The identification of DNA binding regions of the σ54 factor using artificial neural network

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Abstract

Transcription of many bacterial genes is regulated by alternative RNA polymerase sigma factors as the sigma 54 (σ54). A single essential σ promotes transcription of thousands of genes and many alternative σ factors promote transcription of multiple specialized genes required for coping with stress or development. Bacterial genomes have two families of sigma factors, sigma 70 (σ70) and sigma 54 (σ54). σ54 uses a more complex mechanism with specialized enhancers-binding proteins and DNA melting and is well known for its role in regulation of nitrogen metabolism in proteobacteria. The identification of these regulatory elements is the main step to understand the metabolic networks. In this study, we propose a supervised pattern recognition model with neural network to identify Transcription Factor Binding Sites (TFBSs) for σ54. This approach is capable of detecting σ54 TFBSs with sensitivity higher than 98% in recent published data. False positives are reduced with the addition of ANN and feature extraction, which increase the specificity of the program. We also propose a free, fast and friendly tool for σ54 recognition and a σ54 related genes database, available for consult. S54Finder can analyze from short DNA sequences to complete genomes and is available online. The software was used to determine σ54 TFBSs on the complete bacterial genomes database from NCBI and the result is available for comparison. S54Finder does the identification of σ54 regulated genes for a large set of genomes allowing evolutionary and conservation studies of the regulation system between the organisms.

Keywords: Artificial intelligence, pattern recognition, feature extraction.

1. Background

Prokaryotic transcription process starts from the recognition of binding site on DNA sequence by RNA polymerase. The DNA dependent RNA Polymerase (RNAP) is the main enzyme in the transcription and gene expression [1]. It is composed of two subunits, the core enzyme α2ββ with the catalytic site of polymerization and the sigma factors, responsible for promoter recognition [1]. When the enzyme is linked with the sigma factor protein, the complex is called of RNAP holoenzyme (α2ββ'σ) and is ready for transcription [2].
Bacterial genomes have two families of sigma factors, sigma 70 (σ70) and sigma 54 (σ54). σ70 is the best studied and is responsible for transcription of the most bacterial genes in the exponential growth [3]. σ54 uses a more complex mechanism with specialized enhancers-binding proteins and DNA melting and is well known for its role in regulation of nitrogen metabolism in proteobacteria [4].

Each sigma factor recognizes different binding sites in the DNA sequence and is responsible for changing the transcription pattern mediated thorough redirection of transcription initiation [5]. The identification of these regulatory elements is the main step to understand the metabolic networks [6].
A single essential σ promotes transcription of thousands of genes and many alternative σ factors promote transcription of multiple specialized genes required for coping with stress or development [7].
The number of sigma factors varies from one in *Mycoplasma genitalia* [8], seven in *Escherichia coli* [9] to more than 60 in *Streptomyces coelicolor* [10].
It was already shown that σ70 recognize a consensus sequence of hexamers placed between -10/-35 nucleotides upstream the start site and σ54 recognize high GC sequences located -24/-12 nucleotides upstream from the start site [11].

The σ54 factor has an important role in agriculture, due to the control of gene transcription, regulating the nitrogen fixation process that provides ammonia for the plant. This process dispenses chemical soil fertilization, reduces costs and protects the environment [12].
The classical approach for promoter prediction involves the development of algorithms that uses position weight matrices (PWMs) [13-17]. More recently, several methods propose the automatic identification of Transcription Factor Binding Sites (TFBSs) like Gibbs sampling algorithm [18, 19], genetic algorithms [20], and statistical over-representation [21, 22]. These methods works with single and double motifs identification but with a high false positive rate [23], and don't allow complete genome sequences.

In this study, we propose the use of a supervised pattern recognition model with neural network to identify TFBSs for σ54 for whole genome sequence. The advantages of using neural network in pattern recognition include its generalization ability considering both the nonlinear and the diffuse nature of the datasets [24] and also can achieve high performance when processing extended genome sequences [25].

We also propose a free, fast and friendly tool for σ54 recognition and a σ54 database available for consult.

2. Methods

2.1. Candidates sequences for σ54 TFBS and features extraction

The set of intergenic regions to search for σ54 TFBSs candidates was defined as a range of 200 bases from the transcriptional start site of each coding sequence. Candidate sequences were set on 16 bases. The selection was done considering the presence of conserved bases (GG and GC) located in -14/-15 and -2/-3 positions [11]. 18 features were extracted from the candidate sequences. The first sixteen were the nucleotides encoded to numbers (A: 0.0; C: 1.0; G: 2.0; T: 3.0); the 17th feature was the result of the alignment of the candidate sequence with the consensus sequence, extracted from experimentally confirmed sequences available in literature [11, 26, 27]; and the 18th feature was the result of the alignment of the sequence candidate with a consensus of the less frequent bases (present in the true sequences- called as anti-consensus).

2.2. Training data set

Networks were trained using groups of positive sequences collected in the literature and sequences artificially generated, considered as negatives. Those sequences were generated using the MatLab algorithm of string generation. The artificially generated strings were divided into two groups, the first group have only nucleotide base pairs and the same string length of positive sequences. In other side the second group uses also the same length, but it also includes the conserved base pairs shown in the positive sequences.
Positive patterns were defined by sequences experimentally retrieved [26, 27] and a database with 5662 sequences from more than 60 genomes, available in www.sigma54.ca web site [28]. The artificial dataset comprised two groups of random sequences. The groups had the same number of bases observed in the positive pattern and differ by the presence and absence of the highly conserved bases (GG and GC).

2.3. ANN test

Tests with MLP (*Multilayer perceptron*), FAN (*Free Associative Neurons*), RBF (*Radial Basis Function*) and SVM (*Support Vector Machine*) neural networks were performed. RBF and SVM did not show better results than MLP and FAN neural networks. The best architecture used to classify the sequences using MLP neural network had 7 neurons in the first hidden layer and three neurons in the second one. For FAN neural network we used the default setting with fuzzy set support of 100, diffuse neighboring of 6, shuffling the training set every time. The accuracy for each neural network tested on the same database was 95.19% for MLP and 97.95% for the chosen one, the FAN network (**Table 1**).

Table 1. Performance comparison for neural networks.

	MLP	**FAN**
True positives, %	92.15	**95.51**
False positives, %	3.29	2.09
True negatives, %	96.71	97.91
False negatives, %	7.85	4.49
Accuracy, %	95.19	**97.95**

The ANN test was performed using 3 datasets from published studies comprising 281 proposed σ54 TFBS sequences that were not used for training (**Table 2**). For more recent data, the sensitivity test showed more than 98% of right predictions for σ54 binding sites sequences. The decrease of sensitivity observed on Barrios database was due to the presence of candidate sequences in the σ54 TFBS database.

Table 2. ANN sensitivity in comparison with published data.

Dataset	ANN Positive	Total	Sensitivity (%)
Studholme, 2000 [29]	34	34	100
Leang, 2009 [30]	90	91	98.9
Barrios, 1999 [11]	127	156	81.4

The sequences that did not had the conserved bases GG and GC and without known amino acids, were excluded from the test.

2.4. S54Finder tool

S54Finder is a fast tool developed to work with complete genome sequences. It works with annotated sequences stored in a gbk file format parsing the information to perform the analysis. If the query is a flat fasta file the software uses an in-house ORFinder to identify and annotate the coding regions and extract the intergenic sequences. The output of the S54Finder is 2 files, a new gbk file with the predicted σ54 sequences marked and a text file with the predicted sequences and related ORFs positions to download.

3. Results and discussion

There is no TFBSs consensus for σ54, with only few sequences confirmed in laboratory. Several studies present candidate sequences as consensus but the size usually is not the same, since it differs between species. What is observed is that among the vast majority of the sequences there are at least 4 (GG and GC) conserved bases. This scenario turns difficult the pattern recognition since it increases the false positive rate. To overcome this problem we added the anti-consensus feature, which allow us to decrease candidate number usually observed in other tools. To test S54Finder false positive rate we used 20^{12} sequences generated by combination of bases preserving the high conserved ones (GG and GC). The results showed that S54Finder identified, from the total of possibilities, 1.89% of σ54 candidate sequences. This result confirms a high specificity of the S54Finder software.

We tried to compare S54Finder with other available tools such as GenomeMatScan, but the test was not possible since GenomeMatScan does not perform whole genome predictions. The main features between the two software applications are contrasted in **Table 3**.

Table 3. Comparison between S54Finder and GenomeMatScan software.

	S54Finder	GenomeMatScan
Web version	Yes	Yes
Local processing	Yes	No
Method	FAN	HMM
Data entry	Genbank file (.gbk)	Input data copy-pasted into the browser
Results	Output in Genbank formats (.gbk), MatLab (.mat) and text	Shown in browser
Processing large regions of DNA	Yes (complete genomes)	No

HMM: Hidden Markov Models.

The distinguish feature of S54Finder is the ability to perform fast whole genome predictions. This allowed us to search for TFBSs in complete bacterial genomes across the entire NCBI database. From the complete genomes, s54finder obtained 79626 CDS sequences which could be ranked by the level of TFBSs occurrence next to homologous genes of different species.
An in house tool was employed to cluster the CDS. A set of 9417 homologous CDS groups, within 2 or more homologous occurrences were determined. The minimal relative score considered to group a pair of genes was 0.5. To determine the annotation to be considered for each gene cluster we implemented a kmeans to support the choice in the set of original annotations. The generated data – TFBSs, CDSs, annotation, Homologous clusters – were gathered to perform a FASTA/BLAST formatted data base available and a web site (http://200.236.3.16/s54.php), that is available to validate the S54Finder predictions. **Table 4** presents a list with the 29 groups that occurred 100 or more times. The glutamine synthetase protein and the nitrogen regulatory protein P II appears in the top of the list with 379 and 329 occurrences, respectively. Due to the importance of these proteins in the biologic nitrogen fixation their presence in the top predicted list was expected. We proposed a score to determine the correlation of a word present in an NCBI annotation found by s54finde with conserved clusters of genes related to TFBS. A binary matrix where columns represent the occurrence of each word and the lines the homologous groups, was joined to a column containing the number of occurrences of the respective homologous group, T. The ws54score of a word is then the Pearson correlation between the column that represent the word and homologous amount column, T. Our purpose was to identify possibly related words to σ54 regulated genes. Highest ws54scores were associated to gene names like glnL (0.3711), glnB (0.2959), glnE (0.2959) and PII (0.2959), whose association with the σ54 promoter is well known. However, words like MtrA and Thi1, also appeared in the top 10 list though not common in the literature; unknown conserved domains also appeared - DUF2233 (4) and DUF2971 (11) - in the top 15 list and we suppose they are likely related to the σ54. The list with annotation words and s54scores is in the **Additional File**.

4. Conclusion

The S54Finder presents good results regarding research in bacterial genomes. The main advantage is the fact that it is faster than other available tools. The pre-selection of candidates without the use of neural networks has shown that the pattern of conservation, based on published sequences and biologically confirmed, is capable of locating binding sites in bacterial genomes, but generates many false positives.

False positives are reduced with the addition of ANN and feature extraction, which increase the specificity of the program. S54Finder allows the user the identification of σ54-regulated genes for a large set of genomes allowing evolutionary and conservation studies of the regulation system between the organisms. The tool and the σ54 database are freely available in web.

5. Authors' contributions

Following are the contributions of the authors to the work described in this paper. LMF: acquisition of data; analysis and interpretation of data; RTR: made substantial contributions to conception and design of the study; analysis and interpretation of data; JNM: have been involved in drafting the manuscript or revising it critically for important intellectual content; have given final approval of the version to be published; VAW: have been involved in drafting the manuscript or revising it critically for important intellectual content; have given final approval of the version to be published; ICRSW:

have been involved in drafting the manuscript or revising it critically for important intellectual content; have given final approval of the version to be published; PAB: analysis and interpretation of data; RV: participated in the website development and revising the manuscript; LUR: made substantial contributions to conception and design of the study. All authors read and approved the final manuscript.

6. Acknowledgements

CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico) and CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) supported this work.

7. References

[1] Gallegos MT, Cannon WV, Buck M. Functions of the sigma (54) region I in trans and implications for transcription activation. J Biol Chem. 1999; 274(36):25285–90.
[2] Murakami KS, Darst SA. Bacterial RNA polymerases: the whole story. Curr Opin Struct Biol. 2003; 13(1):31–9.
[3] Lonetto M, Gribskov M, Gross CA. The sigma 70 family: sequence conservation and evolutionary relationships. J Bacteriol. 1992; 174 (12):3843–9.
[4] Buck M, Gallegos M-T, Studholme DJ, Guo Y, Gralla JD. The Bacterial Enhancer-Dependent ς54(ςN) Transcription Factor. J Bacteriol. 2000; 182(15):4129–36.
[5] Salzberg SL, Delcher AL, Kasif S, White O. Microbial gene identification using interpolated Markov models. Nucleic Acids Res. 1998; 26(2):544–8.
[6] Tompa M, Li N, Bailey TL, Church GM, De Moor B, Eskin E, Favorov AV, Frith MC, Fu Y, Kent WJ, Makeev VJ, Mironov AA, Noble WS, Pavesi G, Pesole G, Régnier M, Simonis N, Sinha S, Thijs G, van Helden J, Vandenbogaert M, Weng Z, Workman C, Ye C, Zhu Z. Assessing computational tools for the discovery of transcription factor binding sites. Nat Biotechnol. 2005; 23(1):137–44.
[7] Feklistov A, Sharon BD, Darst SA, Gross CA. Bacterial Sigma Factors: A Historical, Structural, and Genomic Perspective. Annu Rev Microbiol. 2014; 68: 357-376.
[8] Fraser CM, Gocayne JD, White O, Adams MD, Clayton RA, Fleischmann RD, Bult CJ, Kerlavage AR, Sutton G, Kelley JM, Fritchman RD, Weidman JF, Small KV, Sandusky M, Fuhrmann J, Nguyen D, Utterback TR, Saudek DM, Phillips CA, Merrick JM, Tomb JF, Dougherty BA, Bott KF, Hu PC, Lucier TS, Peterson SN, Smith HO, Hutchison CA 3rd, Venter JC. The minimal gene complement of Mycoplasma genitalium. Science, 1995; 270: 397-403.
[9] Ishihama A. Functional modulation of Escherichia coli RNA polymerase. Annu Rev Microbiol., 2000; 54: 499-518.
[10] Bentley SD, Chater KF, Cerdeno-Tarraga AM, Challis GL, Thomson NR, James KD, Harris DE, Quail MA, Kieser H, Harper D, Bateman A, Brown S, Chandra G, Chen CW, Collins M, Cronin A, Fraser A, Goble A, Hidalgo J, Hornsby T, Howarth S, Huang CH, Kieser T, Larke L, Murphy L, Oliver K, O'Neil S, Rabbinowitsch E, Rajandream MA, Rutherford K, Rutter S, Seeger K, Saunders D, Sharp S, Squares R, Squares S, Taylor K, Warren T, Wietzorrek A, Woodward J, Barrell BG, Parkhill J, Hopwood DA. Complete genome sequence of the model actinomycete Streptomyces coelicolor A3(2). Nature, 2002; 417: 141-147.
[11] Barrios H, Valderrama B, Morett, E. Compilation and analysis of s54-dependent promoter sequences. Nucleic Acids Res., 1999; 27: 4305-4313.
[12] Postgate JR. Biological nitrogen fixation: Fundamental. Phil. Trans. R. Soc. Lond., 1982; 296: 375-85.
[13] Li QZ, Lin H. The recognition and prediction of s70 promoters in Escherichia coli K-12. Journal of Theoretical Biology. 2006; 242: 135–141.
[14] Tsunoda T, Takagi T. Estimating transcription factor bindability on DNA. Bioinformatics, 1999; 15(7):622–30.
[15] Messeguer X, Escudero R, Farré D, Núñez O, Martínez J, Albà MM. PROMO: detection of known transcription regulatory elements using species-tailored searches. Bioinformatics, 2002; 18(2):333–4.
[16] Mathelier A, Zhao X, Zhang AW, Parcy F, Worsley-Hunt R, Arenillas DJ, Buchman S, Chen CY, Chou A, Ienasescu H, Lim J, Shyr C, Tan G, Zhou M, Lenhard B, Sandelin A, Wasserman WW. JASPAR 2014: an extensively expanded and updated open-access database of transcription factor binding profiles. Nucleic Acids Res. 2014; 42: D142-7.
[17] Cartharius K, Frech K, Grote K, Klocke B, Haltmeier M, Klingenhoff A, Frisch M, Bayerlein M, Werner T. MatInspector and beyond: promoter analysis based on transcription factor binding sites. Bioinformatics, 2005; 21(13):2933–42.
[18] Frith MC, Hansen U, Spouge JL, Weng Z. Finding functional sequence elements by multiple local alignment. Nucleic Acids Res., 2004; 32(1):189–200.
[19] Roth FP, Hughes JD, Estep PW, Church GM. Finding DNA regulatory motifs within unaligned noncoding sequences clustered by whole-genome mRNA quantitation. Nat Biotechnol., 1998; 16(10):939–45.
[20] Gertz J, Riles L, Turnbaugh P, Ho S-W, Cohen BA. Discovery, validation, and genetic dissection of transcription factor binding sites by comparative and functional genomics. Genome Res., 2005; 15(8):1145–52.
[21] Van Helden J, André B, Collado-Vides J. Extracting regulatory sites from the upstream region of yeast genes by computational analysis of oligonucleotide frequencies. J Mol Biol., 1998; 281(5):827–42.
[22] Touzain F, Schbath S, Debled-Rennesson I, Aigle B, Kucherov G, Leblond P. SIGffRid: A tool to search for sigma factor binding sites in bacterial genomes using comparative approach and biologically driven statistics. BMC Bioinformatics, 2008; 9(1):73.
[23] de Avila e Silva S, Gerhardt GJ, Echeverrigaray S. Rule's extraction from neural networks applied to the prediction and recognition of prokaryotic promoters. 2011; 34: 353-360.
[24] Lakshmi KV, Padmavathamma M. Modeling an Expert System for Diagnosis of Gestational Diabetes Mellitus Based On Risk Factors. J Computer Eng (IOSRJCE), 2013; 8: 29-32.
[25] Cotik, V, Zaliz, RR, Zwir, I. A hybrid promoter analysis methodology for prokaryotic genomes. Fuzzy Sets and Systems. 2005; 1:83–102.

[26] Souza JA. Reconhecimento de padrões usando indexação recursiva. Tese de Doutorado, Universidade Federal de Santa Catarina, 1999.
[27] Schwab S, Souza EM, Yates MG, Persuhn DC, Steffens MBR, Chubatsu L S, Pedrosa FO, Rigo LU. The glnAntrBC operon of Herbaspirillum seropedicae is transcribed by two oppositely regulated promoters upstream of glnA. Can. J. Microbiol., 2007; 53: 100-105.
[28] Conway K. s54 Promoter data base. http://www.sigma54.ca/PromoterApp/Web/data.aspx. Accessed: 16 Feb 2012.
[29] Studholme DJ, Wigneshwereraraj SR, Gallegos MT, Buck M. Functionality of Purified sN (s54) and a NifA-Like Protein from the Hyperthermophile Aquifex aeolicus. J Bacteriol. 2000; 182 (6): 1616-1623.
[30] Leang C. Krushkal J, Ueki T, Puljic M, Sun J, Juárez K, Núñez C, Reguera G, Didonato R, Postier B, Adkins RM, Lovley DR. Genome-wide analysis of the RpoN regulon in Geobacter sulfurreducens. BMC Genomics. 2009; 10: 331.

Order	Word	Score
1	glnL	0.3711
2	MtrA	0.3398
3	ThiI	0.3398
4	DUF2233	0.3398
5	decaheme	0.3398
6	GlnB4	0.29591
7	GlnE	0.29591
8	MEMO	0.29591
9	urydylation	0.29591
10	ATase	0.29591
11	DUF2971	0.29591
12	P2	0.29591
13	putative	0.28231
14	fused	0.27864
15	GlnA	0.27173
16	of	0.26583
17	subunit	0.26494
18	GlnG	0.25621
19	system	0.25578
20	BipA	0.2491
21	GlnK	0.24069
22	ISBma2	0.24005
23	HscA	0.23875
24	for	0.23822
25	Pentoside	0.23811
26	regulator	0.23229
27	QueC	0.23164
28	membrane	0.22939
29	component	0.22563
30	specific	0.22547
31	AmtB	0.22453
32	transcriptional	0.21938
33	muropeptide	0.21612
34	transporter	0.21596
35	binding	0.2138
36	DNA	0.21159
37	ammonia	0.21119
38	by	0.21095
39	periplasmic	0.20893
40	YjeF	0.20772
41	interface	0.20637
42	phosphate	0.2039
43	family	0.19994
44	protein	0.19695
45	permease	0.19668
46	NtrC	0.19423
47	RarD	0.19317
48	in	0.19213
49	Flags	0.18908
50	ClpX	0.18842
51	queuosine	0.18842
52	glutamate	0.18803

53	unknown	0.18234
54	type	0.18205
55	dependent	0.182
56	function	0.18026
57	SufB	0.17839
58	xanthine	0.17827
59	diffusion	0.17625
60	murein	0.17586
61	Empty	0.17556
62	dehydrogenase	0.17545
63	galaxtoside	0.17522
64	connecting	0.17522
65	HBP	0.17522
66	PdxB	0.17522
67	locus	0.17241
68	ABC	0.17221
69	biosynthesis	0.17205
70	pectin	0.17205
71	polar	0.17027
72	inner	0.17015
73	like	0.17004
74	GlnB	0.16994
75	kinase	0.1689
76	PAP2	0.16888
77	acid	0.16851
78	Hexuronide	0.1685
79	tricarboxylate	0.1683
80	PTS	0.16826
81	PadR	0.16758
82	RecG	0.16667
83	sensing	0.16576
84	III	0.16425
85	YVTN	0.16424
86	ExaC	0.16424
87	achromobactin	0.16424
88	XkdN	0.16424
89	TctA	0.16424
90	synthetase	0.16413
91	formation	0.16385
92	sigma	0.16298
93	and	0.16239
94	20S	0.16059
95	nitrogen	0.1603
96	GTP	0.15945
97	Predicted	0.15833
98	portion	0.15793
99	glucitol	0.15752
100	II	0.15708
101	NR	0.15673
102	reductase	0.15659
103	arsenate	0.1557
104	acetylmuramoyl	0.15565
105	FhlA	0.1541
106	TypA	0.15374

107	assimilatory	0.15368
108	hydrolase	0.15311
109	Tyr	0.15262
110	chain	0.15088
111	guanosine	0.15075
112	RNA	0.15043
113	CsiR	0.14888
114	superfamily	0.14845
115	LivK	0.14829
116	NS2	0.14758
117	factor	0.14732
118	beta	0.14723
119	diaminohydroxyphosphoribosylaminopyrimidine	0.14694
120	FeS	0.14671
121	gamma	0.14658
122	protoporphyrin	0.14647
123	camphor	0.14609
124	nucleotide	0.14574
125	ATP	0.14555
126	modulated	0.14538
127	ISSfl2	0.145
128	into	0.145
129	coproporphyrinogen	0.14478
130	AsmA	0.14478
131	IIBC	0.14426
132	ribosomal	0.14386
133	StyLTI	0.14321
134	PrpR	0.14321
135	PrpB	0.14321
136	repressor	0.14184
137	CrcB	0.141
138	efflux	0.14097
139	RetS	0.14047
140	IS1665	0.14047
141	UrtC	0.14047
142	UrtE	0.14047
143	uera	0.14047
144	AmiC	0.14047
145	TTT	0.14047
146	invasin	0.13984
147	La	0.1396
148	signal	0.13906
149	Precursor	0.13905
150	activase	0.13903
151	carboxypeptidase	0.138
152	TC	0.13733
153	multidrug	0.13704
154	IS902	0.13694
155	IS116	0.13694
156	54	0.13639
157	operon	0.13596
158	interaction	0.13523
159	bound	0.13383
160	lyase	0.13326

161	synthase	0.13302
162	EIIB	0.13298
163	transaldolase	0.13284
164	Lysine	0.13231
165	chb	0.13224
166	chitobiose	0.13224
167	YeaH	0.13224
168	AstC	0.13224
169	ArgM	0.13224
170	pentulose	0.13224
171	tyrosyl	0.1317
172	Two	0.1316
173	Ntr	0.13142
174	alpha	0.13059
175	Ile	0.13039
176	chelatase	0.12978
177	Fis	0.12977
178	sigma54	0.1296
179	accessory	0.12953
180	resistance	0.12938
181	thioesterase	0.12915
182	ArgT	0.12883
183	HU	0.12872
184	containing	0.12778
185	val	0.12735
186	leu	0.12735
187	arginine	0.12685
188	succunate	0.12675
189	CoxI	0.12675
190	PhoQ	0.12675
191	nifK	0.12675
192	NifH2	0.12675
193	nifD	0.12675
194	DedA	0.12648
195	with	0.12616
196	racemase	0.12577
197	lytic	0.12495
198	acetaldehyde	0.12453
199	oligosaccharide	0.12401
200	salt	0.12401
201	CelA	0.12401
202	YeaG	0.12401
203	autokinase	0.12401
204	LicB	0.12401
205	TrmB	0.12401
206	sulfur	0.12294
207	transmembrane	0.12257
208	IIA	0.1224
209	oxidoreductase	0.12235
210	the	0.12145
211	amide	0.12137
212	residue	0.12107
213	expression	0.12063
214	IS110	0.12063

215	glucan	0.12051
216	Mg	0.12051
217	HypA	0.1203
218	IIC	0.11999
219	CheR	0.11989
220	enzyme	0.11979
221	isoenzymes	0.11913
222	NtrB	0.11898
223	domain	0.11895
224	outer	0.11894
225	protease	0.11873
226	RbsR	0.11852
227	inversion	0.11852
228	HBsu	0.11852
229	HupB	0.11852
230	DUF1481	0.11852
231	aminotransferase	0.11816
232	ZraS	0.11784
233	ZraR	0.11784
234	alternative	0.11767
235	nitrite	0.11767
236	histidine	0.11719
237	Methyltransferase	0.11677
238	ligase	0.11673
239	Peptidase	0.11637
240	sensitivity	0.11629
241	terminal	0.11584
242	SsnA	0.11578
243	selenate	0.11578
244	YgfK	0.11578
245	YgfM	0.11578
246	isomerase	0.11561
247	NifA	0.11526
248	polymerase	0.11487
249	L20	0.11461
250	orf	0.11457
251	NifB	0.1145
252	LivJ	0.11396
253	Meso	0.11396
254	deacylase	0.11343
255	F33	0.11304
256	ftsX	0.11304
257	ybl142	0.11304
258	purH	0.11304
259	HisQ	0.11292
260	amino	0.11279
261	mannitol	0.1124
262	SrlR	0.11212
263	NorV	0.11212
264	NorR	0.11212
265	FlRd	0.11212
266	AexT	0.11212
267	TTSS	0.11212
268	proW	0.11212

269	CP	0.11202
270	iron	0.11182
271	mandelate	0.11179
272	DUF400	0.11137
273	small	0.11101
274	muconate	0.10996
275	PII	0.10996
276	phenylalanyl	0.10953
277	Organism	0.10922
278	translocation	0.10883
279	tripartite	0.10869
280	high	0.10853
281	cation	0.10845
282	NAD	0.10844
283	lipopolysaccharide	0.10815
284	HAAT	0.10814
285	manno	0.10813
286	transglycosylase	0.10813
287	Response	0.108
288	UDP	0.1076
289	cysQ	0.10755
290	DUF1107	0.10755
291	PapS	0.10755
292	amidophosphoribosyltransferase	0.10744
293	StpA	0.10664
294	COG1238	0.10664
295	HybF	0.10664
296	HypB	0.10664
297	HypE	0.10664
298	Willebrand	0.10661
299	von	0.10661
300	pyridoxal	0.10577
301	substances	0.10556
302	mod	0.10556
303	insertion	0.10553
304	fructose	0.10544
305	lipoprotein	0.10518
306	molybdochelatase	0.10501
307	processing	0.10485
308	Cbl	0.10481
309	Nac	0.10481
310	yersiniabactin	0.10481
311	933U	0.10481
312	irp3	0.10481
313	UV	0.10481
314	complex	0.10458
315	decarboxylase	0.10394
316	Fe	0.10375
317	HisJ	0.10341
318	hydrogenase	0.10329
319	MltA	0.10311
320	ubiquinol	0.10234
321	HycA	0.1022
322	glycyl	0.10204

323	Cyclopropane	0.10187
324	assembly	0.10182
325	tRNA	0.10177
326	guanine	0.10167
327	substrate	0.10143
328	incorporation	0.10004
329	acyl	0.10003
330	MipA	0.099719
331	helicase	0.099151
332	sugar	0.098995
333	fixation	0.098907
334	hydroxylase	0.09865
335	ferredoxin	0.098486
336	Glc	0.098409
337	csgA	0.098409
338	crl	0.098409
339	Curlin	0.098409
340	FrsA	0.098409
341	fibers	0.098409
342	binds	0.098409
343	YafO	0.098409
344	YafN	0.098409
345	holoenzyme	0.098409
346	yfeD	0.098409
347	HycC	0.098409
348	hyc	0.098409
349	hyp	0.098409
350	porin	0.098301
351	magnesium	0.097265
352	sensor	0.097238
353	pyrazinamidase	0.097079
354	Glu	0.097058
355	Asp	0.096371
356	CoA	0.096284
357	ligand	0.096283
358	cysteinyl	0.095877
359	associated	0.095662
360	Clp	0.095318
361	NADP	0.095269
362	CheV	0.09521
363	cyclase	0.095006
364	cyclic	0.09496
365	NifH	0.094563
366	DAACS	0.094563
367	MinE	0.094563
368	affinity	0.094501
369	MprA	0.093917
370	proximal	0.093712
371	IIB	0.093647
372	amidase	0.093611
373	ATPases	0.093548
374	AldA	0.092855
375	propeptide	0.092855
376	ethanol	0.092646

377	polyprenylphenol	0.092432
378	lactonizing	0.092399
379	40	0.092327
380	XdhC	0.092136
381	ornithine	0.092064
382	FMN	0.091958
383	conserved	0.091956
384	thiamine	0.091892
385	methionyl	0.091878
386	b12	0.091741
387	dual	0.091679
388	L10	0.091667
389	sorbitol	0.091667
390	effector	0.091637
391	aspartate	0.091519
392	antitermination	0.091504
393	Glycine	0.091475
394	Adenylosuccinate	0.091279
395	fimbrial	0.091133
396	novel	0.091094
397	RutR	0.091094
398	yccE	0.091094
399	YcdM	0.091094
400	Rh	0.091094
401	Amt	0.091094
402	discriminating	0.091094
403	RpoH	0.090743
404	desulfhydrase	0.090472
405	LysR	0.090343
406	malate	0.090256
407	multifunctional	0.090215
408	CjaA	0.090179
409	FliY	0.090179
410	27133	0.090179
411	EC	0.090179
412	HydG	0.090179
413	HdfR	0.090179
414	DUF3225	0.090179
415	RND	0.089732
416	exporter	0.089548
417	NasS	0.089265
418	NasF	0.089265
419	InvG	0.089265
420	cis	0.089141
421	lichenan	0.088744
422	pyruvate	0.088577
423	deoxy	0.088574
424	NifS	0.088478
425	FliA	0.088395
426	glucosidase	0.08764
427	XTP	0.087451
428	dITP	0.087451
429	catabolite	0.08738
430	NifQ	0.087106

431	Rlu	0.086522
432	BztA	0.086522
433	yhdW	0.086522
434	AcrE	0.086522
435	AapJ	0.086522
436	axial	0.086522
437	Era	0.08652
438	Flagellar	0.086266
439	transferase	0.086115
440	transduction	0.085925
441	machinery	0.085511
442	loop	0.085464
443	nitric	0.085282
444	flhb	0.084481
445	elongation	0.08441
446	cell	0.084229
447	nif	0.083758
448	cytoplasmic	0.083676
449	chaperone	0.083508
450	fatty	0.083409
451	class	0.08311
452	yfcZ	0.082864
453	50S	0.082544
454	acids	0.082296
455	bifunctional	0.082202
456	CmeB	0.08195
457	NupC	0.08195
458	NarP	0.08195
459	BpeB	0.08195
460	YpfH	0.08195
461	ArpB	0.08195
462	detox	0.08195
463	citrate	0.081808
464	purines	0.081643
465	NarQ	0.081631
466	to	0.081556
467	integrase	0.081461
468	zinc	0.081406
469	UrtB	0.08124
470	isochorismate	0.081229
471	possible	0.081212
472	cyanate	0.081033
473	metabolite	0.080956
474	switch	0.080928
475	rhodanese	0.080512
476	trans	0.080495
477	xylose	0.080484
478	endonuclease	0.080381
479	S18	0.080338
480	uracil	0.080215
481	diacetylchitobiose	0.080184
482	cluster	0.079937
483	leucine	0.079413
484	PLP	0.079397

485	homoserine	0.079234
486	nickel	0.079227
487	NirC	0.079207
488	ferrous	0.079207
489	MalT	0.079207
490	FGGY	0.079128
491	metal	0.07906
492	flavorubredoxin	0.079045
493	EmrB	0.078876
494	QacA	0.078876
495	DctA	0.078876
496	oxide	0.078696
497	acyltransferase	0.078601
498	28	0.078467
499	Probable	0.078409
500	UvrABC	0.078317
501	Gm2251	0.078292
502	gulonate	0.078292
503	VacB	0.078292
504	YjeB	0.078292
505	HflB	0.078292
506	HF	0.078292
507	DsbD	0.078292
508	Maltose	0.07817
509	polysaccharide	0.077849
510	FlgD	0.077752
511	topological	0.077544
512	Mo	0.077544
513	FlgG	0.077514
514	GsiC	0.077378
515	Der	0.077105
516	uridylate	0.076849
517	Twin	0.076803
518	Site	0.07623
519	ascorbate	0.07596
520	Pyrroline	0.075922
521	capping	0.075863
522	mulitfunctional	0.075812
523	SIS	0.075812
524	HflK	0.075812
525	or	0.075621
526	octulosonic	0.07533
527	repair	0.075246
528	cytochrome	0.075197
529	sensory	0.075099
530	exodeoxyribonuclease	0.075085
531	directed	0.075008
532	propionate	0.07411
533	erythritol	0.07409
534	flavin	0.073914
535	glycosylase	0.073899
536	YtfJ	0.073872
537	LepA	0.073848
538	PhoP	0.073848

539	GalS	0.073721
540	RsuA	0.073721
541	Rmf	0.073721
542	YejH	0.073721
543	YeiM	0.073721
544	516	0.073721
545	EIIBC	0.073721
546	hemin	0.073674
547	scaffolding	0.07362
548	muramidase	0.073418
549	NADPH	0.073354
550	GntR	0.073339
551	nitrate	0.073244
552	tryptophanyl	0.072962
553	octaprenyl	0.07276
554	excisionase	0.072727
555	threonyl	0.072622
556	branching	0.072371
557	potassium	0.072351
558	Uncharacterized	0.072315
559	element	0.072158
560	secretion	0.072127
561	SufS	0.071932
562	RpiR	0.071844
563	pathway	0.071614
564	regulon	0.07154
565	cofactor	0.071207
566	PAS	0.070947
567	YcfS	0.070945
568	YnhG	0.070945
569	FliE	0.070829
570	involved	0.070812
571	diguanylate	0.07075
572	division	0.070639
573	serine	0.070584
574	large	0.070254
575	succinic	0.070079
576	FixX	0.070063
577	MucC	0.070063
578	storage	0.06999
579	cyano	0.069729
580	deazaguanine	0.069729
581	malic	0.06971
582	length	0.06949
583	deoR	0.069475
584	neutral	0.069355
585	an	0.06927
586	FliM	0.068923
587	fragment	0.068858
588	EIIc	0.068699
589	determining	0.068645
590	subfamily	0.068612
591	PAC	0.068542
592	recombinases	0.068319

593	MFP	0.068213
594	utilization	0.068036
595	symporter	0.067973
596	ribonucleotide	0.067783
597	activity	0.067675
598	GltI	0.067513
599	monooxygenase	0.06747
600	HypD	0.067406
601	ring	0.067389
602	ribose	0.067356
603	NlpI	0.06732
604	flavodoxin	0.067166
605	sorbosone	0.067126
606	fagellar	0.066985
607	chloroplast	0.066941
608	ranscriptional	0.06676
609	YbiS	0.066716
610	ErfK	0.066716
611	32	0.066618
612	omega	0.066308
613	NrtA	0.066072
614	4Fe	0.065626
615	4S	0.065498
616	lactose	0.06549
617	prolyl	0.065485
618	no	0.065401
619	HAD	0.065349
620	excinuclease	0.065196
621	histone	0.065159
622	modification	0.065138
623	proline	0.064852
624	FlgJ	0.064831
625	basal	0.064801
626	antitoxin	0.064785
627	maturation	0.064678
628	SPO1	0.064672
629	disulfide	0.064558
630	body	0.064524
631	nucleic	0.064354
632	RseC	0.064173
633	Zn	0.064088
634	triphosphate	0.064015
635	anaerobic	0.063787
636	fliS	0.063723
637	Spo0A	0.063662
638	YqiS	0.063662
639	aciddehydrogenase	0.063662
640	lipoamide	0.063662
641	Ptb	0.063662
642	uroporphyrinogen	0.063641
643	NasT	0.063445
644	PrkA	0.063381
645	RuBisCO	0.063289
646	mismatch	0.063168

647	IF	0.06313
648	heptulosonate	0.062748
649	ScoA	0.062748
650	YxjC	0.062748
651	LL	0.062748
652	epimerase	0.062458
653	Non	0.062303
654	RutA	0.062234
655	sucrose	0.061957
656	CysD	0.061834
657	NAGC	0.061834
658	specialized	0.061834
659	RpoX	0.061834
660	SpaP	0.061834
661	rge	0.061834
662	XdhB	0.061834
663	FtsH	0.061782
664	Thr	0.061767
665	cryptic	0.061705
666	facilitator	0.061484
667	FlgC	0.061475
668	rod	0.061462
669	degradation	0.061424
670	FlgM	0.061318
671	dihydroxyhept	0.061229
672	vitamin	0.061199
673	ANTAR	0.06108
674	NUDIX	0.060959
675	NO3	0.06094
676	NO2	0.06094
677	hook	0.060921
678	Tu	0.060867
679	repeat	0.06083
680	trehalose	0.060828
681	motor	0.060643
682	KefA	0.060294
683	WhiG	0.060294
684	urate	0.060294
685	FabA	0.060294
686	RtcB	0.060294
687	heptosyltransferase	0.060097
688	OMP85	0.060005
689	GroS	0.060005
690	GroES3	0.060005
691	HSP10	0.060005
692	rRNA	0.060001
693	C4	0.059983
694	spermidine	0.059957
695	flavoprotein	0.059704
696	acetolactate	0.059647
697	gluconate	0.059472
698	mutase	0.059415
699	induced	0.059355
700	pyridine	0.059296

701	asparaginase	0.059296
702	AzlC	0.059213
703	anti	0.059082
704	curli	0.059065
705	Similar	0.059065
706	amphiphile	0.059001
707	HAE1	0.059001
708	LivH	0.058946
709	L11	0.058898
710	dinitrogenase	0.058756
711	flgf	0.058679
712	Phe	0.058537
713	aerobic	0.058506
714	nonspecific	0.058354
715	valine	0.05821
716	Acetate	0.058138
717	16S	0.058123
718	keto	0.057957
719	damage	0.057886
720	macrolide	0.057842
721	solute	0.057764
722	aminobutyrate	0.057747
723	independent	0.0574
724	amine	0.057379
725	STP	0.057262
726	SdaC	0.057262
727	fuculose	0.057262
728	UvrY	0.057262
729	HofQ	0.057262
730	NiFe	0.05706
731	FeMo	0.056927
732	glycerate	0.056895
733	FAD	0.056662
734	maltodextrin	0.05647
735	stop	0.056414
736	premature	0.056414
737	FeS4	0.056414
738	LRV	0.056414
739	alanine	0.056384
740	Rof	0.056347
741	YaeP	0.056347
742	BfdA	0.056347
743	ImpA	0.056347
744	HcpA	0.056347
745	Hcp	0.056347
746	haemolysin	0.056347
747	DnaG	0.056347
748	30S	0.056302
749	dicarboxylate	0.056302
750	stress	0.056186
751	output	0.056083
752	GAF	0.056059
753	lysin	0.056013
754	cyclohexanone	0.055996

755	aminoacylase	0.055897
756	pyrophosphokinase	0.055815
757	Na	0.055801
758	NUP	0.055768
759	respiratory	0.055622
760	allantoate	0.055613
761	toxin	0.055608
762	TS	0.055555
763	FlgB	0.055424
764	chemotaxis	0.05539
765	Rsu	0.055369
766	pseudouridine	0.055311
767	Di	0.055299
768	restriction	0.055193
769	hydroperoxide	0.055166
770	aldolase	0.055037
771	semialdehyde	0.054996
772	FlgE	0.054958
773	aldehyde	0.05494
774	F1F0	0.054519
775	yngC	0.054519
776	YfjK	0.054519
777	AcoA	0.054519
778	PdhA	0.054519
779	HXTX	0.054519
780	GltP	0.054519
781	NrfG	0.054519
782	MdtO	0.054519
783	PhnJ	0.054519
784	slyX	0.054519
785	Csd	0.054519
786	CspA	0.054519
787	cspLB	0.054519
788	HpnJ	0.054519
789	NADH	0.054411
790	pantothenate	0.054046
791	lactate	0.054003
792	oxidase	0.053941
793	receiver	0.053861
794	stimulates	0.053786
795	fermentation	0.053786
796	alcohol	0.053713
797	aliphatic	0.053673
798	genes	0.053629
799	GcvR	0.053604
800	FHL	0.053604
801	Bcp	0.053604
802	m2G1207	0.053604
803	HyfA	0.053604
804	dyp	0.053604
805	933R	0.053604
806	packaging	0.053604
807	CheD	0.053604
808	NirD	0.053604

809	mug	0.053604
810	recA	0.053269
811	NsrR	0.053181
812	carrier	0.053091
813	butyryltransferase	0.052812
814	ygfU	0.05269
815	ter	0.05269
816	TesB	0.05269
817	fuscose	0.05269
818	ybl121	0.05269
819	GreA	0.052634
820	EAT	0.052535
821	acylglucosamine	0.052402
822	metalloprotease	0.052344
823	Hydantoin	0.052289
824	exoribonuclease	0.052202
825	urea	0.051929
826	attachment	0.051897
827	Ctc	0.051888
828	initiation	0.051822
829	Ser	0.05172
830	LacI	0.051644
831	malonyl	0.051584
832	aminoglycoside	0.051545
833	homogentisate	0.051241
834	putrescine	0.051117
835	auxiliary	0.050861
836	conductance	0.050839
837	Extracellular	0.050682
838	isozyme	0.050618
839	carbamoyltransferase	0.05046
840	thiolase	0.050448
841	NodT	0.050448
842	isoleucine	0.05031
843	adenosine	0.050049
844	surface	0.050019
845	bicyclomycin	0.049948
846	N6	0.049948
847	CheY	0.049944
848	ADP	0.049916
849	cellobiose	0.049585
850	folding	0.049562
851	UreE	0.049539
852	Major	0.049532
853	AraC	0.04908
854	cystine	0.049034
855	PAAT	0.049034
856	Kdo	0.049032
857	WaaA	0.049032
858	RfaG	0.049032
859	RfaQ	0.049032
860	MscL	0.049032
861	m5C967	0.049032
862	YcfR	0.049032

863	longitudinal	0.049032
864	intracellular	0.048787
865	RadC	0.04867
866	PucI	0.048655
867	Folylpolyglutamate	0.048655
868	menaquinone	0.0486
869	group	0.048406
870	opeon	0.048118
871	sc	0.048118
872	svp	0.048118
873	ccmB	0.048118
874	CcmABCDE	0.048118
875	140	0.048118
876	AtoD	0.048118
877	ato	0.048118
878	pahage	0.048118
879	YgjG	0.048118
880	QseC	0.048118
881	yecA	0.048118
882	MreD	0.048008
883	Cpn10	0.048008
884	NasA	0.048008
885	nifr3	0.047978
886	XdhA	0.047978
887	FlgK	0.047933
888	fumarate	0.04776
889	HTH	0.047728
890	NarL	0.047494
891	IMP	0.047494
892	short	0.047378
893	uptake	0.047213
894	Wza	0.047204
895	GsiB	0.047204
896	gsiABCD	0.047204
897	Cmr	0.047204
898	force	0.047204
899	motive	0.047204
900	MdfA	0.047204
901	TPP	0.046922
902	deaminase	0.046435
903	lysidine	0.04641
904	NifZ	0.046394
905	squalene	0.046289
906	hopene	0.046289
907	polyunsaturated	0.046289
908	PfaA	0.046289
909	MmuP	0.046289
910	IscAnif	0.046289
911	Low	0.046244
912	antibiotic	0.046214
913	CRP	0.045921
914	suppresses	0.04592
915	HflX	0.045866
916	2S	0.04578

917	2Fe	0.04578
918	23S	0.045744
919	ACP	0.045735
920	yddR	0.045422
921	deacetylase	0.045419
922	SugE	0.045338
923	quaternary	0.045338
924	AtoS	0.045338
925	homocysteine	0.045316
926	Exonuclease	0.045111
927	Luciferase	0.045085
928	converting	0.04507
929	FtsE	0.04504
930	entericidin	0.045038
931	deoxyheptonate	0.04495
932	UPF0319	0.04481
933	deoxyguanosinetriphosphate	0.044627
934	U8	0.044461
935	ACN	0.044461
936	siderophore	0.044365
937	MS	0.044222
938	butyrate	0.044124
939	60	0.044124
940	sodium	0.044078
941	aminopeptidase	0.043999
942	Mal	0.043965
943	dipeptidyl	0.043921
944	biotin	0.043693
945	trancsriptional	0.043667
946	rubrerythrin	0.043657
947	box	0.043624
948	Glutaredoxin	0.043465
949	VII	0.043341
950	HflC	0.043226
951	Insulin	0.043226
952	EF	0.04301
953	delta	0.042956
954	SoxR	0.042698
955	subIIB	0.042632
956	manL	0.042632
957	hydratase	0.042452
958	FlhF	0.042295
959	aminohexanoate	0.042098
960	release	0.042058
961	pyrimidine	0.041727
962	sulfatase	0.041721
963	zeaxanthin	0.041717
964	Aba2	0.041717
965	thiol	0.041712
966	undecaprenyl	0.041646
967	mutH	0.041543
968	Icc	0.041543
969	M28	0.041543
970	Trk	0.04138

971	bicarbonate	0.041196
972	aromatic	0.041196
973	compound	0.041149
974	M50	0.041114
975	IV	0.041091
976	aldo	0.041036
977	hypoxanthine	0.04095
978	AtoC	0.040896
979	universal	0.040859
980	xylulokinase	0.040802
981	diphosphate	0.040773
982	Cas1	0.040586
983	porter	0.040586
984	acetoacetyl	0.040511
985	DctM	0.040466
986	CspD	0.040249
987	6x	0.040249
988	FxsA	0.040249
989	gene	0.040231
990	FliR	0.04023
991	selenium	0.04023
992	including	0.040099
993	FtsW	0.040058
994	PEP	0.04001
995	SohA	0.039889
996	YhaV	0.039889
997	TupA	0.039889
998	MFS	0.039854
999	Electron	0.039808
1000	inhibitor	0.039804
1001	UPF0005	0.039603
1002	RecB	0.039603
1003	Ffh	0.039551
1004	Bcr	0.03953
1005	UvrB	0.03953
1006	NCS1	0.03953
1007	encoded	0.03953
1008	drug	0.039526
1009	positive	0.039132
1010	dioxygenase	0.039109
1011	ribulose	0.039094
1012	ketoacyl	0.039063
1013	HI	0.038956
1014	SecE	0.038905
1015	alkaline	0.038637
1016	channel	0.038455
1017	recognition	0.038425
1018	FlaA	0.03831
1019	IS2	0.03831
1020	fucose	0.03831
1021	RecBCD	0.03831
1022	CheW	0.038232
1023	hydrocarbon	0.03818
1024	prophage	0.038167

1025	NusG	0.038087
1026	MutT	0.038087
1027	FliX	0.03806
1028	mgtE	0.03806
1029	LemA	0.037946
1030	sequence	0.037888
1031	urease	0.037868
1032	cobalamin	0.037672
1033	vanX	0.037663
1034	M15D	0.037663
1035	YaeQ	0.037663
1036	proton	0.03756
1037	oxo	0.037464
1038	alkylhydroperoxidase	0.037464
1039	GroEL	0.037418
1040	RocR	0.037418
1041	control	0.037394
1042	import	0.037388
1043	exchanger	0.037369
1044	CheA	0.037265
1045	sulfoxide	0.037201
1046	GbdR	0.037146
1047	GlxA	0.037146
1048	NRZ	0.037146
1049	DdpA	0.037146
1050	DdpX	0.037146
1051	KgtP	0.037146
1052	FixB	0.037146
1053	DctD	0.037146
1054	PcaT	0.037146
1055	flgI	0.037016
1056	L1	0.036773
1057	alanyl	0.036768
1058	tyrosine	0.03665
1059	Co	0.036577
1060	catalytic	0.036576
1061	pump	0.036574
1062	lipoyl	0.036427
1063	FkbM	0.03637
1064	Sel1	0.03637
1065	EIIAB	0.036362
1066	receptor	0.036324
1067	oxalurate	0.036231
1068	Ggt	0.036231
1069	ywrD	0.036231
1070	Heat	0.036043
1071	Hfq	0.036042
1072	L7	0.035893
1073	L12	0.035893
1074	adenine	0.03587
1075	exopolysaccharide	0.03587
1076	core	0.035864
1077	genetic	0.035835
1078	tetrahydropyridine	0.035775

1079	NifW	0.035723
1080	NNP	0.035723
1081	CysB	0.035723
1082	LambdaBa04	0.035723
1083	GcvA	0.035723
1084	deoxyphosphooctonate	0.035633
1085	lysyl	0.035546
1086	TonB	0.03552
1087	Rossmann	0.035436
1088	usher	0.035436
1089	PtsN	0.035436
1090	septal	0.035317
1091	MqsRA	0.035317
1092	MqsR	0.035317
1093	MqsA	0.035317
1094	that	0.035317
1095	divisome	0.035317
1096	ribosyltransferase	0.03527
1097	amidohydrolase	0.035172
1098	bacterial	0.035124
1099	redoxin	0.035044
1100	shock	0.035008
1101	narK	0.034979
1102	RNase	0.034815
1103	palmitoleoyl	0.034779
1104	heme	0.034686
1105	central	0.03463
1106	dephospho	0.034601
1107	Internalin	0.034443
1108	ceramidase	0.03443
1109	from	0.034406
1110	FlgN	0.034406
1111	DUF2126	0.034402
1112	Fnr	0.034287
1113	TIM	0.034257
1114	CoxL	0.034251
1115	CutL	0.034251
1116	protecting	0.034251
1117	acting	0.034251
1118	mechanosensitive	0.034157
1119	triosephosphate	0.034064
1120	sulfonate	0.033942
1121	general	0.033827
1122	galactosidase	0.033807
1123	IscA	0.033783
1124	FlgA	0.033683
1125	DSBA	0.033607
1126	GstI	0.033488
1127	strand	0.033338
1128	oxoisovalerate	0.033195
1129	presentation	0.033195
1130	chemoreceptor	0.033137
1131	Cystathionine	0.032764
1132	rotamase	0.032667

1133	PAAR	0.032667
1134	ferrodoxin	0.032667
1135	CvrA	0.032574
1136	NhaP	0.032574
1137	volume	0.032574
1138	CDP	0.032512
1139	host	0.03251
1140	Man	0.03249
1141	aerotaxis	0.03249
1142	three	0.03249
1143	rhs	0.032235
1144	L33	0.032235
1145	S2	0.032205
1146	IS5	0.032139
1147	E1	0.031954
1148	light	0.031952
1149	Ala	0.031933
1150	GMP	0.031891
1151	oxoadipate	0.031844
1152	esterase	0.031765
1153	nicotinamidase	0.031759
1154	replication	0.031692
1155	CcmI	0.031659
1156	FleR	0.031659
1157	FleQ	0.031659
1158	ISCro1	0.031659
1159	ptxB	0.031659
1160	sector	0.031659
1161	SA0881	0.031659
1162	Adh3	0.031659
1163	apoprotein	0.031659
1164	ClpB	0.031659
1165	rho	0.031587
1166	sporulation	0.031558
1167	antigen	0.031464
1168	thiosulfate	0.031367
1169	LPS	0.031367
1170	SDR	0.031281
1171	ferric	0.031204
1172	chloramphenicol	0.031197
1173	bisphosphatase	0.031113
1174	diacylglyceryl	0.030991
1175	Hsp90	0.030896
1176	Hemolysin	0.030881
1177	thermostable	0.030863
1178	lauroyl	0.030863
1179	glutathione	0.030838
1180	guanylate	0.0308
1181	Chitooligosaccharide	0.030745
1182	uricase	0.030745
1183	ureidoglycolate	0.030745
1184	Yen8	0.030745
1185	avirulence	0.030745
1186	DsdX	0.030745

1187	acriflavin	0.030734
1188	FlaG	0.030725
1189	Hcp1	0.030555
1190	hopanoid	0.030555
1191	polA	0.03055
1192	YfhF	0.03055
1193	YadR	0.03055
1194	HesB	0.03055
1195	IscN	0.03055
1196	inositol	0.030543
1197	oxoglutarate	0.030504
1198	region	0.030479
1199	methoxyphenyl	0.030406
1200	plastoquinone	0.030406
1201	filamentation	0.030397
1202	preprotein	0.030183
1203	dichlorophenolindophenol	0.030027
1204	MoFe	0.029904
1205	imidazole	0.029877
1206	GabT	0.029831
1207	IF3	0.029831
1208	PolX	0.029831
1209	GDH	0.029831
1210	RocG3	0.029831
1211	RocG	0.029831
1212	MtnE	0.029831
1213	MsuE	0.029831
1214	MsuD	0.029831
1215	L21	0.029776
1216	isopropylmalate	0.029775
1217	quinolinate	0.029719
1218	cytosine	0.0295
1219	L3	0.029499
1220	apc	0.029499
1221	hydro	0.029492
1222	AsnC	0.029489
1223	sorbose	0.029478
1224	finger	0.029156
1225	biopolymer	0.029034
1226	oxidative	0.029029
1227	desuccinylase	0.029029
1228	phage	0.028974
1229	GsiD	0.028916
1230	YqeF	0.028916
1231	thil	0.028916
1232	ThlA	0.028916
1233	KamA	0.028916
1234	CodB	0.028916
1235	YodO	0.028916
1236	dinuclear	0.02865
1237	adhesion	0.02865
1238	Vgr	0.028577
1239	Lrp	0.028476
1240	TerC	0.028476

1241	FliW	0.028443
1242	Tpx	0.028443
1243	tungstate	0.028271
1244	on	0.02812
1245	CcdB	0.028002
1246	YgeD	0.028002
1247	Escherichia	0.028002
1248	HoxS	0.028002
1249	HupV	0.028002
1250	derivatives	0.028002
1251	GuaD	0.028002
1252	fec	0.028002
1253	IS629	0.027964
1254	epoxide	0.027862
1255	glucarate	0.027663
1256	particle	0.027487
1257	FlhA	0.027271
1258	RocE	0.027087
1259	RocD	0.027087
1260	RapG	0.027087
1261	LuxR	0.027063
1262	colicin	0.027044
1263	IS	0.027044
1264	PE	0.026789
1265	oxygenase	0.026674
1266	SecF	0.026671
1267	maf	0.026671
1268	AAA	0.026562
1269	IclR	0.026548
1270	M14	0.026331
1271	L25	0.026193
1272	MmsB	0.026173
1273	hibadh	0.026173
1274	PstA	0.026173
1275	linoleoyl	0.026173
1276	Lat	0.026173
1277	PmmA	0.026173
1278	ygjR	0.026173
1279	yqjE	0.026173
1280	alx	0.026173
1281	dieonyl	0.026173
1282	during	0.026173
1283	SUHB	0.026024
1284	extragenic	0.026024
1285	BFD	0.026024
1286	capsid	0.026024
1287	related	0.025889
1288	formyltransferase	0.025877
1289	F0	0.025834
1290	kD	0.025834
1291	DctQ	0.025803
1292	SMR	0.025803
1293	ClpA	0.025803
1294	FtsI	0.025803

1295	amidotransferase	0.025725
1296	epsilon	0.025546
1297	inducible	0.025482
1298	antiporter	0.025372
1299	Dps	0.025364
1300	CRISPR	0.025295
1301	distal	0.025275
1302	SaeS	0.025259
1303	fibrinogen	0.025259
1304	RnfG	0.025259
1305	Blr	0.025259
1306	yicO	0.025259
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1308	YpdF	0.025259
1309	AzgA	0.025259
1310	AD	0.025259
1311	RPME	0.025259
1312	MadM	0.025259
1313	YufO	0.025259
1314	ase	0.025259
1315	aspQ	0.025259
1316	AnsB	0.025259
1317	L31P	0.025259
1318	tRNAGln	0.025259
1319	MdtP	0.025259
1320	shikimate	0.025151
1321	Acetoin	0.025019
1322	YggA	0.025019
1323	lactamase	0.025012
1324	solvent	0.024999
1325	dehalogenase	0.024788
1326	salicylate	0.024747
1327	MHS	0.024731
1328	monoxide	0.024548
1329	CofH	0.024344
1330	ndkA	0.024344
1331	NDK	0.024344
1332	fbiC	0.024344
1333	RPST	0.024344
1334	EIS	0.024344
1335	apyrimidinic	0.024344
1336	didemethyl	0.024344
1337	deazariboflavin	0.024344
1338	DadA	0.024344
1339	UreF	0.024344
1340	UxuR	0.024344
1341	polyhydroxyalkanoate	0.024344
1342	RES	0.024327
1343	oxoacid	0.024327
1344	ppGpp	0.024219
1345	Protoheme	0.024219
1346	maleylacetoacetate	0.024219
1347	plug	0.024219
1348	Rne	0.024219

1349	GTPase	0.02421
1350	precorrin	0.024181
1351	StrS	0.024084
1352	EryC1	0.024084
1353	DnrJ	0.024084
1354	DegT	0.024084
1355	FixA	0.024084
1356	Polyphosphate	0.024081
1357	tautomerase	0.023929
1358	GCN5	0.023692
1359	cAMP	0.023547
1360	Coenzyme	0.023542
1361	kDa	0.023441
1362	RubA	0.023438
1363	FprB	0.02343
1364	AR	0.02343
1365	adrenodoxin	0.02343
1366	LysS	0.02343
1367	bacilysin	0.02343
1368	YwfH	0.02343
1369	LivG	0.02343
1370	FdhD	0.023428
1371	oxoacyl	0.023374
1372	long	0.023367
1373	Orf2	0.023363
1374	ketoglutarate	0.023362
1375	10	0.023282
1376	IS1	0.02309
1377	carbon	0.022981
1378	valyl	0.022944
1379	helix	0.022624
1380	RpoN	0.022582
1381	anchored	0.022553
1382	FliP	0.022545
1383	GPM2	0.022516
1384	SOJ	0.022516
1385	NiCoT	0.022516
1386	NICT	0.022516
1387	Ni2	0.022516
1388	NixA	0.022516
1389	BPG	0.022516
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1391	HoxN	0.022516
1392	HupN	0.022516
1393	transition	0.022516
1394	PGAM	0.022516
1395	PhaC1	0.022516
1396	PhaA	0.022516
1397	PHA	0.022516
1398	GlgP	0.022516
1399	LppF	0.022516
1400	NRII	0.022516
1401	LysE	0.022312
1402	primase	0.022312

1403	F0F1	0.022312
1404	glycoprotease	0.022308
1405	70	0.022306
1406	FliK	0.022188
1407	PGRS	0.022175
1408	YdiF	0.022145
1409	paraquat	0.021989
1410	ObgE	0.021935
1411	tail	0.021837
1412	oligopeptide	0.021808
1413	Fe3	0.021718
1414	lppQ	0.021601
1415	CysC	0.021601
1416	CysN	0.021601
1417	NrgA	0.021601
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1421	drugs	0.021601
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1423	CpsA	0.021601
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1431	PVDS	0.021601
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1433	uvra1	0.021601
1434	cbb3	0.021579
1435	prolipoprotein	0.021561
1436	ArgR	0.021498
1437	V5	0.021498
1438	GroES	0.021478
1439	radical	0.021443
1440	VI	0.021349
1441	deadenyltransferase	0.021261
1442	hrcA	0.021261
1443	FlgH	0.021261
1444	ORF1	0.021188
1445	PrlF	0.021051
1446	sialic	0.020851
1447	IIAB	0.020814
1448	sedoheptulose	0.020687
1449	CtpG	0.020687
1450	MdtH	0.020687
1451	yceB	0.020687
1452	ybbP	0.020687
1453	HDDA	0.020687
1454	primary	0.020687
1455	SsuD1	0.020687
1456	fmnh	0.020687

1457	L21P	0.020687
1458	MobA	0.020523
1459	HtrA	0.020523
1460	FKBP	0.020441
1461	CBS	0.020441
1462	selenocysteine	0.02033
1463	biogenesis	0.020252
1464	sn	0.020205
1465	TorD	0.020205
1466	NifX	0.020205
1467	FleS	0.020091
1468	redox	0.020091
1469	S8	0.020068
1470	heptaprenyl	0.019995
1471	ribityllumazine	0.019889
1472	NDP	0.019889
1473	supressor	0.019772
1474	CbpM	0.019772
1475	CynS	0.019772
1476	amyloplastic	0.019772
1477	addition	0.019772
1478	LfgB	0.019772
1479	laccase	0.019772
1480	ZMP1	0.019772
1481	rnfH	0.019772
1482	M13	0.019772
1483	ASASE	0.019772
1484	ASL	0.019772
1485	PURB	0.019772
1486	NRAMP	0.019682
1487	GlcNAc	0.019682
1488	Fe4S4	0.019682
1489	AMP	0.019613
1490	nuclease	0.019459
1491	penicillin	0.019433
1492	NmrA	0.019432
1493	hybrid	0.019427
1494	deformylase	0.019337
1495	enoyl	0.019337
1496	cold	0.019145
1497	extrusion	0.019142
1498	SecG	0.018975
1499	altronate	0.018975
1500	SRP54	0.018939
1501	orotidine	0.018939
1502	EutR	0.018939
1503	NusB	0.018912
1504	MCP	0.018912
1505	dTDP	0.018873
1506	barrel	0.018868
1507	coaE	0.018858
1508	trpC	0.018858
1509	yohN	0.018858
1510	senter	0.018858

1511	CTPB	0.018858
1512	yagt	0.018858
1513	UPF0231	0.018858
1514	AscG	0.018858
1515	HycI	0.018858
1516	HydN	0.018858
1517	deoxyoctulosonic	0.018858
1518	AGZA	0.018858
1519	phytochrome	0.018858
1520	arabinose	0.018715
1521	sarcosine	0.018584
1522	part	0.018574
1523	SecD	0.018455
1524	depolymerase	0.018455
1525	fhuC	0.018265
1526	RecX	0.018265
1527	inactive	0.018265
1528	FliF	0.018104
1529	Hpt	0.01806
1530	HydA	0.01806
1531	Chorismate	0.018006
1532	cyanophycin	0.017944
1533	fusaric	0.017944
1534	UgpC	0.017944
1535	dnaC	0.017944
1536	DnaI	0.017944
1537	OruR	0.017944
1538	OppD	0.017944
1539	NorA	0.017944
1540	RCMNS	0.017944
1541	YesN	0.017944
1542	MenB	0.017944
1543	lipid	0.017872
1544	Chitin	0.017827
1545	multicopper	0.017759
1546	osmotically	0.017637
1547	Hrp	0.017619
1548	malonate	0.017619
1549	Hup	0.017619
1550	triacylglycerol	0.017603
1551	cobalt	0.017543
1552	dimethylallyl	0.017458
1553	tartrate	0.017454
1554	UreD	0.017413
1555	oxononanoate	0.017413
1556	TRAP	0.017279
1557	mannose	0.017235
1558	Polynucleotide	0.017146
1559	L9	0.017146
1560	butanediol	0.017146
1561	PHP	0.017081
1562	SDHD	0.017029
1563	CheZ	0.017029
1564	amaB	0.017029

1565	FljK	0.017029
1566	FljM	0.017029
1567	FljL	0.017029
1568	POT	0.017029
1569	GshA	0.017029
1570	NrtR	0.017029
1571	51	0.017029
1572	RpsB	0.017029
1573	YaeT	0.017029
1574	pp	0.016972
1575	oxydation	0.016972
1576	A1	0.016972
1577	PQQ	0.01686
1578	NifN	0.016819
1579	aconitate	0.016814
1580	haloacid	0.016768
1581	betaine	0.016517
1582	transketolase	0.016513
1583	lateral	0.01641
1584	Oxalate	0.016325
1585	med	0.016325
1586	TenA	0.016325
1587	OxyR	0.016325
1588	PhaZ	0.016325
1589	TyrR	0.016325
1590	PMM	0.016325
1591	heterodisulfide	0.0163
1592	TPR	0.01627
1593	trigger	0.016231
1594	MaoC	0.016231
1595	enterobactin	0.016168
1596	CspR	0.016115
1597	BlpY	0.016115
1598	OMPP1	0.016115
1599	STPK	0.016115
1600	Cyp130	0.016115
1601	FadL	0.016115
1602	130	0.016115
1603	TodX	0.016115
1604	ggppsase	0.016115
1605	GGPP	0.016115
1606	GadB	0.016115
1607	FPP	0.016115
1608	IdsA1	0.016115
1609	prenyltransferase	0.016115
1610	PHYA	0.016115
1611	YccS	0.016115
1612	YhfK	0.016115
1613	intergral	0.016115
1614	flage3llar	0.016115
1615	EngD	0.016115
1616	PrpE	0.016115
1617	NLP	0.01603
1618	S15	0.01596

1619	pentapeptide	0.015844
1620	NusA	0.015772
1621	PPE	0.015739
1622	IS66	0.015684
1623	methanol	0.015679
1624	dnaB	0.015679
1625	CUT2	0.015679
1626	turn	0.015586
1627	XRE	0.015529
1628	ion	0.015491
1629	negative	0.015342
1630	thioredoxin	0.015303
1631	IS186	0.015201
1632	IS421	0.015201
1633	EvgS	0.015201
1634	except	0.015201
1635	PPE3	0.015201
1636	GogA	0.015201
1637	GtgA	0.015201
1638	MdtA	0.015201
1639	DinI	0.015201
1640	PotA	0.015201
1641	FliH	0.015201
1642	GlyP	0.015201
1643	YjbJ	0.015201
1644	YejF	0.015201
1645	AGCS	0.015201
1646	trasnporter	0.015201
1647	YCE	0.015201
1648	Adh1	0.015201
1649	TraR	0.015183
1650	DksA	0.015183
1651	mycothiol	0.015032
1652	M24	0.014993
1653	proteolytic	0.014874
1654	hexose	0.014859
1655	starch	0.014859
1656	rich	0.014824
1657	SsrA	0.014774
1658	L35	0.014716
1659	HemK	0.014716
1660	S7	0.014716
1661	LSU	0.014647
1662	DctP	0.014493
1663	Ni	0.014402
1664	apparatus	0.014402
1665	phytase	0.014386
1666	RocA	0.014386
1667	LysRS	0.014386
1668	orfA	0.014306
1669	patatin	0.014302
1670	FlrC	0.014286
1671	FlrB	0.014286
1672	FlaL	0.014286

1673	MetE	0.014286
1674	LipN	0.014286
1675	DrrC	0.014286
1676	DRRB	0.014286
1677	DIM	0.014286
1678	daunorubicin	0.014286
1679	CydC	0.014286
1680	trpB	0.014286
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1682	FtsJ	0.014286
1683	RrmJ	0.014286
1684	m2U2552	0.014286
1685	IS30	0.014286
1686	TfoX1	0.014286
1687	SufC	0.014286
1688	SufBCD	0.014286
1689	SufD	0.014286
1690	ketodeoxygluconokinase	0.014286
1691	UMP	0.014286
1692	ThiH	0.014286
1693	FixG	0.014286
1694	PurT	0.014286
1695	CoM	0.014286
1696	nrdA	0.014286
1697	bIF	0.014286
1698	exoenzyme	0.014286
1699	Acetone	0.014286
1700	AcxA	0.014286
1701	octylprenyl	0.014286
1702	IspB	0.014286
1703	HipO	0.014286
1704	hippurate	0.014286
1705	DsrF	0.014286
1706	DsrE	0.014286
1707	molecular	0.014193
1708	xylanase	0.014188
1709	YoeB	0.014188
1710	Txe	0.014188
1711	YajC	0.014188
1712	Ste24	0.014188
1713	FecR	0.014188
1714	triple	0.014188
1715	primosomal	0.014093
1716	UvrD	0.014093
1717	glyoxylase	0.013956
1718	ModE	0.013956
1719	topoisomerase	0.013952
1720	stage	0.013945
1721	diketo	0.013945
1722	Propanoyl	0.013904
1723	EAL	0.013904
1724	endopeptidase	0.013875
1725	rieske	0.013863
1726	monomer	0.013739

1727	CbpA	0.013739
1728	b558	0.013739
1729	didehydrogluconate	0.013739
1730	alkanesulfonate	0.01372
1731	curved	0.01366
1732	M23	0.013605
1733	agmatinase	0.013546
1734	amidolyase	0.013487
1735	copper	0.013425
1736	polyketide	0.013377
1737	FlgT	0.013372
1738	YhgF	0.013372
1739	AmgS	0.013372
1740	familly	0.013372
1741	is982	0.013372
1742	StbB	0.013372
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1744	YbgF	0.013372
1745	SS	0.013372
1746	Sjoegren	0.013372
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1750	RimP	0.013372
1751	IID	0.013372
1752	A2	0.013372
1753	autoantigen	0.013372
1754	TROVE	0.013372
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1756	benzaldehyde	0.013372
1757	MshF	0.013372
1758	MshA	0.013372
1759	energy	0.013372
1760	hyperosmotically	0.013372
1761	taxis	0.013372
1762	NifV	0.013372
1763	YngJ	0.013372
1764	AO	0.013372
1765	AcdA3	0.013372
1766	LAO	0.013372
1767	purE	0.013372
1768	cleavage	0.013264
1769	rhamnogalacturonase	0.013137
1770	ClpS	0.013137
1771	survival	0.013137
1772	preferring	0.013132
1773	ketoadipyl	0.013132
1774	deoxyuronate	0.013132
1775	RstA	0.013132
1776	PilE	0.013092
1777	sulphate	0.013092
1778	Zn2	0.013092
1779	lolD	0.013092
1780	PspF	0.013092

1781	hexulose	0.013092
1782	Dethiobiotin	0.013092
1783	anhydrase	0.013088
1784	fold	0.013052
1785	uridine	0.012995
1786	resolvase	0.012971
1787	isoaspartate	0.012934
1788	ROK	0.012919
1789	ParA	0.012806
1790	taurine	0.012778
1791	winged	0.012745
1792	nitrile	0.01269
1793	c550	0.012604
1794	gaba	0.012604
1795	hand	0.0126
1796	ClpP	0.0126
1797	structural	0.012463
1798	LTP1	0.012458
1799	CpxR	0.012458
1800	Icd2	0.012458
1801	MppA	0.012458
1802	pepetidase	0.012458
1803	NrfJ	0.012458
1804	benzoquinone	0.012458
1805	DMK	0.012458
1806	SCS	0.012458
1807	bis	0.012458
1808	levR	0.012458
1809	hexapeptide	0.012458
1810	DASS	0.012458
1811	def	0.012446
1812	FMNH2	0.012446
1813	LIV	0.012446
1814	pyruvoyl	0.012446
1815	SNF2	0.012446
1816	antidote	0.012446
1817	M37	0.012446
1818	TOBE	0.012446
1819	reducing	0.012446
1820	PilV	0.012446
1821	Rng	0.012446
1822	Melibiose	0.012446
1823	riboflavin	0.012376
1824	formiminoglutamase	0.012319
1825	arginase	0.012319
1826	quinone	0.012164
1827	ECF	0.012121
1828	farnesyltransferase	0.012116
1829	E2	0.012076
1830	OppA	0.012076
1831	S20	0.011963
1832	TetR	0.011894
1833	rubredoxin	0.011882
1834	HAMP	0.011882

1835	RpoS	0.011882
1836	SAM	0.011856
1837	ThiJ	0.011853
1838	HSP	0.011799
1839	DTW	0.011799
1840	Indole	0.011799
1841	deoxyribonuclease	0.011662
1842	peroxiredoxin	0.011659
1843	pantoate	0.011548
1844	C56	0.011548
1845	glycolate	0.011548
1846	Prephenate	0.011548
1847	enhanced	0.011548
1848	cysZ	0.011548
1849	PtsP	0.011548
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1851	TtcA	0.011548
1852	xyldlegf	0.011548
1853	12TM	0.011543
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1855	v6	0.011543
1856	Mom	0.011543
1857	e14	0.011543
1858	AtmD	0.011543
1859	MEROPS	0.011543
1860	UptE	0.011543
1861	AhpCTSA	0.011543
1862	zipper	0.011543
1863	bZIP	0.011543
1864	Diacyglycerol	0.011543
1865	FabZ	0.011543
1866	AgxT	0.011543
1867	geranylgeranyl	0.011501
1868	S12	0.011501
1869	polyamine	0.01147
1870	PhoU	0.011201
1871	IX	0.01119
1872	divalent	0.011153
1873	Mrl	0.011153
1874	RodA	0.011092
1875	DO	0.011092
1876	IIABC	0.011092
1877	AmpC	0.01102
1878	AmpD	0.01102
1879	ExoD	0.01102
1880	choline	0.010978
1881	Gln	0.010773
1882	flavocytochrome	0.010744
1883	S1	0.010733
1884	L13	0.010683
1885	Fe2	0.010683
1886	tellurium	0.010683
1887	AFG1	0.010683
1888	LevD	0.010629

1889	cortex	0.010629
1890	L19P	0.010629
1891	T1	0.010629
1892	CueR	0.010629
1893	ZK632	0.010629
1894	RIO1	0.010629
1895	RIO	0.010629
1896	MJ0444	0.010629
1897	TrpR	0.010629
1898	chains	0.010629
1899	vnfE	0.010629
1900	regA	0.010629
1901	BkdR	0.010629
1902	insulysin	0.010629
1903	acylase	0.010629
1904	DhaK	0.010629
1905	ParE	0.010629
1906	IS1016	0.010506
1907	tol	0.010506
1908	pal	0.010506
1909	osmolarity	0.010506
1910	ModB	0.010506
1911	b556	0.010506
1912	PknH	0.010506
1913	FlhC	0.010506
1914	sulfhydrylase	0.010506
1915	DhnA	0.010506
1916	FO	0.010492
1917	aminomethyltransferase	0.010445
1918	M20	0.01036
1919	DoxX	0.01036
1920	OmpR	0.01036
1921	MreB	0.010287
1922	M48	0.010274
1923	nitropropane	0.010274
1924	heavy	0.010245
1925	PfpI	0.010179
1926	fusion	0.010179
1927	gyrase	0.010165
1928	L31	0.010153
1929	FliL	0.010123
1930	Obg	0.009964
1931	MreC	0.009964
1932	NifU	0.0099455
1933	ene	0.0098654
1934	dioic	0.0098654
1935	PhzF	0.0098594
1936	Phenazine	0.0098594
1937	DppB	0.0098594
1938	Gifsy	0.0098594
1939	A37	0.0098594
1940	thiotransferase	0.0098594
1941	FliG	0.0098594
1942	CpaB	0.0098594

1943	apolipoprotein	0.0098294
1944	divergent	0.0097144
1945	PstB	0.0097144
1946	OmlA	0.0097144
1947	SmpA	0.0097144
1948	tusA	0.0097144
1949	MacA	0.0097144
1950	enyl	0.0097144
1951	LytB	0.0097144
1952	PilS	0.0097144
1953	RplU	0.0097144
1954	imino	0.0097144
1955	asaR	0.0097144
1956	ahyR	0.0097144
1957	nifF	0.0097144
1958	FldA	0.0097144
1959	mercuric	0.0097144
1960	yddQ	0.0097144
1961	aa3	0.0097144
1962	DUF3442	0.0097144
1963	EutB	0.0097144
1964	PleD	0.0097144
1965	accepting	0.009652
1966	allergen	0.0094616
1967	polypeptide	0.0094564
1968	GreB	0.009436
1969	24	0.0092394
1970	retraction	0.0092128
1971	TrmE	0.0092128
1972	lolC	0.0092128
1973	TfoX	0.0092128
1974	CcoG	0.0092128
1975	N5	0.0090474
1976	Rrf2	0.0089149
1977	BadM	0.0089149
1978	L27	0.008908
1979	oligo	0.008908
1980	GltS	0.0088
1981	roadblock	0.0088
1982	LC7	0.0088
1983	LipC	0.0088
1984	CTP	0.0088
1985	Hlx	0.0088
1986	p69	0.0088
1987	putattive	0.0088
1988	ClpC	0.0088
1989	MecB	0.0088
1990	L13P	0.0088
1991	ISBm2	0.0088
1992	IS1477	0.0088
1993	IS1404	0.0088
1994	GluA	0.0088
1995	GltL	0.0088
1996	C32	0.0088

1997	birA	0.0088
1998	movement	0.0088
1999	mxaF1	0.0088
2000	ISEc14	0.0088
2001	ISAfe3	0.0088
2002	XoxF	0.0088
2003	hmw2c	0.0088
2004	hmw2a	0.0088
2005	hmw1a	0.0088
2006	trpCF	0.0088
2007	PurS	0.0088
2008	PqqE	0.0088
2009	allophanate	0.0087702
2010	cyanide	0.0087702
2011	poly	0.0087394
2012	adaptor	0.0087294
2013	collagen	0.0087294
2014	formylglutathione	0.0086567
2015	oxobutanoate	0.0086384
2016	RnfABCDGE	0.0086384
2017	E1component	0.0085662
2018	polyribonucleotide	0.0085662
2019	DszC	0.0085662
2020	bmp	0.0085662
2021	simple	0.0085662
2022	PotD	0.0085662
2023	microcin	0.0085662
2024	Cache	0.0084926
2025	TatD	0.0084926
2026	S16	0.0084245
2027	Soluble	0.0084209
2028	RimM	0.0083801
2029	LRE	0.0083801
2030	RnfA	0.0083801
2031	IS200	0.0083801
2032	phytoene	0.0083801
2033	D15	0.0083801
2034	theronine	0.0083801
2035	basic	0.0083166
2036	Fap	0.0082294
2037	HlyD	0.0081491
2038	S6	0.0081192
2039	mnth	0.0081192
2040	Fibronectin	0.0080004
2041	Co2	0.0080004
2042	P450	0.0079621
2043	multi	0.0079491
2044	FlaE	0.0079196
2045	HlyB	0.0079196
2046	GabP	0.0079196
2047	lactoferrin	0.0079196
2048	MoaE	0.0079196
2049	PilG	0.0078856
2050	KdsD	0.0078856

2051	glycoendo	0.0078856
2052	staR	0.0078856
2053	stalk	0.0078856
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2055	enoly	0.0078856
2056	c552	0.0078856
2057	LplT	0.0078856
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2059	TilS	0.0078856
2060	PurA	0.0078856
2061	REC	0.0078856
2062	RpfG	0.0078856
2063	PutA	0.0078856
2064	PlsX	0.0078856
2065	GrcA	0.0078856
2066	FemA	0.0078856
2067	YjgF	0.0078856
2068	autonomous	0.0078856
2069	Ohr	0.0078856
2070	guanidinobutyrase	0.0078856
2071	M48B	0.0078856
2072	yggG	0.0078856
2073	IISP	0.0078856
2074	metaphosphatase	0.0078856
2075	YvbU	0.0078856
2076	Quino	0.0078856
2077	RpoB	0.0078856
2078	gidB	0.0078856
2079	AroP	0.0078856
2080	glycogenase	0.0078759
2081	DJ	0.0078521
2082	3R	0.0078521
2083	pH	0.0078521
2084	Isocitrate	0.0075912
2085	segregation	0.0075912
2086	chromosome	0.0075462
2087	DEAH	0.0075243
2088	lipase	0.0074096
2089	AP	0.0073874
2090	butanone	0.0073724
2091	cardiolipin	0.0073724
2092	naphthoate	0.0073241
2093	StbE	0.0073241
2094	attenuation	0.007273
2095	hexosaminidase	0.007273
2096	endoglucanase	0.007273
2097	septation	0.007273
2098	vanadium	0.007273
2099	EcnAB	0.007273
2100	member	0.007273
2101	endoribonuclease	0.0071341
2102	PSP	0.0071341
2103	opine	0.0070859
2104	Xaa	0.0070416

2105	lysozyme	0.0070024
2106	CMP	0.0070024
2107	flgl	0.0070024
2108	M16	0.006999
2109	FolEA	0.0069713
2110	MtrB	0.0069713
2111	UDPphosphate	0.0069713
2112	xerc	0.0069713
2113	resuscitation	0.0069713
2114	PsiE	0.0069713
2115	Pnp	0.0069713
2116	opacity	0.0069713
2117	FldB	0.0069713
2118	IS285	0.0069713
2119	DUF1667	0.0069713
2120	SpuD	0.0069713
2121	PotF1	0.0069713
2122	P9	0.0069713
2123	DhaS	0.0069713
2124	Gfo	0.0069713
2125	MocA	0.0069713
2126	Idh	0.0069713
2127	DSG	0.0069713
2128	GlyA	0.0069713
2129	FixR	0.0069713
2130	CPA2	0.0069713
2131	ybaL	0.0069713
2132	PRAI	0.0069713
2133	GadW	0.0069713
2134	GadE	0.0069713
2135	maltokinase	0.0069713
2136	MdtF	0.0069713
2137	SirA	0.0067962
2138	monophosphatase	0.0067319
2139	homocitrate	0.0066286
2140	lysophospholipase	0.0066286
2141	RhlE	0.0066264
2142	fumarylacetoacetate	0.0066264
2143	bax	0.0066264
2144	SurA	0.0066264
2145	carbamyl	0.0066264
2146	isoquinoline	0.0066264
2147	HrpA	0.0066264
2148	HII	0.0066264
2149	LON	0.0066264
2150	HPA2	0.0066264
2151	ribotide	0.0066264
2152	aminoimidazole	0.0066264
2153	U61	0.0066264
2154	LD	0.0066264
2155	s4	0.0066256
2156	RuvB	0.0065934
2157	XerD	0.0065934
2158	CsbD	0.0065934

2159	Sterol	0.0065934
2160	SpoU	0.0063502
2161	TrmH	0.0063502
2162	pilin	0.006324
2163	NrdR	0.0062682
2164	mRNA	0.0062682
2165	insensitive	0.0062682
2166	immunogenic	0.0062682
2167	MsbA	0.0062682
2168	RecO	0.0062682
2169	motility	0.0062522
2170	SSU	0.0062522
2171	GGDEF	0.0061925
2172	AcoX	0.0061844
2173	MiaB	0.0061844
2174	N1	0.0061844
2175	dibenzothiophene	0.0061713
2176	lagellar	0.0060569
2177	HslU	0.0060569
2178	PafA	0.0060569
2179	YwmF	0.0060569
2180	FbaB	0.0060569
2181	DME	0.0060569
2182	exsA	0.0060569
2183	ArgS	0.0060569
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2212	GIY	0.0059798

2213	YIG	0.0059798
2214	Bacitracin	0.0059798
2215	BacA	0.0059798
2216	MrsA	0.0059798
2217	number	0.0059798
2218	HNH	0.0059798
2219	DEAD	0.0058048
2220	WrbA	0.0057754
2221	FliI	0.0057754
2222	exsB	0.0057402
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2225	aminoethylphosphonate	0.0057402
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2231	desaturase	0.0055662
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2233	twitching	0.0053663
2234	ThiC	0.0053663
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2329	Kef	0.0043423
2330	pilB	0.0043423
2331	module	0.004276
2332	addiction	0.004276
2333	DnaK	0.004276
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2371	recycling	0.0041563
2372	PqqC	0.0041563
2373	Single	0.004152
2374	ACT	0.0041393

2375	GlgX	0.0041393
2376	starvation	0.0041146
2377	Rad3	0.00404
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2379	CzcD	0.00404
2380	OHCU	0.00404
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2389	leader	0.003885
2390	Flp	0.0038784
2391	diester	0.0037303
2392	cytidylate	0.0036943
2393	SpoT	0.0036283
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2419	MotY	0.0033138
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2428	Uropathogenic	0.0033138

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2609	Superoxide	0.001938
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2613	OsmC	0.0017716
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2744	ChaC	0.00086727
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2746	PilT	0.00081885
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2761	dismutase	0.0007979
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4239	AcrR	-0.0032228
4240	killer	-0.0032353
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4247	stationary	-0.0034311
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4254	transhydrogenase	-0.0036754
4255	partitioning	-0.0036754
4256	Cobyrinic	-0.0036911
4257	acylaminoacyl	-0.0037191
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4312	autotransporter	-0.0038832
4313	water	-0.0038884
4314	PcrA	-0.0038884
4315	Alginate	-0.0038884
4316	bond	-0.0038884
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4415	P60	-0.0056963
4416	typically	-0.0057174
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4420	MutS	-0.0061747
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4423	autolysis	-0.0061747
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4426	MinD	-0.006443

4427	formaldehyde	-0.0066574
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4429	MotB	-0.0068666
4430	OmpA	-0.0072839
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