrp42
TON_0033	TK1631	72.46	1.00E-46	177	hypothetical protein
TON_0034	TK1630	86.53	2.00E-98	350	hypothetical protein
TON_0035	TK1629	94.25	4.00E-94	335	hypothetical protein
TON_0036	TK1627	74.02	2.00E-146	511	homoserine dehydrogenase
TON_0037	TK1626	86.07	5.00E-130	456	hypothetical protein
TON_0038	TK1625	81.28	1.00E-161	561	methylmalonyl-CoA decarboxylase beta chain
TON_0039	TK1624	73.25	2.00E-41	160	putative acetyl-CoA carboxylase biotin carboxyl carrier protein subunit
TON_0040	TK1623	73.77	8.00E-41	157	methylmalonyl-CoA decarboxylase subunit delta
TON_0041	TK1622	96.55	0	1031	methylmalonyl-CoA decarboxylase subunit alpha
TON_0042	TK1621	91.61	1.00E-74	270	translation initiation factor IF-2
TON_0044	TK1619	76.22	6.00E-54	202	hypothetical protein
TON_0045	TK1618	84.71	3.00E-84	303	metallophosphoesterase
TON_0046	TK1617	64.06	2.00E-90	324	hypothetical protein
TON_0047	TK1616	60.71	1.00E-59	221	hypothetical protein
TON_0048	TK1615	82.72	2.00E-159	554	RNA 3'-terminal-phosphate cyclase
TON_0050	TK1611	88.57	6.00E-149	518	metal-dependent hydrolase
TON_0051	TK1610	59.77	2.00E-23	99.8	hypothetical protein
TON_0058	TK1550	71.29	1.00E-126	445	asparagine synthetase A
TON_0059	TK1549	66.84	5.00E-73	265	ATPase

TON_0061	TK1548	93.73	0	743	serine-glyoxylate aminotransferase
TON_0062	TK1547	74.23	1.00E-160	558	major facilitator superfamily permease
TON_0063	TK1546	95.03	1.00E-100	357	rpl10e 50S ribosomal protein L10e
TON_0064	TK1545	85	0	654	hypothetical protein
TON_0065	TK1543	87.11	4.00E-125	439	hypothetical protein
TON_0066	TK1542	93.08	2.00E-178	617	rpl3p 50S ribosomal protein L3P
TON_0067	TK1541	95.29	6.00E-119	419	rpl4lp 50S ribosomal protein L4P
TON_0068	TK1540	87.21	6.00E-40	154	rplW 50S ribosomal protein L23
TON_0069	TK1539	92.05	2.00E-125	440	rpl2p 50S ribosomal protein L2
TON_0070	TK1538	93.23	6.00E-63	231	rps19p 30S ribosomal protein S19
TON_0071	TK1537	96.15	1.00E-74	270	rpl22p 50S ribosomal protein L22
TON_0072	TK1536	94.76	2.00E-83	300	rps3p 30S ribosomal protein S3
TON_0073	TK1535	93.94	3.00E-29	118	50S ribosomal protein L29
TON_0074	TK1534	90.82	2.00E-42	162	translation initiation factor Sui1
TON_1969	TK1533	77.6	7.00E-55	204	ribonuclease P protein component 1
TON_0075	TK1532	81.65	3.00E-52	195	rps17p 30S ribosomal protein S17
TON_0076	TK1531	97.87	1.00E-56	210	rpl14p 50S ribosomal protein L14
TON_0077	TK1530	84.4	4.00E-51	192	rpl24p 50S ribosomal protein L24
TON_0078	TK1529	88.89	1.00E-129	454	30S ribosomal protein S4e
TON_0079	TK1528	91.26	3.00E-96	342	rpl5p 50S ribosomal protein L5
TON_0080	TK1527	96.43	1.00E-27	113	rps14P 30S ribosomal protein S14
TON_0081	TK1526	96.15	6.00E-70	254	rps8p 30S ribosomal protein S8
TON_0082	TK1525	91.3	1.00E-95	340	rpl6p 50S ribosomal protein L6
TON_0083	TK1524	95.24	8.00E-55	204	rpl32e 50S ribosomal protein L32e
TON_0084	TK1523	91.89	1.00E-76	277	rpl19e 50S ribosomal protein L19e
TON_0085	TK1522	93.03	3.00E-93	333	rpl18p 50S ribosomal protein L18
TON_0086	TK1521	94.47	2.00E-129	453	rps5p 30S ribosomal protein S5
TON_0087	TK1520	92.9	2.00E-82	296	rpl30p 50S ribosomal protein L30
TON_0088	TK1519	84.46	8.00E-49	184	rpl15p 50S ribosomal protein L15
TON_0089	TK1518	84.02	0	745	preprotein translocase subunit SecY
TON_0090	TK1517	85.23	3.00E-71	260	adenylate kinase
TON_0091	TK1516	64	4.00E-48	182	membrane protein
TON_0092	TK1515	93.26	2.00E-45	172	rpl34e 50S ribosomal protein L34e
TON_0093	TK1514	87.82	1.00E-100	357	cytidylate kinase
TON_0094	TK1513	90.36	5.00E-29	117	50S ribosomal protein L14e
TON_0095	TK1512	57.34	3.00E-67	246	short-chain alcohol dehydrogenase
TON_0096	TK1509	93.45	3.00E-180	623	H/ACA RNA-protein complex component Cbf5p
#N/A	TK1507	89.74	6.00E-103	365	#N/A
TON_0102	TK1506	92.62	2.00E-70	256	rps13p 30S ribosomal protein S13
TON_0103	TK1505	91.53	2.00E-68	250	rps4p 30S ribosomal protein S4
TON_0104	TK1504	92.42	2.00E-39	154	rps11p 30S ribosomal protein S11
TON_0105	TK1503	87.94	6.00E-132	462	DNA-directed RNA polymerase subunit D
TON_0106	TK1502	90.83	9.00E-60	220	50S ribosomal protein L18e
TON_0107	TK1501	96.48	4.00E-77	278	rpl13p 50S ribosomal protein L13
TON_0108	TK1500	98.52	3.00E-66	242	rps9p 30S ribosomal protein S9
TON_0109	TK1499	92.31	1.00E-30	123	DNA-directed RNA polymerase subunit N
TON_0110	TK1498	87.72	2.00E-25	105	rpoK DNA-directed RNA polymerase subunit K
TON_0111	TK1497	83.28	1.00E-161	561	hypothetical protein

TON_0112	TK1496	94.03	9.00E-113	397	rps2P 30S ribosomal protein S2
TON_0113	TK1495	93.88	6.00E-22	94.4	rpl40e 50S ribosomal protein L40e
TON_0114	TK1494	83.18	3.00E-48	182	transcription regulator, PadR-like family
TON_0115	TK1493	70.71	3.00E-37	145	hypothetical protein
TON_0117	TK1492	83.79	1.00E-110	391	hypothetical protein
TON_0118	TK1491	83.67	2.00E-69	253	Lrp/AsnC family transcriptional regulator
TON_0119	TK1490	57.41	8.00E-33	130	hypothetical protein
TON_0120	TK1489	83.12	2.00E-86	310	adenine phosphoribosyltransferase
TON_0121	TK1488	75	2.00E-74	270	hypothetical protein
TON_0122	TK1487	70.51	5.00E-28	114	Lrp/AsnC family transcription regulator
TON_0123	TK1486	88.84	0	788	signal recognition particle protein Srp54
TON_0125	TK0380	60.78	3.00E-95	340	hypothetical protein
TON_0127	TK1483	49.65	2.00E-100	358	hypothetical protein
TON_0128	TK1482	90.26	3.00E-144	503	5'-methylthioadenosine phosphorylase
TON_0129	TK1481	83.78	0	707	NADH:polysulfide oxidoreductase
TON_0131	TK1479	92.67	2.00E-144	504	uridine phosphorylase
TON_0132	TK1477	81.44	2.00E-145	506	hypothetical protein
TON_0133	TK1474	88.22	7.00E-152	528	mevalonate kinase
TON_0134	TK1473	64.12	3.00E-95	340	amino acid kinase
TON_0135	TK1470	93.85	0	722	isopentenyl pyrophosphate isomerase
TON_0136	TK1469	90.54	0	833	hydrolase
TON_0137	TK1468	85.42	3.00E-166	576	bifunctional short-chain isoprenyl diphosphate synthase
TON_0140	TK1464	82.33	2.00E-122	431	hypothetical protein
TON_0141	TK1461	93.07	0	1794	leuS leucyl-tRNA synthetase
TON_0143	TK1455	74.79	1.00E-161	561	aminopeptidase P
TON_0144	TK1454	93.3	2.00E-81	293	50S ribosomal protein L15e
TON_0145	TK1451	85.43	1.00E-73	267	hypothetical protein
TON_0146	TK1450	77.1	9.00E-96	341	ribonuclease P protein component 3
TON_0147	TK1442	90.66	0	757	tryptophan synthase subunit beta
TON_0149	TK1440	62.16	6.00E-39	152	hypothetical protein
TON_0150	TK1439	86.23	1.00E-67	247	nickel responsive regulator
TON_0152	TK1438	81.54	0	932	fibronectin-binding protein
TON_0154	TK1435	76.19	2.00E-28	116	nitrogen regulatory protein P-II
TON_0155	TK1434	44.67	1.00E-36	145	alpha-glucosidase
TON_0156	TK1432	59.2	1.00E-176	611	sodium-dependent transporter
TON_0157	TK1431	85.04	0	679	glutamate dehydrogenase
TON_0163	TK1430	91.19	0	698	hypothetical protein
TON_0164	TK1429	78.33	2.00E-90	323	proteasome subunit beta
TON_0165	TK1428	91.98	0	1214	cleavage and polyadenylation specificity factor subunit-like protein
TON_0167	TK1427	62.83	1.00E-40	157	membrane protein
TON_0168	TK1426	89.43	4.00E-103	366	ribose-5-phosphate isomerase A
TON_0169	TK1425	86.43	9.00E-99	351	hypothetical protein
TON_0170	TK1424	70.4	3.00E-163	567	hypothetical protein
TON_0172	TK0937	78.12	0	1080	TRAP-type transporter
TON_0173	TK0936	58.27	2.00E-40	157	hypothetical protein
TON_0174	TK0935	85.76	4.00E-145	506	TRAP-type transporter
TON_0175	TK1422	83.46	4.00E-139	486	hypothetical protein

TON_0176	TK1421	90.45	0	631	cell division protein FtsZ
TON_0178	TK1419	85.53	2.00E-72	263	nusG transcription antitermination protein NusG
TON_0179	TK1418	91.41	1.00E-71	260	rpl11p 50S ribosomal protein L11
TON_0180	TK1417	95.37	1.00E-101	361	rpl1P 50S ribosomal protein L1P
TON_0181	TK1416	91.76	6.00E-150	522	rplP0 acidic ribosomal protein P0
TON_0184	TK1414	84.42	8.00E-75	271	dcd deoxycytidine triphosphate deaminase
TON_0185	TK1413	87.88	2.00E-28	115	histone A
TON_0186	TK1412	89.39	0	800	hypothetical protein
TON_0187	TK1411	81.95	7.00E-59	218	hypothetical protein
TON_0188	TK1410	82.94	0	693	DNA primase
TON_0189	TK1408	87.92	0	988	gltX glutamyl-tRNA synthetase
TON_0190	TK1407	58.97	4.00E-141	493	membrane protein
TON_0191	TK1406	82.43	0	1382	maltodextrin phosphorylase
TON_0192	TK1405	88.6	0	1098	phosphoenolpyruvate carboxykinase
TON_0195	TK1404	81.55	3.00E-109	386	phosphomannomutase
TON_0196	TK1403	82.91	1.00E-97	347	tmk thymidylate kinase
TON_0197	TK1401	82.53	3.00E-137	479	hydrolase
TON_0198	TK1400	85.45	0	671	permease
TON_0199	TK1399	79.74	0	659	permease
TON_0200	TK1398	58.22	2.00E-79	287	glycerophosphoryl diester phosphodiesterase
TON_0201	TK1397	83.87	1.00E-124	438	glycerophosphoryl diester phosphodiesterase
TON_0202	TK1396	87.02	0	843	glpK glycerol kinase
TON_0203	TK1393	90.12	0	839	anaerobic glycerol 3-phosphate dehydrogenase
TON_0204	TK1392	82.73	0	637	NADH oxidase
TON_0205	TK1391	77.68	2.00E-48	183	molybdopterin oxidoreductase
TON_0207	TK1388	70.31	4.00E-22	95.1	hypothetical protein
TON_0208	TK1387	70.26	2.00E-95	340	membrane protein
TON_0209	TK1386	73.45	4.00E-95	339	metallophosphoesterase
TON_0210	TK1385	76.09	5.00E-39	151	hypothetical protein
TON_0211	TK1383	81.66	1.00E-111	394	HAD-superfamily hydrolase
TON_0212	TK1381	83.29	0	698	hypothetical protein
TON_0213	TK1380	88.54	0	791	glycine dehydrogenase subunit 1
TON_0214	TK1379	92.42	0	933	glycine dehydrogenase subunit 2
TON_0216	TK1084	92.68	7.00E-27	110	rpoH DNA-directed RNA polymerase subunit H
TON_0217	TK1083	91.35	0	2099	DNA-directed RNA polymerase subunit B
TON_0218	TK1082	94.03	0	1679	DNA-directed RNA polymerase subunit A'
TON_0219	TK1081	88.49	0	684	DNA-directed RNA polymerase subunit A''
TON_0220	TK1080	87.13	7.00E-40	154	50S ribosomal protein L30e
TON_0221	TK1079	95.17	1.00E-77	280	transcription elongation factor NusA-like protein
TON_0222	TK1078	97.96	6.00E-73	265	rps12P 30S ribosomal protein S12
TON_0223	TK1077	90.23	5.00E-107	379	30S ribosomal protein S7
TON_0224	TK1071	84.32	0	672	phosphodiesterase
TON_0225	TK1069	66.67	2.00E-39	152	hypothetical protein
TON_0227	TK1067	84.43	0	711	hypothetical protein
TON_0228	TK1093	82.09	4.00E-27	111	sulfur carrier protein ThiS
TON_0229	TK1739	27.31	2.00E-39	155	hypothetical protein
TON_0231	TK1094	88.19	0	738	alanine aminotransferase
TON_0233	TK1096	68.91	2.00E-50	191	membrane protein

TON_0234	TK0825	81.4	2.00E-13	65.9	hypothetical protein
TON_0235	TK1098	94.68	1.00E-47	179	rpl44e 50S ribosomal protein L44e
TON_0236	TK1099	93.85	1.00E-31	126	rps27e 30S ribosomal protein S27e
TON_0237	TK1100	88.89	2.00E-136	477	translation initiation factor IF-2
TON_0238	TK1101	84.48	3.00E-25	105	H/ACA RNA-protein complex component Nop10p
TON_0239	TK1102	90.64	1.00E-129	454	hypothetical protein
TON_0240	TK1103	76.47	2.00E-81	293	cobalt ABC transporter permease CbiM
TON_0241	TK1104	75.31	6.00E-25	104	membrane protein
TON_0242	TK1105	73.17	1.00E-67	248	cobalt ABC transporter permease CbiQ
TON_0243	TK1106	75.19	6.00E-114	402	cobalt ABC transporter ATPase
TON_0244	TK1108	88.57	0	803	phosphohexomutase
TON_0245	TK1109	76.56	0	694	bifunctional mannose-6-phosphate isomerase/mannose-1-phosphate guanylyl transferase
TON_0246	TK1110	78.59	0	688	ADP-dependent glucokinase
TON_0247	TK1111	90.96	6.00E-99	352	glucose-6-phosphate isomerase
TON_0249	TK1112	85.96	3.00E-14	68.9	RNA-binding protein
TON_0251	TK1113	71.82	6.00E-81	292	signaling protein
TON_0252	TK1114	81.73	1.00E-149	521	ribonuclease Z
TON_0253	TK1115	65.36	1.00E-87	315	hypothetical protein
TON_0254	TK2020	69.76	9.00E-99	352	ABC-type iron(III)-siderophore transport system, ATPase component
TON_0255	TK2019	80.52	2.00E-135	474	ABC-type iron(III)-siderophore transport system permease
TON_0256	TK2018	65.66	3.00E-140	490	hemV-3 iron (III) ABC transporter ATP-binding protein
TON_0258	TK2016	61.06	4.00E-39	152	iron-molybdenum cofactor-binding protein
TON_0259	TK2015	61.56	5.00E-104	370	mae1-like C4-dicarboxylate transporter
TON_0260	TK2009	77.13	3.00E-110	390	cobalt/zinc/cadmium cation efflux pump protein
TON_0261	TK2008	80.29	2.00E-54	203	hypA hydrogenase nickel incorporation protein
TON_0262	TK2007	80.65	2.00E-105	374	chromosome partitioning ATPase
TON_0263	TK2004	65.36	1.00E-56	211	hydrogenase maturation protease Hycl
TON_0264	TK2002	69.84	4.00E-71	259	mobA molybdopterin-guanine dinucleotide biosynthesis protein MobA
TON_0283	TK2001	74.32	5.00E-28	114	hydrogenase expression/formation protein HypC
TON_0286	TK1997	84.59	0	1318	hydrogenase maturation protein HypF
TON_0287	TK1993	88.66	1.00E-164	571	hydrogenase expression/formation protein HypE
TON_0288	TK1991	74.23	1.00E-40	156	hypothetical protein
TON_0289	TK1990	89.2	0	711	cysteine desulfurase
TON_0290	TK1301	75.93	4.00E-157	546	ATP-NAD kinase
TON_0291	TK1300	63.9	0	644	membrane protein
TON_0296	TK0706	62.73	7.00E-177	612	iron(III)-siderophore ABC transporter periplasmic protein
TON_0297	TK0707	66.88	8.00E-97	345	ABC-type iron(III)-siderophore transport system, permease component
TON_0298	TK0708	62.95	1.00E-82	298	ABC-type iron(III)-siderophore transport system, ATPase component
TON_0302	TK0709	40.54	6.00E-51	193	hypothetical protein
TON_0304	TK1007	46.39	7.00E-75	273	permease
TON_0305	TK1299	88.86	0	741	NADH oxidase
TON_0306	TK1297	81.96	0	629	nonsense-mediated mRNA decay protein
TON_0307	TK1296	86.87	8.00E-40	153	hypothetical protein

TON_0309	TK1294	53.07	3.00E-63	234	membrane protein
TON_0310	TK1293	67.12	0	1114	membrane-bound dolichyl-phosphate-mannose-protein mannosyltransferase
TON_0311	TK1292	85.7	0	1289	phosphoenolpyruvate synthase
TON_0312	TK1289	70.51	0	659	sodium-driven multidrug efflux pump protein
TON_0313	TK1288	68.23	0	667	sodium-driven multidrug efflux pump protein
TON_0314	TK1287	89.14	9.00E-113	398	upp uracil phosphoribosyltransferase
TON_0316	TK1088	92.86	1.00E-180	624	geranylgeranyl hydrogenase
TON_0317	TK1087	88.06	3.00E-30	122	ferredoxin 2
TON_0318	TK1086	73.31	5.00E-103	365	putative transcriptional regulator
TON_0319	TK1085	88.5	2.00E-118	417	protein disulfide oxidoreductase
TON_0320	TK0445	84.71	1.00E-39	153	hypothetical protein
TON_0321	TK0446	50.49	5.00E-52	196	hypothetical protein
TON_0326	TK0464	85.06	8.00E-128	448	hypothetical protein
TON_0327	TK0465	93.95	6.00E-115	405	acetyl-CoA synthetase I subunit beta
TON_0328	TK0466	61.02	1.00E-138	485	hypothetical protein
TON_0330	TK0469	54.66	2.00E-46	177	hypothetical protein
TON_0332	TK0471	88.59	1.00E-127	447	putative transcriptional regulator
TON_0334	TK0473	73.87	4.00E-44	168	hypothetical protein
TON_0335	TK0474	79.08	8.00E-109	385	arginase
TON_0336	TK0475	92.61	0	702	bifunctional D-arabino 3-hexulose-6-phosphate formaldehyde lyase/phosphohexuloisomerase
TON_0337	TK0476	64.54	3.00E-93	333	hypothetical protein
TON_0338	TK0477	74.88	6.00E-89	318	hydrolase
TON_0339	TK0478	71.19	3.00E-20	89	hypothetical protein
TON_0340	TK0479	62.31	5.00E-99	352	hypothetical protein
TON_0341	TK0480	85.87	7.00E-80	288	metal-dependent phosphohydrolase
TON_0342	TK0481	78.24	3.00E-74	269	transcription elongation factor NusA-like protein
TON_0343	TK0492	89.95	0	801	aspC aspartyl-tRNA synthetase
TON_0344	TK0493	42.13	1.00E-143	502	membrane protein
TON_0345	TK2300	84.75	3.00E-55	206	peptidyl-tRNA hydrolase
TON_0346	TK2302	83.17	0	702	truD tRNA pseudouridine synthase D
TON_0347	TK2301	83.19	8.00E-114	401	phosphoglycolate phosphatase
TON_0348	TK0494	80.63	1.00E-171	594	bifunctional carboxypeptidase/aminoacylase
TON_0349	TK1195	90.53	2.00E-45	172	hypothetical protein
TON_0350	TK1194	94.44	3.00E-56	209	hypothetical protein
TON_0352	TK1193	90.79	0	961	pyrG CTP synthetase
TON_0353	TK1192	45.95	3.00E-43	167	membrane protein
TON_0354	TK1191	90.77	2.00E-55	206	30S ribosomal protein S8e
TON_0356	TK1190	89.39	0	656	GTPase
TON_0357	TK0735	66.05	1.00E-98	351	hydrolase
TON_0359	TK1188	84.03	0	692	sugar-phosphate nucleotidyltransferase
TON_0360	TK1187	48.62	4.00E-102	363	membrane protein
TON_0361	TK1186	84.87	0	675	hypothetical protein
TON_0362	TK1183	85.76	1.00E-152	531	methionine aminopeptidase
TON_0363	TK1182	76.23	0	705	Trk-type potassium transport system, membrane component
TON_0364	TK1181	63.22	6.00E-91	326	cobalt transport ATP-binding protein
TON_0365	TK1180	47.58	1.00E-60	225	hypothetical protein
TON_0366	TK1179	76.5	3.00E-72	263	adenylate cyclase, class 2

TON_0367	TK1178	57.69	2.00E-59	220	archaemetzincin-like protein
TON_0368	TK1475	35.97	4.00E-17	79.3	hypothetical protein
TON_0369	TK1177	91.33	0	653	deblocking aminopeptidase
TON_0371	TK1175	65.89	6.00E-48	181	Holliday junction resolvase
TON_0372	TK1174	87.93	5.00E-85	305	acetyltransferase
TON_0373	TK1173	87.88	4.00E-133	466	undecaprenyl diphosphate synthase
TON_0374	TK1172	72.02	2.00E-94	337	TBP-interacting protein
TON_0375	TK1171	47.03	1.00E-49	189	hypothetical protein
TON_0376	TK1170	90.49	0	1091	threonyl-tRNA synthetase
TON_0377	TK1169	80.1	6.00E-93	332	exosome complex RNA-binding protein Csl4
TON_0378	TK1168	78.85	1.00E-84	304	hypothetical protein
TON_0379	TK1167	84.95	3.00E-44	168	DNA-directed RNA polymerase subunit L
TON_0381	TK1166	75	7.00E-56	207	hypothetical protein
TON_0382	TK1165	85.07	2.00E-137	480	AP endonuclease
TON_0383	TK1164	55.36	2.00E-88	317	endopeptidase IV
TON_0384	TK1163	81.65	6.00E-65	238	hypothetical protein
TON_0385	TK1162	60.79	5.00E-99	353	membrane protein
TON_0386	TK1161	81.99	3.00E-134	469	dihydropteroate synthase
TON_0388	TK0939	68.52	2.00E-125	440	GHMP kinase
TON_0389	TK0940	71.86	2.00E-111	394	N-glycosylase/DNA lyase
TON_0390	TK0941	55.21	6.00E-47	179	membrane protein
TON_0391	TK2053	80.33	8.00E-145	505	multidrug ABC transporter ATPase
TON_0392	TK0929	80.76	0	719	3-octaprenyl-4-hydroxybenzoate carboxy-lyase
TON_0393	TK0928	86.62	0	822	DNA/RNA repair helicase
TON_0394	TK0927	75.09	5.00E-120	422	truA tRNA pseudouridine synthase A
TON_0395	TK0925	86.41	0	1021	pheT phenylalanyl-tRNA synthetase subunit beta
TON_0396	TK0921	86.23	0	877	pheS phenylalanyl-tRNA synthetase subunit alpha
TON_0397	TK0916	94.84	0	686	tdh L-threonine 3-dehydrogenase
TON_0398	TK0915	81.38	5.00E-115	405	ATPase
TON_0399	TK0914	94.61	0	753	3-hydroxy-3-methylglutaryl-CoA reductase
TON_0402	TK0911	89.82	0	979	glutamyl-tRNA(Gln) amidotransferase subunit E
TON_0403	TK0908	75.57	0	684	glutamyl-tRNA(Gln) amidotransferase subunit D
TON_0404	TK0904	78.35	9.00E-41	157	hypothetical protein
TON_0405	TK0903	82.12	0	626	putative pseudouridylate synthase
TON_0406	TK0902	94.9	8.00E-50	187	50S ribosomal protein L21e
TON_0407	TK0901	83.33	8.00E-51	191	DNA-directed RNA polymerase subunit F
TON_0408	TK0900	84.47	6.00E-102	362	hypothetical protein
TON_0409	TK0899	74.63	3.00E-118	416	ksgA dimethyladenosine transferase
TON_0410	TK2095	34.16	5.00E-21	93.2	rubrerythrin-like protein
TON_0411	TK0897	84.68	0	1004	hypothetical protein
TON_0412	TK0896	47.08	2.00E-63	234	membrane protein
TON_0414	TK0894	54.35	4.00E-77	280	hypothetical protein
TON_0415	TK0893	81.09	2.00E-175	607	pyruvate fromate-lyase activating enzyme-related protein
TON_0416	TK0892	52.52	1.00E-72	265	polysaccharide deacetylase
TON_0417	TK0891	31.87	4.00E-40	158	glycosyltransferase
TON_0419	TK0890	71.34	8.00E-126	442	thiamine monophosphate kinase
TON_0421	TK0887	83.73	0	708	phosphohydrolase
TON_0422	TK0885	81.41	2.00E-66	243	hypothetical protein

TON_0423	TK0886	59.34	2.00E-162	565	Voltage-gated chloride channel protein
TON_0425	TK0882	82.46	1.00E-129	454	Agmatinase
TON_0426	TK0878	87.5	5.00E-66	241	translation initiation factor IF-5A
TON_0427	TK0877	45.75	3.00E-106	378	membrane protein
TON_0428	TK0876	74.42	2.00E-96	343	ribosome biogenesis protein
TON_0429	TK0875	75.48	4.00E-153	533	Saccharopine reductase
TON_0430	TK0874	58.33	5.00E-56	209	metallophosphoesterase
TON_0431	TK0873	63.12	2.00E-121	427	hypothetical protein
TON_0432	TK1608	29.91	1.00E-19	88.6	hypothetical protein
TON_0434	TK0872	87.06	2.00E-165	573	tRNA/rRNA cytosine-C5-methylase
TON_0435	TK0871	95.24	1.00E-173	601	ornithine carbamoyltransferase
TON_0437	TK0870	81.63	2.00E-121	427	thyX FAD-dependent thymidylate synthase
TON_0440	TK0869	54.11	5.00E-68	249	hypothetical protein
TON_0441	TK0868	88.34	7.00E-88	315	bis(5'-adenosyl)-triphosphatase
TON_0442	TK0866	92.42	0	693	cofactor-independent phosphoglycerate mutase
TON_0443	TK0845	88.13	6.00E-132	462	oxidoreductase
TON_0444	TK0844	87.52	0	1031	tungsten-containing oxidoreductase
TON_0446	TK0649	92.95	7.00E-123	431	putative tRNA-binding protein
TON_0447	TK0648	63.24	1.00E-117	415	hypothetical protein
TON_0448	TK0646	72.64	2.00E-43	166	hypothetical protein
TON_0449	TK0645	83.74	2.00E-152	531	phosphohydrolase
TON_0450	TK0644	73.58	3.00E-41	159	hypothetical protein
TON_0452	TK0642	73.08	1.00E-29	120	hypothetical protein
TON_0453	TK0617	87.44	2.00E-98	350	ribosomal biogenesis protein
TON_0454	TK0616	89.8	1.00E-20	90.1	DNA-directed RNA polymerase subunit P
TON_0455	TK0615	96.51	8.00E-44	167	rpl37ae 50S ribosomal protein L37Ae
TON_0456	TK1196	63.25	2.00E-62	230	hypothetical protein
TON_0457	TK1197	66.28	1.00E-27	113	hypothetical protein
TON_0458	TK1198	86.17	4.00E-133	466	organic radical activating enzyme
TON_0462	TK1199	92.27	0	824	TBP-interacting protein
TON_0463	TK1202	65.03	2.00E-119	420	hypothetical protein
TON_0464	TK1203	58.55	5.00E-51	192	hypothetical protein
TON_0466	TK1204	77.78	2.00E-71	260	hypothetical protein
TON_0469	TK1207	56.49	4.00E-47	179	hypothetical protein
TON_0471	TK1209	71.07	1.00E-71	261	transmembrane electron transport protein
TON_0482	TK1210	83.01	3.00E-71	259	transcriptional regulator
TON_0483	TK1211	80.81	0	727	4-aminobutyrate aminotransferase
TON_0484	TK1212	81.52	0	657	xanthine/uracilpermease
TON_0486	TK1214	76.84	3.00E-87	313	NADH dehydrogenase subunit I
TON_0487	TK1215	77.98	0	634	NADH dehydrogenase subunit D
TON_0488	TK1216	56.14	6.00E-50	189	NADH dehydrogenase subunit C
TON_0489	TK1217	81.82	1.00E-81	294	NADH dehydrogenase subunit B
TON_0490	TK1218	58.64	9.00E-97	345	NADH dehydrogenase subunit
TON_0491	TK1219	60.23	0	716	NADH dehydrogenase subunit M
TON_0492	TK1220	74.75	0	677	NADH dehydrogenase subunit N
TON_0493	TK1221	90.35	6.00E-46	174	putative monovalent cation/H ⁺ antiporter subunit C
TON_0494	TK1222	84.68	3.00E-87	313	putative monovalent cation/H ⁺ antiporter subunit B
TON_0495	TK1223	79.79	6.00E-27	111	hypothetical protein

TON_0496	TK1224	81.67	1.00E-48	184	putative monovalent cation/H+ antiporter subunit G
TON_0497	TK1225	89.29	4.00E-36	141	putative monovalent cation/H+ antiporter subunit F
TON_0498	TK1226	77.4	7.00E-75	271	putative monovalent cation/H+ antiporter subunit E
TON_0499	TK1227	95.18	1.00E-88	317	regulator of amino acid metabolism
TON_0500	TK1228	87.11	0	753	molybdenum cofactor biosynthesis protein A
TON_0501	TK1230	82.76	1.00E-180	624	UDP-N-acetylglucosamine 2-epimerase
TON_0502	TK1231	84.45	0	749	UDP-N-acetyl-D-mannosaminuronate dehydrogenase
TON_0503	TK1232	81.72	0	638	hypothetical protein
TON_1971	TK1233	45.4	2.00E-26	111	membrane protein
TON_0504	TK1234	80.22	1.00E-31	126	lipoate-protein ligase A
TON_0505	TK1235	83.96	0	1102	argS arginyl-tRNA synthetase
TON_0506	TK1237	80.82	1.00E-144	504	dihydrodipicolinate synthase
TON_0507	TK1239	94.22	0	760	peptide chain release factor 1
TON_0509	TK1241	48.73	2.00E-37	147	hypothetical protein
TON_0511	TK1246	65.57	2.00E-62	230	hypothetical protein
TON_0512	TK1247	63.3	1.00E-165	574	membrane-associated metallopeptidase
TON_0513	TK1248	86.92	7.00E-51	191	hypothetical protein
TON_0514	TK1249	90.16	0	707	hypothetical protein
TON_0517	TK1251	93.38	6.00E-71	258	rps15p 30S ribosomal protein S15
TON_0518	TK1252	88.11	0	800	ssDNA-specific exonuclease
TON_0519	TK1253	70.37	3.00E-30	122	hypothetical protein
TON_0520	TK1254	89.5	2.00E-106	377	30S ribosomal protein S3Ae
TON_0521	TK1257	85.06	5.00E-168	582	RNA-binding protein
TON_0523	TK1259	70.47	6.00E-65	238	putative transcriptional regulator
TON_0524	TK1260	60.44	3.00E-30	122	nucleotide pyrophosphohydrolase
TON_0525	TK1261	53.6	1.00E-38	150	transcriptional regulator
TON_0526	TK1262	73.98	3.00E-50	189	metalloprotease
TON_0528	TK1263	64.29	1.00E-93	335	hypothetical protein
TON_0529	TK1264	90.98	0	1113	ATP-dependent protease Lon
TON_0530	TK0731	75.2	1.00E-96	345	Fe-S cluster assembly ABC transporter ATPase
TON_0531	TK0730	86.85	0	785	Fe-S cluster assembly ABC transporter permease
TON_0533	TK2066	77.7	6.00E-63	231	hydrogenase-specific maturation endopeptidase
TON_0534	TK2069	86.25	0	720	cytosolic NiFe-hydrogenase subunit alpha
TON_0535	TK2070	85.66	1.00E-128	451	cytosolic NiFe-hydrogenase subunit delta
TON_0536	TK2071	91.29	1.00E-158	551	cytochrome-c3 hydrogenase subunit gamma
TON_0537	TK2072	78.75	0	625	sulfhydrogenase subunit beta
TON_0541	TK2073	67.2	7.00E-48	181	4Fe-4S binding protein
TON_0542	TK2074	84.09	4.00E-179	619	putative glutamate synthase subunit beta
TON_0543	TK2075	85.12	5.00E-69	252	4Fe-4S binding protein
TON_0544	TK1569	38.27	1.00E-57	216	alcohol dehydrogenase
TON_0546	TK0865	59.51	3.00E-100	358	putative vitamin B12 transport protein
TON_0547	TK0569	37.83	4.00E-50	191	hypothetical protein
TON_0548	TK1266	86.1	7.00E-93	332	putative transcriptional regulator
TON_0549	TK1267	63.1	1.00E-90	325	permease
TON_0553	TK1268	55.09	7.00E-143	499	hypothetical protein
TON_0554	TK1269	73.31	0	651	phosphoesterase
TON_0555	TK1270	85.51	9.00E-29	117	hypothetical protein
TON_0557	TK1272	65.62	2.00E-66	244	putative transcriptional regulator

TON_0558	TK0906	68.16	4.00E-66	243	endonuclease V
TON_0559	TK0907	70.24	9.00E-72	261	haloacid dehalogenase superfamily protein
TON_0560	TK0545	89.38	0	740	S-adenosylmethionine synthetase
TON_0562	TK0338	70.06	5.00E-69	252	putative kinase
TON_0564	TK0547	69.72	3.00E-84	303	metallophosphoesterase
TON_0565	TK0548	87.15	0	715	aspartate aminotransferase
TON_0566	TK0549	81.03	0	888	carbamoyl transferase
TON_0568	TK0550	90.25	0	824	prolyl-tRNA synthetase
TON_0569	TK0551	80.78	3.00E-159	553	D-isomer specific 2-hydroxyacid dehydrogenase
TON_0571	TK0979	81.1	2.00E-98	350	membrane protein
TON_0572	TK0980	42.44	6.00E-26	109	membrane protein
TON_0573	TK1053	57.94	1.00E-49	188	membrane protein
TON_0575	TK1459	46.97	7.00E-84	303	hypothetical protein
TON_0579	TK1049	86.91	0	1315	metG methionyl-tRNA synthetase
TON_0580	TK1119	75.65	6.00E-48	181	6-pyruvoyl-tetrahydropterin synthase
TON_0581	TK1120	77.12	5.00E-69	252	hypothetical protein
TON_0582	TK1123	87.63	4.00E-84	302	2-oxoglutarate ferredoxin oxidoreductase subunit gamma
TON_0583	TK1124	93.59	2.00E-159	553	2-oxoglutarate ferredoxin oxidoreductase subunit beta
TON_0584	TK1125	90.58	0	654	2-oxoglutarate ferredoxin oxidoreductase subunit alpha
TON_0585	TK1126	92.35	2.00E-88	316	2-oxoglutarate ferredoxin oxidoreductase subunit gamma
TON_0586	TK1129	94.37	3.00E-163	566	2-oxoglutarate ferredoxin oxidoreductase subunit beta
TON_0587	TK1130	91.16	0	764	2-oxoglutarate ferredoxin oxidoreductase subunit alpha
TON_0588	TK1131	86.67	9.00E-35	137	2-oxoacid:ferredoxin oxidoreductase subunit delta
TON_0589	TK1135	88.27	4.00E-174	602	hypothetical protein
TON_0590	TK1137	81.5	3.00E-123	433	surE stationary phase survival protein SurE
TON_0592	TK0653	87.41	2.00E-134	470	signal recognition particle GTPase
TON_0593	TK0656	59.18	6.00E-47	178	hypothetical protein
TON_0595	TK0658	75.45	0	793	ABC transporter ATPase
TON_0596	TK0659	66.03	2.00E-104	371	ABC transporter permease
TON_0597	TK0660	65.44	3.00E-99	353	ABC transporter permease
TON_0598	TK0661	58.62	2.00E-101	360	ABC-type manganese/zinc transport system periplasmic protein
TON_0599	TK0662	45.48	7.00E-140	489	hypothetical protein
TON_0600	TK0663	86.11	8.00E-33	130	hypothetical protein
TON_0601	TK0664	85.12	5.00E-104	369	hypoxanthine/guanine phosphoribosyltransferase
TON_0602	TK0444	88.03	0	901	cysS cysteinyl-tRNA synthetase
TON_0604	TK0439	67.28	5.00E-62	229	membrane-associated metalloprotease
TON_0606	TK0436	87.38	0	1097	ABC-type transporter, ATPase component
TON_0607	TK0429	83.55	6.00E-72	261	ribH 6,7-dimethyl-8-ribityllumazine synthase
TON_0608	TK0428	82.34	0	647	bifunctional 3,4-dihydroxy-2-butanone 4-phosphate synthase/GTP cyclohydrolase II protein
TON_0609	TK0425	74.18	1.00E-79	287	riboflavin synthase subunit alpha
TON_0610	TK0424	77.9	6.00E-160	555	riboflavin biosynthesis protein RibD
TON_0611	TK0423	83.41	0	1073	prolyl endopeptidase
TON_0612	TK1048	69.87	7.00E-99	352	ATPase
TON_0613	TK0764	77.66	0	2099	large helicase-like protein

TON_0614	TK0763	76.67	4.00E-29	118	hypothetical protein
TON_0615	TK0762	69.86	6.00E-142	496	glycosyltransferase
TON_0616	TK0761	66.9	4.00E-86	310	sodium/phosphate symporter
TON_0617	TK0760	91.72	0	1074	7-cyano-7-deazaguanine tRNA-ribosyltransferase
TON_0619	TK0379	85.3	0	630	hypothetical protein
TON_0620	TK0378	96.28	1.00E-119	421	chromosome partitioning protein
TON_0621	TK0026	64.95	3.00E-78	283	phosphoglycolate phosphatase
TON_0622	TK0025	73.54	6.00E-142	495	membrane protein
TON_0623	TK0024	72.05	2.00E-113	400	hypothetical protein
TON_0624	TK0023	79.27	3.00E-62	229	hypothetical protein
TON_0625	TK0022	86.53	2.00E-163	567	hypothetical protein
TON_0627	TK0775	89.02	8.00E-176	608	deblocking aminopeptidase
TON_0628	TK0774	79.45	2.00E-124	437	permease
TON_0629	TK1041	83.82	3.00E-51	192	transcriptional regulator
TON_0630	TK1042	65.82	7.00E-162	562	membrane protein
TON_0631	TK1043	32.2	2.00E-14	72	hypothetical protein
TON_0634	TK1044	66.75	3.00E-162	563	permease
TON_0635	TK1045	82.89	4.00E-56	209	cobalamin adenosyltransferase
TON_0637	TK1047	76	9.00E-112	395	translation initiation factor IF-2
TON_0638	TK1472	83.67	5.00E-108	382	competence damage-inducible protein A
TON_0639	TK0765	90.72	0	636	glyceraldehyde-3-phosphate dehydrogenase
TON_0641	TK0768	77.66	7.00E-38	147	hypothetical protein
TON_0642	TK0769	79.5	3.00E-72	263	hypothetical protein
TON_0643	TK0978	91.47	0	1070	glycyl-tRNA synthetase
TON_0644	TK0976	86.67	2.00E-33	132	small nuclear ribonucleoprotein
TON_0645	TK0975	83.61	2.00E-27	112	rpl37e 50S ribosomal protein L37e
TON_0646	TK0974	75.38	0	667	sodium-driven multidrug efflux pump protein
TON_0647	TK0971	67.58	6.00E-146	509	hypothetical protein
TON_0648	TK0970	69.68	3.00E-155	540	N(2),N(2)-dimethylguanosine tRNA methyltransferase
TON_0649	TK0969	75	1.00E-33	132	50S ribosomal protein L35
TON_0650	TK0968	87.96	1.00E-110	391	hydrolase
TON_0651	TK0967	80.46	1.00E-161	561	Xaa-Pro aminopeptidase
TON_0652	TK0964	91.6	0	630	cell division protein
TON_0653	TK0961	79.7	3.00E-159	553	HypE protein
TON_0654	TK0960	81.08	4.00E-118	416	ATPase
TON_0655	TK0959	51.18	2.00E-28	117	hypothetical protein
TON_0656	TK0958	60	2.00E-21	92.4	iron(II) transport protein A
TON_0657	TK0957	75.49	0	959	iron(II) transport protein B
TON_0659	TK0955	85.47	0	734	sugar-phosphate nucleotidyltransferase
TON_0660	TK0510	73.46	5.00E-109	386	hypothetical protein
TON_0661	TK0509	75	1.00E-72	264	aromatic acid decarboxylase
TON_0662	TK0508	69.54	8.00E-53	198	putative transcriptional regulator
TON_0663	TK0507	80.72	1.00E-70	257	adenylate cyclase
TON_0666	TK0506	88.16	0	728	translation-associated GTPase
TON_0669	TK0504	85.53	2.00E-103	367	aspartate racemase
TON_0670	TK0503	93.81	1.00E-59	219	hypothetical protein
TON_0671	TK0502	90.77	0	821	zinc-dependent protease
TON_0672	TK0499	82.54	0	739	zinc-dependent protease

TON_0673	TK0497	85.2	8.00E-159	551	Met-10+ like protein
TON_0675	TK0422	81.62	2.00E-164	571	tRNA m1G methyltransferase
TON_0677	TK1274	91.25	0	1638	valS valyl-tRNA synthetase
TON_1972	TK1273	60.26	4.00E-78	283	SAM-dependent methyltransferase
TON_0678	TK0864	75.31	7.00E-139	485	putative aminotransferase
TON_0679	TK0863	67.58	8.00E-109	385	cobD cobalamin biosynthesis protein
TON_0681	TK0862	55	9.00E-23	97.1	hypothetical protein
TON_0682	TK0861	69.57	5.00E-72	263	ATPase
TON_0683	TK0858	81.2	7.00E-54	201	hypothetical protein
TON_0684	TK0857	72.73	1.00E-87	315	cobS cobalamin synthase
TON_0686	TK0856	76.97	2.00E-80	290	GTP:adenosylcobinamide-phosphate guanylyltransferase
TON_0687	TK0854	83.44	0	800	cobyric acid synthase
TON_0688	TK0853	82.04	8.00E-158	548	hypothetical protein
TON_0689	TK0846	82.72	3.00E-93	333	adenosylcobinamide amidohydrolase
TON_0690	TK0544	70.18	1.00E-60	224	molybdenum cofactor biosynthesis protein B
TON_0691	TK0541	84.34	0	635	molybdenum cofactor biosynthesis protein MoeA
TON_0693	TK2187	34.37	3.00E-50	191	membrane protein
TON_0696	TK0540	82.32	0	702	metal-dependent phosphohydrolase
TON_0697	TK0539	80.94	3.00E-135	473	hypothetical protein
TON_0698	TK0538	65.34	8.00E-68	248	N-acetyltransferase
TON_0699	TK0553	85.61	0	762	nucleic acid-binding protein
TON_0701	TK0671	91.94	0	637	putative deoxyhypusine synthase
TON_0702	TK0672	80.17	3.00E-158	550	putative glutamate synthase subunit beta
TON_0703	TK0673	82.24	4.00E-124	436	glucose-1-dehydrogenase
TON_0705	TK0677	85.86	2.00E-111	394	heat shock protein HtpX
TON_0706	TK0353	78.7	1.00E-79	287	hypothetical protein
TON_0707	TK0678	89.43	0	926	chaperonin subunit alpha
TON_0709	TK0679	79.64	7.00E-96	342	serine/threonine protein kinase
TON_0711	TK0682	72.3	0	777	MutS-like DNA mismatch repair ATPase
TON_0713	TK0354	89.68	7.00E-77	278	putative molybdenum cofactor biosynthesis protein MoaC
TON_0714	TK0358	93.95	0	884	RNA terminal phosphate cyclase
TON_0715	TK0359	74.17	5.00E-60	222	hypothetical protein
TON_0716	TK0360	86.13	2.00E-162	563	tRNA/rRNA cytosine-C5-methylase
TON_0717	TK0361	82.39	2.00E-37	148	hypothetical protein
TON_0718	TK0363	87.68	1.00E-132	464	panB 3-methyl-2-oxobutanoate hydroxymethyltransferase
TON_0719	TK0364	77.73	1.00E-93	335	dolichol-phosphate mannosyltransferase
TON_0720	TK1876	52.33	9.00E-37	146	hypothetical protein
TON_0722	TK0365	48.36	5.00E-64	236	membrane-bound phosphoesterase
TON_0723	TK0518	74.32	2.00E-61	226	hypothetical protein
TON_0724	TK0519	87.8	3.00E-99	352	hypothetical protein
TON_0725	TK0521	80.2	0	1402	DEAD/DEAH box helicase
TON_0727	TK1031	87.16	0	1085	putative ATPase RIL
TON_0736	TK1032	63.83	1.00E-121	428	HypE protein
TON_0737	TK1034	60.46	4.00E-91	327	restriction endonuclease
TON_0738	TK0710	72.36	8.00E-100	355	hypothetical protein
TON_0739	TK1035	49.8	3.00E-64	237	glutamine amidotransferase
TON_0740	TK1036	73.53	7.00E-55	204	hypothetical protein

TON_0741	TK1037	78.51	0	823	metallophosphoesterase
TON_0742	TK1038	70.14	2.00E-115	407	2-phosphoglycerate kinase
TON_0743	TK1039	78.2	0	668	cyclic 2,3-diphosphoglycerate synthetase
TON_0744	TK1040	74.58	4.00E-15	72	hypothetical protein
TON_0745	TK0029	70.45	5.00E-122	429	zinc-dependent hydrolase
TON_0746	TK0069	77.4	2.00E-100	357	exonuclease
TON_0747	TK0070	61.26	2.00E-36	143	hypothetical protein
TON_0748	TK0071	83.09	7.00E-136	475	hypothetical protein
TON_0749	TK0072	36.04	7.00E-94	337	formaldehyde:ferredoxin oxidoreductase
TON_0751	TK0307	99.02	4.00E-54	201	rps10p 30S ribosomal protein S10P
TON_0752	TK0308	96.5	0	814	elongation factor 1-alpha
TON_0755	TK0309	93.72	0	1409	elongation factor EF-2
TON_0756	TK0312	67.42	7.00E-139	485	metal-dependent phosphohydrolase
TON_0757	TK0793	89.77	4.00E-130	456	GTP cyclohydrolase
TON_0761	TK0796	68.8	2.00E-49	186	DNA-binding protein
TON_0762	TK0797	70.26	2.00E-160	557	hypothetical protein
TON_0763	TK0798	89.9	0	726	DNA topoisomerase VI subunit A
TON_0764	TK0799	89.82	0	966	DNA topoisomerase VI subunit B
TON_0765	TK0800	87.39	8.00E-97	345	putative RNA-processing protein
TON_0766	TK0801	88.62	2.00E-128	450	serine/threonine protein kinase
TON_0767	TK0802	87.83	7.00E-55	204	translation initiation factor IF-1
TON_0768	TK0803	76.15	3.00E-104	370	ABC-type manganese/zinc transport system, ATPase component
TON_0769	TK0804	78.39	1.00E-109	388	manganese/zinc ABC transporter permease
TON_0770	TK0805	74.01	5.00E-95	339	rnhB ribonuclease HII
TON_0771	TK0806	62.82	5.00E-137	480	membrane-bound dolichyl-phosphate-mannose-protein mannosyltransferase
TON_0772	TK0807	76.52	1.00E-175	608	hypothetical protein
TON_0773	TK0808	71.88	1.00E-15	73.6	hypothetical protein
TON_0774	TK0809	82.72	0	929	glucosamine--fructose-6-phosphate aminotransferase
TON_0775	TK0810	51.72	0	947	oligosaccharyl transferase
TON_0777	TK0704	35.64	2.00E-22	98.2	UbiE/COQ5 methyltransferase
TON_0779	TK1065	47.87	2.00E-16	76.3	molybdopterin converting factor protein subunit 1
TON_0780	TK0812	73.66	4.00E-95	339	adk adenylate kinase
TON_0781	TK0813	64.63	2.00E-26	110	hypothetical protein
TON_0782	TK0554	68.84	3.00E-79	286	hypothetical protein
TON_0785	TK0511	81.59	0	811	pyruvate kinase
TON_0786	TK1055	78.99	1.00E-53	201	peroxiredoxin, bacterioferritin comigratory protein
TON_0788	TK1823	48.48	5.00E-11	58.2	hypothetical protein
TON_0790	TK0512	50	1.00E-61	228	putative zinc-dependent protease
TON_0791	TK0513	65.16	5.00E-104	369	hypothetical protein
TON_0795	TK0514	85.58	4.00E-33	132	camphor resistance protein CrcB
TON_0796	TK0515	85.6	2.00E-60	223	hypothetical protein
TON_0797	TK0516	38.55	2.00E-31	127	hypothetical protein
TON_0798	TK0517	89.97	0	706	bifunctional phosphopantothenoylecysteine decarboxylase/phosphopantothenate synthase
TON_0799	TK1063	72.84	1.00E-107	381	small-conductance mechanosensitive channel
TON_0801	TK1471	69.47	1.00E-65	241	aspartate racemase
TON_0802	TK0700	88.66	1.00E-48	182	nucleotide pyrophosphohydrolase

TON_0803	TK0833	58.68	1.00E-97	348	permease
TON_0804	TK0699	88.79	0	788	zinc-dependent protease
TON_0805	TK0698	88.41	0	814	zinc-dependent protease
TON_0806	TK1927	59.06	5.00E-58	216	membrane protein
TON_0808	TK0689	79.08	3.00E-59	219	membrane protein
TON_0809	TK0688	49.47	6.00E-49	186	membrane-associated phosphatase
TON_0816	TK0687	89.12	3.00E-99	353	hypothetical protein
TON_0817	TK0686	79.2	6.00E-107	379	hydrolase
TON_0818	TK1074	47.33	4.00E-27	112	hypothetical protein
TON_0819	TK0685	75.2	4.00E-113	399	NAD-dependent deacetylase
TON_0820	TK0684	78.39	7.00E-159	552	aromatic amino acid permease
TON_0821	TK0528	87.62	0	739	glyA serine hydroxymethyltransferase
TON_0823	TK0532	58.39	1.00E-43	167	hypothetical protein
TON_0824	TK0533	87.27	1.00E-55	206	DNA-directed RNA polymerase subunit M
TON_0826	TK0535	90.36	7.00E-106	375	DNA polymerase sliding clamp
TON_0827	TK0536	65.78	8.00E-58	215	hypothetical protein
TON_0828	TK0690	82.68	0	1098	molybdopterin oxidoreductase, molybdopterin-binding subunit
TON_0829	TK0537	89.35	4.00E-105	372	peroxiredoxin
TON_0830	TK0692	70.09	2.00E-85	307	permease
TON_0831	TK0693	59.13	4.00E-64	236	membrane protein
TON_0832	TK0694	85.16	4.00E-143	499	ATP-binding transport protein
TON_0834	TK0838	55.17	6.00E-22	94.7	hypothetical protein
TON_0835	TK0837	79.39	0	1274	heavy-metal transporting P-type ATPase
TON_0836	TK0834	78.53	5.00E-69	252	transcriptional regulatory protein
TON_0845	TK0005	36.21	4.00E-15	72.8	hypothetical protein
TON_0847	TK0831	88.46	5.00E-23	99.8	alkyl hydroperoxide reductase subunit c
TON_0852	TK1999	64.52	1.00E-57	214	hypothetical protein
TON_0860	TK0817	79.3	0	880	2-oxoacid:ferredoxin oxidoreductase subunit alpha
TON_0861	TK0816	87.97	4.00E-158	549	2-oxoacid:ferredoxin oxidoreductase subunit beta
TON_0862	TK0815	73.47	2.00E-64	236	thioredoxin peroxidase
TON_0863	TK0814	82.31	0	672	type A flavoprotein
TON_0865	TK0828	63.69	6.00E-128	449	NAD(P)H:rubredoxin oxidoreductase
TON_0866	TK0523	83.63	3.00E-77	280	rubrerythrin
TON_0867	TK0524	94.34	4.00E-25	105	rubredoxin
TON_0868	TK0525	89.57	1.00E-59	219	sor superoxide reductase
TON_0869	TK0527	82.05	4.00E-55	205	hypothetical protein
TON_0871	TK0650	81.03	6.00E-72	261	rubrerythrin-like protein
TON_0872	TK1060	64	5.00E-26	108	hypothetical protein
TON_0873	TK1056	78.91	2.00E-62	230	rubrerythrin-like protein
TON_0874	TK1054	77.19	9.00E-73	265	N-acetyltransferase
TON_0877	TK0826	82.18	3.00E-81	293	hypothetical protein
TON_0878	TK0242	61.27	9.00E-93	332	ATP phosphoribosyltransferase
TON_0879	TK0243	69.12	2.00E-77	280	hisG ATP phosphoribosyltransferase catalytic subunit
TON_0880	TK0244	79.62	3.00E-161	560	hisD histidinol dehydrogenase
TON_0881	TK0245	75.71	3.00E-63	233	hisB imidazoleglycerol-phosphate dehydratase
TON_0882	TK0246	85.71	2.00E-94	336	hisH imidazole glycerol phosphate synthase subunit HisH

TON_0883	TK0247	71.23	2.00E-88	317	1-(5-phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino] imidazole-4-carboxamide isomerase
TON_0884	TK0248	83.33	3.00E-115	406	imidazole glycerol phosphate synthase subunit HisF
TON_0885	TK0249	80.77	8.00E-100	355	bifunctional phosphoribosyl-AMP cyclohydrolase/phosphoribosyl-ATP pyrophosphatase
TON_0886	TK0250	57.31	2.00E-98	351	histidinol-phosphate aminotransferase
TON_0887	TK0251	57.08	8.00E-68	249	hydrolase
TON_0888	TK0273	78.38	5.00E-63	233	pyrroline-5-carboxylate reductase
TON_0891	TK0981	82.78	9.00E-164	568	N2, N2-dimethylguanosine tRNA methyltransferase
TON_0899	TK0984	90.14	5.00E-103	365	alanyl-tRNA synthetase
TON_0900	TK0985	23.69	2.00E-33	135	hypothetical protein
TON_0901	TK0986	77.44	2.00E-180	624	proton/glutamate symporter
TON_0902	TK0987	55.6	2.00E-65	241	biotin--protein ligase
TON_0903	TK0989	90.39	8.00E-136	475	fructose-bisphosphate aldolase
TON_0904	TK0990	82.6	0	968	pyruvate carboxylase subunit B
TON_0905	TK0991	65.08	0	632	cstA
TON_0906	TK0993	72.83	2.00E-36	142	hypothetical protein
TON_0907	TK0994	76.22	7.00E-134	469	arsA protein
TON_0908	TK0995	41.67	8.00E-15	70.9	hypothetical protein
TON_0909	TK0996	73.56	1.00E-90	324	membrane protein
TON_0910	TK0999	82.1	4.00E-116	409	lysophospholipase
TON_0911	TK1002	88.79	6.00E-173	598	adenylosuccinate synthetase
TON_0912	TK1004	87.42	1.00E-160	557	UDP-glucose 4-epimerase
TON_0915	TK0701	81.85	7.00E-129	452	ATPase, N-terminus
TON_0916	TK0702	74.39	2.00E-123	434	ATPase C-terminus
TON_0917	TK0723	83.72	9.00E-63	231	iron-molybdenum cofactor-binding protein
TON_0918	TK0721	66.67	1.00E-64	238	hypothetical protein
TON_0924	TK0742	59.44	2.00E-41	160	membrane protein
TON_0925	TK0565	60.87	4.00E-45	172	DNA-binding protein
TON_0926	TK0564	53.01	4.00E-43	166	hypothetical protein
TON_0927	TK0563	85.43	4.00E-75	272	6-pyruvoyl-tetrahydropterin synthase
TON_0928	TK0562	88.04	4.00E-43	165	hypothetical protein
TON_0929	TK0561	90.47	0	849	adenylosuccinate lyase
TON_0930	TK0560	97.8	2.00E-47	179	DNA/RNA-binding protein alba
TON_0931	TK0559	47.6	2.00E-45	174	transcriptional regulator
TON_0932	TK0558	77.53	1.00E-71	261	hypothetical protein
TON_0933	TK0557	73.3	4.00E-69	252	putative NTPase
TON_0934	TK0556	89.33	2.00E-179	620	translation initiation factor IF-2
TON_0936	TK1008	84.27	6.00E-169	585	Fe-containing alcohol dehydrogenase
TON_0937	TK1015	85.34	0	1617	large helicase-like protein
TON_0938	TK0313	85.96	2.00E-174	603	acetylornithine deacetylase
TON_0939	TK0314	66.67	3.00E-92	330	hydrolase
TON_0940	TK0315	86.25	2.00E-36	142	hypothetical protein
TON_0941	TK0317	68.65	2.00E-101	360	TatD-related deoxyribonuclease
TON_0943	TK0319	83.5	0	828	Pterin-binding protein
TON_0944	TK0320	82.7	6.00E-122	428	hypothetical protein
TON_0945	TK0683	84.68	4.00E-161	559	glyoxylate reductase

TON_0947	TK1116	71.53	9.00E-180	622	23S rRNA (uracil-5-)-methyltransferase
TON_0951	TK1307	91.18	2.00E-89	320	ndk nucleoside diphosphate kinase
TON_0952	TK1309	97.01	9.00E-35	137	50S ribosomal protein L24e
TON_0954	TK1311	94.31	1.00E-52	197	rpl7ae 50S ribosomal protein L7Ae
TON_0955	TK1313	87.56	9.00E-94	335	hypothetical protein
TON_0957	TK1315	74.53	0	927	hypothetical protein
TON_0958	TK1316	89.27	5.00E-143	499	membrane protease subunit
TON_0959	TK1317	66.94	1.00E-28	117	membrane protein
TON_0960	TK0758	61.4	2.00E-149	521	metal-dependent amidohydrolase
TON_0961	TK0759	91.88	0	817	asnC asparaginyl-tRNA synthetase
TON_0963	TK0757	66.39	9.00E-138	482	thiamin-binding periplasmic protein
TON_0964	TK0867	44.19	2.00E-50	192	Ca ²⁺ /Na ⁺ antiporter
TON_0965	TK0756	80.25	8.00E-66	241	hypothetical protein
TON_0966	TK0755	85.62	2.00E-77	280	hypothetical protein
TON_0968	TK0754	92.22	0	1441	ATPase
TON_0969	TK0752	89.54	0	1187	acylamino acid-releasing protein
TON_0970	TK0749	72.54	6.00E-82	295	molybdopterin-guanine dinucleotide biosynthesis protein A
TON_0973	TK0748	61.22	2.00E-38	150	hypothetical protein
TON_0974	TK0746	73.95	8.00E-112	395	cobalt ABC transporter ATPase
TON_0975	TK0745	61.51	1.00E-60	225	cobalt ABC transporter permease
TON_0976	TK0744	54.33	2.00E-60	224	hypothetical protein
TON_0978	TK0743	80.08	8.00E-119	418	membrane protein
TON_0979	TK0566	91.79	0	1535	DEAD/DEAH box helicase
TON_0980	TK0567	58.28	9.00E-48	181	transcriptional regulator
TON_0981	TK0568	95.2	0	715	tyrosyl-tRNA synthetase
TON_0983	TK0570	77.68	0	724	iron(III) ABC transporter periplasmic protein
TON_0984	TK0571	75.85	0	845	iron(III) ABC transporter permease
TON_0985	TK0572	84.66	3.00E-177	613	ABC-type iron(III) transport system, ATPase component
TON_0986	TK0573	48.68	8.00E-43	165	hypothetical protein
TON_0987	TK0574	45.51	3.00E-162	564	metallophosphoesterase
TON_0988	TK1148	88.14	6.00E-96	342	hypothetical protein
TON_0989	TK1147	55.6	0	781	type II restriction endonuclease
TON_0990	TK1146	83.17	0	714	pgk phosphoglycerate kinase
TON_0992	TK1145	61.96	1.00E-85	308	ABC type transporter permease
TON_0993	TK1144	84.36	2.00E-155	540	ABC-type multidrug transporter, ATPase component
TON_0994	TK1143	54.73	2.00E-29	120	hypothetical protein
TON_0995	TK1142	58.74	8.00E-45	171	hypothetical protein
TON_0996	TK1141	84.23	1.00E-123	434	endonuclease III
TON_0997	TK1456	75.14	5.00E-71	259	phosphate transport system regulator
TON_0998	TK1457	74.88	5.00E-77	279	phosphate transport system regulator
TON_0999	TK1458	40.1	4.00E-67	247	hypothetical protein
TON_1001	TK0944	89.79	0	739	acyl-CoA synthetase large subunit
TON_1002	TK0943	90.38	8.00E-123	431	acetyl-CoA synthetase II subunit beta
TON_1004	TK1687	74.07	4.00E-120	423	cysteine synthase
TON_1006	TK0366	72.77	4.00E-81	293	hypothetical protein
TON_1007	TK0367	65.54	4.00E-55	206	membrane protein
TON_1008	TK0368	88.98	0	661	thiamine biosynthesis protein Thil

TON_1009	TK0369	74.04	4.00E-25	105	membrane protein
TON_1010	TK0370	74.26	1.00E-77	281	NAD(P)H-flavin oxidoreductase
TON_1011	TK0375	87.76	6.00E-123	432	maleate cis-trans isomerase
TON_1012	TK0376	85.37	0	753	ADP-specific phosphofructokinase
TON_1013	TK0777	80	2.00E-123	434	integrase/recombinase
TON_1014	TK0778	76	1.00E-125	441	hypothetical protein
TON_1015	TK0779	82.4	1.00E-115	407	sugar fermentation stimulation protein A
TON_1032	TK0781	94.54	0	663	deblocking aminopeptidase
TON_1034	TK0322	25.65	1.00E-11	63.5	hypothetical protein
TON_1035	TK0324	36.41	3.00E-18	84.3	membrane protein
TON_1037	TK0326	56.36	1.00E-70	258	multidrug ABC transporter ATPase
TON_1040	TK0784	84.25	0	1122	ERCC2/XPD/Rad3-related DNA repair helicase
TON_1041	TK1753	38.06	1.00E-43	168	hypothetical protein
TON_1042	TK0306	71.12	6.00E-153	532	DEAD/DEAH box helicase
TON_1045	TK0787	71.65	9.00E-108	381	bifunctional inositol-1 monophosphatase/fructose-1,6-bisphosphatase
TON_1046	TK0788	73.61	6.00E-111	392	membrane protein
TON_1047	TK0789	83.14	3.00E-170	590	egsA NAD(P)-dependent glycerol-1-phosphate dehydrogenase
TON_1048	TK0790	86.81	2.00E-70	256	hypothetical protein
TON_1049	TK0332	70.43	5.00E-140	489	Allophanate hydrolase, subunit 2
TON_1050	TK0333	69.37	2.00E-82	297	hypothetical protein
TON_1051	TK0336	85.49	8.00E-130	455	LamB/YcsF family protein
TON_1053	TK0339	74.05	8.00E-39	151	hypothetical protein
TON_1055	TK0345	71.84	5.00E-110	389	3-methyladenine DNA glycosylase
TON_1056	TK0346	60.82	2.00E-30	122	hypothetical protein
TON_1057	TK0347	64.37	1.00E-141	495	nodulation protein nfeD
TON_1058	TK0348	91.03	7.00E-101	358	membrane protease subunit
TON_1059	TK0349	93.82	5.00E-123	432	ATPase
TON_1062	TK0352	89.86	0	893	thymidine phosphorylase
TON_1063	TK1030	79.84	4.00E-50	188	hypothetical protein
TON_1064	TK1029	78.87	1.00E-54	204	hypothetical protein
TON_1065	TK1026	87.35	7.00E-119	418	geranylgeranylgeranyl glyceryl phosphate synthase
TON_1066	TK1023	48.1	4.00E-19	85.1	hypothetical protein
TON_1067	TK1022	64.26	6.00E-101	359	D-aminopeptidase
TON_1069	TK1021	85.29	0	1283	Hef nuclease
TON_1070	TK1019	68.35	4.00E-43	166	hypothetical protein
TON_1071	TK1018	84.16	4.00E-75	273	hypothetical protein
TON_1072	TK1017	80.52	0	1544	chromosome segregation ATPase
TON_1073	TK1016	48.82	7.00E-33	131	hypothetical protein
TON_1074	TK0330	90.91	7.00E-66	241	methylmalonyl-CoA epimerase
TON_1075	TK0329	88.09	6.00E-166	575	lysine/arginine/ornithine transport system kinase
TON_1076	TK0328	82.52	7.00E-65	238	methylmalonyl-CoA mutase
TON_1077	TK0327	70.28	3.00E-89	320	hypothetical protein
TON_1078	TK0954	79.57	3.00E-85	306	Maf-like protein
TON_1080	TK0953	92.86	0	1056	ATPase
TON_1081	TK0952	79.92	3.00E-109	387	ATPase
TON_1082	TK0951	75.3	1.00E-111	394	GTPase
TON_1083	TK0950	65.97	3.00E-179	620	asparagine synthase

TON_1085	TK0949	69.77	2.00E-140	490	glycosyltransferase
TON_1086	TK0948	79.94	2.00E-151	527	putative translation factor
TON_1087	TK0947	51.3	1.00E-104	372	hypothetical protein
TON_1088	TK0946	58.27	7.00E-51	191	hypothetical protein
TON_1089	TK0945	87.61	1.00E-117	414	nucleotidyltransferase
TON_1090	TK1140	91.63	0	850	seryl-tRNA synthetase
TON_1091	TK1282	87.5	0	693	molybdenum cofactor biosynthesis protein MoeA
TON_1093	TK0670	74.41	2.00E-107	380	hypothetical protein
TON_1094	TK0669	86.28	0	1340	CDC48/VCP
TON_1095	TK0668	82.69	7.00E-43	164	hypothetical protein
TON_1096	TK0667	82.05	9.00E-119	418	metallophosphoesterase
TON_1097	TK0665	91.03	0	780	acetyl-CoA synthetase I subunit alpha
TON_1099	TK1281	94.41	7.00E-143	499	flap endonuclease-1
TON_1100	TK1280	91.64	5.00E-152	529	tfb transcription initiation factor IIB
TON_1102	TK1278	87.5	1.00E-50	190	hypothetical protein
TON_1103	TK1276	94.67	5.00E-81	291	30S ribosomal protein S19e
TON_1104	TK1275	80.88	6.00E-50	188	RNA-binding protein
TON_1105	TK1283	79.9	3.00E-92	329	hypothetical protein
TON_1106	TK1322	92.21	1.00E-24	103	rplX 50S ribosomal protein LX
TON_1107	TK1321	83.77	4.00E-109	386	translation initiation factor IF-6
TON_1108	TK1320	81.11	1.00E-23	99.8	50S ribosomal protein L31e
TON_1110	TK1149	92.35	0	1080	methylmalonyl-CoA mutase, N-terminus of large subunit
TON_1111	TK1153	83.99	5.00E-144	502	hypothetical protein
TON_1113	TK1155	82.82	5.00E-65	238	small heat shock protein
TON_1114	TK1157	90.7	0	1334	CDC48/VCP
TON_1117	TK1159	63.27	1.00E-13	67	hypothetical protein
TON_1118	TK0938	53.06	2.00E-12	64.3	hypothetical protein
TON_1119	TK1033	57.25	2.00E-39	153	metalloprotease
TON_1120	TK0934	79.51	1.00E-117	414	putative molybdopterin-guanine dinucleotide biosynthesis protein MobB/FeS domain-containing protein
TON_1121	TK0933	76.06	1.00E-27	113	hypothetical protein
TON_1122	TK0930	60.58	2.00E-98	350	hypothetical protein
TON_1124	TK0293	80.35	1.00E-102	364	hypothetical protein
TON_1125	TK0292	72.19	2.00E-61	226	hypothetical protein
TON_1128	TK0284	82.89	2.00E-82	297	NAD(P)H-flavin oxidoreductase
TON_1130	TK0271	80.58	2.00E-43	166	hypothetical protein
TON_1131	TK0270	77.52	4.00E-89	319	transketolase, N-terminal section
TON_1132	TK0269	77.81	7.00E-144	502	transketolase
TON_1133	TK0268	85.44	1.00E-133	468	3-deoxy-7-phosphoheptulonate synthase
TON_1134	TK0267	72.31	2.00E-122	431	aroB 3-dehydroquinate synthase
TON_1135	TK0266	59.22	1.00E-63	234	aroD 3-dehydroquinate dehydratase
TON_1136	TK0265	65.93	8.00E-84	302	aroE shikimate 5-dehydrogenase
TON_1137	TK0264	66.05	4.00E-83	300	shikimate kinase
TON_1138	TK0263	65.66	3.00E-141	493	3-phosphoshikimate 1-carboxyvinyltransferase
TON_1139	TK0262	76.64	1.00E-149	521	chorismate synthase
TON_1140	TK0261	59.18	5.00E-11	58.2	chorismate mutase
TON_1141	TK0260	68.47	7.00E-136	476	aromatic aminotransferase

TON_1142	TK0259	61.33	4.00E-85	306	prephenate dehydrogenase
TON_1143	TK0241	73.94	2.00E-58	216	protein-tyrosine phosphatase
TON_1149	TK0236	49.68	1.00E-71	262	hypothetical protein
TON_1155	TK0225	73.65	4.00E-59	219	hypothetical protein
TON_1156	TK0224	65.69	1.00E-74	271	SAM-dependent methyltransferase
TON_1158	TK0232	55.15	7.00E-79	285	Acetyltransferase (GNAT) family protein
TON_1159	TK0229	65.15	5.00E-19	85.9	hypothetical protein
TON_1160	TK0223	77.05	1.00E-164	571	hypothetical protein
TON_1164	TK0067	94.15	8.00E-101	358	nicotinamide-nucleotide adenylyltransferase
TON_1165	TK0062	78.91	6.00E-120	422	hypothetical protein
TON_1166	TK0061	51.56	3.00E-167	580	hypothetical protein
TON_1167	TK0060	85.31	2.00E-88	317	tRNA 2'-O-methylase
TON_1168	TK0059	79.79	1.00E-82	297	CDP-alcohol phosphatidyltransferase
TON_1169	TK0058	78.88	3.00E-108	383	hydrolase
TON_1170	TK0057	65.56	5.00E-25	107	hypothetical protein
TON_1171	TK0056	84.13	8.00E-92	328	hypothetical protein
TON_1172	TK0055	83.78	2.00E-52	196	hypothetical protein
TON_1174	TK0053	51.23	2.00E-89	321	signal peptidase
TON_1175	TK0052	78.64	2.00E-93	333	phosphoserine phosphatase
TON_1176	TK0051	78.24	2.00E-74	270	pcm protein-L-isoaspartate O-methyltransferase
TON_1177	TK0050	36.38	1.00E-90	326	membrane protein
TON_1178	TK0049	80.48	0	787	flagellar assembly protein J
TON_1179	TK0048	91.22	0	1001	flagella-related protein I
TON_1180	TK0047	94.4	1.00E-126	444	flagellar accessory protein FlaH
TON_1181	TK0046	79.25	7.00E-64	235	flagella-related protein G
TON_1182	TK0045	43.82	4.00E-16	76.6	flagella-related protein
TON_1184	TK0043	85.44	9.00E-52	194	flagella-related protein C
TON_1185	TK0042	69.57	5.00E-87	313	flagellin
TON_1186	TK0041	73.76	8.00E-72	262	flagellin
TON_1187	TK0040	61.63	9.00E-66	242	flagellin
TON_1189	TK0038	59.52	6.00E-67	246	flagellin
TON_1190	TK0037	55.41	2.00E-104	371	SAM-dependent methyltransferase
TON_1191	TK0036	85.32	2.00E-52	196	hypothetical protein
TON_1193	TK0629	82.88	1.00E-57	214	purine-binding chemotaxis protein (cheW)
TON_1195	TK0631	67.86	8.00E-112	395	cheR chemotaxis protein methyltransferase
TON_1196	TK0632	88.33	2.00E-59	219	chemotaxis response regulator
TON_1197	TK0633	75.42	1.00E-139	488	chemotaxis-specific methylesterase
TON_1198	TK0634	58.47	6.00E-149	520	cheA chemotaxis histidine kinase
TON_1199	TK0636	67.48	2.00E-79	287	histidine kinase
TON_1200	TK0637	65	5.00E-65	239	chemotaxis protein cheC
TON_1201	TK0639	78.26	1.00E-73	267	chemoreceptor glutamine deamidase CheD
TON_1202	TK0638	64.79	0	813	methyl-accepting chemotaxis protein
TON_1203	TK0640	50.39	1.00E-63	234	hypothetical protein
TON_1204	TK0641	61.29	5.00E-118	416	hypothetical protein
TON_1205	TK0035	50.63	2.00E-110	391	membrane protein
TON_1206	TK0034	68.29	6.00E-97	345	hypothetical protein
TON_1207	TK0033	48.05	2.00E-77	281	hypothetical protein
TON_1208	TK0032	39.28	9.00E-87	313	hypothetical protein

TON_1211	TK0030	77.01	1.00E-83	301	cyclase-related protein
TON_1212	TK0028	90.02	0	721	S-adenosyl-L-homocysteine hydrolase
TON_1214	TK0027	70.89	1.00E-82	298	hypothetical protein
TON_1215	TK0014	62.78	3.00E-61	226	metal-dependent phosphohydrolase
TON_1216	TK0013	69.61	1.00E-41	159	hypothetical protein
TON_1217	TK0012	90.27	1.00E-72	264	GTP-binding protein
TON_1218	TK0011	69.4	3.00E-55	206	hypothetical protein
TON_1219	TK0010	46.81	4.00E-18	81.6	hypothetical protein
TON_1220	TK0009	46.72	4.00E-108	384	hypothetical protein
TON_1221	TK0008	81.69	3.00E-171	593	DNA methylase
TON_1223	TK0004	44.37	5.00E-22	95.9	membrane protein
TON_1224	TK0003	46.96	4.00E-15	72.4	Membrane protein
TON_1225	TK0002	62.79	4.00E-75	273	putative zinc-dependent protease
TON_1226	TK2296	73.52	2.00E-110	390	hypothetical protein
TON_1228	TK1893	66.53	2.00E-86	312	glycerate kinase
TON_1229	TK2293	76.26	4.00E-59	219	hypothetical protein
TON_1230	TK2292	89.55	2.00E-31	126	rps17E 30S ribosomal protein S17e
TON_1231	TK2291	80.3	1.00E-81	295	heat shock regulator
TON_1233	TK1318	86.98	5.00E-98	348	thymidine kinase
TON_1234	TK2290	91.67	0	844	rbcl ribulose bisophosphate carboxylase
TON_1236	TK2288	69.51	4.00E-62	229	metallophosphoesterase
TON_1237	TK2287	88.12	2.00E-135	474	tfb transcription initiation factor IIB
TON_1239	TK2285	61.31	2.00E-82	298	carbohydrate/pyrimidine kinase
TON_1240	TK2284	69.23	2.00E-63	233	ADP-ribose pyrophosphatase
TON_1241	TK2283	68.97	3.00E-39	152	hypothetical protein
TON_1242	TK2282	36.53	2.00E-78	285	membrane protein
TON_1243	TK2281	71.71	2.00E-106	377	ABC transporter
TON_1244	TK0298	77.8	0	689	putative transposase
TON_1245	TK0849	92.16	1.00E-21	93.2	hypothetical protein
TON_1247	TK2280	88.84	5.00E-120	422	ATP-binding protein
TON_1248	TK2279	67.61	2.00E-161	560	bifunctional sugar nucleotidyltransferase/CDP-alcohol phosphatidyltransferase synthase
TON_1249	TK2278	87.43	0	703	myo-inositol-1-phosphate synthase
TON_1250	TK2277	68	4.00E-78	283	hypothetical protein
TON_1251	TK2276	81.04	2.00E-101	360	orotidine 5'-phosphate decarboxylase
TON_1252	TK2275	83.72	2.00E-82	296	putative RNA-binding protein
TON_1253	TK2274	84.93	2.00E-72	263	glycerol-3-phosphate cytidyltransferase
TON_1254	TK2273	75.44	6.00E-41	157	putative transcriptional regulator
TON_1255	TK2272	88.67	2.00E-127	447	ATPase
TON_1256	TK2271	79.43	2.00E-173	600	cell division protein FtsZ
TON_1257	TK2270	87.3	3.00E-28	115	hypothetical protein
TON_1258	TK2269	56.3	2.00E-35	139	hypothetical protein
TON_1259	TK2268	86.99	0	719	aspartate aminotransferase
TON_1260	TK2267	75.86	1.00E-34	136	membrane protein
TON_1261	TK2266	76.63	7.00E-178	615	permease
TON_1263	TK2263	92.47	1.00E-131	461	putative transcriptional regulator
TON_1264	TK2260	88	5.00E-144	502	dihydroorotate dehydrogenase 1B
TON_1265	TK0119	83.16	0	759	proline dehydrogenase subunit alpha
TON_1266	TK0120	84.34	1.00E-80	290	proline dehydrogenase subunit gamma

TON_1267	TK0121	75.9	4.00E-31	124	hypothetical protein
TON_1268	TK0122	56.35	3.00E-111	394	sarcosine oxidase subunit beta
TON_1270	TK0305	94.67	2.00E-115	406	pyrH uridylyate kinase
TON_1271	TK0304	91.57	0	768	NADH oxidase
TON_1278	TK0302	83.89	2.00E-87	313	RNA 2'-phosphotransferase-like protein
TON_1279	TK0123	68.2	2.00E-130	457	multidrug-efflux transporter
TON_1280	TK1831	58.62	3.00E-113	400	galactokinase
TON_1281	TK0117	90.16	0	688	sarcosine oxidase, beta subunit
TON_1282	TK0116	75.41	0	709	sarcosine oxidase, alpha subunit
TON_1283	TK1286	95.1	0	753	GTPase
TON_1284	TK1285	82.55	7.00E-61	224	transcriptional regulator
TON_1285	TK1284	92.12	2.00E-88	316	intracellular protease I
TON_1289	TK0153	66.55	1.00E-116	411	ATP:dephospho-CoA triphosphoribosyl transferase
TON_1290	TK0154	75	2.00E-24	102	hypothetical protein
TON_1291	TK1659	80.75	1.00E-79	287	small neutral amino acid transporter A
TON_1292	TK0189	82.44	5.00E-60	221	stress-inducible protein
TON_1293	TK0188	84.59	1.00E-142	497	hypothetical protein
TON_1973	TK0187	57.69	1.00E-86	311	glutamine amidotransferase
TON_1295	TK0186	86.57	0	729	multiple substrate aminotransferase
TON_1296	TK0185	94.1	0	627	translation initiation factor IF-2
TON_1297	TK1749	27.46	2.00E-13	68.2	hypothetical protein
TON_1298	TK1750	36.77	2.00E-54	205	hypothetical protein
TON_1299	TK0184	90.05	3.00E-175	607	C/D box methylation guide ribonucleoprotein complex aNOP56 subunit
TON_1300	TK0183	93.81	1.00E-123	434	fibrillarin
TON_1301	TK0181	88.86	1.00E-179	621	hypothetical protein
TON_1302	TK0180	85.05	4.00E-179	619	acetyl-CoA acetyltransferase
TON_1303	TK0179	83.58	3.00E-65	239	hypothetical protein
TON_1304	TK0124	75.26	2.00E-37	145	hypothetical protein
TON_1305	TK0125	81.76	4.00E-60	223	N-acetyltransferase
TON_1306	TK0126	79.53	7.00E-65	238	transcription factor
TON_1307	TK0129	84.48	4.00E-58	215	hypothetical protein
TON_1309	TK0132	91.67	2.00E-99	353	transcription factor
TON_1310	TK0134	63.94	1.00E-129	454	acetylpolyamine aminohydrolase
TON_1311	TK0135	87.62	2.00E-104	370	indolepyruvate oxidoreductase subunit beta
TON_1312	TK0136	89.03	0	1031	indolepyruvate: ferredoxin oxidoreductase subunit alpha
TON_1313	TK0139	86.24	0	792	acetyl-CoA synthetase II subunit alpha
TON_1314	TK0141	81.25	7.00E-102	362	metal-dependent hydrolase
TON_1315	TK0142	64.97	2.00E-118	417	putative transcriptional regulator
TON_1316	TK0143	80.85	3.00E-19	85.5	nucleic acid-binding protein
TON_1317	TK0144	63.33	2.00E-87	314	hypothetical protein
TON_1318	TK0145	44.39	2.00E-37	147	membrane protein
TON_1320	TK1323	72.97	3.00E-164	570	glycosyltransferase
TON_1321	TK1324	53.91	5.00E-65	239	4-hydroxybenzoate octaprenyltransferase
TON_1322	TK0147	80.07	2.00E-136	477	spermidine synthase
TON_1323	TK0149	91.72	4.00E-83	299	pyruvoyl-dependent arginine decarboxylase
TON_1324	TK0627	62.7	2.00E-118	418	NapA-type sodium/hydrogen antiporter
TON_1325	TK0626	75.21	1.00E-46	177	hypothetical protein

TON_1326	TK0625	55.2	2.00E-120	425	putative monovalent cation/H+ antiporter subunit D
TON_1327	TK0624	72.29	2.00E-22	95.9	putative monovalent cation/H+ antiporter subunit C
TON_1328	TK0623	60	7.00E-41	158	putative monovalent cation/H+ antiporter subunit B
TON_1331	TK0620	74.04	4.00E-37	145	putative monovalent cation/H+ antiporter subunit G
TON_1332	TK0619	63.33	7.00E-25	103	putative monovalent cation/H+ antiporter subunit F
TON_1333	TK0618	67.16	8.00E-80	288	putative monovalent cation/H+ antiporter subunit E
TON_1334	TK0150	91.79	2.00E-67	246	glycine cleavage system protein H
TON_1336	TK1325	90.55	0	856	putative oxidoreductase
TON_1337	TK1326	69.23	2.00E-120	424	ferredoxin-NADP(+) reductase subunit alpha
TON_1339	TK1328	81.42	6.00E-113	399	tRNA (1-methyladenosine) methyltransferase
TON_1340	TK1329	43.92	9.00E-35	139	hypothetical protein
TON_1341	TK1330	63.44	7.00E-32	127	signal recognition particle protein Srp19
TON_1342	TK1331	92.5	6.00E-38	147	putative transcriptional regulator
TON_1344	TK1334	82.61	9.00E-87	311	hypothetical protein
TON_1345	TK0652	77.7	6.00E-106	375	heavy-metal cation transporter
TON_1346	TK1335	96.3	2.00E-73	266	hypothetical protein
TON_1347	TK1336	66.67	7.00E-153	532	ABC-type sodium efflux pump system permease
TON_1348	TK1337	82.14	3.00E-109	386	ABC-type sodium efflux pump system, ATPase component
TON_1349	TK1339	92.31	1.00E-29	119	putative transcriptional regulator
TON_1353	TK1064	64.89	1.00E-148	518	cmo tungsten-containing aldehyde ferredoxin oxidoreductase cofactor modifying protein
TON_1354	TK1066	79.17	0	949	aor-2 tungsten-containing aldehyde ferredoxin oxidoreductase
TON_1355	TK1689	76.17	0	939	subtilisin-like serine protease
TON_1356	TK1690	58.71	0	726	membrane protein
TON_1358	TK1691	86.32	0	633	hypothetical protein
TON_1359	TK1692	70.33	8.00E-96	342	hypothetical protein
TON_1360	TK1693	74.84	4.00E-69	252	hypothetical protein
TON_1361	TK1694	73.13	1.00E-21	93.2	4Fe-4S ferredoxin
TON_1362	TK1676	88.21	0	676	nicotinate phosphoribosyltransferase
TON_1363	TK1681	83.61	1.00E-150	525	hypothetical protein
TON_1365	TK2254	67.72	4.00E-97	347	UDP-N-acetylglucosamine--dolichyl-phosphate N-acetylglucosaminephosphotransferase
TON_1366	TK2255	73.41	0	649	bifunctional phosphatase/dolichol-phosphate glucosyltransferase
TON_1367	TK2256	48.76	8.00E-27	111	hypothetical protein
TON_1368	TK2257	92.12	5.00E-89	318	deoxycytidylate deaminase
TON_1369	TK2258	59.39	5.00E-73	266	zinc-dependent protease
TON_1370	TK2259	87.6	2.00E-60	223	putative transcriptional regulator
TON_1372	TK0106	88.64	2.00E-140	490	diphthine synthase
TON_1373	TK1688	86.01	2.00E-120	423	putative transcriptional regulator
TON_1374	TK1686	90.8	5.00E-139	485	hypothetical protein
TON_1375	TK1685	83.1	9.00E-137	478	ferredoxin-NADP(+) reductase subunit alpha
TON_1376	TK1684	86.75	0	780	putative oxidoreductase
TON_1377	TK1683	55.77	1.00E-40	157	hypothetical protein
TON_1385	TK2252	88.44	0	681	proteasome-activating nucleotidase
TON_1386	TK2251	80.56	2.00E-148	517	permease
TON_1388	TK2250	87.42	2.00E-162	563	serine/threonine protein kinase
TON_1389	TK2249	61.11	2.00E-54	203	hypothetical protein

TON_1390	TK2248	63.06	3.00E-103	367	biotin synthase
TON_1391	TK2247	52.73	8.00E-106	376	hypothetical protein
TON_1392	TK2246	93.46	2.00E-160	556	L-asparaginase
TON_1393	TK2245	85.53	7.00E-151	525	transcriptional regulator
TON_1394	TK0827	78.92	2.00E-169	587	permease
TON_1395	TK2244	86.53	3.00E-97	346	indolepyruvate oxidoreductase subunit B
TON_1396	TK2241	75.88	1.00E-101	361	SAM-dependent methyltransferase
TON_1397	TK2240	86.88	0	904	lysK lysyl-tRNA synthetase
TON_1398	TK2239	72.76	1.00E-114	404	Phol-related type II restriction endonuclease
TON_1399	TK2238	75.71	7.00E-74	268	membrane protein
TON_1400	TK2237	84.57	2.00E-92	330	hypothetical protein
TON_1403	TK2235	78.49	3.00E-132	463	ribose-phosphate pyrophosphokinase
TON_1404	TK2234	70.35	6.00E-70	256	membrane protein
TON_1405	TK2233	76.92	6.00E-52	194	hypothetical protein
TON_1406	TK2232	79.72	2.00E-98	350	hydrolase
TON_1407	TK2231	81.28	2.00E-103	367	radB DNA repair and recombination protein RadB
TON_1408	TK2227	84.29	0	800	RNA-binding protein FAU-1
TON_1409	TK2226	60.89	3.00E-77	280	hypothetical protein
TON_1410	TK2225	83.71	1.00E-151	528	moaA molybdenum cofactor biosynthesis protein A
TON_1412	TK2223	84.82	6.00E-143	499	Met-10+ like protein
TON_1413	TK2219	90.05	0	748	replication factor C large subunit
TON_1415	TK2217	96.71	0	734	2-amino-3-ketobutyrate coenzyme A ligase
TON_1417	TK2215	76.05	7.00E-73	265	tRNA-splicing endonuclease subunit alpha
TON_1418	TK2214	84.24	4.00E-80	289	ribosomal protein-alanine acetyltransferase
TON_1420	TK2213	68.79	0	761	bipolar DNA helicase
TON_1421	TK2212	74.94	1.00E-174	605	DNA repair exonuclease
TON_1423	TK2210	82.43	0	674	5'-3' nuclease
TON_1424	TK2209	68.15	1.00E-126	444	ABC-type iron(III)-siderophore transport system permease
TON_1425	TK2208	72.88	7.00E-101	358	ABC-type iron(III)-siderophore transport system, ATPase component
TON_1426	TK2207	86.17	3.00E-97	346	proteasome subunit beta 2
TON_1427	TK2206	63.34	6.00E-130	456	hypothetical protein
TON_1428	TK2205	81.67	1.00E-164	571	threonine synthase
TON_1430	TK2203	67.82	9.00E-91	325	hypothetical protein
TON_1432	TK2200	92.41	0	827	hypothetical protein
TON_1434	TK2198	85.59	8.00E-59	218	hypothetical protein
TON_1436	TK2197	57.09	5.00E-89	319	putative transcriptional regulator
TON_1437	TK2196	91.64	1.00E-154	538	pyrB aspartate carbamoyltransferase catalytic subunit
TON_1438	TK2195	77.03	6.00E-65	238	aspartate carbamoyltransferase regulatory subunit
TON_1440	TK2194	60.82	7.00E-64	235	membrane protein
TON_1441	TK2193	76.05	3.00E-114	403	hypothetical protein
TON_1442	TK2192	81.08	7.00E-89	318	hypothetical protein
TON_1444	TK2191	77.49	2.00E-85	307	hypothetical protein
TON_1445	TK2185	87.31	0	738	glmM phosphoglucosamine mutase
TON_1446	TK2183	60.47	3.00E-37	145	hypothetical protein
TON_1449	TK2179	85.71	4.00E-124	436	hypothetical protein
TON_1450	TK2173	77.27	2.00E-68	250	hypothetical protein
TON_1451	TK2172	70.14	0	932	cyclomaltodextrin glucanotransferase

TON_1452	TK2171	51.21	8.00E-55	205	hypothetical protein
TON_1453	TK2170	62.88	2.00E-153	534	zinc-dependent protease
TON_1454	TK2169	73.51	0	702	zinc-dependent protease
TON_1457	TK0881	73.15	2.00E-61	226	universal stress protein
TON_1458	TK0880	68.88	1.00E-145	508	arsenical pump membrane protein
TON_1459	TK0879	46.96	1.00E-38	151	hypothetical protein
TON_1460	TK2168	69.41	0	810	serine protease
TON_1461	TK2167	78.68	0	652	hypothetical protein
TON_1462	TK2166	74.11	2.00E-157	547	ArgE/DapE-related deacylase
TON_1463	TK1966	89.11	2.00E-155	540	D-3-phosphoglycerate dehydrogenase
TON_1464	TK1967	74.42	8.00E-85	305	phosphate transport system regulator PhoU
TON_1465	TK1968	82.61	1.00E-145	507	2-dehydropantoate 2-reductase
TON_1466	TK1970	73.71	4.00E-100	356	putative tRNA/rRNA methyltransferase
TON_1467	TK1971	61.71	2.00E-59	220	methylated-DNA--protein-cysteine methyltransferase
TON_1468	TK1972	83.72	2.00E-94	338	membrane protein
TON_1470	TK1560	53.46	6.00E-75	273	NapA-type sodium/hydrogen antiporter
TON_1472	TK1973	74.77	2.00E-37	145	nac nascent polypeptide-associated complex protein
TON_1473	TK1974	88.03	5.00E-55	204	carboxymuconolactone decarboxylase-related protein
TON_1474	TK1976	80	1.00E-168	585	HflX-related GTP-binding protein
TON_1475	TK1977	84.38	2.00E-125	441	sodium/phosphate symporter
TON_1476	TK1978	92.97	9.00E-74	268	pyruvate/ketoisovalerate ferredoxin oxidoreductase subunit gamma
TON_1477	TK1979	86.27	3.00E-49	185	vorD 2-ketoisovalerate ferredoxin oxidoreductase subunit delta
TON_1478	TK1980	91.16	0	684	vorA 2-ketoisovalerate ferredoxin oxidoreductase subunit alpha
TON_1479	TK1981	89.07	1.00E-170	591	2-ketoisovalerate ferredoxin oxidoreductase subunit beta
TON_1480	TK1982	92.38	1.00E-55	206	porD pyuvate ferredoxin oxidoreductase subunit delta
TON_1481	TK1983	94.92	0	718	porA pyruvate ferredoxin oxidoreductase subunit alpha
TON_1482	TK1984	90.03	1.00E-153	535	pyruvate ferredoxin oxidoreductase subunit beta
TON_1483	TK2021	90.81	4.00E-143	499	ATPase
TON_1484	TK2022	35.42	9.00E-64	236	membrane protein
TON_1485	TK2023	83.61	7.00E-112	395	hypothetical protein
TON_1486	TK2024	85.33	6.00E-65	238	transcription initiation factor E subunit alpha
TON_1487	TK2025	90.43	3.00E-46	175	hypothetical protein
TON_1488	TK2029	71.03	4.00E-121	426	carbohydrate/pyrimidine kinase
TON_1490	TK2031	91.21	4.00E-44	167	acylphosphatase
TON_1491	TK2032	74.51	1.00E-37	146	divalent cation tolerance protein
TON_1492	TK2033	79.9	3.00E-86	309	hypothetical protein
TON_1493	TK2034	70.14	9.00E-113	398	universal stress protein
TON_1494	TK2035	93.72	0	771	gcvT glycine cleavage system aminomethyltransferase T
TON_1495	TK2036	71.64	6.00E-108	382	permease
TON_1496	TK2165	84.62	2.00E-34	135	hypothetical protein
TON_1497	TK2164	90.67	0	690	thermophile-specific fructose-1,6-bisphosphatase
TON_1498	TK2163	86.83	0	1155	tungsten-containing glyceraldehyde-3-phosphate:ferredoxin oxidoreductase

TON_1501	TK2159	80.95	0	691	oxidoreductase
TON_1502	TK2158	90.76	8.00E-168	582	carbamate kinase-like carbamoyl phosphate synthetase
TON_1503	TK0130	85.56	1.00E-131	461	hypothetical protein
TON_1504	TK2157	92.62	5.00E-123	432	hypothetical protein
TON_1505	TK2156	88.07	0	1019	RNA-binding protein
TON_1507	TK2153	87.5	3.00E-45	172	hypothetical protein
TON_1508	TK2152	89.57	8.00E-107	378	hypothetical protein
TON_1509	TK0729	57.79	5.00E-68	250	ubiE ubiquinone/menaquinone biosynthesis methyltransferase
TON_1510	TK2134	85.11	2.00E-69	253	transcriptional regulator
TON_1511	TK2135	76.57	0	675	23S rRNA (uracil-5-)-methyltransferase
TON_1512	TK2136	84.51	8.00E-31	124	hypothetical protein
TON_1513	TK2138	76.57	4.00E-68	249	pyrE orotate phosphoribosyltransferase
TON_1515	TK2140	88.26	0	932	ATP-dependent DNA ligase
TON_1516	TK2141	78.67	7.00E-135	472	GHMP kinase
TON_1517	TK2142	83.88	0	906	NhaC-type sodium/hydrogen antiporter
TON_1518	TK2143	86.32	3.00E-98	349	uracil-DNA glycosylase
TON_1519	TK2144	67.24	2.00E-45	173	hypothetical protein
TON_1520	TK2145	87.76	0	1076	hypothetical protein
TON_1521	TK2146	60.44	4.00E-19	85.5	hypothetical protein
TON_1522	TK2148	76.39	0	741	hypothetical protein
TON_1523	TK2149	65.18	2.00E-31	126	effector of murein hydrolase
TON_1524	TK2150	75.78	2.00E-87	313	effector of murein hydrolase
TON_1525	TK2151	84.62	7.00E-69	251	txf putative transcriptional regulator
TON_1526	TK2133	56.48	9.00E-56	208	hypothetical protein
TON_1527	TK2132	76.5	3.00E-82	296	L-fuculose phosphate aldolase
TON_1528	TK2131	96.39	7.00E-41	157	hypothetical protein
TON_1529	TK2130	86.29	1.00E-87	313	cob(I)yrinic acid a,c-diamide adenosyltransferase
TON_1530	TK1905	74.28	1.00E-123	434	hypothetical protein
TON_1531	TK1907	88.78	2.00E-88	317	hypothetical protein
TON_1532	TK1908	87.55	6.00E-129	452	lipoate-protein ligase A, N-terminal section
TON_1533	TK2037	65.45	1.00E-55	207	signal peptidase I
TON_1534	TK2038	78.57	8.00E-75	271	hypothetical protein
TON_1535	TK2039	45.2	2.00E-84	305	hypothetical protein
TON_1536	TK2040	76.13	4.00E-143	499	microsomal dipeptidase
TON_1539	TK2045	78.72	5.00E-125	439	SAM-dependent methyltransferase
TON_1540	TK2046	80.26	0	678	membrane protein
TON_1541	TK2047	85.91	0	766	membrane protein
TON_1542	TK2048	62.8	0	1189	hypothetical protein
TON_1543	TK2049	82.77	0	1034	acylamino acid-releasing protein
TON_1544	TK2050	65.74	2.00E-35	139	membrane protein
TON_1545	TK2051	64.68	5.00E-74	269	hypothetical protein
TON_1546	TK2052	96	2.00E-36	142	regulatory protein AsnC
TON_1550	TK2059	81.44	2.00E-43	166	hypothetical protein
TON_1551	TK2060	83.93	5.00E-96	342	phosphate transport system regulator PhoU
TON_1552	TK2061	83.74	2.00E-180	624	sodium/phosphate symporter
TON_1553	TK2062	52.6	1.00E-155	542	metallophosphoesterase
TON_1554	TK2063	83.05	2.00E-57	212	hypothetical protein

TON_1557	TK2064	86.7	0	770	2-methylthioadenine synthetase
TON_1558	TK2065	87.32	6.00E-17	77.8	RNA-binding protein
TON_1563	TK2076	83.4	0	1232	formate dehydrogenase subunit alpha
TON_1564	TK2077	86.14	1.00E-73	268	4Fe-4S binding protein
TON_1570	TK2078	53.09	1.00E-40	157	Formate hydrogen lyase subunit 6 (hydrogenase 3 component F)
TON_1573	TK2079	85.67	6.00E-142	495	formate transporter
TON_1582	TK2080	76.19	2.00E-65	240	putative monovalent cation/H+ antiporter subunit E
TON_1583	TK2081	80.25	2.00E-32	129	putative monovalent cation/H+ antiporter subunit F
TON_1584	TK2082	80.49	2.00E-54	202	putative monovalent cation/H+ antiporter subunit G
TON_1585	TK2083	84.88	1.00E-11	60.1	hypothetical protein
TON_1586	TK2084	89.8	1.00E-38	149	membrane bound hydrogenase subunit MbhE
TON_1587	TK2085	87.92	4.00E-55	205	putative monovalent cation/H+ antiporter subunit B
TON_1588	TK2086	89.92	4.00E-52	195	putative monovalent cation/H+ antiporter subunit C
TON_1589	TK2087	80.08	0	749	putative monovalent cation/H+ antiporter subunit D
TON_1590	TK2088	80	7.00E-54	201	membrane bound hydrogenase subunit MbhI
TON_1591	TK2089	86.63	2.00E-87	313	membrane bound hydrogenase, NiFe-hydrogenase small subunit
TON_1592	TK2090	71.96	9.00E-79	285	membrane bound hydrogenase, NiFe-hydrogenase large subunit 1
TON_1593	TK2091	85.68	0	771	membrane bound hydrogenase, NiFe-hydrogenase large subunit 2
TON_1594	TK2092	83.54	4.00E-134	469	membrane bound hydrogenase, MbhM subunit
TON_1596	TK2096	63.69	2.00E-46	177	rubrerythrin-like protein
TON_1597	TK0841	56.36	3.00E-14	68.9	membrane protein
TON_1598	TK0840	71.18	3.00E-91	327	NAD(P)H-flavin oxidoreductase
TON_1599	TK2097	72.96	1.00E-56	211	RNA-binding protein
TON_1600	TK2098	85.53	0	704	ATPase
TON_1601	TK2099	58.86	1.00E-51	194	membrane-bound metal-dependent hydrolase
TON_1603	TK2100	90	2.00E-159	554	thioredoxin reductase
TON_1605	TK2101	84.27	0	782	4-aminobutyrate aminotransferase
TON_1606	TK2102	65.83	3.00E-59	220	membrane protein
TON_1607	TK2103	60.64	2.00E-31	125	hypothetical protein
TON_1608	TK2104	85.84	7.00E-106	375	deoxyribose-phosphate aldolase
TON_1609	TK2105	65.98	3.00E-35	139	hypothetical protein
TON_1611	TK0235	65.16	2.00E-126	444	permease
TON_1613	TK2106	91.86	0	764	eno phosphopyruvate hydratase
TON_1614	TK2109	83.94	3.00E-139	486	biotin synthase
TON_1615	TK2110	87.33	2.00E-75	273	transcriptional regulator
TON_1616	TK2111	78.26	2.00E-84	303	putative deoxyribonucleotide triphosphate pyrophosphatase
TON_1617	TK2112	92.55	4.00E-84	302	hypothetical protein
TON_1618	TK2113	58.25	6.00E-92	329	hypothetical protein
TON_1619	TK2114	59.15	2.00E-106	377	hypothetical protein
TON_1620	TK2115	75.54	3.00E-50	189	molybdopterin converting factor subunit 2
TON_1622	TK2117	80.6	3.00E-89	320	hypothetical protein
TON_1623	TK2118	82.95	2.00E-39	152	molybdopterin converting factor subunit 1
TON_1624	TK2119	85.71	4.00E-63	232	hypothetical protein
TON_1625	TK0169	63.58	3.00E-44	169	putative transcriptional regulator
TON_1628	TK2120	37.32	7.00E-51	193	hypothetical protein

TON_1629	TK2121	71.93	5.00E-69	252	hypothetical protein
TON_1630	TK2122	90.34	0	711	tRNA/rRNA cytosine-C5-methylase
TON_1631	TK2123	55.49	8.00E-91	326	membrane protein
TON_1632	TK2124	84.17	6.00E-139	485	ppnK inorganic polyphosphate/ATP-NAD kinase
TON_1633	TK2125	34.75	2.00E-36	144	membrane protein
TON_1634	TK2126	92.62	7.00E-162	561	putative DNA-binding/iron metalloprotein/AP endonuclease
TON_1635	TK1674	66.67	3.00E-62	229	hypothetical protein
TON_1636	TK2127	86.99	0	753	acyl-CoA synthetase large subunit
TON_1638	TK2128	83.33	9.00E-74	268	phosphopantetheine adenylyltransferase
TON_1640	TK2129	93.36	4.00E-111	392	triosephosphate isomerase
TON_1641	TK1904	85.96	6.00E-120	422	hypothetical protein
TON_1642	TK1903	86.59	0	2995	DNA polymerase II large subunit
TON_1643	TK1902	64.45	0	904	DNA polymerase II small subunit
TON_1644	TK1901	89.64	0	728	cdc6 cell division control protein 6
TON_1645	TK0133	57.51	9.00E-63	231	hypothetical protein
TON_1646	TK1900	67.08	2.00E-98	351	calcium-gated potassium channel protein
TON_1648	TK1898	77.11	3.00E-103	366	hypothetical protein
TON_1649	TK1897	63.78	2.00E-44	169	hypothetical protein
TON_1650	TK1896	83.06	8.00E-119	418	hypothetical protein
TON_1651	TK1895	95.33	1.00E-142	498	5'-methylthioadenosine phosphorylase
TON_1653	TK1891	84.25	0	742	N-ethylammelmine chlorohydrolase
TON_1654	TK0195	30.14	3.00E-24	105	hypothetical protein
TON_1655	TK1890	83.89	1.00E-74	271	hypothetical protein
TON_1659	TK1886	84.58	0	768	putative YjeF-related carbohydrate kinase
TON_1660	TK1884	82.43	0	778	alpha-amylase
TON_1661	TK1883	69.73	5.00E-74	268	transcriptional regulator
TON_1662	TK1882	92.08	2.00E-49	186	hypothetical protein
TON_1663	TK1881	92.15	9.00E-100	354	transcriptional regulator
TON_1665	TK1880	90.62	0	849	succinyl-CoA synthetase large subunit
TON_1666	TK1874	88.77	0	655	tryptophanyl-tRNA synthetase
TON_1667	TK1872	86.22	3.00E-116	410	2-hydroxyhepta-2,4-diene-1,7-dioate isomerase
TON_1671	TK1863	83.29	0	627	N6-adenine-specific DNA methylase
TON_1672	TK1857	85.99	3.00E-160	556	GTPase
TON_1674	TK1854	34.15	1.00E-42	166	hypothetical protein
TON_1676	TK1852	68.57	3.00E-140	490	hypothetical protein
TON_1677	TK1851	66.67	4.00E-112	396	hypothetical protein
TON_1678	TK1850	71.7	6.00E-65	238	FKBP-type peptidyl-prolyl cis-trans isomerase
TON_1680	TK1849	74.39	7.00E-73	265	hypothetical protein
TON_1683	TK1846	81.39	1.00E-154	537	hypothetical protein
TON_1684	TK1845	64.75	2.00E-144	504	hypothetical protein
TON_1686	TK1843	74.37	6.00E-95	339	carbohydrate/pyrimidine kinase
TON_1687	TK1840	92.99	0	934	carboxypeptidase
TON_1688	TK1837	85.22	2.00E-53	199	hypothetical protein
TON_1689	TK1836	74.39	5.00E-157	546	geranylgeranyl hydrogenase
TON_1690	TK1835	83.59	1.00E-95	341	pyrrolidone-carboxylate peptidase
TON_1691	TK1833	84.4	0	931	hypothetical protein
TON_1692	TK1821	93.5	0	633	ATPase
TON_1693	TK1824	53.47	8.00E-70	255	hypothetical protein

TON_1694	TK1820	66.67	3.00E-144	503	membrane-associated metalloprotease
TON_1695	TK1717	77.21	6.00E-134	469	glycosyltransferase
TON_1702	TK1819	39.48	5.00E-90	324	polysaccharide biosynthesis-like protein
TON_1709	TK1817	80.42	1.00E-126	444	cobalt/zinc/cadmium cation efflux pump protein
TON_1710	TK1814	84.6	2.00E-172	597	L-tyrosine decarboxylase
TON_1711	TK1813	80.26	9.00E-163	565	NapA-type sodium/hydrogen antiporter
TON_1713	TK1811	62.07	2.00E-78	284	hydrolase
TON_1714	TK1810	63.24	6.00E-62	229	hypothetical protein
TON_1716	TK1809	86.2	0	1170	4-alpha-Glucanotransferase
TON_1717	TK1556	86.84	2.00E-154	537	ATPase
TON_1718	TK1557	91.67	0	874	dehydrogenase
TON_1719	TK1558	68.51	2.00E-60	223	hypothetical protein
TON_1720	TK1559	66.84	5.00E-149	519	NapA-type sodium/hydrogen antiporter
TON_1721	TK1561	74.13	1.00E-61	228	hypothetical protein
TON_1722	TK1562	80.79	0	694	hisS histidyl-tRNA synthetase
TON_1729	TK1567	91.17	0	1620	alaS alanyl-tRNA synthetase
TON_1730	TK1570	66.41	4.00E-44	169	hypothetical protein
TON_1731	TK1571	66.67	4.00E-51	192	hypothetical protein
TON_1732	TK1572	75.4	2.00E-104	370	NGG1p interacting factor 3
TON_1733	TK1574	92.74	0	1084	histone acetyltransferase Elp3
TON_1736	TK1580	74.19	3.00E-67	246	hypothetical protein
TON_1737	TK1581	87.57	4.00E-87	312	hypothetical protein
TON_1740	TK1590	93.95	2.00E-137	480	hypothetical protein
TON_1742	TK1592	89.13	1.00E-71	260	S-adenosylmethionine decarboxylase
TON_1743	TK1593	73.24	3.00E-116	410	preprotein translocase subunit SecF
TON_1744	TK1594	70.81	0	714	secD preprotein translocase subunit SecD
TON_1745	TK1595	85.71	2.00E-109	387	Trk-type potassium transport system, NAD-binding component
TON_1747	TK1597	66.72	0	815	V-type ATP synthase subunit I
TON_1748	TK1598	85.19	2.00E-35	140	V-type ATP synthase subunit K
TON_1749	TK1599	73.4	5.00E-62	229	V-type ATP synthase subunit E
TON_1750	TK1600	67.59	8.00E-144	502	V-type ATP synthase subunit C
TON_1751	TK1601	78.43	4.00E-44	168	V-type ATP synthase subunit F
TON_1752	TK1602	95.38	0	1080	V-type ATP synthase subunit A
TON_1753	TK1603	98.27	0	922	V-type ATP synthase subunit B
TON_1754	TK1604	90.57	1.00E-105	374	V-type ATP synthase subunit D
TON_1755	TK1605	83.92	2.00E-132	463	flavoprotein
TON_1756	TK1606	84.15	1.00E-106	378	Methyl-accepting chemotaxis protein
TON_1757	TK1607	60.93	5.00E-134	469	hypothetical protein
TON_1758	TK1551	78.47	2.00E-128	451	ATPase
TON_1761	TK1807	88	8.00E-162	561	hypothetical protein
TON_1762	TK1806	73.39	2.00E-104	370	dihydroorotate dehydrogenase electron transfer subunit
TON_1763	TK1805	69.9	3.00E-167	580	dihydroorotase
TON_1765	TK1803	55.4	5.00E-102	363	oligopeptide transport system permease protein appB
TON_1766	TK1802	53.18	6.00E-130	456	dipeptide/oligopeptide ABC transporter permease
TON_1767	TK1801	89.97	3.00E-173	600	dipeptide/oligopeptide ABC transporter ATPase
TON_1768	TK1800	91.64	1.00E-178	617	dipeptide/oligopeptide ABC transporter ATPase
TON_1770	TK1798	77.56	1.00E-102	364	NAD synthetase

TON_1771	TK1797	79.64	3.00E-121	426	permease
TON_1772	TK1796	78.33	0	732	glnA glutamine synthetase
TON_1773	TK1795	63.7	1.00E-46	177	hypothetical protein
TON_1775	TK1793	32.2	2.00E-50	192	membrane protein
TON_1776	TK1792	65.48	2.00E-89	321	permease
TON_1777	TK1791	75.87	1.00E-159	555	DNA primase small subunit
TON_1778	TK1790	63.59	8.00E-142	495	DNA primase large subunit
TON_1779	TK1789	85.54	7.00E-112	395	ATPase
TON_1780	TK1788	51	5.00E-101	360	hypothetical protein
TON_1781	TK1787	55.35	3.00E-100	357	membrane protein
TON_1782	TK1786	75	1.00E-36	143	hypothetical protein
TON_1783	TK1785	93.94	0	711	putative tRNA/rRNA methyltransferase
TON_1784	TK1784	80.82	6.00E-111	392	hypothetical protein
TON_1785	TK1781	85.07	0	734	diaminopimelate aminotransferase
TON_1786	TK1780	79.82	8.00E-46	174	hypothetical protein
TON_1787	TK1779	86.31	0	893	oligopeptide transporter
TON_1788	TK1778	84.87	1.00E-142	497	hydrolase
TON_1789	TK1777	75.72	0	711	phosphopentomutase
TON_1790	TK1776	79.23	1.00E-58	217	hypothetical protein
TON_1791	TK1775	88.27	0	678	ABC-type maltodextrin transport system, ATPase component
TON_1792	TK1774	80.93	0	1741	pullulanase
TON_1793	TK1773	75.9	2.00E-148	517	ABC-type maltodextrin transport system permease
TON_1794	TK1772	83.39	1.00E-144	504	sugar transport inner membrane protein (malF-like)
TON_1795	TK1771	80.72	0	681	ABC-type maltodextrin transport system
TON_1796	TK1770	62.1	0	754	cyclomaltodextrinase
TON_1797	TK1769	84.04	5.00E-167	579	putative transcriptional regulator
TON_1798	TK1768	76.89	0	655	glycogen synthase
TON_1799	TK1767	84.17	7.00E-58	215	ribonuclease P protein component 2
TON_1800	TK1766	83.33	6.00E-170	588	hypothetical protein
TON_1803	TK1748	90.61	0	1968	ileS isoleucyl-tRNA synthetase
TON_1804	TK1746	90.27	4.00E-36	142	hypothetical protein
TON_1805	TK1745	71.64	2.00E-112	397	permease
TON_1810	TK1744	81.37	4.00E-45	171	hypothetical protein
TON_1811	TK1743	80.7	0	967	hypothetical protein
TON_1812	TK1741	75.06	0	647	tRNA CCA-pyrophosphorylase
TON_1813	TK1738	92.93	2.00E-88	317	2'-5' RNA ligase
TON_1815	TK1737	87.01	7.00E-76	275	xanthine/guanine phosphoribosyltransferase
TON_1817	TK1735	71.53	4.00E-46	175	hypothetical protein
TON_1818	TK1734	75.1	4.00E-111	393	sugar phosphatase
TON_1820	TK1718	48.83	0	669	oligosaccharyl transferase
TON_1821	TK1733	47.73	6.00E-100	356	lps biosynthesis rfbU related protein
TON_1822	TK1732	65.85	2.00E-133	467	dolichol-phosphate mannosyltransferase
TON_1823	TK1731	45.58	3.00E-71	261	glycosyltransferase
TON_1827	TK1818	54.34	2.00E-50	190	hypothetical protein
TON_1836	TK1708	84.71	3.00E-147	513	galE-2 UDP-glucose 4-epimerase
TON_1837	TK1711	80.66	1.00E-159	554	sugar-phosphate nucleotidyltransferase
TON_1850	TK1118	39.16	6.00E-19	85.9	nucleic acid-binding protein

TON_1852	TK1712	27.49	2.00E-33	135	lipopolysaccharide O-side chain biosynthesis protein
TON_1858	TK1721	28.96	6.00E-31	127	phosphatidylinositol glycantransferase-class A
TON_1861	TK1722	30.17	3.00E-12	65.1	glycosyltransferase
TON_1865	TK0111	93.22	1.00E-28	116	hypothetical protein
TON_1866	TK0112	95.6	3.00E-46	175	ef1B elongation factor 1-beta
TON_1869	TK2297	77.42	1.00E-111	395	hypothetical protein
TON_1870	TK2298	81.51	0	1060	anaerobic ribonucleoside triphosphate reductase
TON_1871	TK2299	76.37	1.00E-104	371	anaerobic ribonucleoside-triphosphate reductase activating enzyme
TON_1877	TK2303	95.99	0	962	chaperonin beta subunit
TON_1878	TK1298	90.93	2.00E-177	613	hypothetical protein
TON_1881	TK0175	83.98	5.00E-89	319	hypothetical protein
TON_1882	TK0178	82.28	0	1063	DNA helicase
TON_1884	TK0194	85.6	0	851	inosine 5'-monophosphate dehydrogenase
TON_1885	TK0297	75.28	0	694	L-aspartate oxidase
TON_1887	TK0296	86.09	1.00E-155	541	quinolinate synthetase
TON_1888	TK1314	39.45	2.00E-85	308	hypothetical protein
TON_1889	TK0218	85.51	7.00E-130	455	nicotinate-nucleotide pyrophosphorylase
TON_1890	TK0217	89.97	2.00E-162	563	pyridoxal biosynthesis lyase PdxS
TON_1891	TK0216	78.17	2.00E-88	317	glutamine amidotransferase subunit PdxT
TON_1892	TK0209	64.15	6.00E-11	58.2	hypothetical protein
TON_1893	TK0193	92.83	7.00E-167	578	GMP synthase
TON_1894	TK0190	92.02	1.00E-103	367	GMP synthase
TON_1895	TK1661	46.85	2.00E-57	214	hypothetical protein
TON_1900	TK1666	46.9	4.00E-34	135	hypothetical protein
TON_1901	TK1667	52.75	2.00E-47	181	membrane protein
TON_1902	TK1668	63.59	7.00E-53	199	hypothetical protein
TON_1903	TK1669	89.69	2.00E-174	604	cell division GTPase
TON_1904	TK1670	31.59	1.00E-88	320	hypothetical protein
TON_1905	TK1671	87.04	8.00E-170	588	tRNA-modifying protein
TON_1906	TK1673	81.05	1.00E-88	317	N5-glutamine methyltransferase
TON_1908	TK1675	77.72	2.00E-162	564	subtilisin-like serine protease
TON_1909	TK1695	91.67	2.00E-22	95.9	30S ribosomal protein S27ae
TON_1910	TK1696	85.71	7.00E-47	177	rps24e 30S ribosomal protein S24e
TON_1911	TK1697	71.75	2.00E-61	227	hypothetical protein
TON_1912	TK1698	75.76	3.00E-23	99	DNA-directed RNA polymerase subunit E''
TON_1913	TK1699	83.63	2.00E-79	286	DNA-directed RNA polymerase subunit E'
TON_1914	TK1700	97.19	1.00E-91	327	inorganic pyrophosphatase
TON_1918	TK1909	76.42	2.00E-157	547	dolichol-phosphate mannosyltransferase
TON_1919	TK1912	58.78	9.00E-177	612	putative leucine aminopeptidase
TON_1920	TK1913	74.53	1.00E-41	160	transcriptional regulator
TON_1921	TK1914	65.15	2.00E-76	277	exonuclease SbcD
TON_1923	TK1916	85.61	2.00E-135	473	carbon-nitrogen hydrolase
TON_1925	TK1917	61.07	1.00E-79	288	SAM-dependent methyltransferase
TON_1927	TK1920	65.12	2.00E-47	179	hypothetical protein
TON_1930	TK1923	57.09	1.00E-68	252	membrane protein
TON_1931	TK1924	67.8	4.00E-25	105	transcriptional regulator
TON_1932	TK1925	59.19	6.00E-64	236	membrane protein

TON_1933	TK1926	85.32	2.00E-50	189	hypothetical protein
TON_1934	TK1928	81.71	3.00E-165	573	diphthine synthase, DPH2 subunit
TON_1935	TK1933	79.7	3.00E-94	336	DNA methylase
TON_1936	TK1934	31.32	2.00E-17	82	hypothetical protein
TON_1938	TK1935	85	0	708	tRNA/rRNA cytosine-C5-methylase
TON_1939	TK1940	63.07	2.00E-97	347	small-conductance mechanosensitive channel
TON_1940	TK1941	53.99	1.00E-64	238	hypothetical protein
TON_1941	TK1943	66.67	6.00E-76	275	hypothetical protein
TON_1942	TK1944	83.72	1.00E-119	421	metal-dependent phosphohydrolase
TON_1943	TK1945	87.41	1.00E-66	243	nucleic acid-binding protein
TON_1944	TK1946	96.1	0	749	translation initiation factor IF-2
TON_1945	TK1951	87.2	9.00E-61	224	30S ribosomal protein S6e
TON_1946	TK1952	80.36	6.00E-15	71.2	preprotein translocase subunit SecG
TON_1947	TK1953	78.24	6.00E-80	289	hypothetical protein
TON_1948	TK1954	79.12	2.00E-81	294	GTP-binding protein
TON_1976	TK1955	84.42	4.00E-71	258	putative transcriptional regulator
TON_1949	TK1956	58.82	2.00E-109	388	hypothetical protein
TON_1950	TK1957	76.53	5.00E-122	429	ubiA prenyltransferase UbiA-like protein
TON_1951	TK1958	78.57	9.00E-57	210	hypothetical protein
TON_1952	TK1959	86.96	3.00E-101	360	replication factor A complex, RPA32 subunit
TON_1953	TK1960	83.87	6.00E-50	187	replication factor A complex, RPA14 subunit
TON_1954	TK1961	72.44	2.00E-137	481	replication factor A
TON_1955	TK1962	88.76	8.00E-91	325	putative transcriptional regulator
TON_1956	TK0107	84.44	1.00E-66	244	manganese-dependent transcription regulator
TON_1957	TK0157	81.66	0	640	xanthine/uracil permease
TON_1958	TK0158	74.17	3.00E-121	427	sugar-binding transport ATP-binding protein
TON_1959	TK0159	74.23	0	803	iron(III) ABC transporter permease
TON_1960	TK0160	75.51	3.00E-141	493	D-aminopeptidase
TON_1961	TK0170	87.14	9.00E-138	481	endonuclease IV
TON_1962	TK0171	40.12	2.00E-43	168	hypothetical protein
TON_1963	TK0172	71.43	2.00E-152	530	membrane protein
TON_1964	TK0173	84	4.00E-36	141	hypothetical protein
TON_1965	TK0174	88.78	2.00E-105	373	hypothetical protein
TON_1966	TK2304	92.89	0	878	tRNA/rRNA cytosine-C5-methylase

**TON_nc050 was classified to non-coding RNA by reversed annotation of TON_1978 in NCBI database.

Supplementary Table 8. The 5' UTR length of orthologous genes between *T. onnurineus* and *T. kodakarensis*

orthologous genes		UTR length (nt)	
TON	KOD	TON	KOD
TON_0002	TK0110	9	10
TON_0004	TK0108	-99	89
TON_0006	TK1992	0	1
TON_0007	TK0155	29	11
TON_0008	TK1658	25	11
TON_0012	TK1652	10	259
TON_0017	TK1649	8	9
TON_0018	TK1648	12	11
TON_0020	TK1643	-5	10
TON_0022	TK1642	10	12
TON_0023	TK1641	9	7
TON_0027	TK1637	45	28
TON_0033	TK1631	32	28
TON_0035	TK1629	9	9
TON_0037	TK1626	16	12
TON_0041	TK1622	30	22
TON_0042	TK1621	12	11
TON_0044	TK1619	16	11
TON_0045	TK1618	9	13
TON_0047	TK1616	9	9
TON_0058	TK1550	11	10
TON_0059	TK1549	11	9
TON_0061	TK1548	12	12
TON_0063	TK1546	80	33
TON_0064	TK1545	9	9
TON_0090	TK1517	23	33
TON_0092	TK1515	12	11
TON_0096	TK1509	24	117
TON_0113	TK1495	25	26
TON_0114	TK1494	27	23
TON_0115	TK1493	10	8
TON_0117	TK1492	24	26
TON_0118	TK1491	10	10
TON_0120	TK1489	15	16
TON_0123	TK1486	11	12
TON_0127	TK1483	10	12
TON_0131	TK1479	22	23
TON_0135	TK1470	10	10
TON_0136	TK1469	49	50
TON_0141	TK1461	126	128
TON_0143	TK1455	10	9
TON_0144	TK1454	69	69
TON_0145	TK1451	11	13
TON_0147	TK1442	247	265

TON_0149	TK1440	0	13
TON_0150	TK1439	9	8
TON_0154	TK1435	9	8
TON_0156	TK1432	59	59
TON_0157	TK1431	29	26
TON_0163	TK1430	13	13
TON_0164	TK1429	46	43
TON_0167	TK1427	11	12
TON_0169	TK1425	9	9
TON_0170	TK1424	11	10
TON_0174	TK0935	52	33
TON_0175	TK1422	11	9
TON_0176	TK1421	52	75
TON_0180	TK1417	42	52
TON_0185	TK1413	27	4
TON_0186	TK1412	0	0
TON_0187	TK1411	9	9
TON_0189	TK1408	10	37
TON_0190	TK1407	22	23
TON_0191	TK1406	27	27
TON_0192	TK1405	12	11
TON_0195	TK1404	0	73
TON_0196	TK1403	28	23
TON_0198	TK1400	21	48
TON_0200	TK1398	10	9
TON_0203	TK1393	18	17
TON_0208	TK1387	13	33
TON_0209	TK1386	0	0
TON_0210	TK1385	11	11
TON_0213	TK1380	30	30
TON_0227	TK1067	1	1
TON_0228	TK1093	10	11
TON_0231	TK1094	10	10
TON_0234	TK0825	23	63
TON_0235	TK1098	81	79
TON_0237	TK1100	28	25
TON_0240	TK1103	35	32
TON_0245	TK1109	24	9
TON_0249	TK1112	11	10
TON_0252	TK1114	0	0
TON_0258	TK2016	9	59
TON_0260	TK2009	9	12
TON_0261	TK2008	9	9
TON_0288	TK1991	9	10
TON_0305	TK1299	10	10
TON_0306	TK1297	11	10
TON_0309	TK1294	9	8
TON_0310	TK1293	45	46

TON_0311	TK1292	27	26
TON_0312	TK1289	7	8
TON_0313	TK1288	8	12
TON_0314	TK1287	9	10
TON_0318	TK1086	82	83
TON_0319	TK1085	75	73
TON_0327	TK0465	23	23
TON_0330	TK0469	12	4
TON_0332	TK0471	144	143
TON_0336	TK0475	23	23
TON_0342	TK0481	41	33
TON_0344	TK0493	28	32
TON_0348	TK0494	9	9
TON_0349	TK1195	12	12
TON_0352	TK1193	19	21
TON_0353	TK1192	10	9
TON_0361	TK1186	16	18
TON_0362	TK1183	11	118
TON_0363	TK1182	9	10
TON_0369	TK1177	25	24
TON_0371	TK1175	11	10
TON_0372	TK1174	10	10
TON_0374	TK1172	11	31
TON_0377	TK1169	11	11
TON_0381	TK1166	10	23
TON_0382	TK1165	10	11
TON_0383	TK1164	10	8
TON_0390	TK0941	47	26
TON_0392	TK0929	10	6
TON_0393	TK0928	9	14
TON_0394	TK0927	0	0
TON_0396	TK0921	14	14
TON_0397	TK0916	24	23
TON_0403	TK0908	12	10
TON_0404	TK0904	-83	0
TON_0405	TK0903	44	44
TON_0406	TK0902	59	129
TON_0408	TK0900	12	12
TON_0410	TK2095	10	97
TON_0411	TK0897	0	0
TON_0414	TK0894	28	107
TON_0415	TK0893	11	10
TON_0421	TK0887	5	31
TON_0422	TK0885	10	9
TON_0427	TK0877	46	42
TON_0429	TK0875	9	9
TON_0435	TK0871	10	10
TON_0437	TK0870	10	8

TON_0440	TK0869	-24	11
TON_0442	TK0866	10	10
TON_0447	TK0648	14	104
TON_0453	TK0617	7	3
TON_0455	TK0615	36	35
TON_0456	TK1196	10	10
TON_0466	TK1204	8	9
TON_0469	TK1207	10	11
TON_0471	TK1209	0	0
TON_0484	TK1212	8	8
TON_0498	TK1226	54	40
TON_0499	TK1227	25	25
TON_0502	TK1231	10	289
TON_0503	TK1232	11	12
TON_0504	TK1234	10	10
TON_0507	TK1239	31	25
TON_0509	TK1241	4	11
TON_0511	TK1246	40	40
TON_0512	TK1247	14	11
TON_0514	TK1249	9	9
TON_0517	TK1251	46	46
TON_0523	TK1259	22	20
TON_0524	TK1260	44	219
TON_0525	TK1261	11	9
TON_0528	TK1263	10	9
TON_0529	TK1264	24	22
TON_0537	TK2072	53	52
TON_0544	TK1569	23	77
TON_0546	TK0865	24	24
TON_0547	TK0569	50	9
TON_0549	TK1267	0	0
TON_0553	TK1268	57	58
TON_0554	TK1269	68	67
TON_0555	TK1270	10	9
TON_0560	TK0545	25	32
TON_0565	TK0548	10	10
TON_0568	TK0550	9	10
TON_0569	TK0551	11	11
TON_0573	TK1053	0	112
TON_0579	TK1049	10	10
TON_0581	TK1120	0	0
TON_0588	TK1131	21	23
TON_0589	TK1135	11	9
TON_0590	TK1137	0	0
TON_0593	TK0656	7	25
TON_0600	TK0663	22	86
TON_0601	TK0664	12	12
TON_0602	TK0444	16	10

TON_0606	TK0436	11	10
TON_0610	TK0424	0	0
TON_0611	TK0423	10	11
TON_0612	TK1048	11	13
TON_0613	TK0764	1	1
TON_0614	TK0763	10	9
TON_0615	TK0762	0	0
TON_0619	TK0379	1	1
TON_0620	TK0378	30	27
TON_0628	TK0774	0	0
TON_0639	TK0765	9	10
TON_0649	TK0969	15	39
TON_0650	TK0968	0	11
TON_0651	TK0967	10	10
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TON_0659	TK0955	9	10
TON_0660	TK0510	11	11
TON_0661	TK0509	10	10
TON_0662	TK0508	40	39
TON_0670	TK0503	230	18
TON_0671	TK0502	24	24
TON_0673	TK0497	10	1
TON_0675	TK0422	-38	7
TON_0677	TK1274	31	29
TON_0681	TK0862	9	113
TON_0688	TK0853	-44	9
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TON_0701	TK0671	0	0
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TON_0707	TK0678	30	209
TON_0714	TK0358	11	2
TON_0718	TK0363	11	31
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TON_0743	TK1039	9	9
TON_0744	TK1040	39	31
TON_0745	TK0029	8	10
TON_0746	TK0069	17	109
TON_0747	TK0070	29	33
TON_0748	TK0071	1	1
TON_0752	TK0308	26	118
TON_0755	TK0309	32	32
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TON_0757	TK0793	21	10

TON_0767	TK0802	21	10
TON_0771	TK0806	9	63
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TON_0773	TK0808	10	7
TON_0779	TK1065	10	12
TON_0780	TK0812	9	14
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TON_0786	TK1055	9	10
TON_0790	TK0512	11	10
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TON_0984	TK0571	39	39
TON_0987	TK0574	10	9
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TON_0994	TK1143	10	13
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TON_1191	TK0036	93	67
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TON_1296	TK0185	20	16
TON_1298	TK1750	26	24
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TON_1358	TK1691	31	31
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TON_1472	TK1973	10	9
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TON_1480	TK1982	37	10
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TON_1487	TK2025	36	34
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TON_1498	TK2163	73	71
TON_1503	TK0130	5	13
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TON_1516	TK2141	2	11
TON_1517	TK2142	23	22
TON_1519	TK2144	9	9
TON_1520	TK2145	29	26
TON_1522	TK2148	9	32
TON_1523	TK2149	0	0
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TON_1709	TK1817	8	104
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TON_1721	TK1561	0	0
TON_1722	TK1562	12	11
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TON_1736	TK1580	-24	0
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TON_1765	TK1803	40	53
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TON_1800	TK1766	22	14
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TON_1901	TK1667	13	18
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TON_1948	TK1954	10	13
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TON_1956	TK0107	173	11
TON_1960	TK0160	9	34
TON_1966	TK2304	0	0
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