

ToPASEq: an R package for topology-based pathway analysis of microarray and RNAseq data

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Contents

1	Introduction	2
1.1	Input, output and general functionalities	3
1.2	Pathway topological structure	3
1.3	Preparing and manipulating pathways	4
2	Analysis of microarray data	7
2.1	TopologyGSA	7
2.2	DEGraph	9
2.3	clipper	11
2.4	SPIA	12
2.5	TAPPA	14
2.6	PRS	16
2.7	PWEA	18
3	Analysis of RNA-Seq data	20
3.1	TopologyGSA	20
3.2	DEGraph	21
3.3	clipper	182
3.4	SPIA	183
3.5	TAPPA	233
3.6	PRS	319
3.7	PWEA	336
4	Outputs and visualization of the results for one pathway	338

Chapter 1

Introduction

This package de-novo implements or adjusts the existing implementations of several different methods for topology-based pathway analysis of gene expression data from microarray and RNA-Seq technologies.

These high-throughput technologies are used for measuring of expression levels of thousands genes in one experiment often with the aim to find pathways and biological processes affected between two conditions. The information which biological processes are affected helps investigators to set-up biologically relevant hypotheses for further research.

To this end, a differential gene expression between conditions is assessed - by the means of specific methods, such as limma for instance, which produce lists of differentially expressed genes with specific statistics and p-values for each gene, as well as fold change of mean expression between compared groups.

Pathway analysis is the next step, where these differentially expressed genes are mapped to reference pathways derived from databases and relative enrichment is assessed. Methods of topology-based pathway analysis are the last generation of pathway analysis methods that take into account the topological structure of a pathway, which helps to increase specificity and sensitivity of the results.

This package implements seven topology-based pathway analysis methods that focus on identification of the pathways that are differentially affected between two conditions (Table 1.1). Each method is implemented as a single wrapper function which allows the user to call a method in a single command. In addition, this package offers a visualization of the results. The visualization is based on the **Rgraphviz** package and displays distribution of differential expression and topological significance of the nodes from one pathway. The user can simplify the pathway topology by merging selected sets of nodes into one (individual gene names is the only information that is lost in it).

Table 1.1: Methods included in the package.

Method	Ref.	Type	Implementation
TopologyGSA	[Massa <i>et al.</i> (2010)]	M	imported
DEGraph	[Jacob <i>et al.</i> (2010)]	M	imported
clipper	[Martini <i>et al.</i> (2012)]	M	imported
SPIA	[Tarca <i>et al.</i> (2009)], [Draghici <i>et al.</i> (2007)]	U	imported
TBS	[Al-Haj Ibrahim <i>et al.</i> (2012)]	U	de novo
PWEA	[Hung <i>et al.</i> (2010)]	U	de novo
TAPPA	[Gao and Wang(2007)]	U	de novo

M - multivariable, U - univariable

1.1 Input, output and general functionalities

The input data are either normalized (count) data or gene expression data as well as pathway topological structure.

For the sake of simplicity, our package offers in each wrapper function a pre-processing step for RNA-seq normalization - TMM [Robinson and Oshlack(2010)] and DESeq [Anders and Huber(2010)]. If necessary, the functions also performs differential gene expression analysis through calling limma and DESeq2 packages.

Since some of the methods (SPIA, PRS, PWEA) work with the results of the differential expression analysis, the user can prepare the data by his preferred method and skip the built-in normalization and/or differential expression analysis.

To summarize, the wrapper functions give options to: 1) normalize the count data (for RNAseq) 2) apply differential expression analysis on gene-level, if applicable, and finally 3) perform topological pathway analysis. The functions provides output in a uniform format defined as a new S3 class `topResult` with basic methods (print, plot, summary) and methods for obtaining the individual parts of the output.

1.2 Pathway topological structure

Pathways and their topological structures are an important input for the analysis. They are represented as graphs $G = (V, E)$, where V denotes a set of vertices or nodes represented by genes and $E \subseteq V \times V$ is a set of edges between nodes (oriented or not, depending on the method) representing the interaction between genes. These structures can be downloaded from public databases such as KEGG or Biocarta or are available through other packages such as **graphite**.

ToPASEq is build upon **graphite** R-package where pathways from seven public databases: KEGG, Biocarta, Reactome, NCI, SPIKE, HumanCyc, Panther were downloaded and parsed into a new S4 class `pathway` (up to version 1.12.0). The parsing process deals also with a special type of nodes that can

be found in biological pathways. Protein complexes are expanded into cliques since it is assumed that all units from one complex interact with each other. A clique, from graph theory, is a subset of vertices such that every two vertices in the subset are connected by an edge. On the other hand, gene families are expanded into separate nodes with same incoming and/or outgoing edges, because they are believed to be interchangeable. The most important modification is the propagation of signal through the so called compound-mediated interactions. By compound-mediated interaction we mean an interaction that engages not only genes or their product but also other chemical compounds e.g. calcium ions. **graphite** is the first package that propagates signal through such interactions. For example, if gene *A* interacts with compound *c* and compound *c* with gene *B* then in a pathway topology gene *A* should interact with gene *B*. Please see [Sales *et al.*(2012)] for more details.

```
> library(ToPASEq)
> pathways<-pathways("hsapiens", "kegg")[1:5]
> pathways[[1]]

"Acute myeloid leukemia" pathway
Native ID           = hsa:05221
Database            = KEGG
Species             = hsapiens
Type of identifiers = ENTREZID
Number of nodes     = 57
Number of edges     = 177
Retrieved on       = 03-05-2016

> str(pathways[[1]])

Formal class 'Pathway' [package "graphite"] with 7 slots
 ..@ id          : chr "hsa:05221"
 ..@ title       : chr "Acute myeloid leukemia"
 ..@ edges       : 'data.frame':      177 obs. of  4 variables:
 .. ..$ src      : chr [1:177] "10000" "10000" "10000" "10000" ...
 .. ..$ dest     : chr [1:177] "1147" "1147" "2475" "2475" ...
 .. ..$ direction: Factor w/ 1 level "directed": 1 1 1 1 1 1 1 1 1 1 ...
 .. ..$ type      : chr [1:177] "Process(activation)" "Process(phosphorylation)" "Process(ac
 ..@ database    : chr "KEGG"
 ..@ species     : chr "hsapiens"
 ..@ identifier  : chr "ENTREZID"
 ..@ timestamp   : Date[1:1], format: "2016-05-03"
```

1.3 Preparing and manipulating pathways

The easiest way is to use pathway available through **graphite**. However, you might need to use your own pathway - the easiest way is to download it from

some database (do not forget this pathway needs to contain topological information!) and convert it to the correct format using our specific functions for pathway conversion and manipulation.

Functions **AdjacencyMatrix2Pathway** and **graphNEL2Pathway** coerce either an adjacency matrix (binary matrix, where 1 means an edge between two genes) or **graphNEL** into **Pathway**. For a reduction of a specified set of nodes (e.g. genes from the same class with similar function), which helps to simplify the graphical graph representation, you can use function **reduceGraph**.

Any other topological manipulations or basic topological analysis can be achieved through **graphNEL** and conversion from and to **Pathway**. Or directly with the following functions:

intersection compute the intersection of the two supplied graphs. They must have identical nodes.

join returns the joining of the two graphs. It is similar to **intersection** but does not require the identical nodes

union compute the union of the two supplied graphs. They must have identical nodes.

subGraph Given a set of nodes and a pathway this function creates and returns subgraph with only the supplied nodes and any edges between them

clearNode Clears all edges incoming and outgoing edges from node(s)

removeEdge removes all edges between two subsets of nodes (starting in one subset and ending in the other)

removeNode removes node(s) from a pathway

nodes<- sets node labels of pathway to a specific value

degree Returns the number of incoming or outgoing edges for specified nodes

numNoEdges Returns the number of nodes without any edge

mostEdges Returns the nodes with most edges

acc Returns the set of nodes accessible from a subset of nodes. The undirected edges are considered as bidirected (directed in both directions)

connComp Returns the connected components present in a pathway. They are returned as list where each slot refers to one component and contains the relevant nodes. The undirected edges are considered as bidirected (directed in both directions)

edges Returns the edges relevant to node or all edges in the pathway

isAdjacent Checks whether two nodes are adjacent (there is an edge starting in first node and ending in the second)

isConnected Checks if a pathway contains only one connected component

isDirected Checks if all edges in a pathway are directed

edgemode Returns the type of edges in a pathway: **directed**, **undirected** or **both**

numEdges Returns the number of edges in a pathway

numNodes Returns the number of nodes in a pathway

edgeNames Returns the names of the edges in a following format: starting node ending node

We also especially designed function **prepareData** that converts the identifiers of pathways, compares them against the supplied vector of the identifiers from expression data and filters pathways with too many nodes, too few edges, not enough identifiers common with the expression data and transforms the pathways into formats required in individual methods.

The normalized gene expression data or count data can be in two formats. One is a simple matrix where rows refer to genes and the other one is an **ExpressionSet**. There are four acceptable formats for the clinical data: the name or number of **phenoData** of **ExpressionSet** or a character or numeric vector that is coerced to factor. We will demonstrate the features of the package on the example of analysis of two datasets. For microarray data we will use the log2-transformed normalized expression data from the **DEGraph** package and for RNA-Seq data we will use the count data from **gageData** package. The pathway topologies are available via function **pathways()** from **graphite** package. For this demonstration we will use human pathways from KEGG or Biocarta.

Chapter 2

Analysis of microarray data

In our example we will use the dataset `Loi2008_DEGraphVignette` from `DEGraph` package. It contains the expression profiles of 255 patients with hormone-dependent breast cancer stored as a matrix. The aim of the study was to determine which genes are differentially expressed between tamoxifen-resistant and tamoxifen-sensitive samples. Gene expression data matrix and vector of class labels is stored as separate objects `exprLoi2008` and `classLoi2008`, respectively. In `classLoi2008`, 0 refers to a tamoxifen-resistant sample and 1 to a tamoxifen-sensitive one. We will not need the annotation data (`annLoi2008`) or KEGG pathways `grListKEGG` in our example. On the other hand, we will use a few first pathways from KEGG. The pathways were selected only in order to reduce the computational complexity of the analysis. Also, the outputs from the most computationally complex methods are displayed as comments.

We will load the package, the data and subset of the pathways with

```
> library(ToPASEq)
> library(DEGraph)
> data(Loi2008_DEGraphVignette)
> pathways<-pathways("hsapiens", "kegg")[1:5]
> ls()

[1] "annLoi2008" "classLoi2008" "exprLoi2008"
[4] "grListKEGG" "pathways"
```

2.1 TopologyGSA

TopologyGSA represents a multivariable method in which the expression of genes is modelled with Gaussian Graphical Models with covariance matrix reflecting the pathway topology. It uses the Iterative Proportional Scaling algorithm to estimate the covariance matrices. The testing procedure is a two-step process. First the equality of covariance matrices is tested via a likelihood ratio test. Then, when the null hypothesis of equality of covariance matrices

is not rejected, the differential expression is tested via multivariate analysis of variance. On the other hand, when the covariance matrices are not equal, then Behrens-Fisher method for testing the equality of means in a two sample problem with unequal covariance matrices is employed. This method was first implemented in the **TopologyGSA** package. In ToPASEq we have optimized its performance by using different function for obtaining cliques from each pathway.

The method can be used with a single command

```
> top<-TopologyGSA(exprLoi2008, classLoi2008, pathways, type="MA", perms=200)
> #99 node labels mapped to the expression data
> #Average coverage 31.47657 %
> #0 (out of 5) pathways without a mapped node
> #Acute myeloid leukemia
> #Adherens junction
> #Adipocytokine signaling pathway
> #Adrenergic signaling in cardiomyocytes
> #African trypanosomiasis
> res(top)
> #results
> #
```

	t.value	df.mean1	df.mean2	p.value
#Acute myeloid leukemia	3024.796	30	224	0
#Adherens junction	1102.830	10	244	0
#Adipocytokine signaling pathway	3196.432	25	229	0
#Adrenergic signaling in cardiomyocytes	2178.476	26	228	0
#African trypanosomiasis	1404.259	8	246	0

```
> #
```

	lambda.value	df.var	p.value.var
#Acute myeloid leukemia	213.01437	156	1.649509e-03
#Adherens junction	39.92094	10	1.749659e-05
#Adipocytokine signaling pathway	192.81336	121	3.595452e-05
#Adrenergic signaling in cardiomyocytes	169.47418	80	2.211953e-08
#African trypanosomiasis	13.02808	12	3.670031e-01

```
> #
```

	qchisq.value	var.equal	q.value
#Acute myeloid leukemia	186.14575	1	0
#Adherens junction	18.30704	1	0
#Adipocytokine signaling pathway	147.67353	1	0
#Adrenergic signaling in cardiomyocytes	101.87947	1	0
#African trypanosomiasis	21.02607	0	0

```
> #
> #errors
> #named list()
```

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). The others arguments are optional. The **perms** argument sets the number of permutations to be used in the statistical

tests. By default both mean and variance tests are run, this can be changed to only variance test by setting `method="var"`. Arguments `convertTo` and `convertBy` control the conversion of the node labels in the pathways. The default setting is `convertTo="none"` which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. The threshold for variance test is specified with `alpha` argument. The implementation allows also testing of all the cliques present in the graph by setting `testCliques=TRUE`. Please note that these tests may take quite a long time. The implementation returns also a gene-level statistics of the differential expression of genes performed via moderated t-test from `limma` package. These statistics are later used in the visualization of a selected pathway.

2.2 DEGraph

Another multivariable method implemented in the package is DEGraph. This method assumes the same direction in the differential expression of genes belonging to a pathway. It performs the regular Hotelling's T2 test in the graph-Fourier space restricted to its first k components which is more powerful than test in the full graph-Fourier space or in the original space.

We apply the method with

```
> deg<-DEGraph(exprLoi2008, classLoi2008, pathways, type="MA")
```

```
98 node labels mapped to the expression data
Average coverage 31.32477 %
0 (out of 5) pathways without a mapped node
0 denoted as 0
1 denoted as 1
Contrasts: 1 - 0
```

```
> res(deg)
```

```
$results
```

```
$results[[1]]
```

	Overall.p
Acute myeloid leukemia	0.026081586
Adherens junction	NA
Adipocytokine signaling pathway	0.008440407
Adrenergic signaling in cardiomyocytes	0.057391182
African trypanosomiasis	0.234212387
	Overall.q.value
Acute myeloid leukemia	0.05216317
Adherens junction	NA
Adipocytokine signaling pathway	0.03376163
Adrenergic signaling in cardiomyocytes	0.07652158
African trypanosomiasis	0.23421239

	Comp1.p	
Acute myeloid leukemia	0.09184337	
Adherens junction	NA	
Adipocytokine signaling pathway	0.03920983	
Adrenergic signaling in cardiomyocytes	0.15382925	
African trypanosomiasis	0.04727610	
	Comp1.pFourier	
Acute myeloid leukemia	0.026081586	
Adherens junction	NA	
Adipocytokine signaling pathway	0.008440407	
Adrenergic signaling in cardiomyocytes	0.057391182	
African trypanosomiasis	0.234212387	
	Comp1.k	Comp2.p
Acute myeloid leukemia	4	0.006982534
Adherens junction	NA	NA
Adipocytokine signaling pathway	1	NA
Adrenergic signaling in cardiomyocytes	3	0.492055041
African trypanosomiasis	1	NA
	Comp2.pFourier	
Acute myeloid leukemia	0.0004994694	
Adherens junction	NA	
Adipocytokine signaling pathway	NA	
Adrenergic signaling in cardiomyocytes	0.7744589408	
African trypanosomiasis	NA	
	Comp2.k	
Acute myeloid leukemia	1	
Adherens junction	NA	
Adipocytokine signaling pathway	NA	
Adrenergic signaling in cardiomyocytes	1	
African trypanosomiasis	NA	
\$results\$graphs		
	Comp1.graph	
Acute myeloid leukemia	?	
Adherens junction	NA	
Adipocytokine signaling pathway	?	
Adrenergic signaling in cardiomyocytes	?	
African trypanosomiasis	?	
	Comp2.graph	
Acute myeloid leukemia	?	
Adherens junction	NA	
Adipocytokine signaling pathway	NA	
Adrenergic signaling in cardiomyocytes	?	
African trypanosomiasis	NA	

```
$errors
named list()
```

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. Since, the DEGraph method runs a statistical test for each connected component of a pathway, a method for assigning a global p-value for whole pathway is needed. The user can select from three approaches: the minimum, the mean and the p-value of the biggest component. This is specified via **overall** argument. The implementation returns also a gene-level statistics of the differential expression of genes performed via moderated t-test from **limma** package. These statistics are later used in the visualization of a selected pathway.

2.3 clipper

The last multivariable method available within this package is called clipper. This method is similar to the topologyGSA as it uses the same two-step approach. However, the Iterative Proportional Scaling algorithm was substituted with a shrinkage procedure of James-Stein-type which additionally allows proper estimates also in the situation when number of samples is smaller than the number of genes in a pathway. The tests on a pathway-level are followed with a search for the most affected path in the graph.

The method can be applied with

```
> cli<-clipper( exprLoi2008, classLoi2008, pathways,type="MA", method="mean")
> #99 node labels mapped to the expression data
> #Average coverage 31.47657 %
> #0 (out of 5) pathways without a mapped node
> #0 pathways were filtered out
> #Analysing pathway:
> #
> #Acute myeloid leukemia
> #Adherens junction
> #Adipocytokine signaling pathway
> #Adrenergic signaling in cardiomyocytes
> #African trypanosomiasis
> #0 denoted as 0
> # 1 denoted as 1
> # Contrasts: 1 - 0
> #Warning messages:
```

```

> #1: In getJunctionTreePaths(graph, root) :
> # The DAG presents cliques that are not connected.
> #2: In prunePaths(clipped, pruneLevel) : pathSummary is NULL
> #3: In getJunctionTreePaths(graph, root) :
> # The DAG presents cliques that are not connected.
> #4: In prunePaths(clipped, pruneLevel) : pathSummary is NULL
> res(cli)$results[[1]]
> #

```

	alphaVar	alphaMean	mean.q.value	var.q.value
> #Acute myeloid leukemia	0.735	0.009	0.0150	0.91875
> #Adherens junction	0.101	0.022	0.0275	0.26500
> #Adipocytokine signaling pathway	0.656	0.001	0.0050	0.91875
> #Adrenergic signaling in cardiomyocytes	0.106	0.061	0.0610	0.26500
> #African trypanosomiasis	0.953	0.007	0.0150	0.95300

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the row-names of gene expression data matrix. Also, both mean and variance tests are run, this can be changed to only variance test by setting **method="var"**. The **nperm** controls the number of permutations in the statistical tests. Similarly as in **topologyGSA**, the implementation allows testing of all the cliques present in the graph by setting **testCliques=TRUE**. Please note that these tests may take quite a long time. The implementation returns also a gene-level statistics of the differential expression of genes performed via moderated t-test from **limma** package. These statistics are later used in the visualization of a selected pathway.

The function returns two types of the results on pathway-level. The first (printed above), is a table of p-values and q-values related to the differential expression and concentration of the pathways. The second one, is a list containing the most affected paths in each pathway - these are obtained via **easyClip** function from **clipper** package.

2.4 SPIA

The most well-known topology-based pathway analysis method is SPIA. In there, two evidences of differential expression of a pathway are combined. The first evidence is a regular so called overrepresentation analysis in which the statistical significance of the number of differentially expressed genes belonging to a pathway is assessed. The second evidence reflects the pathway topology and it is called the perturbation factor. The authors assume that a differentially expressed gene at the beginning of a pathway topology (e.g. a receptor in a signaling pathway) has a stronger effect on the functionality of a pathway than a

differentially expressed gene at the end of a pathway (e.g. a transcription factor in a signaling pathway). The perturbation factors of all genes are calculated from a system of linear equations and then combined within a pathway. The two evidences in a form of p-values are finally combined into a global p-value, which is used to rank the pathways.

```
> spi<-SPIA(exprLoi2008, classLoi2008,pathways , type="MA", logFC.th=-1)
```

```
0 denoted as 0
```

```
1 denoted as 1
```

```
Contrasts: 1 - 0
```

```
98 node labels mapped to the expression data
```

```
Average coverage 31.32477 %
```

```
0 (out of 5) pathways without a mapped node
```

```
0 denoted as 0
```

```
1 denoted as 1
```

```
Contrasts: 1 - 0
```

```
> res(spi)
```

```
$results
```

	pSize	NDE	pNDE
Acute myeloid leukemia	30	5	0.643
Adherens junction	10	3	0.249
Adipocytokine signaling pathway	25	8	0.049
Adrenergic signaling in cardiomyocytes	25	4	0.679
African trypanosomiasis	8	3	0.150
	tA	pPERT	pG
Acute myeloid leukemia	-0.523	0.288	0.497
Adherens junction	-0.308	0.576	0.422
Adipocytokine signaling pathway	0.186	0.640	0.140
Adrenergic signaling in cardiomyocytes	-0.291	0.536	0.732
African trypanosomiasis	-0.047	0.960	0.423
	pGFdr	pGFWER	
Acute myeloid leukemia	0.62125	1.0	
Adherens junction	0.62125	1.0	
Adipocytokine signaling pathway	0.62125	0.7	
Adrenergic signaling in cardiomyocytes	0.73200	1.0	
African trypanosomiasis	0.62125	1.0	
	Status		
Acute myeloid leukemia	Inhibited		
Adherens junction	Inhibited		
Adipocytokine signaling pathway	Activated		
Adrenergic signaling in cardiomyocytes	Inhibited		
African trypanosomiasis	Inhibited		

```
$errors
```

```
named list()
```

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). Alternatively, the user can supply the results of the differential expression analysis of genes in two forms:

1. a data.frame with columns: *ID* gene identifiers (they must match with the node labels), *logFC* log fold-changes, *t* - t-statistics, *pval* p-values, *padj* adjusted p-values. Then the user sets **type** to **DEtable**
2. a list with two slots: named vector of log fold-changes of differentially expressed genes and a vector of names of all genes analysed. Then the user sets **type** to **DElist**

The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. The default thresholds for the differential expression analysis of genes (the moderated t-test from **limma** is used) are set with arguments **logFC.th** and **p.val.th**. The user can omit one of these criteria by setting the argument negative value, as is shown also in the example. The implementation returns also a gene-level statistics of the differential expression of genes. These statistics are later used in the visualization of a selected pathway.

2.5 TAPPA

TAPPA was among the first topology-based pathway analysis methods. It was inspired in chemoinformatics and their models for predicting the structure of molecules. In TAPPA, the gene expression values are standardized and sigma-transformed within a samples. Then, a pathway is seen a molecule, individual genes as atoms and the energy of a molecule is a score defined for one sample. This score is called Pathway Connectivity Index. The difference of expression is assessed via a common univariable two sample test - Mann-Whitney in our implemetation.

```
> tap<-TAPPA(exprLoi2008, classLoi2008, pathways, type="MA")
```

```
98 node labels mapped to the expression data
Average coverage 31.32477 %
0 (out of 5) pathways without a mapped node
0 denoted as 0
1 denoted as 1
Contrasts: 1 - 0
```

```
> res(tap)
```

\$results

	X0.N	X0.Min.	
Acute myeloid leukemia	68	-0.2909	
Adherens junction	68	-0.1521	
Adipocytokine signaling pathway	68	-0.3464	
Adrenergic signaling in cardiomyocytes	68	-0.1848	
African trypanosomiasis	68	-0.2150	
	X0.1st.Qu.	X0.Median	
Acute myeloid leukemia	-0.07893	0.034980	
Adherens junction	-0.05562	-0.021800	
Adipocytokine signaling pathway	-0.13940	-0.002325	
Adrenergic signaling in cardiomyocytes	-0.06417	0.006781	
African trypanosomiasis	-0.08672	-0.037130	
	X0.Mean	X0.3rd.Qu.	
Acute myeloid leukemia	0.019060	0.12270	
Adherens junction	-0.016930	0.02244	
Adipocytokine signaling pathway	-0.011370	0.09997	
Adrenergic signaling in cardiomyocytes	-0.007017	0.04800	
African trypanosomiasis	-0.023710	0.03819	
	X0.Max.	X1.N	X1.Min.
Acute myeloid leukemia	0.3199	187	-0.4077
Adherens junction	0.1334	187	-0.1536
Adipocytokine signaling pathway	0.3573	187	-0.4469
Adrenergic signaling in cardiomyocytes	0.1527	187	-0.2247
African trypanosomiasis	0.1801	187	-0.2400
	X1.1st.Qu.		
Acute myeloid leukemia	-0.15430		
Adherens junction	-0.03624		
Adipocytokine signaling pathway	-0.12690		
Adrenergic signaling in cardiomyocytes	-0.05528		
African trypanosomiasis	-0.05886		
	X1.Median	X1.Mean	
Acute myeloid leukemia	-0.0490500	-0.046460	
Adherens junction	-0.0027600	-0.006503	
Adipocytokine signaling pathway	0.0009355	0.008730	
Adrenergic signaling in cardiomyocytes	-0.0147700	-0.014400	
African trypanosomiasis	-0.0036970	0.010750	
	X1.3rd.Qu.	X1.Max.	
Acute myeloid leukemia	0.06715	0.3696	
Adherens junction	0.02827	0.1240	
Adipocytokine signaling pathway	0.14160	0.5097	
Adrenergic signaling in cardiomyocytes	0.03123	0.1951	
African trypanosomiasis	0.06799	0.4001	
	p.value		
Acute myeloid leukemia	0.001672774		
Adherens junction	0.209738211		

Adipocytokine signaling pathway	0.405572919
Adrenergic signaling in cardiomyocytes	0.514258706
African trypanosomiasis	0.014492732
	q.value
Acute myeloid leukemia	0.008363871
Adherens junction	0.349563684
Adipocytokine signaling pathway	0.506966149
Adrenergic signaling in cardiomyocytes	0.514258706
African trypanosomiasis	0.036231830

```
$errors
named list()
```

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. The user can also specified whether the normalization step (standardization and sigma-transformation) should be performed (**normalize=TRUE**). If **verbose=TRUE**, function prints out the titles of pathways as their are analysed. The implementation returns also a gene-level statistics of the differential expression of genes. These statistics are later used in the visualization of a selected pathway.

2.6 PRS

PRS is another method that works with gene-level statistics and a list of differentially expressed genes. The pathway topology is incorporated as the number of downstream differentially expressed genes. The gene-level log fold-changes are weighted by this number and summed up into a pathway-level score. A statistical significance is assessed by a permutations of genes.

```
> Prs<-PRS( exprLoi2008, classLoi2008, pathways, type="MA", logFC.th=-1, nperm=100)

0 denoted as 0
1 denoted as 1
Contrasts: 1 - 0
98 node labels mapped to the expression data
Average coverage 31.32477 %
0 (out of 5) pathways without a mapped node
0 denoted as 0
1 denoted as 1
Contrasts: 1 - 0
```

```

> res(Prs)

$results
                                nPRS p.value
Acute myeloid leukemia          -0.7739984  0.96
Adherens junction               2.0800769  0.06
Adipocytokine signaling pathway  0.4392239  0.25
Adrenergic signaling in cardiomyocytes -0.7767516  0.84
African trypanosomiasis         2.2193512  0.05
                                q.value
Acute myeloid leukemia          0.9600000
Adherens junction               0.1500000
Adipocytokine signaling pathway  0.4166667
Adrenergic signaling in cardiomyocytes 0.9600000
African trypanosomiasis         0.1500000

$errors
named list()

>

```

Arguments of this functions are almost the same as in **SPiA**. Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("**MA**" is used for expression microarray and "**RNASeq**" for RNA-Seq data). Alternatively, the user can supply the results of the differential expression analysis of genes in two forms:

1. a data.frame with columns: *ID* gene identifiers (they must match with the node labels), *logFC* log fold-changes, *t* - t-statistics, *pval* p-values, *padj* adjusted p-values. Then the user sets **type** to **DEtable**
2. a list with two slots: named vector of log fold-changes of differentially expressed genes and a vector of names of all genes analysed. Then the user sets **type** to **DElist**

The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. The default thresholds for the differential expression analysis of genes (the moderated t-test from **limma** is used) are set with arguments **logFC.th** and **p.val.th**. The user can omit one of these criteria by setting the argument negative value, as is shown also in the example. The implementation returns also a gene-level statistics of the differential expression of genes. These statistics are later used in the visualization of a selected pathway. There is one extra argument **nperm** which controls the number of permutations.

2.7 PWEA

The last method available in this package is called PathWay Enrichment Analysis (PWEA). This is actually a weighed form of common Gene Set Enrichment Analysis (GSEA). The weights are called Topological Influence Factor (TIF) and are defined as a geometric mean of ratios of Pearson's correlation coefficient and the distance of two genes in a pathway. The weights of genes outside a pathway are assigned randomly from normal distribution with parameters estimated from the weights of genes in all pathways. A statistical significance of a pathway is assessed via Kolmogorov-Smirnov-like test statistic comparing two cumulative distribution functions with class label permutations.

```
> pwe<-PWEA(exprLoi2008, classLoi2008, pathways, type="MA", nperm=100)
> #0 denoted as 0
> # 1 denoted as 1
> # Contrasts: 1 - 0
> #29 node labels mapped to the expression data
> #Average coverage 5.752782 %
> #1 (out of 5) pathways without a mapped node
> #1 pathways were filtered out
> # Preparing permutations..
> res(pwe)
> # $results
> #

```

	ES	p.value	q.value
#Acute myeloid leukemia	-0.1516072	0.36	0.5066667
#Adherens junction	0.2576037	1.00	1.0000000
#Adipocytokine signaling pathway	0.2221782	0.38	0.5066667
#Adrenergic signaling in cardiomyocytes	-0.2265755	0.05	0.2000000

```
> #
> # $errors
> #named list()
>
```

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the `type` argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). Alternatively, the user can supply a list of observed and random gene-level statistics and set `type` to `DEtable`. The observed gene-level statistics are expected as data frame with columns: *ID* gene identifiers (they must match with the node labels), *logFC* log fold-changes, *t* - t-statistics, *pval* p-values, *padj* adjusted p-values.. A data.frame of similar data.frames is expected for random statistics (it is an output from `sapply` function when the applied function returns a data frame). Columns should refer to the results from individual analyses after class label permutation. The others arguments are optional. Arguments `convertTo` and `convertBy` control the conversion of the node labels in the pathways. The default setting is `convertTo="none"` which performs no conversion. Please note, that the node labels should be the

same as the rownames of gene expression data matrix. The **alpha** parameter sets a threshold for gene weights. The purpose of this filtering is to reduce the possibility that a weight of a gene that is tightly correlated with a few genes are lowered by the weak correlation with other genes in a pathway. The implementation returns also a gene-level statistics of the differential expression of genes. These statistics are later used in the visualization of a selected pathway. The **nperm** argument controls the number of permutations.

Chapter 3

Analysis of RNA-Seq data

All of the methods mentioned in the previous chapter were designed for the microarray data. However, the RNA-Seq technology is gaining popularity and becomes widely used. Unfortunately, the topology-based pathway analysis methods are not available for this type of the data. Therefore, we adapted the selected methods for RNA-Seq count matrices. Two types of adaptations were used. If a method works directly with the expression profiles (multivariable methods and TAPPA), then the count matrix is normalized and transformed either by TMM or DESeq2 method. The remaining methods use also or only the gene-level statistics like log fold-change. The differential expression analysis of genes with either DESeq2 or limma package is a part of their implementation.

We will use the data from `gageData` for an example analysis.

```
> library(gageData)
> data(hnrnp.cnts)
> hnrnp.cnts<-hnrnp.cnts[rowSums(hnrnp.cnts)>0,]
> group<-c(rep("sample",4), rep("control",4))
> pathways<-pathways("hsapiens", "kegg")
>
```

3.1 TopologyGSA

TopologyGSA represents a multivariable method in which the expression of genes is modelled with Gaussian Graphical Models with covariance matrix reflecting the pathway topology. It uses the the Iterative Proportional Scaling algorithm to estimate the covariance matrices. The testing procedure is a two-step process. First the equality of covariance matrices is tested via a likelihood ratio test. Then, when the null hypothesis of equality of covariance matrices is not rejected, the differential expression is tested via multivariate analysis of variance. On the other hand, when the covariance matrices are not equal, then Behrens-Fisher method for testing the equality of means in a two sample problem with unequal covariance matrices is employed.

The method can be used with a single command

```
> top<-TopologyGSA(hnrnp.cnts, group, pathways[1:3], type="RNASeq", nperm=1000)
> #528 node labels mapped to the expression data
> #Average coverage 83.16538
> #0 (out of 10) pathways without a mapped node
> #Normalization method was not specified. TMM used as default
> #Acute myeloid leukemia
> #Adherens junction
> #Adipocytokine signaling pathway
>
>
> res(top)
> #data frame with 0 columns and 1 rows
>
>
```

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). The others arguments are optional. The **perms** argument sets the number of permutations to be used in the statistical tests. By default both mean and variance tests are run, this can be changed to only variance test by setting **method="var"**. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. The threshold for variance test is specified with **alpha** argument. The implementation allows also testing of all the cliques present in the graph by setting **testCliques=TRUE**. Please note that these tests may take quite a long time. The implementation returns also a gene-level statistics of the differential expression of genes performed via moderated t-test from **limma** package. These statistics are later used in the visualization of a selected pathway.

Unfortunately, this method requires more samples than nodes in a pathway. Therefore there is an empty output in the example above.

3.2 DEGraph

Another multivariable method implemented in the package is DEGraph. This method assumes the same direction in the differential expression of genes belonging to a pathway. It performs the regular Hotelling's T2 test in the graph-Fourier space restricted to its first k components which is more powerful than test in the full graph-Fourier space or in the original space.

We apply the method with

```
> deg<-DEGraph(hnrnp.cnts, group, pathways, type="RNASeq")
```

14329 node labels mapped to the expression data
Average coverage 84.40644 %
0 (out of 267) pathways without a mapped node

> res(deg)[[1]][[1]]

	Overall.p
Acute myeloid leukemia	2.683394e-02
Adherens junction	1.343409e-01
Adipocytokine signaling pathway	8.665537e-02
African trypanosomiasis	2.078754e-01
AGE-RAGE signaling pathway in diabetic complications	3.297610e-04
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	1.269940e-02
Aldosterone-regulated sodium reabsorption	1.738535e-01
Allograft rejection	8.546771e-01
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1.276149e-04
Amino sugar and nucleotide sugar metabolism	9.186695e-03
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	6.280109e-02
AMPK signaling pathway	2.345083e-03
Amyotrophic lateral sclerosis (ALS)	4.057960e-03
Antigen processing and presentation	1.196358e-01
Arachidonic acid metabolism	NA
Arginine and proline metabolism	1.858306e-01
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	1.193991e-03
Ascorbate and aldarate metabolism	NA
Asthma	2.734131e-01
Autoimmune thyroid disease	8.546771e-01
B cell receptor signaling pathway	1.407039e-01
beta-Alanine metabolism	4.594303e-02
Bile secretion	3.022706e-02
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	6.071317e-04
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	6.730337e-04
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	8.138020e-02
Central carbon metabolism in cancer	5.702963e-03
Chagas disease (American trypanosomiasis)	8.702790e-04
Chemical carcinogenesis	NA
Choline metabolism in cancer	2.612321e-01

Chronic myeloid leukemia	5.581007e-02
Circadian rhythm	5.341162e-02
Citrate cycle (TCA cycle)	1.796427e-03
Cocaine addiction	6.684496e-03
Colorectal cancer	8.763833e-02
Cysteine and methionine metabolism	1.023640e-01
Cytosolic DNA-sensing pathway	3.299765e-02
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	1.527982e-03
Dorso-ventral axis formation	2.675513e-02
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	5.465861e-01
Endocytosis	2.077984e-03
Endometrial cancer	3.359916e-02
Epstein-Barr virus infection	3.434329e-01
Ether lipid metabolism	NA
Fanconi anemia pathway	4.090170e-02
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	1.418699e-02
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	1.983813e-02
Gastric acid secretion	8.445878e-03
Glucagon signaling pathway	1.713701e-02
Glutathione metabolism	NA
Glycerolipid metabolism	3.922077e-03
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	1.938295e-04
Glycolysis / Gluconeogenesis	6.199374e-03
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	9.608565e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	3.813981e-06
GnRH signaling pathway	3.515292e-01
Graft-versus-host disease	8.546771e-01
Hepatitis C	1.605871e-02
Herpes simplex infection	4.689919e-02
Histidine metabolism	NA
Huntington's disease	1.576390e-03

Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	7.856899e-01
Inflammatory mediator regulation of TRP channels	1.691544e-01
Influenza A	1.365372e-01
Inositol phosphate metabolism	NA
Insulin resistance	8.889484e-02
Insulin secretion	2.152774e-01
Insulin signaling pathway	3.825402e-02
Intestinal immune network for IgA production	2.279272e-01
Legionellosis	3.846843e-01
Leishmaniasis	9.648594e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	7.552792e-01
Maturity onset diabetes of the young	8.656706e-01
Measles	2.467815e-01
Melanogenesis	3.257857e-02
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	3.950384e-01
mRNA surveillance pathway	1.448173e-04
mTOR signaling pathway	4.081232e-03
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	4.306460e-01
Neuroactive ligand-receptor interaction	7.259594e-01
Neurotrophin signaling pathway	4.308852e-01
Nicotinate and nicotinamide metabolism	1.104539e-02
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	1.438629e-02
Non-alcoholic fatty liver disease (NAFLD)	1.115275e-01
One carbon pool by folate	1.128339e-03
Oocyte meiosis	7.217088e-02
Osteoclast differentiation	1.019221e-02
Ovarian steroidogenesis	8.075149e-01
Oxidative phosphorylation	NA
Pancreatic cancer	2.747913e-01
Pancreatic secretion	3.022706e-02
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	3.731617e-03
Pathogenic Escherichia coli infection	4.183095e-01
Pentose and glucuronate interconversions	1.689197e-01
Pentose phosphate pathway	9.607221e-01
Peroxisome	NA
Pertussis	1.710487e-02
Phagosome	3.106467e-02

Phenylalanine metabolism	1.766262e-02
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	2.467377e-02
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	6.085264e-03
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	5.563929e-05
Pyruvate metabolism	3.017727e-03
Regulation of autophagy	8.275166e-04
Regulation of lipolysis in adipocytes	2.270281e-01
Renal cell carcinoma	2.426642e-02
Renin secretion	3.308961e-03
Renin-angiotensin system	3.720312e-01
Retinol metabolism	NA
Rheumatoid arthritis	8.546771e-01
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	7.688811e-01
RNA degradation	8.761521e-03
RNA transport	1.201860e-01
Salivary secretion	8.569712e-01
Salmonella infection	6.001921e-02
Selenocompound metabolism	NA
Shigellosis	3.666778e-01
SNARE interactions in vesicular transport	7.232946e-02
Sphingolipid metabolism	NA
Staphylococcus aureus infection	1.553210e-01
Starch and sucrose metabolism	3.103412e-03
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	1.792871e-02
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	2.073505e-02
T cell receptor signaling pathway	4.019857e-02
Taste transduction	1.446835e-01
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	2.335354e-04
Thyroid hormone synthesis	4.534803e-01
Tight junction	1.763080e-01

TNF signaling pathway	1.998218e-01
Toxoplasmosis	9.648594e-01
Transcriptional misregulation in cancer	8.000109e-02
Tryptophan metabolism	NA
Type I diabetes mellitus	8.546771e-01
Type II diabetes mellitus	1.590204e-01
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	1.049775e-01
Vasopressin-regulated water reabsorption	8.245162e-03
VEGF signaling pathway	4.728829e-02
Vibrio cholerae infection	3.317853e-01
Viral carcinogenesis	1.429658e-03
Viral myocarditis	4.157033e-01
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	1.032858e-01
	Overall.q.value
Acute myeloid leukemia	0.0686948776
Adherens junction	0.2149455150
Adipocytokine signaling pathway	0.1558014683
African trypanosomiasis	0.2892179055
AGE-RAGE signaling pathway in diabetic complications	0.0060299151
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	0.0439330505
Aldosterone-regulated sodium reabsorption	0.2528778655
Allograft rejection	0.8918073802
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.0046341528
Amino sugar and nucleotide sugar metabolism	0.0345852065
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	0.1217960532
AMPK signaling pathway	0.0157984548
Amyotrophic lateral sclerosis (ALS)	0.0200922183
Antigen processing and presentation	0.1947317720
Arachidonic acid metabolism	NA
Arginine and proline metabolism	0.2642924298
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.0117562172
Ascorbate and aldarate metabolism	NA
Asthma	0.3552856637
Autoimmune thyroid disease	0.8918073802
B cell receptor signaling pathway	0.2196353046
beta-Alanine metabolism	0.0976274338
Bile secretion	0.0744050727
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA

Bladder cancer	0.0095720351
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	0.0095720351
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.1488095131
Central carbon metabolism in cancer	0.0270362676
Chagas disease (American trypanosomiasis)	0.0101268831
Chemical carcinogenesis	NA
Choline metabolism in cancer	0.3447186596
Chronic myeloid leukemia	0.1116201315
Circadian rhythm	0.1085188410
Citrate cycle (TCA cycle)	0.0135260369
Cocaine addiction	0.0285205154
Colorectal cancer	0.1558014683
Cysteine and methionine metabolism	0.1762744362
Cytosolic DNA-sensing pathway	0.0767945307
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	0.0126111212
Dorso-ventral axis formation	0.0686948776
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	0.6246697961
Endocytosis	0.0147767738
Endometrial cancer	0.0767980823
Epstein-Barr virus infection	0.4352416867
Ether lipid metabolism	NA
Fanconi anemia pathway	0.0887358821
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	0.0472165281
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	0.0564284582
Gastric acid secretion	0.0337835138
Glucagon signaling pathway	0.0521562591
Glutathione metabolism	NA
Glycerolipid metabolism	0.0200922183
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	0.0049620354
Glycolysis / Gluconeogenesis	0.0273627539
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA

Glycosphingolipid biosynthesis - globo series	0.9648593562
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	0.0004881896
GnRH signaling pathway	0.4411347127
Graft-versus-host disease	0.8918073802
Hepatitis C	0.0513878609
Herpes simplex infection	0.0976274338
Histidine metabolism	NA
Huntington's disease	0.0126111212
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	0.8669681576
Inflammatory mediator regulation of TRP channels	0.2488708658
Influenza A	0.2157625579
Inositol phosphate metabolism	NA
Insulin resistance	0.1558704081
Insulin secretion	0.2962958289
Insulin signaling pathway	0.0859037555
Intestinal immune network for IgA production	0.3071018608
Legionellosis	0.4689484659
Leishmaniasis	0.9648593562
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	0.8480327691
Maturity onset diabetes of the young	0.8935954539
Measles	0.3290420480
Melanogenesis	0.0767945307
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	0.4770274501
mRNA surveillance pathway	0.0046341528
mTOR signaling pathway	0.0200922183
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	0.5013937091
Neuroactive ligand-receptor interaction	0.8223256592
Neurotrophin signaling pathway	0.5013937091
Nicotinate and nicotinamide metabolism	0.0392724961
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	0.0472165281
Non-alcoholic fatty liver disease (NAFLD)	0.1853962872
One carbon pool by folate	0.0117562172
Oocyte meiosis	0.1361495803
Osteoclast differentiation	0.0372743834
Ovarian steroidogenesis	0.8834350695
Oxidative phosphorylation	NA

Pancreatic cancer	0.3552856637
Pancreatic secretion	0.0744050727
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	0.0200922183
Pathogenic Escherichia coli infection	0.4957742601
Pentose and glucuronate interconversions	0.2488708658
Pentose phosphate pathway	0.9648593562
Peroxisome	NA
Pertussis	0.0521562591
Phagosome	0.0750241025
Phenylalanine metabolism	0.0521562591
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	0.0657967307
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	0.0273627539
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	0.0035609144
Pyruvate metabolism	0.0189160355
Regulation of autophagy	0.0101268831
Regulation of lipolysis in adipocytes	0.3071018608
Renal cell carcinoma	0.0657967307
Renin secretion	0.0192521393
Renin-angiotensin system	0.4578846088
Retinol metabolism	NA
Rheumatoid arthritis	0.8918073802
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	0.8557981017
RNA degradation	0.0339840820
RNA transport	0.1947317720
Salivary secretion	0.8918073802
Salmonella infection	0.1181916724
Selenocompound metabolism	NA
Shigellosis	0.4556773018
SNARE interactions in vesicular transport	0.1361495803
Sphingolipid metabolism	NA
Staphylococcus aureus infection	0.2366796794
Starch and sucrose metabolism	0.0189160355
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	0.0521562591
Synaptic vesicle cycle	NA

Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	0.0576975363
T cell receptor signaling pathway	0.0887140947
Taste transduction	0.2231264091
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	0.0049820882
Thyroid hormone synthesis	0.5229322780
Tight junction	0.2535666134
TNF signaling pathway	0.2810679609
Toxoplasmosis	0.9648593562
Transcriptional misregulation in cancer	0.1484078265
Tryptophan metabolism	NA
Type I diabetes mellitus	0.8918073802
Type II diabetes mellitus	0.2394659645
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	0.1768041406
Vasopressin-regulated water reabsorption	0.0337835138
VEGF signaling pathway	0.0976274338
Vibrio cholerae infection	0.4246851598
Viral carcinogenesis	0.0126111212
Viral myocarditis	0.4957742601
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	0.1762744362
	Comp1.p
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	3.321571e-01
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	7.337280e-01
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	4.755887e-02
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	6.922096e-03
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	2.409016e-02

Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	4.625094e-02
Ascorbate and aldarate metabolism	NA
Asthma	9.033627e-02
Autoimmune thyroid disease	7.337280e-01
B cell receptor signaling pathway	NA
beta-Alanine metabolism	9.137767e-02
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	1.684380e-01
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	4.851462e-03
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	NA
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	1.306564e-02
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	1.886335e-04
Cytosolic DNA-sensing pathway	1.973568e-03
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	5.540730e-03
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	2.779362e-03
Gastric acid secretion	NA

Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	9.739993e-02
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	6.812957e-05
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	2.725203e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	4.975241e-05
GnRH signaling pathway	NA
Graft-versus-host disease	7.337280e-01
Hepatitis C	NA
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	2.520118e-01
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	7.793022e-01
Maturity onset diabetes of the young	4.820172e-01
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	5.837847e-03
mRNA surveillance pathway	4.352991e-02
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA

Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	1.274495e-03
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	7.946070e-04
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	2.003296e-04
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	4.659743e-01
Pentose phosphate pathway	6.671947e-02
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	9.307516e-05
Pyruvate metabolism	7.213830e-05
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	3.785431e-01
Retinol metabolism	NA
Rheumatoid arthritis	7.337280e-01
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA

Shigellosis	9.048986e-02
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	7.428724e-04
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	3.861644e-04
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	3.693798e-02
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	9.869721e-02
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	7.341611e-02
Tryptophan metabolism	NA
Type I diabetes mellitus	7.337280e-01
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	4.321249e-02
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	1.083861e-04
Viral carcinogenesis	8.268046e-03
Viral myocarditis	3.240477e-01
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	3.001528e-01
	Comp1.pFourier
Acute myeloid leukemia	2.683394e-02
Adherens junction	1.343409e-01
Adipocytokine signaling pathway	8.665537e-02
African trypanosomiasis	2.078754e-01
AGE-RAGE signaling pathway in diabetic complications	3.297610e-04
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	1.269940e-02
Aldosterone-regulated sodium reabsorption	1.738535e-01
Allograft rejection	8.546771e-01

alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1.276149e-04
Amino sugar and nucleotide sugar metabolism	9.186695e-03
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	6.280109e-02
AMPK signaling pathway	2.345083e-03
Amyotrophic lateral sclerosis (ALS)	4.057960e-03
Antigen processing and presentation	1.196358e-01
Arachidonic acid metabolism	NA
Arginine and proline metabolism	1.858306e-01
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	1.193991e-03
Ascorbate and aldarate metabolism	NA
Asthma	2.734131e-01
Autoimmune thyroid disease	8.546771e-01
B cell receptor signaling pathway	1.407039e-01
beta-Alanine metabolism	4.594303e-02
Bile secretion	3.022706e-02
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	6.071317e-04
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	6.730337e-04
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	8.138020e-02
Central carbon metabolism in cancer	5.702963e-03
Chagas disease (American trypanosomiasis)	8.702790e-04
Chemical carcinogenesis	NA
Choline metabolism in cancer	2.612321e-01
Chronic myeloid leukemia	5.581007e-02
Circadian rhythm	5.341162e-02
Citrate cycle (TCA cycle)	1.796427e-03
Cocaine addiction	6.684496e-03
Colorectal cancer	8.763833e-02
Cysteine and methionine metabolism	1.023640e-01
Cytosolic DNA-sensing pathway	3.299765e-02
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	1.527982e-03
Dorso-ventral axis formation	2.675513e-02
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	5.465861e-01
Endocytosis	2.077984e-03
Endometrial cancer	3.359916e-02
Epstein-Barr virus infection	3.434329e-01

Ether lipid metabolism	NA
Fanconi anemia pathway	4.090170e-02
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	1.418699e-02
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	1.983813e-02
Gastric acid secretion	8.445878e-03
Glucagon signaling pathway	1.713701e-02
Glutathione metabolism	NA
Glycerolipid metabolism	3.922077e-03
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	1.938295e-04
Glycolysis / Gluconeogenesis	6.199374e-03
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	9.608565e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	3.813981e-06
GnRH signaling pathway	3.515292e-01
Graft-versus-host disease	8.546771e-01
Hepatitis C	1.605871e-02
Herpes simplex infection	4.689919e-02
Histidine metabolism	NA
Huntington's disease	1.576390e-03
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	7.856899e-01
Inflammatory mediator regulation of TRP channels	1.691544e-01
Influenza A	1.365372e-01
Inositol phosphate metabolism	NA
Insulin resistance	8.889484e-02
Insulin secretion	2.152774e-01
Insulin signaling pathway	3.825402e-02
Intestinal immune network for IgA production	2.279272e-01
Legionellosis	3.846843e-01
Leishmaniasis	9.648594e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	7.552792e-01

Maturity onset diabetes of the young	8.656706e-01
Measles	2.467815e-01
Melanogenesis	3.257857e-02
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	3.950384e-01
mRNA surveillance pathway	1.448173e-04
mTOR signaling pathway	4.081232e-03
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	4.306460e-01
Neuroactive ligand-receptor interaction	7.259594e-01
Neurotrophin signaling pathway	4.308852e-01
Nicotinate and nicotinamide metabolism	1.104539e-02
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	1.438629e-02
Non-alcoholic fatty liver disease (NAFLD)	1.115275e-01
One carbon pool by folate	1.128339e-03
Oocyte meiosis	7.217088e-02
Osteoclast differentiation	1.019221e-02
Ovarian steroidogenesis	8.075149e-01
Oxidative phosphorylation	NA
Pancreatic cancer	2.747913e-01
Pancreatic secretion	3.022706e-02
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	3.731617e-03
Pathogenic Escherichia coli infection	4.183095e-01
Pentose and glucuronate interconversions	1.689197e-01
Pentose phosphate pathway	9.607221e-01
Peroxisome	NA
Pertussis	1.710487e-02
Phagosome	3.106467e-02
Phenylalanine metabolism	1.766262e-02
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	2.467377e-02
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	6.085264e-03
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	5.563929e-05
Pyruvate metabolism	3.017727e-03
Regulation of autophagy	8.275166e-04
Regulation of lipolysis in adipocytes	2.270281e-01
Renal cell carcinoma	2.426642e-02
Renin secretion	3.308961e-03
Renin-angiotensin system	3.720312e-01

Retinol metabolism	NA
Rheumatoid arthritis	8.546771e-01
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	7.688811e-01
RNA degradation	8.761521e-03
RNA transport	1.201860e-01
Salivary secretion	8.569712e-01
Salmonella infection	6.001921e-02
Selenocompound metabolism	NA
Shigellosis	3.666778e-01
SNARE interactions in vesicular transport	7.232946e-02
Sphingolipid metabolism	NA
Staphylococcus aureus infection	1.553210e-01
Starch and sucrose metabolism	3.103412e-03
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	1.792871e-02
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	2.073505e-02
T cell receptor signaling pathway	4.019857e-02
Taste transduction	1.446835e-01
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	2.335354e-04
Thyroid hormone synthesis	4.534803e-01
Tight junction	1.763080e-01
TNF signaling pathway	1.998218e-01
Toxoplasmosis	9.648594e-01
Transcriptional misregulation in cancer	8.000109e-02
Tryptophan metabolism	NA
Type I diabetes mellitus	8.546771e-01
Type II diabetes mellitus	1.590204e-01
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	1.049775e-01
Vasopressin-regulated water reabsorption	8.245162e-03
VEGF signaling pathway	4.728829e-02
Vibrio cholerae infection	3.317853e-01
Viral carcinogenesis	1.429658e-03
Viral myocarditis	4.157033e-01
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	1.032858e-01

	Comp1.k
Acute myeloid leukemia	3
Adherens junction	4
Adipocytokine signaling pathway	3
African trypanosomiasis	1
AGE-RAGE signaling pathway in diabetic complications	6
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	3
Aldosterone-regulated sodium reabsorption	3
Allograft rejection	1
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2
Amino sugar and nucleotide sugar metabolism	1
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	2
AMPK signaling pathway	3
Amyotrophic lateral sclerosis (ALS)	1
Antigen processing and presentation	2
Arachidonic acid metabolism	NA
Arginine and proline metabolism	1
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	1
Ascorbate and aldarate metabolism	NA
Asthma	1
Autoimmune thyroid disease	1
B cell receptor signaling pathway	3
beta-Alanine metabolism	1
Bile secretion	2
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	2
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	1
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	2
Central carbon metabolism in cancer	4
Chagas disease (American trypanosomiasis)	2
Chemical carcinogenesis	NA
Choline metabolism in cancer	6
Chronic myeloid leukemia	6
Circadian rhythm	4
Citrate cycle (TCA cycle)	1
Cocaine addiction	3
Colorectal cancer	5
Cysteine and methionine metabolism	1

Cytosolic DNA-sensing pathway	1
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	4
Dorso-ventral axis formation	1
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	2
Endocytosis	2
Endometrial cancer	4
Epstein-Barr virus infection	2
Ether lipid metabolism	NA
Fanconi anemia pathway	4
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	2
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	1
Gastric acid secretion	3
Glucagon signaling pathway	5
Glutathione metabolism	NA
Glycerolipid metabolism	2
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	1
Glycolysis / Gluconeogenesis	2
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	1
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	1
GnRH signaling pathway	4
Graft-versus-host disease	1
Hepatitis C	2
Herpes simplex infection	2
Histidine metabolism	NA
Huntington's disease	2
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	3
Inflammatory mediator regulation of TRP channels	4
Influenza A	3
Inositol phosphate metabolism	NA
Insulin resistance	2

Insulin secretion	5
Insulin signaling pathway	4
Intestinal immune network for IgA production	1
Legionellosis	2
Leishmaniasis	2
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	1
Maturity onset diabetes of the young	1
Measles	2
Melanogenesis	3
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	1
mRNA surveillance pathway	2
mTOR signaling pathway	2
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	2
Neuroactive ligand-receptor interaction	2
Neurotrophin signaling pathway	5
Nicotinate and nicotinamide metabolism	1
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	2
Non-alcoholic fatty liver disease (NAFLD)	4
One carbon pool by folate	1
Oocyte meiosis	4
Osteoclast differentiation	2
Ovarian steroidogenesis	3
Oxidative phosphorylation	NA
Pancreatic cancer	6
Pancreatic secretion	2
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	1
Pathogenic Escherichia coli infection	3
Pentose and glucuronate interconversions	2
Pentose phosphate pathway	1
Peroxisome	NA
Pertussis	2
Phagosome	4
Phenylalanine metabolism	2
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	2
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA

Prion diseases	2
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	1
Pyruvate metabolism	1
Regulation of autophagy	2
Regulation of lipolysis in adipocytes	4
Renal cell carcinoma	4
Renin secretion	2
Renin-angiotensin system	1
Retinol metabolism	NA
Rheumatoid arthritis	1
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	2
RNA degradation	2
RNA transport	2
Salivary secretion	2
Salmonella infection	3
Selenocompound metabolism	NA
Shigellosis	1
SNARE interactions in vesicular transport	4
Sphingolipid metabolism	NA
Staphylococcus aureus infection	3
Starch and sucrose metabolism	1
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	1
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	2
T cell receptor signaling pathway	3
Taste transduction	2
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	2
Thyroid hormone synthesis	4
Tight junction	2
TNF signaling pathway	6
Toxoplasmosis	2
Transcriptional misregulation in cancer	1
Tryptophan metabolism	NA
Type I diabetes mellitus	1
Type II diabetes mellitus	3

Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	1
Vasopressin-regulated water reabsorption	3
VEGF signaling pathway	2
Vibrio cholerae infection	1
Viral carcinogenesis	1
Viral myocarditis	1
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	1
	Comp2.p
Acute myeloid leukemia	NA
Adherens junction	1.481186e-03
Adipocytokine signaling pathway	1.374063e-02
African trypanosomiasis	3.743224e-02
AGE-RAGE signaling pathway in diabetic complications	1.293286e-02
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	9.033627e-02
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1.493874e-02
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	7.524637e-02
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	1.388958e-02
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	9.033627e-02
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	3.453946e-01
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	2.652803e-07
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	NA

Central carbon metabolism in cancer	1.971067e-03
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	4.655277e-03
Chronic myeloid leukemia	2.429064e-02
Circadian rhythm	4.771821e-03
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	7.548896e-05
Cytosolic DNA-sensing pathway	5.007935e-03
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	1.812216e-03
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	6.102416e-02
Endocytosis	NA
Endometrial cancer	9.869721e-02
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	1.767816e-01
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	3.651105e-05
Glycolysis / Gluconeogenesis	2.017917e-03
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	2.126348e-03
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	2.697094e-02
GnRH signaling pathway	NA
Graft-versus-host disease	NA

Hepatitis C	4.408723e-02
Herpes simplex infection	7.392980e-03
Histidine metabolism	NA
Huntington's disease	2.559033e-02
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	1.461611e-02
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	1.667720e-01
Intestinal immune network for IgA production	NA
Legionellosis	7.113984e-01
Leishmaniasis	3.887577e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	8.607069e-01
Maturity onset diabetes of the young	NA
Measles	1.772913e-01
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	3.930594e-02
mTOR signaling pathway	1.572668e-03
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	5.956817e-03
Neuroactive ligand-receptor interaction	3.503275e-02
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	2.896892e-02
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	5.527719e-02
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	1.521317e-01
Oxidative phosphorylation	NA
Pancreatic cancer	1.089600e-03
Pancreatic secretion	6.307811e-02
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	2.848925e-01
Pathogenic Escherichia coli infection	1.128429e-01
Pentose and glucuronate interconversions	2.931817e-02

Pentose phosphate pathway	8.149323e-04
Peroxisome	NA
Pertussis	2.016979e-01
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	1.063318e-01
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	2.175494e-05
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	2.782924e-02
Salivary secretion	NA
Salmonella infection	3.362306e-02
Selenocompound metabolism	NA
Shigellosis	2.896892e-02
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	5.462572e-02
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	1.566007e-01
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	7.337280e-01
T cell receptor signaling pathway	6.226573e-03
Taste transduction	2.333172e-01
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA

Thiamine metabolism	NA
Thyroid cancer	2.009437e-03
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	1.255121e-03
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	1.264990e-02
VEGF signaling pathway	NA
Vibrio cholerae infection	8.646299e-02
Viral carcinogenesis	5.896532e-02
Viral myocarditis	4.189248e-02
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp2.pFourier	
Acute myeloid leukemia	8.546789e-01
Adherens junction	5.196806e-04
Adipocytokine signaling pathway	4.230508e-02
African trypanosomiasis	2.922056e-02
AGE-RAGE signaling pathway in diabetic complications	4.353248e-05
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	2.105152e-01
Aldosterone-regulated sodium reabsorption	1.750243e-01
Allograft rejection	2.734131e-01
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	4.394902e-02
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	1.974748e-02
AMPK signaling pathway	4.581910e-02
Amyotrophic lateral sclerosis (ALS)	2.391120e-01
Antigen processing and presentation	3.023482e-01
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	2.734131e-01
B cell receptor signaling pathway	3.948262e-02

beta-Alanine metabolism	NA
Bile secretion	7.805723e-01
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	1.033828e-02
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	9.822004e-01
Central carbon metabolism in cancer	1.861212e-04
Chagas disease (American trypanosomiasis)	8.475496e-02
Chemical carcinogenesis	NA
Choline metabolism in cancer	7.119866e-01
Chronic myeloid leukemia	6.038602e-02
Circadian rhythm	3.360055e-01
Citrate cycle (TCA cycle)	NA
Cocaine addiction	7.260976e-01
Colorectal cancer	5.946140e-03
Cysteine and methionine metabolism	7.548123e-05
Cytosolic DNA-sensing pathway	6.826353e-03
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	7.306609e-02
Dorso-ventral axis formation	1.023159e-01
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	1.163920e-01
Endocytosis	3.549273e-01
Endometrial cancer	2.335354e-04
Epstein-Barr virus infection	3.696621e-03
Ether lipid metabolism	NA
Fanconi anemia pathway	8.074759e-05
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	4.361522e-01
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	1.629596e-01
Glucagon signaling pathway	5.354515e-02
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	2.772092e-06
Glycolysis / Gluconeogenesis	2.488998e-02

Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	7.575652e-02
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	1.894697e-02
GnRH signaling pathway	1.808112e-03
Graft-versus-host disease	NA
Hepatitis C	1.098787e-02
Herpes simplex infection	1.198945e-02
Histidine metabolism	NA
Huntington's disease	6.140781e-01
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	3.089862e-01
Inflammatory mediator regulation of TRP channels	6.205323e-03
Influenza A	8.594545e-04
Inositol phosphate metabolism	NA
Insulin resistance	3.896294e-03
Insulin secretion	8.556072e-02
Insulin signaling pathway	3.383035e-02
Intestinal immune network for IgA production	NA
Legionellosis	1.287291e-01
Leishmaniasis	6.191867e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	6.785390e-01
Maturity onset diabetes of the young	NA
Measles	8.070942e-02
Melanogenesis	1.788867e-01
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	5.259391e-03
mTOR signaling pathway	4.267400e-04
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	2.261001e-01
Neuroactive ligand-receptor interaction	9.669939e-01
Neurotrophin signaling pathway	1.967410e-02
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	5.104709e-02
Non-alcoholic fatty liver disease (NAFLD)	3.438317e-03
One carbon pool by folate	2.197171e-01

Oocyte meiosis	1.827773e-02
Osteoclast differentiation	4.134982e-01
Ovarian steroidogenesis	7.138747e-01
Oxidative phosphorylation	NA
Pancreatic cancer	3.095555e-03
Pancreatic secretion	6.968137e-01
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	4.952981e-01
Pathogenic Escherichia coli infection	6.738207e-01
Pentose and glucuronate interconversions	1.873539e-03
Pentose phosphate pathway	2.154682e-03
Peroxisome	NA
Pertussis	1.333941e-03
Phagosome	3.053383e-02
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	1.146469e-01
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	1.648858e-05
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	7.061067e-03
Renal cell carcinoma	2.205904e-03
Renin secretion	1.276149e-04
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	1.639718e-02
RNA degradation	NA
RNA transport	1.354497e-01
Salivary secretion	1.966754e-01
Salmonella infection	3.407628e-02
Selenocompound metabolism	NA
Shigellosis	5.104709e-02
SNARE interactions in vesicular transport	5.729370e-02
Sphingolipid metabolism	NA
Staphylococcus aureus infection	2.509147e-02
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA

Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	4.681311e-01
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	8.546771e-01
T cell receptor signaling pathway	6.678164e-03
Taste transduction	7.498701e-02
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	3.714533e-04
Thyroid hormone synthesis	2.430070e-01
Tight junction	8.262934e-03
TNF signaling pathway	2.793647e-01
Toxoplasmosis	4.107125e-02
Transcriptional misregulation in cancer	9.587589e-01
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	5.772512e-01
VEGF signaling pathway	3.494582e-03
Vibrio cholerae infection	9.807019e-01
Viral carcinogenesis	4.027179e-02
Viral myocarditis	2.894027e-01
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp2.k	
Acute myeloid leukemia	2
Adherens junction	1
Adipocytokine signaling pathway	1
African trypanosomiasis	1
AGE-RAGE signaling pathway in diabetic complications	1
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	3
Aldosterone-regulated sodium reabsorption	2
Allograft rejection	1
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	1
AMPK signaling pathway	3

Amyotrophic lateral sclerosis (ALS)	1
Antigen processing and presentation	2
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	1
B cell receptor signaling pathway	2
beta-Alanine metabolism	NA
Bile secretion	1
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	1
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	2
Central carbon metabolism in cancer	1
Chagas disease (American trypanosomiasis)	2
Chemical carcinogenesis	NA
Choline metabolism in cancer	1
Chronic myeloid leukemia	2
Circadian rhythm	1
Citrate cycle (TCA cycle)	NA
Cocaine addiction	2
Colorectal cancer	2
Cysteine and methionine metabolism	1
Cytosolic DNA-sensing pathway	1
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	2
Dorso-ventral axis formation	1
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	2
Endocytosis	2
Endometrial cancer	2
Epstein-Barr virus infection	2
Ether lipid metabolism	NA
Fanconi anemia pathway	2
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	2
Fatty acid elongation	NA

Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	3
Glucagon signaling pathway	2
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	1
Glycolysis / Gluconeogenesis	2
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	1
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	1
GnRH signaling pathway	2
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	1
Histidine metabolism	NA
Huntington's disease	1
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	2
Inflammatory mediator regulation of TRP channels	3
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	2
Insulin secretion	2
Insulin signaling pathway	2
Intestinal immune network for IgA production	NA
Legionellosis	1
Leishmaniasis	1
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	1
Maturity onset diabetes of the young	NA
Measles	2
Melanogenesis	2
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	1

mTOR signaling pathway	1
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	1
Neuroactive ligand-receptor interaction	1
Neurotrophin signaling pathway	4
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	1
Non-alcoholic fatty liver disease (NAFLD)	2
One carbon pool by folate	1
Oocyte meiosis	3
Osteoclast differentiation	2
Ovarian steroidogenesis	1
Oxidative phosphorylation	NA
Pancreatic cancer	1
Pancreatic secretion	2
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	1
Pathogenic Escherichia coli infection	1
Pentose and glucuronate interconversions	1
Pentose phosphate pathway	1
Peroxisome	NA
Pertussis	2
Phagosome	2
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	2
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	1
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	2
Renal cell carcinoma	3
Renin secretion	2
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	2
RNA degradation	NA

RNA transport	1
Salivary secretion	2
Salmonella infection	1
Selenocompound metabolism	NA
Shigellosis	1
SNARE interactions in vesicular transport	2
Sphingolipid metabolism	NA
Staphylococcus aureus infection	1
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	1
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	1
T cell receptor signaling pathway	1
Taste transduction	1
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	1
Thyroid hormone synthesis	3
Tight junction	2
TNF signaling pathway	3
Toxoplasmosis	2
Transcriptional misregulation in cancer	1
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	1
VEGF signaling pathway	2
Vibrio cholerae infection	1
Viral carcinogenesis	1
Viral myocarditis	1
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp3.p	
Acute myeloid leukemia	4.904284e-02
Adherens junction	2.292748e-05
Adipocytokine signaling pathway	1.147263e-02
African trypanosomiasis	9.670449e-01
AGE-RAGE signaling pathway in diabetic complications	2.292748e-05

Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.559033e-02
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	6.397253e-03
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	2.003296e-04
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	6.171019e-04
beta-Alanine metabolism	NA
Bile secretion	7.812008e-06
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	7.564743e-05
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	6.501366e-02
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	1.040329e-02
Chemical carcinogenesis	NA
Choline metabolism in cancer	8.665990e-02
Chronic myeloid leukemia	5.859868e-04
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	6.827015e-02
Colorectal cancer	1.642179e-05
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA

Endocrine and other factor-regulated calcium reabsorption	1.156150e-02
Endocytosis	NA
Endometrial cancer	1.100060e-01
Epstein-Barr virus infection	5.587546e-02
Ether lipid metabolism	NA
Fanconi anemia pathway	3.427673e-03
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	6.307811e-02
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1.772990e-01
Herpes simplex infection	5.089027e-02
Histidine metabolism	NA
Huntington's disease	4.221786e-04
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	1.499595e-02
Inflammatory mediator regulation of TRP channels	NA
Influenza A	5.904718e-02
Inositol phosphate metabolism	NA
Insulin resistance	1.446356e-01
Insulin secretion	NA
Insulin signaling pathway	7.626221e-03
Intestinal immune network for IgA production	NA
Legionellosis	2.003296e-04
Leishmaniasis	3.502073e-02
Linoleic acid metabolism	NA

Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	5.045211e-02
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	1.697150e-02
mTOR signaling pathway	1.736289e-02
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	6.726537e-02
Neuroactive ligand-receptor interaction	3.606624e-02
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	3.210491e-01
Non-alcoholic fatty liver disease (NAFLD)	1.853509e-02
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	7.315402e-02
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	4.271506e-04
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	6.397253e-03
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	2.850790e-01
Phagosome	2.370887e-03
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	5.276505e-01
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA

Regulation of lipolysis in adipocytes	5.410172e-03
Renal cell carcinoma	1.987117e-02
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	1.139148e-02
RNA degradation	NA
RNA transport	NA
Salivary secretion	5.409121e-01
Salmonella infection	7.113984e-01
Selenocompound metabolism	NA
Shigellosis	1.596866e-01
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	9.033627e-02
T cell receptor signaling pathway	6.171019e-04
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	3.730385e-01
Tight junction	9.440231e-03
TNF signaling pathway	1.820035e-02
Toxoplasmosis	2.921922e-03
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	1.362697e-03
Vibrio cholerae infection	NA

Viral carcinogenesis	NA
Viral myocarditis	4.198956e-05
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp3.pFourier
Acute myeloid leukemia	8.403137e-02
Adherens junction	6.690442e-02
Adipocytokine signaling pathway	1.279352e-01
African trypanosomiasis	7.953202e-01
AGE-RAGE signaling pathway in diabetic complications	4.380652e-02
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	7.282288e-02
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	6.140781e-01
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	9.778295e-02
AMPK signaling pathway	5.242030e-01
Amyotrophic lateral sclerosis (ALS)	3.731617e-03
Antigen processing and presentation	1.067731e-01
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	3.033232e-01
beta-Alanine metabolism	NA
Bile secretion	1.508331e-03
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	4.356788e-01
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	5.519550e-02
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	9.491520e-01
Chemical carcinogenesis	NA
Choline metabolism in cancer	5.595241e-01
Chronic myeloid leukemia	1.186274e-03
Circadian rhythm	NA

Citrate cycle (TCA cycle)	NA
Cocaine addiction	4.391963e-01
Colorectal cancer	3.759383e-02
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	2.780326e-02
Endocytosis	3.080663e-01
Endometrial cancer	3.626109e-01
Epstein-Barr virus infection	4.253858e-02
Ether lipid metabolism	NA
Fanconi anemia pathway	5.081139e-03
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	6.968137e-01
Glucagon signaling pathway	8.931956e-01
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	1.571789e-01
Graft-versus-host disease	NA
Hepatitis C	3.200578e-01
Herpes simplex infection	5.412498e-03
Histidine metabolism	NA
Huntington's disease	7.621257e-03
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	3.691518e-03

Inflammatory mediator regulation of TRP channels	2.375714e-01
Influenza A	1.308912e-02
Inositol phosphate metabolism	NA
Insulin resistance	2.938004e-02
Insulin secretion	2.881541e-01
Insulin signaling pathway	1.046551e-02
Intestinal immune network for IgA production	NA
Legionellosis	3.731617e-03
Leishmaniasis	5.826237e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	4.911423e-01
Melanogenesis	4.848867e-02
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	3.446334e-02
mTOR signaling pathway	5.362409e-02
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	7.188636e-02
Neuroactive ligand-receptor interaction	5.023725e-02
Neurotrophin signaling pathway	1.571789e-01
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	1.417019e-01
Non-alcoholic fatty liver disease (NAFLD)	8.441988e-06
One carbon pool by folate	NA
Oocyte meiosis	7.073635e-02
Osteoclast differentiation	3.058004e-02
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	8.096576e-02
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	9.778295e-02
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	7.128266e-02
Phagosome	4.853406e-02
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA

Phosphatidylinositol signaling system	NA
Phototransduction	3.789732e-01
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	2.562359e-03
Renal cell carcinoma	1.021018e-03
Renin secretion	9.329192e-01
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	8.002334e-04
RNA degradation	NA
RNA transport	NA
Salivary secretion	8.479994e-01
Salmonella infection	1.287291e-01
Selenocompound metabolism	NA
Shigellosis	2.107395e-01
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	2.734131e-01
T cell receptor signaling pathway	3.033232e-01
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	4.026018e-01
Tight junction	8.748215e-01
TNF signaling pathway	4.675764e-03
Toxoplasmosis	8.016575e-01

Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	2.349180e-01
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	1.356273e-04
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp3.k	
Acute myeloid leukemia	1
Adherens junction	1
Adipocytokine signaling pathway	1
African trypanosomiasis	1
AGE-RAGE signaling pathway in diabetic complications	1
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	2
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	1
AMPK signaling pathway	3
Amyotrophic lateral sclerosis (ALS)	1
Antigen processing and presentation	2
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	1
beta-Alanine metabolism	NA
Bile secretion	1
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	1
Butanoate metabolism	NA

Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	2
Chemical carcinogenesis	NA
Choline metabolism in cancer	1
Chronic myeloid leukemia	2
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	1
Colorectal cancer	1
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	1
Endocytosis	2
Endometrial cancer	1
Epstein-Barr virus infection	1
Ether lipid metabolism	NA
Fanconi anemia pathway	1
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	2
Glucagon signaling pathway	2
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA

Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	2
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	1
Histidine metabolism	NA
Huntington's disease	1
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	1
Inflammatory mediator regulation of TRP channels	2
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	2
Insulin secretion	2
Insulin signaling pathway	1
Intestinal immune network for IgA production	NA
Legionellosis	1
Leishmaniasis	1
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1
Melanogenesis	2
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	1
mTOR signaling pathway	1
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	1
Neuroactive ligand-receptor interaction	1
Neurotrophin signaling pathway	2
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	1
Non-alcoholic fatty liver disease (NAFLD)	1
One carbon pool by folate	NA
Oocyte meiosis	3
Osteoclast differentiation	2
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	1
Pancreatic secretion	NA

Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	1
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	1
Phagosome	1
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	1
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	1
Renal cell carcinoma	2
Renin secretion	2
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	1
RNA degradation	NA
RNA transport	NA
Salivary secretion	1
Salmonella infection	1
Selenocompound metabolism	NA
Shigellosis	1
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	1

T cell receptor signaling pathway	1
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	1
Tight junction	1
TNF signaling pathway	1
Toxoplasmosis	1
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	2
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	1
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp4.p	
Acute myeloid leukemia	0.1028037044
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	0.0118846447
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	0.1165044772
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.0023446943
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	0.0664524475
Antigen processing and presentation	0.0105250744
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA

Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	0.0289689238
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	0.0030029610
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.1778522302
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	0.0069582588
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	0.0165556603
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	0.0972827518
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	0.0937144802
Endometrial cancer	NA
Epstein-Barr virus infection	0.0042520141
Ether lipid metabolism	NA
Fanconi anemia pathway	0.2196986243
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	0.0054101722
Glutathione metabolism	NA

Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	0.0289689238
Herpes simplex infection	0.0028533350
Histidine metabolism	NA
Huntington's disease	0.0006918987
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	0.2182500129
Inositol phosphate metabolism	NA
Insulin resistance	0.0731754117
Insulin secretion	NA
Insulin signaling pathway	0.0042489869
Intestinal immune network for IgA production	NA
Legionellosis	0.0653135251
Leishmaniasis	0.0609946529
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	0.1772989782
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	0.0024895785
mTOR signaling pathway	0.0936906504
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	0.4099728734
Neurotrophin signaling pathway	0.1219609340
Nicotinate and nicotinamide metabolism	NA

Nitrogen metabolism	NA
NOD-like receptor signaling pathway	0.0010590124
Non-alcoholic fatty liver disease (NAFLD)	0.0768456266
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	0.0020589939
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	0.0165556603
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	0.2209078568
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	0.3296079460
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	0.1356989861
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	0.0035455987
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	0.0653135251
Selenocompound metabolism	NA
Shigellosis	0.0126620392
SNARE interactions in vesicular transport	NA

Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	0.0289689238
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	0.0030945278
TNF signaling pathway	0.0040275539
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	0.0056768404
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	0.7337279566
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Acute myeloid leukemia	Comp4.pFourier 9.865616e-01
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	1.078994e-01
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	1.496570e-01
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.018559e-06

Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	8.862120e-03
Amyotrophic lateral sclerosis (ALS)	4.430039e-01
Antigen processing and presentation	7.350070e-02
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	5.104709e-02
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	9.155713e-02
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1.085773e-01
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	3.639962e-02
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	1.279443e-03
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	2.282664e-02
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	1.208309e-01
Endometrial cancer	NA
Epstein-Barr virus infection	3.619171e-01
Ether lipid metabolism	NA
Fanconi anemia pathway	9.056752e-02

Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	2.562359e-03
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	5.104709e-02
Herpes simplex infection	1.151402e-02
Histidine metabolism	NA
Huntington's disease	4.334308e-02
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	7.786257e-02
Influenza A	1.263807e-01
Inositol phosphate metabolism	NA
Insulin resistance	1.079104e-02
Insulin secretion	NA
Insulin signaling pathway	2.094260e-01
Intestinal immune network for IgA production	NA
Legionellosis	3.088718e-01
Leishmaniasis	1.664549e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	3.200578e-01

Melanogenesis	1.571789e-01
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	2.544490e-03
mTOR signaling pathway	3.644533e-02
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	1.633723e-01
Neurotrophin signaling pathway	2.412372e-02
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	3.718071e-02
Non-alcoholic fatty liver disease (NAFLD)	2.523456e-02
One carbon pool by folate	NA
Oocyte meiosis	7.841720e-04
Osteoclast differentiation	1.677263e-02
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	1.279443e-03
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	1.640716e-01
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	7.988713e-01
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	2.564463e-01
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA

Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	4.765610e-02
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	3.088718e-01
Selenocompound metabolism	NA
Shigellosis	2.373188e-03
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	5.104709e-02
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	3.080366e-03
TNF signaling pathway	5.684114e-05
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	2.970863e-06
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	8.546771e-01
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Acute myeloid leukemia	Comp4.k 1

Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	1
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	2
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	2
Amyotrophic lateral sclerosis (ALS)	1
Antigen processing and presentation	1
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	1
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	1
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	1
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	1
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	1
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA

Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	1
Endometrial cancer	NA
Epstein-Barr virus infection	1
Ether lipid metabolism	NA
Fanconi anemia pathway	1
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	1
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	1
Histidine metabolism	NA
Huntington's disease	1
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	2
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	1

Intestinal immune network for IgA production	NA
Legionellosis	1
Leishmaniasis	1
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1
Melanogenesis	2
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	1
mTOR signaling pathway	1
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	1
Neurotrophin signaling pathway	1
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	1
Non-alcoholic fatty liver disease (NAFLD)	1
One carbon pool by folate	NA
Oocyte meiosis	2
Osteoclast differentiation	1
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	1
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	1
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	1
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA

Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	2
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	1
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	1
Selenocompound metabolism	NA
Shigellosis	1
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	1
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	1
TNF signaling pathway	1
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA

Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	1
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	1
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp5.p
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.003296e-04
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	2.889050e-03
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	5.123194e-02
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	5.404006e-04

Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	2.878791e-03
Endometrial cancer	NA
Epstein-Barr virus infection	1.946053e-04
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1.397149e-03
Herpes simplex infection	2.609499e-03

Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	3.114562e-01
Inositol phosphate metabolism	NA
Insulin resistance	3.078118e-03
Insulin secretion	NA
Insulin signaling pathway	6.813498e-02
Intestinal immune network for IgA production	NA
Legionellosis	2.227131e-02
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	7.392980e-03
Melanogenesis	4.655827e-02
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	4.655277e-03
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	6.051296e-04
One carbon pool by folate	NA
Oocyte meiosis	3.274527e-03
Osteoclast differentiation	1.993417e-01
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	3.635533e-04
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA

Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	8.023023e-05
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	6.099465e-02
Selenocompound metabolism	NA
Shigellosis	1.387118e-02
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA

Thyroid hormone synthesis	NA
Tight junction	5.501854e-03
TNF signaling pathway	3.966609e-03
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	1.398632e-04
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	2.578241e-04
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp5.pFourier
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	3.731617e-03
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	4.260475e-02
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA

Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	2.836896e-01
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	1.011855e-03
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	1.871346e-03
Endometrial cancer	NA
Epstein-Barr virus infection	5.583817e-01
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA

Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1.537225e-01
Herpes simplex infection	4.620056e-01
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1.571789e-01
Influenza A	2.451161e-01
Inositol phosphate metabolism	NA
Insulin resistance	1.720397e-03
Insulin secretion	NA
Insulin signaling pathway	7.800867e-01
Intestinal immune network for IgA production	NA
Legionellosis	8.164932e-01
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1.198945e-02
Melanogenesis	9.602093e-03
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	7.119866e-01
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	5.371660e-03
One carbon pool by folate	NA
Oocyte meiosis	1.605020e-04
Osteoclast differentiation	7.383287e-02

Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	1.534091e-01
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	2.369698e-01
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	1.664549e-01
Selenocompound metabolism	NA
Shigellosis	5.209966e-03
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA

Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	6.287270e-01
TNF signaling pathway	7.641047e-01
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	7.591212e-06
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	2.014797e-04
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp5.k	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	1
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA

Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	1
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	1
Endometrial cancer	NA
Epstein-Barr virus infection	1
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA

Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	1
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	2
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	1
Intestinal immune network for IgA production	NA
Legionellosis	1
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1
Melanogenesis	1
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA

N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	1
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	1
One carbon pool by folate	NA
Oocyte meiosis	1
Osteoclast differentiation	1
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	1
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	1
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA

Salmonella infection	1
Selenocompound metabolism	NA
Shigellosis	1
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	1
TNF signaling pathway	1
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	1
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	1
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp6.p	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA

Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1.537627e-04
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	6.079290e-03
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	8.612618e-03
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	9.728275e-02
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	5.229261e-01

Endometrial cancer	NA
Epstein-Barr virus infection	1.755161e-01
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	7.712749e-03
Herpes simplex infection	9.670449e-01
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	2.270304e-02
Influenza A	1.105806e-02
Inositol phosphate metabolism	NA
Insulin resistance	1.854994e-03
Insulin secretion	NA
Insulin signaling pathway	1.572668e-03
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA

Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	2.609499e-03
Melanogenesis	1.971067e-03
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	3.114995e-02
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	3.525411e-05
One carbon pool by folate	NA
Oocyte meiosis	3.314963e-03
Osteoclast differentiation	5.998769e-02
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA

Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	1.721992e-04
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	1.512026e-02
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	9.033627e-02

Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp6.pFourier
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.069767e-02
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	2.166146e-03
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	5.808492e-01
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	2.282664e-02
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA

Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	3.559239e-01
Endometrial cancer	NA
Epstein-Barr virus infection	8.144986e-02
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	6.073678e-01
Herpes simplex infection	7.953202e-01
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1.641130e-04
Influenza A	6.218025e-01

Inositol phosphate metabolism	NA
Insulin resistance	1.704876e-01
Insulin secretion	NA
Insulin signaling pathway	4.267400e-04
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	4.620056e-01
Melanogenesis	1.861212e-04
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	1.507586e-03
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	2.045709e-06
One carbon pool by folate	NA
Oocyte meiosis	9.429127e-04
Osteoclast differentiation	6.458810e-02
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA

Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	2.239921e-03
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	5.739834e-03
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA

Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	2.734131e-01
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp6.k	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	1
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA

Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	1
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	1
Endometrial cancer	NA
Epstein-Barr virus infection	1
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA

GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	1
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	1
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1
Melanogenesis	1
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	1
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	1
One carbon pool by folate	NA
Oocyte meiosis	1
Osteoclast differentiation	1
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA

Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	1
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA

Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	1
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	1
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp7.p	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.138043e-04
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	1.147263e-02
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA

Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	4.284359e-02
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	4.767311e-06
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA

Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	3.519424e-05
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1.027267e-01
Influenza A	4.592931e-01
Inositol phosphate metabolism	NA
Insulin resistance	5.954206e-03
Insulin secretion	NA
Insulin signaling pathway	5.271242e-02
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	2.416589e-05
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA

Non-alcoholic fatty liver disease (NAFLD)	1.147263e-02
One carbon pool by folate	NA
Oocyte meiosis	1.521317e-01
Osteoclast differentiation	1.049829e-01
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	7.702696e-03
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA

Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp7.pFourier	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.084033e-02
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA

Amoebiasis	NA
AMPK signaling pathway	1.279352e-01
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	4.043465e-01
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	9.057618e-05
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA

Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	2.385081e-02
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	6.835374e-02
Influenza A	1.951185e-01
Inositol phosphate metabolism	NA
Insulin resistance	2.184496e-02
Insulin secretion	NA
Insulin signaling pathway	6.234188e-02
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA

Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	3.637256e-06
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	1.279352e-01
One carbon pool by folate	NA
Oocyte meiosis	7.138747e-01
Osteoclast differentiation	1.157787e-01
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA

RIG-I-like receptor signaling pathway	2.002900e-03
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp7.k
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA

African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	1
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	1
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA

Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	1
Intestinal immune network for IgA production	NA
Legionellosis	NA

Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	1
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	1
One carbon pool by folate	NA
Oocyte meiosis	1
Osteoclast differentiation	1
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA

Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	1
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA

VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp8.p
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.014168963
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	0.044182378
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.170398904
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA

Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	0.005007935
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA

Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	0.061724757
Influenza A	0.002921922
Inositol phosphate metabolism	NA
Insulin resistance	0.108534881
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	0.036066242
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA

Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA

TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp8.pFourier	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.016614655
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	0.032429411
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA

Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.895719464
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA

Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	0.006826353
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	0.098468241
Influenza A	0.801657547
Inositol phosphate metabolism	NA
Insulin resistance	0.397665252
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	0.050237254
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA

Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA

Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp8.k	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	1
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA

Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA

Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA

Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	1
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA

Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp9.p
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA

alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	3.606624e-02
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1.574914e-01
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA

Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	2.609499e-03
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	2.383015e-05
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA

Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	2.578241e-04
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA

Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA

	Comp9.pFourier
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	0.0502372536
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.1890873374
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA

Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	0.4620055564
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	0.0009004874
Inositol phosphate metabolism	NA
Insulin resistance	NA

Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	0.0002014797
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA

Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA

Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp9.k
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	1
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1

Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA

Hepatitis C	1
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	1
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA

Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA

Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp10.p	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA

beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.0903362659
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA

Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	0.0004686003
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	NA

Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA

Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp10.pFourier	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA

Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.2734131
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA

Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	0.5986167
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA

mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA

RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp10.k
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA

Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	1
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA

Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA

Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA

Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA

Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp11.p
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	NA
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA

Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	4.767311e-06
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA

Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA

Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA

Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp11.pFourier	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA

Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	NA
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA

Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	9.057618e-05
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA

Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA

T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp11.k
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA

Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	NA
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA

Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA

Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA

Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Comp12.p	
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA

Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	NA
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA

Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1.653004e-05
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA

Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA

Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Acute myeloid leukemia	NA

Comp12.pFourier

NA

Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	NA
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA
Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA

Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	0.01509456
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA

Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA

Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA
Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA

Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
	Comp12.k
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	NA
AGE-RAGE signaling pathway in diabetic complications	NA
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	NA
Aldosterone-regulated sodium reabsorption	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Amino sugar and nucleotide sugar metabolism	NA
Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	NA
AMPK signaling pathway	NA
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	NA
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	NA
beta-Alanine metabolism	NA
Bile secretion	NA
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	NA
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	NA
Central carbon metabolism in cancer	NA
Chagas disease (American trypanosomiasis)	NA

Chemical carcinogenesis	NA
Choline metabolism in cancer	NA
Chronic myeloid leukemia	NA
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	NA
Endocytosis	NA
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fanconi anemia pathway	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hepatitis C	1
Herpes simplex infection	NA

Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	NA
mTOR signaling pathway	NA
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	NA
Non-alcoholic fatty liver disease (NAFLD)	NA
One carbon pool by folate	NA
Oocyte meiosis	NA
Osteoclast differentiation	NA
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	NA
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	NA
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA

Pertussis	NA
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	NA
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	NA
Regulation of lipolysis in adipocytes	NA
Renal cell carcinoma	NA
Renin secretion	NA
Renin-angiotensin system	NA
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	NA
RNA degradation	NA
RNA transport	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
SNARE interactions in vesicular transport	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	NA
T cell receptor signaling pathway	NA
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	NA

Thyroid hormone synthesis	NA
Tight junction	NA
TNF signaling pathway	NA
Toxoplasmosis	NA
Transcriptional misregulation in cancer	NA
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	NA
VEGF signaling pathway	NA
Vibrio cholerae infection	NA
Viral carcinogenesis	NA
Viral myocarditis	NA
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. Since, the **DEGraph** method runs a statistical test for each connected component of a pathway, a method for assigning a global p-value for whole pathway is needed. The user can select from three approaches: the minimum, the mean and the p-value of the biggest component. This is specified via **overall** argument. The implementation returns also a gene-level statistics of the differential expression of genes performed via moderated t-test from **limma** package. These statistics are later used in the visualization of a selected pathway.

3.3 clipper

The last multivariable method available within this package is called **clipper**. This method is similar to the **topologyGSA** as it uses the same two-step approach. However, the Iterative Proportional Scaling algorithm was substituted with a shrinkage procedure of James-Stein-type which additionally allows proper estimates also in the situation when number of samples is smaller than the number of genes in a pathway. The tests on a pathway-level are followed with a search for the most affected path in the graph.

The method can be applied with

```

> cli<-clipper(hnrnp.cnts, group, pathways, type="RNASeq", method="mean")
> #530 node labels mapped to the expression data
> #Average coverage 82.98681 %
> #0 (out of 10) pathways without a mapped node
> #1 pathways were filtered out
> #Analysing pathway:
> #
> #Acute myeloid leukemia
> #Adherens junction
> #Adipocytokine signaling pathway
> #Adrenergic signaling in cardiomyocytes
> #African trypanosomiasis
> #Alanine, aspartate and glutamate metabolism
> #Alcoholism
> #Aldosterone-regulated sodium reabsorption
> #Allograft rejection
> #alpha-Linolenic acid metabolism
> res(cli)$results[[1]][1:2,]
> #
> #alphaVar alphaMean mean.q.value var.q.value
> #Acute myeloid leukemia 0.026 0.010 0.016 0.033
> #Adherens junction 0.030 0.009 0.016 0.033
>

```

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the row-names of gene expression data matrix. Also, both mean and variance tests are run, this can be changed to only variance test by setting **method="var"**. The **nperm** controls the number of permutations in the statistical tests. Similarly as in **topologyGSA**, the implementation allows testing of all the cliques present in the graph by setting **testCliques=TRUE**. Please note that these tests may take quite a long time. The implementation returns also a gene-level statistics of the differential expression of genes performed via moderated t-test from **limma** package. These statistics are later used in the visualization of a selected pathway.

3.4 SPIA

The most well-known topology-based pathway analysis method is SPIA. In there, two evidences of differential expression of a pathway are combined. The first evidence is a regular so called overrepresentation analysis in which the statistical significance of the number of differentially expressed genes belonging

to a pathway is assessed. The second evidence reflects the pathway topology and it is called the perturbation factor. The authors assume that a differentially expressed gene at the beginning of a pathway topology (e.g. a receptor in a signaling pathway) has a stronger effect on the functionality of a pathway than a differentially expressed gene at the end of a pathway (e.g. a transcription factor in a signaling pathway). The perturbation factors of all genes are calculated from a system of linear equations and then combined within a pathway. The two evidences in a form of p-values are finally combined into a global p-value, which is used to rank the pathways.

```
> spi<-SPIA(hnrnp.cnts, group, pathways, type="RNASeq", logFC.th=-1)
```

```
14329 node labels mapped to the expression data
```

```
Average coverage 84.40644 %
```

```
0 (out of 267) pathways without a mapped node
```

```
> res(spi)
```

```
$results
```

	pSize
Acute myeloid leukemia	50
Adherens junction	66
Adipocytokine signaling pathway	57
Adrenergic signaling in cardiomyocytes	124
African trypanosomiasis	20
AGE-RAGE signaling pathway in diabetic complications	85
Alanine, aspartate and glutamate metabolism	30
Aldosterone synthesis and secretion	54
Aldosterone-regulated sodium reabsorption	25
Allograft rejection	15
alpha-Linolenic acid metabolism	15
Alzheimer's disease	44
Amino sugar and nucleotide sugar metabolism	40
Aminoacyl-tRNA biosynthesis	13
Amoebiasis	34
Amphetamine addiction	51
AMPK signaling pathway	87
Amyotrophic lateral sclerosis (ALS)	34
Antigen processing and presentation	33
Apoptosis	119
Arachidonic acid metabolism	39
Arginine and proline metabolism	45
Arginine biosynthesis	18
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	9
Ascorbate and aldarate metabolism	7
Asthma	3
Autoimmune thyroid disease	7

B cell receptor signaling pathway	64
Bacterial invasion of epithelial cells	51
Basal cell carcinoma	41
beta-Alanine metabolism	28
Bile secretion	20
Biosynthesis of unsaturated fatty acids	6
Biotin metabolism	2
Bladder cancer	29
Butanoate metabolism	20
Caffeine metabolism	3
Carbohydrate digestion and absorption	14
Cardiac muscle contraction	10
Cell adhesion molecules (CAMs)	66
Cell cycle	123
Central carbon metabolism in cancer	55
Chagas disease (American trypanosomiasis)	77
Chemical carcinogenesis	38
Choline metabolism in cancer	72
Cholinergic synapse	78
Chronic myeloid leukemia	69
Circadian entrainment	75
Circadian rhythm	29
Citrate cycle (TCA cycle)	29
Cocaine addiction	35
Colorectal cancer	45
Complement and coagulation cascades	38
Cysteine and methionine metabolism	35
Cytosolic DNA-sensing pathway	18
D-Glutamine and D-glutamate metabolism	4
Dilated cardiomyopathy	61
Dopaminergic synapse	105
Dorso-ventral axis formation	12
Drug metabolism - cytochrome P450	39
Drug metabolism - other enzymes	27
ECM-receptor interaction	69
Endocrine and other factor-regulated calcium reabsorption	32
Endocytosis	93
Endometrial cancer	42
Epithelial cell signaling in Helicobacter pylori infection	32
Epstein-Barr virus infection	76
ErbB signaling pathway	77
Estrogen signaling pathway	77
Ether lipid metabolism	33
Fanconi anemia pathway	38
Fat digestion and absorption	8
Fatty acid biosynthesis	12

Fatty acid degradation	34
Fatty acid elongation	24
Fc epsilon RI signaling pathway	51
Fc gamma R-mediated phagocytosis	81
Folate biosynthesis	13
FoxO signaling pathway	115
Fructose and mannose metabolism	31
GABAergic synapse	45
Galactose metabolism	20
Gap junction	74
Gastric acid secretion	47
Glioma	59
Glucagon signaling pathway	76
Glutamatergic synapse	70
Glutathione metabolism	40
Glycerolipid metabolism	45
Glycerophospholipid metabolism	80
Glycine, serine and threonine metabolism	31
Glycolysis / Gluconeogenesis	56
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	9
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	5
Glycosaminoglycan degradation	18
Glycosphingolipid biosynthesis - ganglio series	12
Glycosphingolipid biosynthesis - globo series	11
Glycosphingolipid biosynthesis - lacto and neolacto series	20
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	23
Glyoxylate and dicarboxylate metabolism	23
GnRH signaling pathway	76
Graft-versus-host disease	11
Hepatitis B	116
Hepatitis C	80
Herpes simplex infection	87
HIF-1 signaling pathway	91
Histidine metabolism	21
Huntington's disease	26
Hypertrophic cardiomyopathy (HCM)	22
Inflammatory bowel disease (IBD)	33
Inflammatory mediator regulation of TRP channels	72
Influenza A	96
Inositol phosphate metabolism	64
Insulin resistance	85
Insulin secretion	43
Insulin signaling pathway	123
Intestinal immune network for IgA production	20
Legionellosis	37
Leishmaniasis	43

Leukocyte transendothelial migration	73
Linoleic acid metabolism	16
Lipoic acid metabolism	3
Long-term depression	47
Long-term potentiation	55
Longevity regulating pathway	72
Longevity regulating pathway - multiple species	54
Lysine biosynthesis	2
Lysine degradation	47
Malaria	10
Maturity onset diabetes of the young	11
Measles	74
Melanogenesis	87
Melanoma	56
Metabolism of xenobiotics by cytochrome P450	43
Mineral absorption	4
Morphine addiction	43
mRNA surveillance pathway	63
mTOR signaling pathway	50
Mucin type O-Glycan biosynthesis	24
N-Glycan biosynthesis	46
Natural killer cell mediated cytotoxicity	88
Neuroactive ligand-receptor interaction	14
Neurotrophin signaling pathway	105
NF-kappa B signaling pathway	69
Nicotinate and nicotinamide metabolism	23
Nitrogen metabolism	4
NOD-like receptor signaling pathway	44
Non-alcoholic fatty liver disease (NAFLD)	68
Non-small cell lung cancer	50
Notch signaling pathway	46
One carbon pool by folate	18
Oocyte meiosis	102
Osteoclast differentiation	97
Ovarian steroidogenesis	26
Oxidative phosphorylation	40
p53 signaling pathway	67
Pancreatic cancer	62
Pancreatic secretion	24
Pantothenate and CoA biosynthesis	11
Parkinson's disease	26
Pathogenic Escherichia coli infection	39
Pentose and glucuronate interconversions	18
Pentose phosphate pathway	28
Peroxisome	8
Pertussis	45

Phagosome	29
Phenylalanine metabolism	12
Phenylalanine, tyrosine and tryptophan biosynthesis	3
Phosphatidylinositol signaling system	78
Phospholipase D signaling pathway	90
Phototransduction	21
Platelet activation	95
Porphyrin and chlorophyll metabolism	24
Primary bile acid biosynthesis	14
Prion diseases	20
Progesterone-mediated oocyte maturation	74
Prolactin signaling pathway	61
Propanoate metabolism	30
Prostate cancer	79
Protein processing in endoplasmic reticulum	50
Proximal tubule bicarbonate reclamation	7
Pyrimidine metabolism	98
Pyruvate metabolism	37
Regulation of autophagy	17
Regulation of lipolysis in adipocytes	42
Renal cell carcinoma	52
Renin secretion	39
Renin-angiotensin system	2
Retinol metabolism	39
Retrograde endocannabinoid signaling	49
Rheumatoid arthritis	13
Riboflavin metabolism	3
Ribosome biogenesis in eukaryotes	3
RIG-I-like receptor signaling pathway	48
RNA degradation	14
RNA transport	122
Salivary secretion	36
Salmonella infection	69
Selenocompound metabolism	14
Serotonergic synapse	61
Shigellosis	48
Signaling pathways regulating pluripotency of stem cells	103
Small cell lung cancer	79
SNARE interactions in vesicular transport	26
Sphingolipid metabolism	44
Sphingolipid signaling pathway	91
Staphylococcus aureus infection	24
Starch and sucrose metabolism	28
Steroid biosynthesis	20
Steroid hormone biosynthesis	34
Sulfur metabolism	9

Sulfur relay system	8
Synaptic vesicle cycle	18
Synthesis and degradation of ketone bodies	9
Systemic lupus erythematosus	13
T cell receptor signaling pathway	79
Taste transduction	24
Taurine and hypotaurine metabolism	8
Terpenoid backbone biosynthesis	21
TGF-beta signaling pathway	69
Thiamine metabolism	3
Thyroid cancer	26
Thyroid hormone signaling pathway	102
Thyroid hormone synthesis	39
Tight junction	102
TNF signaling pathway	69
Toll-like receptor signaling pathway	76
Toxoplasmosis	85
Transcriptional misregulation in cancer	17
Tryptophan metabolism	36
Type I diabetes mellitus	4
Type II diabetes mellitus	39
Tyrosine metabolism	24
Ubiquinone and other terpenoid-quinone biosynthesis	9
Valine, leucine and isoleucine degradation	45
Vascular smooth muscle contraction	87
Vasopressin-regulated water reabsorption	20
VEGF signaling pathway	53
Vibrio cholerae infection	15
Viral carcinogenesis	6
Viral myocarditis	26
Vitamin B6 metabolism	5
Vitamin digestion and absorption	2
Wnt signaling pathway	124
	NDE
Acute myeloid leukemia	20
Adherens junction	33
Adipocytokine signaling pathway	20
Adrenergic signaling in cardiomyocytes	42
African trypanosomiasis	3
AGE-RAGE signaling pathway in diabetic complications	32
Alanine, aspartate and glutamate metabolism	11
Aldosterone synthesis and secretion	19
Aldosterone-regulated sodium reabsorption	9
Allograft rejection	6
alpha-Linolenic acid metabolism	6
Alzheimer's disease	20

Amino sugar and nucleotide sugar metabolism	20
Aminoacyl-tRNA biosynthesis	6
Amoebiasis	10
Amphetamine addiction	20
AMPK signaling pathway	42
Amyotrophic lateral sclerosis (ALS)	18
Antigen processing and presentation	16
Apoptosis	48
Arachidonic acid metabolism	15
Arginine and proline metabolism	15
Arginine biosynthesis	6
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	5
Ascorbate and aldarate metabolism	0
Asthma	0
Autoimmune thyroid disease	0
B cell receptor signaling pathway	23
Bacterial invasion of epithelial cells	15
Basal cell carcinoma	20
beta-Alanine metabolism	12
Bile secretion	5
Biosynthesis of unsaturated fatty acids	3
Biotin metabolism	0
Bladder cancer	15
Butanoate metabolism	6
Caffeine metabolism	1
Carbohydrate digestion and absorption	6
Cardiac muscle contraction	4
Cell adhesion molecules (CAMs)	19
Cell cycle	61
Central carbon metabolism in cancer	24
Chagas disease (American trypanosomiasis)	29
Chemical carcinogenesis	11
Choline metabolism in cancer	32
Cholinergic synapse	22
Chronic myeloid leukemia	28
Circadian entrainment	22
Circadian rhythm	10
Citrate cycle (TCA cycle)	15
Cocaine addiction	12
Colorectal cancer	23
Complement and coagulation cascades	19
Cysteine and methionine metabolism	14
Cytosolic DNA-sensing pathway	7
D-Glutamine and D-glutamate metabolism	2
Dilated cardiomyopathy	15
Dopaminergic synapse	33

Dorso-ventral axis formation	6
Drug metabolism - cytochrome P450	10
Drug metabolism - other enzymes	13
ECM-receptor interaction	31
Endocrine and other factor-regulated calcium reabsorption	7
Endocytosis	33
Endometrial cancer	19
Epithelial cell signaling in Helicobacter pylori infection	15
Epstein-Barr virus infection	28
ErbB signaling pathway	30
Estrogen signaling pathway	29
Ether lipid metabolism	11
Fanconi anemia pathway	20
Fat digestion and absorption	5
Fatty acid biosynthesis	4
Fatty acid degradation	15
Fatty acid elongation	7
Fc epsilon RI signaling pathway	20
Fc gamma R-mediated phagocytosis	30
Folate biosynthesis	9
FoxO signaling pathway	49
Fructose and mannose metabolism	22
GABAergic synapse	9
Galactose metabolism	13
Gap junction	24
Gastric acid secretion	13
Glioma	23
Glucagon signaling pathway	23
Glutamatergic synapse	20
Glutathione metabolism	17
Glycerolipid metabolism	25
Glycerophospholipid metabolism	42
Glycine, serine and threonine metabolism	15
Glycolysis / Gluconeogenesis	24
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	7
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	2
Glycosaminoglycan degradation	11
Glycosphingolipid biosynthesis - ganglio series	6
Glycosphingolipid biosynthesis - globo series	4
Glycosphingolipid biosynthesis - lacto and neolacto series	4
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	10
Glyoxylate and dicarboxylate metabolism	12
GnRH signaling pathway	29
Graft-versus-host disease	5
Hepatitis B	48
Hepatitis C	39

Herpes simplex infection	38
HIF-1 signaling pathway	35
Histidine metabolism	8
Huntington's disease	13
Hypertrophic cardiomyopathy (HCM)	7
Inflammatory bowel disease (IBD)	6
Inflammatory mediator regulation of TRP channels	24
Influenza A	32
Inositol phosphate metabolism	22
Insulin resistance	29
Insulin secretion	12
Insulin signaling pathway	47
Intestinal immune network for IgA production	5
Legionellosis	10
Leishmaniasis	15
Leukocyte transendothelial migration	26
Linoleic acid metabolism	4
Lipoic acid metabolism	1
Long-term depression	16
Long-term potentiation	22
Longevity regulating pathway	24
Longevity regulating pathway - multiple species	20
Lysine biosynthesis	1
Lysine degradation	14
Malaria	1
Maturity onset diabetes of the young	4
Measles	24
Melanogenesis	31
Melanoma	21
Metabolism of xenobiotics by cytochrome P450	15
Mineral absorption	1
Morphine addiction	6
mRNA surveillance pathway	38
mTOR signaling pathway	22
Mucin type O-Glycan biosynthesis	8
N-Glycan biosynthesis	19
Natural killer cell mediated cytotoxicity	34
Neuroactive ligand-receptor interaction	5
Neurotrophin signaling pathway	38
NF-kappa B signaling pathway	19
Nicotinate and nicotinamide metabolism	13
Nitrogen metabolism	2
NOD-like receptor signaling pathway	16
Non-alcoholic fatty liver disease (NAFLD)	28
Non-small cell lung cancer	20
Notch signaling pathway	17

One carbon pool by folate	9
Oocyte meiosis	46
Osteoclast differentiation	34
Ovarian steroidogenesis	8
Oxidative phosphorylation	22
p53 signaling pathway	25
Pancreatic cancer	29
Pancreatic secretion	6
Pantothenate and CoA biosynthesis	5
Parkinson's disease	7
Pathogenic Escherichia coli infection	8
Pentose and glucuronate interconversions	6
Pentose phosphate pathway	17
Peroxisome	5
Pertussis	17
Phagosome	6
Phenylalanine metabolism	6
Phenylalanine, tyrosine and tryptophan biosynthesis	1
Phosphatidylinositol signaling system	27
Phospholipase D signaling pathway	32
Phototransduction	4
Platelet activation	32
Porphyrin and chlorophyll metabolism	6
Primary bile acid biosynthesis	5
Prion diseases	8
Progesterone-mediated oocyte maturation	32
Prolactin signaling pathway	25
Propanoate metabolism	11
Prostate cancer	39
Protein processing in endoplasmic reticulum	21
Proximal tubule bicarbonate reclamation	3
Pyrimidine metabolism	37
Pyruvate metabolism	17
Regulation of autophagy	10
Regulation of lipolysis in adipocytes	12
Renal cell carcinoma	26
Renin secretion	12
Renin-angiotensin system	0
Retinol metabolism	12
Retrograde endocannabinoid signaling	11
Rheumatoid arthritis	2
Riboflavin metabolism	1
Ribosome biogenesis in eukaryotes	1
RIG-I-like receptor signaling pathway	26
RNA degradation	6
RNA transport	55

Salivary secretion	9
Salmonella infection	22
Selenocompound metabolism	5
Serotonergic synapse	15
Shigellosis	14
Signaling pathways regulating pluripotency of stem cells	41
Small cell lung cancer	36
SNARE interactions in vesicular transport	9
Sphingolipid metabolism	20
Sphingolipid signaling pathway	35
Staphylococcus aureus infection	10
Starch and sucrose metabolism	11
Steroid biosynthesis	5
Steroid hormone biosynthesis	10
Sulfur metabolism	2
Sulfur relay system	2
Synaptic vesicle cycle	10
Synthesis and degradation of ketone bodies	3
Systemic lupus erythematosus	4
T cell receptor signaling pathway	31
Taste transduction	5
Taurine and hypotaurine metabolism	3
Terpenoid backbone biosynthesis	8
TGF-beta signaling pathway	29
Thiamine metabolism	1
Thyroid cancer	13
Thyroid hormone signaling pathway	39
Thyroid hormone synthesis	12
Tight junction	30
TNF signaling pathway	27
Toll-like receptor signaling pathway	25
Toxoplasmosis	31
Transcriptional misregulation in cancer	5
Tryptophan metabolism	14
Type I diabetes mellitus	0
Type II diabetes mellitus	13
Tyrosine metabolism	8
Ubiquinone and other terpenoid-quinone biosynthesis	3
Valine, leucine and isoleucine degradation	16
Vascular smooth muscle contraction	30
Vasopressin-regulated water reabsorption	7
VEGF signaling pathway	19
Vibrio cholerae infection	2
Viral carcinogenesis	2
Viral myocarditis	9
Vitamin B6 metabolism	3

Vitamin digestion and absorption	0
Wnt signaling pathway	45
	pNDE
Acute myeloid leukemia	0.381
Adherens junction	0.021
Adipocytokine signaling pathway	0.666
Adrenergic signaling in cardiomyocytes	0.793
African trypanosomiasis	0.992
AGE-RAGE signaling pathway in diabetic complications	0.493
Alanine, aspartate and glutamate metabolism	0.584
Aldosterone synthesis and secretion	0.659
Aldosterone-regulated sodium reabsorption	0.616
Allograft rejection	0.501
alpha-Linolenic acid metabolism	0.501
Alzheimer's disease	0.157
Amino sugar and nucleotide sugar metabolism	0.064
Aminoacyl-tRNA biosynthesis	0.339
Amoebiasis	0.864
Amphetamine addiction	0.423
AMPK signaling pathway	0.020
Amyotrophic lateral sclerosis (ALS)	0.042
Antigen processing and presentation	0.119
Apoptosis	0.254
Arachidonic acid metabolism	0.486
Arginine and proline metabolism	0.745
Arginine biosynthesis	0.709
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.207
Ascorbate and aldarate metabolism	1.000
Asthma	1.000
Autoimmune thyroid disease	1.000
B cell receptor signaling pathway	0.617
Bacterial invasion of epithelial cells	0.900
Basal cell carcinoma	0.082
beta-Alanine metabolism	0.323
Bile secretion	0.914
Biosynthesis of unsaturated fatty acids	0.394
Biotin metabolism	1.000
Bladder cancer	0.075
Butanoate metabolism	0.809
Caffeine metabolism	0.750
Carbohydrate digestion and absorption	0.421
Cardiac muscle contraction	0.540
Cell adhesion molecules (CAMs)	0.937
Cell cycle	0.003
Central carbon metabolism in cancer	0.189
Chagas disease (American trypanosomiasis)	0.496

Chemical carcinogenesis	0.886
Choline metabolism in cancer	0.118
Cholinergic synapse	0.961
Chronic myeloid leukemia	0.309
Circadian entrainment	0.935
Circadian rhythm	0.677
Citrate cycle (TCA cycle)	0.075
Cocaine addiction	0.690
Colorectal cancer	0.037
Complement and coagulation cascades	0.070
Cysteine and methionine metabolism	0.419
Cytosolic DNA-sensing pathway	0.523
D-Glutamine and D-glutamate metabolism	0.473
Dilated cardiomyopathy	0.986
Dopaminergic synapse	0.903
Dorso-ventral axis formation	0.259
Drug metabolism - cytochrome P450	0.953
Drug metabolism - other enzymes	0.159
ECM-receptor interaction	0.108
Endocrine and other factor-regulated calcium reabsorption	0.979
Endocytosis	0.657
Endometrial cancer	0.172
Epithelial cell signaling in Helicobacter pylori infection	0.165
Epstein-Barr virus infection	0.555
ErbB signaling pathway	0.403
Estrogen signaling pathway	0.496
Ether lipid metabolism	0.728
Fanconi anemia pathway	0.036
Fat digestion and absorption	0.131
Fatty acid biosynthesis	0.706
Fatty acid degradation	0.245
Fatty acid elongation	0.843
Fc epsilon RI signaling pathway	0.423
Fc gamma R-mediated phagocytosis	0.540
Folate biosynthesis	0.019
FoxO signaling pathway	0.125
Fructose and mannose metabolism	0.000
GABAergic synapse	0.996
Galactose metabolism	0.010
Gap junction	0.826
Gastric acid secretion	0.933
Glioma	0.425
Glucagon signaling pathway	0.912
Glutamatergic synapse	0.946
Glutathione metabolism	0.286
Glycerolipid metabolism	0.009

Glycerophospholipid metabolism	0.003
Glycine, serine and threonine metabolism	0.131
Glycolysis / Gluconeogenesis	0.220
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.016
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.610
Glycosaminoglycan degradation	0.033
Glycosphingolipid biosynthesis - ganglio series	0.259
Glycosphingolipid biosynthesis - globo series	0.629
Glycosphingolipid biosynthesis - lacto and neolacto series	0.970
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.330
Glyoxylate and dicarboxylate metabolism	0.100
GnRH signaling pathway	0.461
Graft-versus-host disease	0.385
Hepatitis B	0.189
Hepatitis C	0.021
Herpes simplex infection	0.120
HIF-1 signaling pathway	0.426
Histidine metabolism	0.541
Huntington's disease	0.122
Hypertrophic cardiomyopathy (HCM)	0.763
Inflammatory bowel disease (IBD)	0.995
Inflammatory mediator regulation of TRP channels	0.778
Influenza A	0.803
Inositol phosphate metabolism	0.712
Insulin resistance	0.746
Insulin secretion	0.921
Insulin signaling pathway	0.424
Intestinal immune network for IgA production	0.914
Legionellosis	0.926
Leishmaniasis	0.668
Leukocyte transendothelial migration	0.640
Linoleic acid metabolism	0.899
Lipoic acid metabolism	0.750
Long-term depression	0.714
Long-term potentiation	0.371
Longevity regulating pathway	0.778
Longevity regulating pathway - multiple species	0.550
Lysine biosynthesis	0.603
Lysine degradation	0.882
Malaria	0.990
Maturity onset diabetes of the young	0.629
Measles	0.826
Melanogenesis	0.644
Melanoma	0.520
Metabolism of xenobiotics by cytochrome P450	0.668
Mineral absorption	0.843

Morphine addiction	1.000
mRNA surveillance pathway	0.000
mTOR signaling pathway	0.189
Mucin type O-Glycan biosynthesis	0.716
N-Glycan biosynthesis	0.322
Natural killer cell mediated cytotoxicity	0.415
Neuroactive ligand-receptor interaction	0.638
Neurotrophin signaling pathway	0.606
NF-kappa B signaling pathway	0.963
Nicotinate and nicotinamide metabolism	0.045
Nitrogen metabolism	0.473
NOD-like receptor signaling pathway	0.592
Non-alcoholic fatty liver disease (NAFLD)	0.276
Non-small cell lung cancer	0.381
Notch signaling pathway	0.559
One carbon pool by folate	0.184
Oocyte meiosis	0.057
Osteoclast differentiation	0.691
Ovarian steroidogenesis	0.804
Oxidative phosphorylation	0.015
p53 signaling pathway	0.526
Pancreatic cancer	0.073
Pancreatic secretion	0.928
Pantothenate and CoA biosynthesis	0.385
Parkinson's disease	0.900
Pathogenic Escherichia coli infection	0.992
Pentose and glucuronate interconversions	0.709
Pentose phosphate pathway	0.009
Peroxisome	0.131
Pertussis	0.514
Phagosome	0.982
Phenylalanine metabolism	0.259
Phenylalanine, tyrosine and tryptophan biosynthesis	0.750
Phosphatidylinositol signaling system	0.709
Phospholipase D signaling pathway	0.651
Phototransduction	0.978
Platelet activation	0.781
Porphyrin and chlorophyll metabolism	0.928
Primary bile acid biosynthesis	0.638
Prion diseases	0.474
Progesterone-mediated oocyte maturation	0.161
Prolactin signaling pathway	0.302
Propanoate metabolism	0.584
Prostate cancer	0.016
Protein processing in endoplasmic reticulum	0.277
Proximal tubule bicarbonate reclamation	0.514

Pyrimidine metabolism	0.477
Pyruvate metabolism	0.169
Regulation of autophagy	0.056
Regulation of lipolysis in adipocytes	0.904
Renal cell carcinoma	0.038
Renin secretion	0.835
Renin-angiotensin system	1.000
Retinol metabolism	0.835
Retrograde endocannabinoid signaling	0.990
Rheumatoid arthritis	0.979
Riboflavin metabolism	0.750
Ribosome biogenesis in eukaryotes	0.750
RIG-I-like receptor signaling pathway	0.011
RNA degradation	0.421
RNA transport	0.040
Salivary secretion	0.956
Salmonella infection	0.844
Selenocompound metabolism	0.638
Serotonergic synapse	0.986
Shigellosis	0.901
Signaling pathways regulating pluripotency of stem cells	0.311
Small cell lung cancer	0.073
SNARE interactions in vesicular transport	0.670
Sphingolipid metabolism	0.157
Sphingolipid signaling pathway	0.426
Staphylococcus aureus infection	0.391
Starch and sucrose metabolism	0.472
Steroid biosynthesis	0.914
Steroid hormone biosynthesis	0.864
Sulfur metabolism	0.902
Sulfur relay system	0.859
Synaptic vesicle cycle	0.085
Synthesis and degradation of ketone bodies	0.708
Systemic lupus erythematosus	0.770
T cell receptor signaling pathway	0.381
Taste transduction	0.973
Taurine and hypotaurine metabolism	0.619
Terpenoid backbone biosynthesis	0.541
TGF-beta signaling pathway	0.228
Thiamine metabolism	0.750
Thyroid cancer	0.122
Thyroid hormone signaling pathway	0.435
Thyroid hormone synthesis	0.835
Tight junction	0.957
TNF signaling pathway	0.401
Toll-like receptor signaling pathway	0.805

Toxoplasmosis	0.582
Transcriptional misregulation in cancer	0.815
Tryptophan metabolism	0.470
Type I diabetes mellitus	1.000
Type II diabetes mellitus	0.737
Tyrosine metabolism	0.716
Ubiquinone and other terpenoid-quinone biosynthesis	0.708
Valine, leucine and isoleucine degradation	0.635
Vascular smooth muscle contraction	0.724
Vasopressin-regulated water reabsorption	0.655
VEGF signaling pathway	0.620
Vibrio cholerae infection	0.990
Viral carcinogenesis	0.717
Viral myocarditis	0.670
Vitamin B6 metabolism	0.267
Vitamin digestion and absorption	1.000
Wnt signaling pathway	0.600
	tA
Acute myeloid leukemia	-10240.712
Adherens junction	-22437.526
Adipocytokine signaling pathway	-16332.615
Adrenergic signaling in cardiomyocytes	-13229.409
African trypanosomiasis	-585.250
AGE-RAGE signaling pathway in diabetic complications	-9114.645
Alanine, aspartate and glutamate metabolism	0.000
Aldosterone synthesis and secretion	8259.580
Aldosterone-regulated sodium reabsorption	470.017
Allograft rejection	0.000
alpha-Linolenic acid metabolism	0.000
Alzheimer's disease	-23797.500
Amino sugar and nucleotide sugar metabolism	0.000
Aminoacyl-tRNA biosynthesis	0.000
Amoebiasis	-254.500
Amphetamine addiction	-882.730
AMPK signaling pathway	9342.012
Amyotrophic lateral sclerosis (ALS)	-37860.750
Antigen processing and presentation	-14914.625
Apoptosis	-2656.408
Arachidonic acid metabolism	0.000
Arginine and proline metabolism	0.000
Arginine biosynthesis	0.000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	3006.750
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	5053.614

Bacterial invasion of epithelial cells	-6258.125
Basal cell carcinoma	-11007.205
beta-Alanine metabolism	0.000
Bile secretion	-23.000
Biosynthesis of unsaturated fatty acids	0.000
Biotin metabolism	NA
Bladder cancer	-6582.125
Butanoate metabolism	0.000
Caffeine metabolism	0.000
Carbohydrate digestion and absorption	290.750
Cardiac muscle contraction	0.000
Cell adhesion molecules (CAMs)	-10071.778
Cell cycle	13571.231
Central carbon metabolism in cancer	-20629.224
Chagas disease (American trypanosomiasis)	-33458.726
Chemical carcinogenesis	0.000
Choline metabolism in cancer	-3642.720
Cholinergic synapse	1637.518
Chronic myeloid leukemia	-13164.865
Circadian entrainment	8789.657
Circadian rhythm	-1395.783
Citrate cycle (TCA cycle)	0.000
Cocaine addiction	-997.047
Colorectal cancer	27460.062
Complement and coagulation cascades	-2799.592
Cysteine and methionine metabolism	0.000
Cytosolic DNA-sensing pathway	-1541.625
D-Glutamine and D-glutamate metabolism	0.000
Dilated cardiomyopathy	0.000
Dopaminergic synapse	-3147.034
Dorso-ventral axis formation	3685.250
Drug metabolism - cytochrome P450	0.000
Drug metabolism - other enzymes	0.000
ECM-receptor interaction	-158490.125
Endocrine and other factor-regulated calcium reabsorption	9119.125
Endocytosis	0.000
Endometrial cancer	20826.708
Epithelial cell signaling in Helicobacter pylori infection	7037.833
Epstein-Barr virus infection	8626.558
ErbB signaling pathway	-13078.430
Estrogen signaling pathway	-14708.137
Ether lipid metabolism	0.000
Fanconi anemia pathway	-2745.875
Fat digestion and absorption	0.000
Fatty acid biosynthesis	0.000
Fatty acid degradation	0.000

Fatty acid elongation	0.000
Fc epsilon RI signaling pathway	-5693.508
Fc gamma R-mediated phagocytosis	4378.149
Folate biosynthesis	0.000
FoxO signaling pathway	-6640.972
Fructose and mannose metabolism	0.000
GABAergic synapse	318.203
Galactose metabolism	0.000
Gap junction	915.500
Gastric acid secretion	2845.500
Glioma	2020.127
Glucagon signaling pathway	534.498
Glutamatergic synapse	2387.916
Glutathione metabolism	0.000
Glycerolipid metabolism	0.000
Glycerophospholipid metabolism	0.000
Glycine, serine and threonine metabolism	0.000
Glycolysis / Gluconeogenesis	0.000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.000
Glycosaminoglycan degradation	0.000
Glycosphingolipid biosynthesis - ganglio series	0.000
Glycosphingolipid biosynthesis - globo series	0.000
Glycosphingolipid biosynthesis - lacto and neolacto series	0.000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.000
Glyoxylate and dicarboxylate metabolism	0.000
GnRH signaling pathway	26278.625
Graft-versus-host disease	0.000
Hepatitis B	-39267.925
Hepatitis C	-224.125
Herpes simplex infection	-30578.156
HIF-1 signaling pathway	690.568
Histidine metabolism	0.000
Huntington's disease	2454.250
Hypertrophic cardiomyopathy (HCM)	0.000
Inflammatory bowel disease (IBD)	1745.904
Inflammatory mediator regulation of TRP channels	-5735.125
Influenza A	861.480
Inositol phosphate metabolism	0.000
Insulin resistance	59757.147
Insulin secretion	-1936.904
Insulin signaling pathway	46351.119
Intestinal immune network for IgA production	323.375
Legionellosis	2233.250
Leishmaniasis	10531.704
Leukocyte transendothelial migration	-19445.597

Linoleic acid metabolism	0.000
Lipoic acid metabolism	0.000
Long-term depression	NA
Long-term potentiation	-8911.650
Longevity regulating pathway	18868.562
Longevity regulating pathway - multiple species	3953.063
Lysine biosynthesis	0.000
Lysine degradation	0.000
Malaria	0.000
Maturity onset diabetes of the young	500.250
Measles	10001.200
Melanogenesis	-18386.607
Melanoma	3118.693
Metabolism of xenobiotics by cytochrome P450	0.000
Mineral absorption	-408.500
Morphine addiction	24.578
mRNA surveillance pathway	0.000
mTOR signaling pathway	497.375
Mucin type O-Glycan biosynthesis	0.000
N-Glycan biosynthesis	0.000
Natural killer cell mediated cytotoxicity	15797.524
Neuroactive ligand-receptor interaction	169.000
Neurotrophin signaling pathway	15733.332
NF-kappa B signaling pathway	-22052.023
Nicotinate and nicotinamide metabolism	0.000
Nitrogen metabolism	0.000
NOD-like receptor signaling pathway	14.438
Non-alcoholic fatty liver disease (NAFLD)	706.231
Non-small cell lung cancer	-13992.269
Notch signaling pathway	25485.054
One carbon pool by folate	0.000
Oocyte meiosis	9590.408
Osteoclast differentiation	-33768.837
Ovarian steroidogenesis	301.750
Oxidative phosphorylation	0.000
p53 signaling pathway	3401.186
Pancreatic cancer	-1280.125
Pancreatic secretion	-23.000
Pantothenate and CoA biosynthesis	0.000
Parkinson's disease	-42721.750
Pathogenic Escherichia coli infection	99104.625
Pentose and glucuronate interconversions	0.000
Pentose phosphate pathway	0.000
Peroxisome	0.000
Pertussis	-3465.833
Phagosome	0.000

Phenylalanine metabolism	0.000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.000
Phosphatidylinositol signaling system	0.000
Phospholipase D signaling pathway	15541.237
Phototransduction	-2568.375
Platelet activation	3467.602
Porphyrin and chlorophyll metabolism	0.000
Primary bile acid biosynthesis	0.000
Prion diseases	-11354.071
Progesterone-mediated oocyte maturation	141794.312
Prolactin signaling pathway	-16111.037
Propanoate metabolism	0.000
Prostate cancer	76062.388
Protein processing in endoplasmic reticulum	9117.042
Proximal tubule bicarbonate reclamation	0.000
Pyrimidine metabolism	0.000
Pyruvate metabolism	0.000
Regulation of autophagy	4482.125
Regulation of lipolysis in adipocytes	-8105.025
Renal cell carcinoma	-5790.849
Renin secretion	2770.875
Renin-angiotensin system	NA
Retinol metabolism	0.000
Retrograde endocannabinoid signaling	6.146
Rheumatoid arthritis	0.000
Riboflavin metabolism	0.000
Ribosome biogenesis in eukaryotes	0.000
RIG-I-like receptor signaling pathway	9194.208
RNA degradation	2002.625
RNA transport	-124.625
Salivary secretion	2669.375
Salmonella infection	-100406.973
Selenocompound metabolism	0.000
Serotonergic synapse	1783.398
Shigellosis	1973.750
Signaling pathways regulating pluripotency of stem cells	NA
Small cell lung cancer	-217799.217
SNARE interactions in vesicular transport	-1218.167
Sphingolipid metabolism	0.000
Sphingolipid signaling pathway	-53014.650
Staphylococcus aureus infection	-15502.313
Starch and sucrose metabolism	0.000
Steroid biosynthesis	0.000
Steroid hormone biosynthesis	0.000
Sulfur metabolism	0.000
Sulfur relay system	-1333.750

Synaptic vesicle cycle	0.000
Synthesis and degradation of ketone bodies	0.000
Systemic lupus erythematosus	-4225.750
T cell receptor signaling pathway	12180.010
Taste transduction	48.625
Taurine and hypotaurine metabolism	0.000
Terpenoid backbone biosynthesis	0.000
TGF-beta signaling pathway	-20167.550
Thiamine metabolism	0.000
Thyroid cancer	21290.250
Thyroid hormone signaling pathway	-1320.246
Thyroid hormone synthesis	-371.625
Tight junction	-4289.125
TNF signaling pathway	-37305.542
Toll-like receptor signaling pathway	-11410.867
Toxoplasmosis	-10225.062
Transcriptional misregulation in cancer	-388.000
Tryptophan metabolism	0.000
Type I diabetes mellitus	NA
Type II diabetes mellitus	2399.000
Tyrosine metabolism	0.000
Ubiquinone and other terpenoid-quinone biosynthesis	0.000
Valine, leucine and isoleucine degradation	0.000
Vascular smooth muscle contraction	-3379.788
Vasopressin-regulated water reabsorption	-3012.659
VEGF signaling pathway	734.526
Vibrio cholerae infection	-232.317
Viral carcinogenesis	2210.875
Viral myocarditis	6739.625
Vitamin B6 metabolism	0.000
Vitamin digestion and absorption	NA
Wnt signaling pathway	15527.194
pPERT	
Acute myeloid leukemia	0.25000
Adherens junction	0.14600
Adipocytokine signaling pathway	0.08800
Adrenergic signaling in cardiomyocytes	0.30800
African trypanosomiasis	0.43800
AGE-RAGE signaling pathway in diabetic complications	0.46800
Alanine, aspartate and glutamate metabolism	NA
Aldosterone synthesis and secretion	0.26600
Aldosterone-regulated sodium reabsorption	0.59400
Allograft rejection	1.00000
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.08800
Amino sugar and nucleotide sugar metabolism	NA

Aminoacyl-tRNA biosynthesis	NA
Amoebiasis	0.93400
Amphetamine addiction	0.88600
AMPK signaling pathway	0.25800
Amyotrophic lateral sclerosis (ALS)	0.03600
Antigen processing and presentation	0.05200
Apoptosis	0.88000
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.04200
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
B cell receptor signaling pathway	0.51600
Bacterial invasion of epithelial cells	0.61200
Basal cell carcinoma	0.51600
beta-Alanine metabolism	NA
Bile secretion	0.91200
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	0.46600
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	0.74800
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.46000
Cell cycle	0.71200
Central carbon metabolism in cancer	0.45600
Chagas disease (American trypanosomiasis)	0.09200
Chemical carcinogenesis	NA
Choline metabolism in cancer	0.71400
Cholinergic synapse	0.85000
Chronic myeloid leukemia	0.30400
Circadian entrainment	0.27400
Circadian rhythm	0.44800
Citrate cycle (TCA cycle)	NA
Cocaine addiction	0.80200
Colorectal cancer	0.02200
Complement and coagulation cascades	0.64200
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	0.46200
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	1.00000
Dopaminergic synapse	0.57000
Dorso-ventral axis formation	0.06600

Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
ECM-receptor interaction	0.00600
Endocrine and other factor-regulated calcium reabsorption	0.05600
Endocytosis	NA
Endometrial cancer	0.11200
Epithelial cell signaling in Helicobacter pylori infection	0.30400
Epstein-Barr virus infection	0.35400
ErbB signaling pathway	0.49800
Estrogen signaling pathway	0.59800
Ether lipid metabolism	NA
Fanconi anemia pathway	0.34800
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Fc epsilon RI signaling pathway	0.67600
Fc gamma R-mediated phagocytosis	0.66600
Folate biosynthesis	NA
FoxO signaling pathway	0.71600
Fructose and mannose metabolism	NA
GABAergic synapse	0.80800
Galactose metabolism	NA
Gap junction	0.93800
Gastric acid secretion	0.26000
Glioma	0.86600
Glucagon signaling pathway	0.94800
Glutamatergic synapse	0.52000
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	0.15800
Graft-versus-host disease	1.00000
Hepatitis B	0.29200
Hepatitis C	0.97200
Herpes simplex infection	0.14400

HIF-1 signaling pathway	0.95600
Histidine metabolism	NA
Huntington's disease	0.25000
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	0.85000
Inflammatory mediator regulation of TRP channels	0.59800
Influenza A	0.92000
Inositol phosphate metabolism	NA
Insulin resistance	0.03400
Insulin secretion	0.63600
Insulin signaling pathway	0.18000
Intestinal immune network for IgA production	0.53000
Legionellosis	0.40200
Leishmaniasis	0.12400
Leukocyte transendothelial migration	0.31800
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Long-term depression	NA
Long-term potentiation	0.57600
Longevity regulating pathway	0.04600
Longevity regulating pathway - multiple species	0.54800
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	1.00000
Maturity onset diabetes of the young	0.66000
Measles	0.21200
Melanogenesis	0.57800
Melanoma	0.85800
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	0.14400
Morphine addiction	0.97400
mRNA surveillance pathway	1.00000
mTOR signaling pathway	0.87400
Mucin type O-Glycan biosynthesis	NA
N-Glycan biosynthesis	NA
Natural killer cell mediated cytotoxicity	0.57200
Neuroactive ligand-receptor interaction	0.79400
Neurotrophin signaling pathway	0.28200
NF-kappa B signaling pathway	0.15200
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	0.99800
Non-alcoholic fatty liver disease (NAFLD)	0.95000
Non-small cell lung cancer	0.44000
Notch signaling pathway	0.07600
One carbon pool by folate	NA

Oocyte meiosis	0.56200
Osteoclast differentiation	0.12800
Ovarian steroidogenesis	0.68200
Oxidative phosphorylation	NA
p53 signaling pathway	0.35800
Pancreatic cancer	0.93600
Pancreatic secretion	0.80200
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	0.02600
Pathogenic Escherichia coli infection	0.00200
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	0.64400
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phospholipase D signaling pathway	0.36400
Phototransduction	0.26000
Platelet activation	0.88200
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	0.15000
Progesterone-mediated oocyte maturation	0.00001
Prolactin signaling pathway	0.47000
Propanoate metabolism	NA
Prostate cancer	0.00800
Protein processing in endoplasmic reticulum	0.40200
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	0.31000
Regulation of lipolysis in adipocytes	0.28000
Renal cell carcinoma	0.51400
Renin secretion	0.37200
Renin-angiotensin system	NA
Retinol metabolism	NA
Retrograde endocannabinoid signaling	0.98400
Rheumatoid arthritis	1.00000
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	0.24600
RNA degradation	0.15800
RNA transport	0.92000
Salivary secretion	0.23800

Salmonella infection	0.00600
Selenocompound metabolism	NA
Serotonergic synapse	0.58200
Shigellosis	0.65800
Signaling pathways regulating pluripotency of stem cells	NA
Small cell lung cancer	0.00800
SNARE interactions in vesicular transport	0.44600
Sphingolipid metabolism	NA
Sphingolipid signaling pathway	0.10600
Staphylococcus aureus infection	0.13000
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	0.24800
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	0.15400
T cell receptor signaling pathway	0.41400
Taste transduction	0.70400
Taurine and hypotaurine metabolism	NA
Terpenoid backbone biosynthesis	NA
TGF-beta signaling pathway	0.13800
Thiamine metabolism	NA
Thyroid cancer	0.02000
Thyroid hormone signaling pathway	0.85600
Thyroid hormone synthesis	0.92600
Tight junction	0.33800
TNF signaling pathway	0.07600
Toll-like receptor signaling pathway	0.48200
Toxoplasmosis	0.36400
Transcriptional misregulation in cancer	0.27800
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	0.63600
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vascular smooth muscle contraction	0.80800
Vasopressin-regulated water reabsorption	0.34200
VEGF signaling pathway	0.93800
Vibrio cholerae infection	0.58000
Viral carcinogenesis	0.16400
Viral myocarditis	0.11600
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA

Wnt signaling pathway	0.23400
	pG
Acute myeloid leukemia	0.319
Adherens junction	0.021
Adipocytokine signaling pathway	0.225
Adrenergic signaling in cardiomyocytes	0.589
African trypanosomiasis	0.797
AGE-RAGE signaling pathway in diabetic complications	0.569
Alanine, aspartate and glutamate metabolism	0.584
Aldosterone synthesis and secretion	0.481
Aldosterone-regulated sodium reabsorption	0.734
Allograft rejection	0.847
alpha-Linolenic acid metabolism	0.501
Alzheimer's disease	0.073
Amino sugar and nucleotide sugar metabolism	0.064
Aminoacyl-tRNA biosynthesis	0.339
Amoebiasis	0.980
Amphetamine addiction	0.743
AMPK signaling pathway	0.032
Amyotrophic lateral sclerosis (ALS)	0.011
Antigen processing and presentation	0.038
Apoptosis	0.558
Arachidonic acid metabolism	0.486
Arginine and proline metabolism	0.745
Arginine biosynthesis	0.709
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.050
Ascorbate and aldarate metabolism	1.000
Asthma	1.000
Autoimmune thyroid disease	1.000
B cell receptor signaling pathway	0.683
Bacterial invasion of epithelial cells	0.879
Basal cell carcinoma	0.176
beta-Alanine metabolism	0.323
Bile secretion	0.985
Biosynthesis of unsaturated fatty acids	0.394
Biotin metabolism	1.000
Bladder cancer	0.152
Butanoate metabolism	0.809
Caffeine metabolism	0.750
Carbohydrate digestion and absorption	0.679
Cardiac muscle contraction	0.540
Cell adhesion molecules (CAMs)	0.794
Cell cycle	0.015
Central carbon metabolism in cancer	0.297
Chagas disease (American trypanosomiasis)	0.187
Chemical carcinogenesis	0.886

Choline metabolism in cancer	0.293
Cholinergic synapse	0.982
Chronic myeloid leukemia	0.316
Circadian entrainment	0.605
Circadian rhythm	0.665
Citrate cycle (TCA cycle)	0.075
Cocaine addiction	0.881
Colorectal cancer	0.007
Complement and coagulation cascades	0.184
Cysteine and methionine metabolism	0.419
Cytosolic DNA-sensing pathway	0.585
D-Glutamine and D-glutamate metabolism	0.473
Dilated cardiomyopathy	1.000
Dopaminergic synapse	0.857
Dorso-ventral axis formation	0.087
Drug metabolism - cytochrome P450	0.953
Drug metabolism - other enzymes	0.159
ECM-receptor interaction	0.005
Endocrine and other factor-regulated calcium reabsorption	0.214
Endocytosis	0.657
Endometrial cancer	0.095
Epithelial cell signaling in Helicobacter pylori infection	0.200
Epstein-Barr virus infection	0.516
ErbB signaling pathway	0.523
Estrogen signaling pathway	0.657
Ether lipid metabolism	0.728
Fanconi anemia pathway	0.067
Fat digestion and absorption	0.131
Fatty acid biosynthesis	0.706
Fatty acid degradation	0.245
Fatty acid elongation	0.843
Fc epsilon RI signaling pathway	0.644
Fc gamma R-mediated phagocytosis	0.727
Folate biosynthesis	0.019
FoxO signaling pathway	0.306
Fructose and mannose metabolism	0.000
GABAergic synapse	0.980
Galactose metabolism	0.010
Gap junction	0.972
Gastric acid secretion	0.586
Glioma	0.736
Glucagon signaling pathway	0.990
Glutamatergic synapse	0.841
Glutathione metabolism	0.286
Glycerolipid metabolism	0.009
Glycerophospholipid metabolism	0.003

Glycine, serine and threonine metabolism	0.131
Glycolysis / Gluconeogenesis	0.220
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.016
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.610
Glycosaminoglycan degradation	0.033
Glycosphingolipid biosynthesis - ganglio series	0.259
Glycosphingolipid biosynthesis - globo series	0.629
Glycosphingolipid biosynthesis - lacto and neolacto series	0.970
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.330
Glyoxylate and dicarboxylate metabolism	0.100
GnRH signaling pathway	0.264
Graft-versus-host disease	0.752
Hepatitis B	0.215
Hepatitis C	0.100
Herpes simplex infection	0.087
HIF-1 signaling pathway	0.773
Histidine metabolism	0.541
Huntington's disease	0.137
Hypertrophic cardiomyopathy (HCM)	0.763
Inflammatory bowel disease (IBD)	0.987
Inflammatory mediator regulation of TRP channels	0.821
Influenza A	0.962
Inositol phosphate metabolism	0.712
Insulin resistance	0.119
Insulin secretion	0.899
Insulin signaling pathway	0.273
Intestinal immune network for IgA production	0.836
Legionellosis	0.740
Leishmaniasis	0.289
Leukocyte transendothelial migration	0.528
Linoleic acid metabolism	0.899
Lipoic acid metabolism	0.750
Long-term depression	0.714
Long-term potentiation	0.543
Longevity regulating pathway	0.155
Longevity regulating pathway - multiple species	0.663
Lysine biosynthesis	0.603
Lysine degradation	0.882
Malaria	1.000
Maturity onset diabetes of the young	0.780
Measles	0.480
Melanogenesis	0.740
Melanoma	0.806
Metabolism of xenobiotics by cytochrome P450	0.668
Mineral absorption	0.377
Morphine addiction	1.000

mRNA surveillance pathway	NaN
mTOR signaling pathway	0.463
Mucin type O-Glycan biosynthesis	0.716
N-Glycan biosynthesis	0.322
Natural killer cell mediated cytotoxicity	0.579
Neuroactive ligand-receptor interaction	0.851
Neurotrophin signaling pathway	0.473
NF-kappa B signaling pathway	0.428
Nicotinate and nicotinamide metabolism	0.045
Nitrogen metabolism	0.473
NOD-like receptor signaling pathway	0.902
Non-alcoholic fatty liver disease (NAFLD)	0.613
Non-small cell lung cancer	0.467
Notch signaling pathway	0.177
One carbon pool by folate	0.184
Oocyte meiosis	0.142
Osteoclast differentiation	0.303
Ovarian steroidogenesis	0.878
Oxidative phosphorylation	0.015
p53 signaling pathway	0.503
Pancreatic cancer	0.252
Pancreatic secretion	0.964
Pantothenate and CoA biosynthesis	0.385
Parkinson's disease	0.111
Pathogenic Escherichia coli infection	0.014
Pentose and glucuronate interconversions	0.709
Pentose phosphate pathway	0.009
Peroxisome	0.131
Pertussis	0.697
Phagosome	0.982
Phenylalanine metabolism	0.259
Phenylalanine, tyrosine and tryptophan biosynthesis	0.750
Phosphatidylinositol signaling system	0.709
Phospholipase D signaling pathway	0.578
Phototransduction	0.602
Platelet activation	0.946
Porphyrin and chlorophyll metabolism	0.928
Primary bile acid biosynthesis	0.638
Prion diseases	0.259
Progesterone-mediated oocyte maturation	0.000
Prolactin signaling pathway	0.419
Propanoate metabolism	0.584
Prostate cancer	0.001
Protein processing in endoplasmic reticulum	0.356
Proximal tubule bicarbonate reclamation	0.514
Pyrimidine metabolism	0.477

Pyruvate metabolism	0.169
Regulation of autophagy	0.088
Regulation of lipolysis in adipocytes	0.601
Renal cell carcinoma	0.096
Renin secretion	0.674
Renin-angiotensin system	1.000
Retinol metabolism	0.835
Retrograde endocannabinoid signaling	1.000
Rheumatoid arthritis	1.000
Riboflavin metabolism	0.750
Ribosome biogenesis in eukaryotes	0.750
RIG-I-like receptor signaling pathway	0.019
RNA degradation	0.247
RNA transport	0.158
Salivary secretion	0.564
Salmonella infection	0.032
Selenocompound metabolism	0.638
Serotonergic synapse	0.893
Shigellosis	0.903
Signaling pathways regulating pluripotency of stem cells	0.311
Small cell lung cancer	0.005
SNARE interactions in vesicular transport	0.660
Sphingolipid metabolism	0.157
Sphingolipid signaling pathway	0.185
Staphylococcus aureus infection	0.202
Starch and sucrose metabolism	0.472
Steroid biosynthesis	0.914
Steroid hormone biosynthesis	0.864
Sulfur metabolism	0.902
Sulfur relay system	0.542
Synaptic vesicle cycle	0.085
Synthesis and degradation of ketone bodies	0.708
Systemic lupus erythematosus	0.371
T cell receptor signaling pathway	0.449
Taste transduction	0.944
Taurine and hypotaurine metabolism	0.619
Terpenoid backbone biosynthesis	0.541
TGF-beta signaling pathway	0.140
Thiamine metabolism	0.750
Thyroid cancer	0.017
Thyroid hormone signaling pathway	0.740
Thyroid hormone synthesis	0.972
Tight junction	0.689
TNF signaling pathway	0.137
Toll-like receptor signaling pathway	0.755
Toxoplasmosis	0.541

Transcriptional misregulation in cancer	0.563
Tryptophan metabolism	0.470
Type I diabetes mellitus	1.000
Type II diabetes mellitus	0.824
Tyrosine metabolism	0.716
Ubiquinone and other terpenoid-quinone biosynthesis	0.708
Valine, leucine and isoleucine degradation	0.635
Vascular smooth muscle contraction	0.899
Vasopressin-regulated water reabsorption	0.559
VEGF signaling pathway	0.897
Vibrio cholerae infection	0.893
Viral carcinogenesis	0.369
Viral myocarditis	0.276
Vitamin B6 metabolism	0.267
Vitamin digestion and absorption	1.000
Wnt signaling pathway	0.416
	pGFdr
Acute myeloid leukemia	0.9234000
Adherens junction	0.2685789
Adipocytokine signaling pathway	0.8542969
Adrenergic signaling in cardiomyocytes	1.0000000
African trypanosomiasis	1.0000000
AGE-RAGE signaling pathway in diabetic complications	1.0000000
Alanine, aspartate and glutamate metabolism	1.0000000
Aldosterone synthesis and secretion	1.0000000
Aldosterone-regulated sodium reabsorption	1.0000000
Allograft rejection	1.0000000
alpha-Linolenic acid metabolism	1.0000000
Alzheimer's disease	0.6284483
Amino sugar and nucleotide sugar metabolism	0.5981538
Aminoacyl-tRNA biosynthesis	0.9468621
Amoebiasis	1.0000000
Amphetamine addiction	1.0000000
AMPK signaling pathway	0.3645000
Amyotrophic lateral sclerosis (ALS)	0.2430000
Antigen processing and presentation	0.4014783
Apoptosis	1.0000000
Arachidonic acid metabolism	1.0000000
Arginine and proline metabolism	1.0000000
Arginine biosynthesis	1.0000000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.4860000
Ascorbate and aldarate metabolism	1.0000000
Asthma	1.0000000
Autoimmune thyroid disease	1.0000000
B cell receptor signaling pathway	1.0000000
Bacterial invasion of epithelial cells	1.0000000

Basal cell carcinoma	0.7834655
beta-Alanine metabolism	0.9234000
Bile secretion	1.0000000
Biosynthesis of unsaturated fatty acids	1.0000000
Biotin metabolism	1.0000000
Bladder cancer	0.7575882
Butanoate metabolism	1.0000000
Caffeine metabolism	1.0000000
Carbohydrate digestion and absorption	1.0000000
Cardiac muscle contraction	1.0000000
Cell adhesion molecules (CAMs)	1.0000000
Cell cycle	0.2565000
Central carbon metabolism in cancer	0.9234000
Chagas disease (American trypanosomiasis)	0.7834655
Chemical carcinogenesis	1.0000000
Choline metabolism in cancer	0.9234000
Cholinergic synapse	1.0000000
Chronic myeloid leukemia	0.9234000
Circadian entrainment	1.0000000
Circadian rhythm	1.0000000
Citrate cycle (TCA cycle)	0.6284483
Cocaine addiction	1.0000000
Colorectal cancer	0.2430000
Complement and coagulation cascades	0.7834655
Cysteine and methionine metabolism	1.0000000
Cytosolic DNA-sensing pathway	1.0000000
D-Glutamine and D-glutamate metabolism	1.0000000
Dilated cardiomyopathy	1.0000000
Dopaminergic synapse	1.0000000
Dorso-ventral axis formation	0.6480000
Drug metabolism - cytochrome P450	1.0000000
Drug metabolism - other enzymes	0.7575882
ECM-receptor interaction	0.2025000
Endocrine and other factor-regulated calcium reabsorption	0.8426613
Endocytosis	1.0000000
Endometrial cancer	0.6567568
Epithelial cell signaling in Helicobacter pylori infection	0.8181000
Epstein-Barr virus infection	1.0000000
ErbB signaling pathway	1.0000000
Estrogen signaling pathway	1.0000000
Ether lipid metabolism	1.0000000
Fanconi anemia pathway	0.6030000
Fat digestion and absorption	0.7501304
Fatty acid biosynthesis	1.0000000
Fatty acid degradation	0.8991000
Fatty acid elongation	1.0000000

Fc epsilon RI signaling pathway	1.0000000
Fc gamma R-mediated phagocytosis	1.0000000
Folate biosynthesis	0.2565000
FoxO signaling pathway	0.9234000
Fructose and mannose metabolism	0.0000000
GABAergic synapse	1.0000000
Galactose metabolism	0.2430000
Gap junction	1.0000000
Gastric acid secretion	1.0000000
Glioma	1.0000000
Glucagon signaling pathway	1.0000000
Glutamatergic synapse	1.0000000
Glutathione metabolism	0.9234000
Glycerolipid metabolism	0.2430000
Glycerophospholipid metabolism	0.1822500
Glycine, serine and threonine metabolism	0.7501304
Glycolysis / Gluconeogenesis	0.8485714
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.2565000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	1.0000000
Glycosaminoglycan degradation	0.3645000
Glycosphingolipid biosynthesis - ganglio series	0.8991000
Glycosphingolipid biosynthesis - globo series	1.0000000
Glycosphingolipid biosynthesis - lacto and neolacto series	1.0000000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.9324419
Glyoxylate and dicarboxylate metabolism	0.6567568
GnRH signaling pathway	0.9011250
Graft-versus-host disease	1.0000000
Hepatitis B	0.8426613
Hepatitis C	0.6567568
Herpes simplex infection	0.6480000
HIF-1 signaling pathway	1.0000000
Histidine metabolism	1.0000000
Huntington's disease	0.7501304
Hypertrophic cardiomyopathy (HCM)	1.0000000
Inflammatory bowel disease (IBD)	1.0000000
Inflammatory mediator regulation of TRP channels	1.0000000
Influenza A	1.0000000
Inositol phosphate metabolism	1.0000000
Insulin resistance	0.7414615
Insulin secretion	1.0000000
Insulin signaling pathway	0.9063243
Intestinal immune network for IgA production	1.0000000
Legionellosis	1.0000000
Leishmaniasis	0.9234000
Leukocyte transendothelial migration	1.0000000
Linoleic acid metabolism	1.0000000

Lipoic acid metabolism	1.0000000
Long-term depression	1.0000000
Long-term potentiation	1.0000000
Longevity regulating pathway	0.7575882
Longevity regulating pathway - multiple species	1.0000000
Lysine biosynthesis	1.0000000
Lysine degradation	1.0000000
Malaria	1.0000000
Maturity onset diabetes of the young	1.0000000
Measles	1.0000000
Melanogenesis	1.0000000
Melanoma	1.0000000
Metabolism of xenobiotics by cytochrome P450	1.0000000
Mineral absorption	1.0000000
Morphine addiction	1.0000000
mRNA surveillance pathway	NaN
mTOR signaling pathway	1.0000000
Mucin type O-Glycan biosynthesis	1.0000000
N-Glycan biosynthesis	0.9234000
Natural killer cell mediated cytotoxicity	1.0000000
Neuroactive ligand-receptor interaction	1.0000000
Neurotrophin signaling pathway	1.0000000
NF-kappa B signaling pathway	1.0000000
Nicotinate and nicotinamide metabolism	0.4556250
Nitrogen metabolism	1.0000000
NOD-like receptor signaling pathway	1.0000000
Non-alcoholic fatty liver disease (NAFLD)	1.0000000
Non-small cell lung cancer	1.0000000
Notch signaling pathway	0.7834655
One carbon pool by folate	0.7834655
Oocyte meiosis	0.7501304
Osteoclast differentiation	0.9234000
Ovarian steroidogenesis	1.0000000
Oxidative phosphorylation	0.2565000
p53 signaling pathway	1.0000000
Pancreatic cancer	0.8991000
Pancreatic secretion	1.0000000
Pantothenate and CoA biosynthesis	1.0000000
Parkinson's disease	0.7098158
Pathogenic Escherichia coli infection	0.2565000
Pentose and glucuronate interconversions	1.0000000
Pentose phosphate pathway	0.2430000
Peroxisome	0.7501304
Pertussis	1.0000000
Phagosome	1.0000000
Phenylalanine metabolism	0.8991000

Phenylalanine, tyrosine and tryptophan biosynthesis	1.0000000
Phosphatidylinositol signaling system	1.0000000
Phospholipase D signaling pathway	1.0000000
Phototransduction	1.0000000
Platelet activation	1.0000000
Porphyrin and chlorophyll metabolism	1.0000000
Primary bile acid biosynthesis	1.0000000
Prion diseases	0.8991000
Progesterone-mediated oocyte maturation	0.0000000
Prolactin signaling pathway	1.0000000
Propanoate metabolism	1.0000000
Prostate cancer	0.0810000
Protein processing in endoplasmic reticulum	0.9830455
Proximal tubule bicarbonate reclamation	1.0000000
Pyrimidine metabolism	1.0000000
Pyruvate metabolism	0.7834655
Regulation of autophagy	0.6480000
Regulation of lipolysis in adipocytes	1.0000000
Renal cell carcinoma	0.6567568
Renin secretion	1.0000000
Renin-angiotensin system	1.0000000
Retinol metabolism	1.0000000
Retrograde endocannabinoid signaling	1.0000000
Rheumatoid arthritis	1.0000000
Riboflavin metabolism	1.0000000
Ribosome biogenesis in eukaryotes	1.0000000
RIG-I-like receptor signaling pathway	0.2565000
RNA degradation	0.8991000
RNA transport	0.7575882
Salivary secretion	1.0000000
Salmonella infection	0.3645000
Selenocompound metabolism	1.0000000
Serotonergic synapse	1.0000000
Shigellosis	1.0000000
Signaling pathways regulating pluripotency of stem cells	0.9234000
Small cell lung cancer	0.2025000
SNARE interactions in vesicular transport	1.0000000
Sphingolipid metabolism	0.7575882
Sphingolipid signaling pathway	0.7834655
Staphylococcus aureus infection	0.8181000
Starch and sucrose metabolism	1.0000000
Steroid biosynthesis	1.0000000
Steroid hormone biosynthesis	1.0000000
Sulfur metabolism	1.0000000
Sulfur relay system	1.0000000
Synaptic vesicle cycle	0.6480000

Synthesis and degradation of ketone bodies	1.0000000
Systemic lupus erythematosus	1.0000000
T cell receptor signaling pathway	1.0000000
Taste transduction	1.0000000
Taurine and hypotaurine metabolism	1.0000000
Terpenoid backbone biosynthesis	1.0000000
TGF-beta signaling pathway	0.7501304
Thiamine metabolism	1.0000000
Thyroid cancer	0.2565000
Thyroid hormone signaling pathway	1.0000000
Thyroid hormone synthesis	1.0000000
Tight junction	1.0000000
TNF signaling pathway	0.7501304
Toll-like receptor signaling pathway	1.0000000
Toxoplasmosis	1.0000000
Transcriptional misregulation in cancer	1.0000000
Tryptophan metabolism	1.0000000
Type I diabetes mellitus	1.0000000
Type II diabetes mellitus	1.0000000
Tyrosine metabolism	1.0000000
Ubiquinone and other terpenoid-quinone biosynthesis	1.0000000
Valine, leucine and isoleucine degradation	1.0000000
Vascular smooth muscle contraction	1.0000000
Vasopressin-regulated water reabsorption	1.0000000
VEGF signaling pathway	1.0000000
Vibrio cholerae infection	1.0000000
Viral carcinogenesis	1.0000000
Viral myocarditis	0.9063243
Vitamin B6 metabolism	0.9011250
Vitamin digestion and absorption	1.0000000
Wnt signaling pathway	1.0000000
pGFWER	
Acute myeloid leukemia	1.000
Adherens junction	1.000
Adipocytokine signaling pathway	1.000
Adrenergic signaling in cardiomyocytes	1.000
African trypanosomiasis	1.000
AGE-RAGE signaling pathway in diabetic complications	1.000
Alanine, aspartate and glutamate metabolism	1.000
Aldosterone synthesis and secretion	1.000
Aldosterone-regulated sodium reabsorption	1.000
Allograft rejection	1.000
alpha-Linolenic acid metabolism	1.000
Alzheimer's disease	1.000
Amino sugar and nucleotide sugar metabolism	1.000
Aminoacyl-tRNA biosynthesis	1.000

Amoebiasis	1.000
Amphetamine addiction	1.000
AMPK signaling pathway	1.000
Amyotrophic lateral sclerosis (ALS)	1.000
Antigen processing and presentation	1.000
Apoptosis	1.000
Arachidonic acid metabolism	1.000
Arginine and proline metabolism	1.000
Arginine biosynthesis	1.000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	1.000
Ascorbate and aldarate metabolism	1.000
Asthma	1.000
Autoimmune thyroid disease	1.000
B cell receptor signaling pathway	1.000
Bacterial invasion of epithelial cells	1.000
Basal cell carcinoma	1.000
beta-Alanine metabolism	1.000
Bile secretion	1.000
Biosynthesis of unsaturated fatty acids	1.000
Biotin metabolism	1.000
Bladder cancer	1.000
Butanoate metabolism	1.000
Caffeine metabolism	1.000
Carbohydrate digestion and absorption	1.000
Cardiac muscle contraction	1.000
Cell adhesion molecules (CAMs)	1.000
Cell cycle	1.000
Central carbon metabolism in cancer	1.000
Chagas disease (American trypanosomiasis)	1.000
Chemical carcinogenesis	1.000
Choline metabolism in cancer	1.000
Cholinergic synapse	1.000
Chronic myeloid leukemia	1.000
Circadian entrainment	1.000
Circadian rhythm	1.000
Citrate cycle (TCA cycle)	1.000
Cocaine addiction	1.000
Colorectal cancer	1.000
Complement and coagulation cascades	1.000
Cysteine and methionine metabolism	1.000
Cytosolic DNA-sensing pathway	1.000
D-Glutamine and D-glutamate metabolism	1.000
Dilated cardiomyopathy	1.000
Dopaminergic synapse	1.000
Dorso-ventral axis formation	1.000
Drug metabolism - cytochrome P450	1.000

Drug metabolism - other enzymes	1.000
ECM-receptor interaction	1.000
Endocrine and other factor-regulated calcium reabsorption	1.000
Endocytosis	1.000
Endometrial cancer	1.000
Epithelial cell signaling in Helicobacter pylori infection	1.000
Epstein-Barr virus infection	1.000
ErbB signaling pathway	1.000
Estrogen signaling pathway	1.000
Ether lipid metabolism	1.000
Fanconi anemia pathway	1.000
Fat digestion and absorption	1.000
Fatty acid biosynthesis	1.000
Fatty acid degradation	1.000
Fatty acid elongation	1.000
Fc epsilon RI signaling pathway	1.000
Fc gamma R-mediated phagocytosis	1.000
Folate biosynthesis	1.000
FoxO signaling pathway	1.000
Fructose and mannose metabolism	0.000
GABAergic synapse	1.000
Galactose metabolism	1.000
Gap junction	1.000
Gastric acid secretion	1.000
Glioma	1.000
Glucagon signaling pathway	1.000
Glutamatergic synapse	1.000
Glutathione metabolism	1.000
Glycerolipid metabolism	1.000
Glycerophospholipid metabolism	0.729
Glycine, serine and threonine metabolism	1.000
Glycolysis / Gluconeogenesis	1.000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	1.000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	1.000
Glycosaminoglycan degradation	1.000
Glycosphingolipid biosynthesis - ganglio series	1.000
Glycosphingolipid biosynthesis - globo series	1.000
Glycosphingolipid biosynthesis - lacto and neolacto series	1.000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	1.000
Glyoxylate and dicarboxylate metabolism	1.000
GnRH signaling pathway	1.000
Graft-versus-host disease	1.000
Hepatitis B	1.000
Hepatitis C	1.000
Herpes simplex infection	1.000
HIF-1 signaling pathway	1.000

Histidine metabolism	1.000
Huntington's disease	1.000
Hypertrophic cardiomyopathy (HCM)	1.000
Inflammatory bowel disease (IBD)	1.000
Inflammatory mediator regulation of TRP channels	1.000
Influenza A	1.000
Inositol phosphate metabolism	1.000
Insulin resistance	1.000
Insulin secretion	1.000
Insulin signaling pathway	1.000
Intestinal immune network for IgA production	1.000
Legionellosis	1.000
Leishmaniasis	1.000
Leukocyte transendothelial migration	1.000
Linoleic acid metabolism	1.000
Lipoic acid metabolism	1.000
Long-term depression	1.000
Long-term potentiation	1.000
Longevity regulating pathway	1.000
Longevity regulating pathway - multiple species	1.000
Lysine biosynthesis	1.000
Lysine degradation	1.000
Malaria	1.000
Maturity onset diabetes of the young	1.000
Measles	1.000
Melanogenesis	1.000
Melanoma	1.000
Metabolism of xenobiotics by cytochrome P450	1.000
Mineral absorption	1.000
Morphine addiction	1.000
mRNA surveillance pathway	NaN
mTOR signaling pathway	1.000
Mucin type O-Glycan biosynthesis	1.000
N-Glycan biosynthesis	1.000
Natural killer cell mediated cytotoxicity	1.000
Neuroactive ligand-receptor interaction	1.000
Neurotrophin signaling pathway	1.000
NF-kappa B signaling pathway	1.000
Nicotinate and nicotinamide metabolism	1.000
Nitrogen metabolism	1.000
NOD-like receptor signaling pathway	1.000
Non-alcoholic fatty liver disease (NAFLD)	1.000
Non-small cell lung cancer	1.000
Notch signaling pathway	1.000
One carbon pool by folate	1.000
Oocyte meiosis	1.000

Osteoclast differentiation	1.000
Ovarian steroidogenesis	1.000
Oxidative phosphorylation	1.000
p53 signaling pathway	1.000
Pancreatic cancer	1.000
Pancreatic secretion	1.000
Pantothenate and CoA biosynthesis	1.000
Parkinson's disease	1.000
Pathogenic Escherichia coli infection	1.000
Pentose and glucuronate interconversions	1.000
Pentose phosphate pathway	1.000
Peroxisome	1.000
Pertussis	1.000
Phagosome	1.000
Phenylalanine metabolism	1.000
Phenylalanine, tyrosine and tryptophan biosynthesis	1.000
Phosphatidylinositol signaling system	1.000
Phospholipase D signaling pathway	1.000
Phototransduction	1.000
Platelet activation	1.000
Porphyrin and chlorophyll metabolism	1.000
Primary bile acid biosynthesis	1.000
Prion diseases	1.000
Progesterone-mediated oocyte maturation	0.000
Prolactin signaling pathway	1.000
Propanoate metabolism	1.000
Prostate cancer	0.243
Protein processing in endoplasmic reticulum	1.000
Proximal tubule bicarbonate reclamation	1.000
Pyrimidine metabolism	1.000
Pyruvate metabolism	1.000
Regulation of autophagy	1.000
Regulation of lipolysis in adipocytes	1.000
Renal cell carcinoma	1.000
Renin secretion	1.000
Renin-angiotensin system	1.000
Retinol metabolism	1.000
Retrograde endocannabinoid signaling	1.000
Rheumatoid arthritis	1.000
Riboflavin metabolism	1.000
Ribosome biogenesis in eukaryotes	1.000
RIG-I-like receptor signaling pathway	1.000
RNA degradation	1.000
RNA transport	1.000
Salivary secretion	1.000
Salmonella infection	1.000

Selenocompound metabolism	1.000
Serotonergic synapse	1.000
Shigellosis	1.000
Signaling pathways regulating pluripotency of stem cells	1.000
Small cell lung cancer	1.000
SNARE interactions in vesicular transport	1.000
Sphingolipid metabolism	1.000
Sphingolipid signaling pathway	1.000
Staphylococcus aureus infection	1.000
Starch and sucrose metabolism	1.000
Steroid biosynthesis	1.000
Steroid hormone biosynthesis	1.000
Sulfur metabolism	1.000
Sulfur relay system	1.000
Synaptic vesicle cycle	1.000
Synthesis and degradation of ketone bodies	1.000
Systemic lupus erythematosus	1.000
T cell receptor signaling pathway	1.000
Taste transduction	1.000
Taurine and hypotaurine metabolism	1.000
Terpenoid backbone biosynthesis	1.000
TGF-beta signaling pathway	1.000
Thiamine metabolism	1.000
Thyroid cancer	1.000
Thyroid hormone signaling pathway	1.000
Thyroid hormone synthesis	1.000
Tight junction	1.000
TNF signaling pathway	1.000
Toll-like receptor signaling pathway	1.000
Toxoplasmosis	1.000
Transcriptional misregulation in cancer	1.000
Tryptophan metabolism	1.000
Type I diabetes mellitus	1.000
Type II diabetes mellitus	1.000
Tyrosine metabolism	1.000
Ubiquinone and other terpenoid-quinone biosynthesis	1.000
Valine, leucine and isoleucine degradation	1.000
Vascular smooth muscle contraction	1.000
Vasopressin-regulated water reabsorption	1.000
VEGF signaling pathway	1.000
Vibrio cholerae infection	1.000
Viral carcinogenesis	1.000
Viral myocarditis	1.000
Vitamin B6 metabolism	1.000
Vitamin digestion and absorption	1.000
Wnt signaling pathway	1.000

	Status
Acute myeloid leukemia	Inhibited
Adherens junction	Inhibited
Adipocytokine signaling pathway	Inhibited
Adrenergic signaling in cardiomyocytes	Inhibited
African trypanosomiasis	Inhibited
AGE-RAGE signaling pathway in diabetic complications	Inhibited
Alanine, aspartate and glutamate metabolism	Inhibited
Aldosterone synthesis and secretion	Activated
Aldosterone-regulated sodium reabsorption	Activated
Allograft rejection	Inhibited
alpha-Linolenic acid metabolism	Inhibited
Alzheimer's disease	Inhibited
Amino sugar and nucleotide sugar metabolism	Inhibited
Aminoacyl-tRNA biosynthesis	Inhibited
Amoebiasis	Inhibited
Amphetamine addiction	Inhibited
AMPK signaling pathway	Activated
Amyotrophic lateral sclerosis (ALS)	Inhibited
Antigen processing and presentation	Inhibited
Apoptosis	Inhibited
Arachidonic acid metabolism	Inhibited
Arginine and proline metabolism	Inhibited
Arginine biosynthesis	Inhibited
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	Activated
Ascorbate and aldarate metabolism	<NA>
Asthma	<NA>
Autoimmune thyroid disease	<NA>
B cell receptor signaling pathway	Activated
Bacterial invasion of epithelial cells	Inhibited
Basal cell carcinoma	Inhibited
beta-Alanine metabolism	Inhibited
Bile secretion	Inhibited
Biosynthesis of unsaturated fatty acids	Inhibited
Biotin metabolism	<NA>
Bladder cancer	Inhibited
Butanoate metabolism	Inhibited
Caffeine metabolism	Inhibited
Carbohydrate digestion and absorption	Activated
Cardiac muscle contraction	Inhibited
Cell adhesion molecules (CAMs)	Inhibited
Cell cycle	Activated
Central carbon metabolism in cancer	Inhibited
Chagas disease (American trypanosomiasis)	Inhibited
Chemical carcinogenesis	Inhibited
Choline metabolism in cancer	Inhibited

Cholinergic synapse	Activated
Chronic myeloid leukemia	Inhibited
Circadian entrainment	Activated
Circadian rhythm	Inhibited
Citrate cycle (TCA cycle)	Inhibited
Cocaine addiction	Inhibited
Colorectal cancer	Activated
Complement and coagulation cascades	Inhibited
Cysteine and methionine metabolism	Inhibited
Cytosolic DNA-sensing pathway	Inhibited
D-Glutamine and D-glutamate metabolism	Inhibited
Dilated cardiomyopathy	Inhibited
Dopaminergic synapse	Inhibited
Dorso-ventral axis formation	Activated
Drug metabolism - cytochrome P450	Inhibited
Drug metabolism - other enzymes	Inhibited
ECM-receptor interaction	Inhibited
Endocrine and other factor-regulated calcium reabsorption	Activated
Endocytosis	Inhibited
Endometrial cancer	Activated
Epithelial cell signaling in Helicobacter pylori infection	Activated
Epstein-Barr virus infection	Activated
ErbB signaling pathway	Inhibited
Estrogen signaling pathway	Inhibited
Ether lipid metabolism	Inhibited
Fanconi anemia pathway	Inhibited
Fat digestion and absorption	Inhibited
Fatty acid biosynthesis	Inhibited
Fatty acid degradation	Inhibited
Fatty acid elongation	Inhibited
Fc epsilon RI signaling pathway	Inhibited
Fc gamma R-mediated phagocytosis	Activated
Folate biosynthesis	Inhibited
FoxO signaling pathway	Inhibited
Fructose and mannose metabolism	Inhibited
GABAergic synapse	Activated
Galactose metabolism	Inhibited
Gap junction	Activated
Gastric acid secretion	Activated
Glioma	Activated
Glucagon signaling pathway	Activated
Glutamatergic synapse	Activated
Glutathione metabolism	Inhibited
Glycerolipid metabolism	Inhibited
Glycerophospholipid metabolism	Inhibited
Glycine, serine and threonine metabolism	Inhibited

Glycolysis / Gluconeogenesis	Inhibited
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	Inhibited
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	Inhibited
Glycosaminoglycan degradation	Inhibited
Glycosphingolipid biosynthesis - ganglio series	Inhibited
Glycosphingolipid biosynthesis - globo series	Inhibited
Glycosphingolipid biosynthesis - lacto and neolacto series	Inhibited
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	Inhibited
Glyoxylate and dicarboxylate metabolism	Inhibited
GnRH signaling pathway	Activated
Graft-versus-host disease	Inhibited
Hepatitis B	Inhibited
Hepatitis C	Inhibited
Herpes simplex infection	Inhibited
HIF-1 signaling pathway	Activated
Histidine metabolism	Inhibited
Huntington's disease	Activated
Hypertrophic cardiomyopathy (HCM)	Inhibited
Inflammatory bowel disease (IBD)	Activated
Inflammatory mediator regulation of TRP channels	Inhibited
Influenza A	Activated
Inositol phosphate metabolism	Inhibited
Insulin resistance	Activated
Insulin secretion	Inhibited
Insulin signaling pathway	Activated
Intestinal immune network for IgA production	Activated
Legionellosis	Activated
Leishmaniasis	Activated
Leukocyte transendothelial migration	Inhibited
Linoleic acid metabolism	Inhibited
Lipoic acid metabolism	Inhibited
Long-term depression	<NA>
Long-term potentiation	Inhibited
Longevity regulating pathway	Activated
Longevity regulating pathway - multiple species	Activated
Lysine biosynthesis	Inhibited
Lysine degradation	Inhibited
Malaria	Inhibited
Maturity onset diabetes of the young	Activated
Measles	Activated
Melanogenesis	Inhibited
Melanoma	Activated
Metabolism of xenobiotics by cytochrome P450	Inhibited
Mineral absorption	Inhibited
Morphine addiction	Activated
mRNA surveillance pathway	Inhibited

mTOR signaling pathway	Activated
Mucin type O-Glycan biosynthesis	Inhibited
N-Glycan biosynthesis	Inhibited
Natural killer cell mediated cytotoxicity	Activated
Neuroactive ligand-receptor interaction	Activated
Neurotrophin signaling pathway	Activated
NF-kappa B signaling pathway	Inhibited
Nicotinate and nicotinamide metabolism	Inhibited
Nitrogen metabolism	Inhibited
NOD-like receptor signaling pathway	Activated
Non-alcoholic fatty liver disease (NAFLD)	Activated
Non-small cell lung cancer	Inhibited
Notch signaling pathway	Activated
One carbon pool by folate	Inhibited
Oocyte meiosis	Activated
Osteoclast differentiation	Inhibited
Ovarian steroidogenesis	Activated
Oxidative phosphorylation	Inhibited
p53 signaling pathway	Activated
Pancreatic cancer	Inhibited
Pancreatic secretion	Inhibited
Pantothenate and CoA biosynthesis	Inhibited
Parkinson's disease	Inhibited
Pathogenic Escherichia coli infection	Activated
Pentose and glucuronate interconversions	Inhibited
Pentose phosphate pathway	Inhibited
Peroxisome	Inhibited
Pertussis	Inhibited
Phagosome	Inhibited
Phenylalanine metabolism	Inhibited
Phenylalanine, tyrosine and tryptophan biosynthesis	Inhibited
Phosphatidylinositol signaling system	Inhibited
Phospholipase D signaling pathway	Activated
Phototransduction	Inhibited
Platelet activation	Activated
Porphyrin and chlorophyll metabolism	Inhibited
Primary bile acid biosynthesis	Inhibited
Prion diseases	Inhibited
Progesterone-mediated oocyte maturation	Activated
Prolactin signaling pathway	Inhibited
Propanoate metabolism	Inhibited
Prostate cancer	Activated
Protein processing in endoplasmic reticulum	Activated
Proximal tubule bicarbonate reclamation	Inhibited
Pyrimidine metabolism	Inhibited
Pyruvate metabolism	Inhibited

Regulation of autophagy	Activated
Regulation of lipolysis in adipocytes	Inhibited
Renal cell carcinoma	Inhibited
Renin secretion	Activated
Renin-angiotensin system	<NA>
Retinol metabolism	Inhibited
Retrograde endocannabinoid signaling	Activated
Rheumatoid arthritis	Inhibited
Riboflavin metabolism	Inhibited
Ribosome biogenesis in eukaryotes	Inhibited
RIG-I-like receptor signaling pathway	Activated
RNA degradation	Activated
RNA transport	Inhibited
Salivary secretion	Activated
Salmonella infection	Inhibited
Selenocompound metabolism	Inhibited
Serotonergic synapse	Activated
Shigellosis	Activated
Signaling pathways regulating pluripotency of stem cells	<NA>
Small cell lung cancer	Inhibited
SNARE interactions in vesicular transport	Inhibited
Sphingolipid metabolism	Inhibited
Sphingolipid signaling pathway	Inhibited
Staphylococcus aureus infection	Inhibited
Starch and sucrose metabolism	Inhibited
Steroid biosynthesis	Inhibited
Steroid hormone biosynthesis	Inhibited
Sulfur metabolism	Inhibited
Sulfur relay system	Inhibited
Synaptic vesicle cycle	Inhibited
Synthesis and degradation of ketone bodies	Inhibited
Systemic lupus erythematosus	Inhibited
T cell receptor signaling pathway	Activated
Taste transduction	Activated
Taurine and hypotaurine metabolism	Inhibited
Terpenoid backbone biosynthesis	Inhibited
TGF-beta signaling pathway	Inhibited
Thiamine metabolism	Inhibited
Thyroid cancer	Activated
Thyroid hormone signaling pathway	Inhibited
Thyroid hormone synthesis	Inhibited
Tight junction	Inhibited
TNF signaling pathway	Inhibited
Toll-like receptor signaling pathway	Inhibited
Toxoplasmosis	Inhibited
Transcriptional misregulation in cancer	Inhibited

Tryptophan metabolism	Inhibited
Type I diabetes mellitus	<NA>
Type II diabetes mellitus	Activated
Tyrosine metabolism	Inhibited
Ubiquinone and other terpenoid-quinone biosynthesis	Inhibited
Valine, leucine and isoleucine degradation	Inhibited
Vascular smooth muscle contraction	Inhibited
Vasopressin-regulated water reabsorption	Inhibited
VEGF signaling pathway	Activated
Vibrio cholerae infection	Inhibited
Viral carcinogenesis	Activated
Viral myocarditis	Activated
Vitamin B6 metabolism	Inhibited
Vitamin digestion and absorption	<NA>
Wnt signaling pathway	Activated

`$errors`
`named list()`

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the `type` argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). Alternatively, the user can supply the results of the differential expression analysis of genes in two forms:

1. a data.frame with columns: *ID* gene identifiers (they must match with the node labels), *logFC* log fold-changes, *t* - t-statistics, *pval* p-values, *padj* adjusted p-values. Then the user sets `type` to `DEtable`
2. a list with two slots: named vector of log fold-changes of differentially expressed genes and a vector of names of all genes analysed. Then the user sets `type` to `DElist`

The others arguments are optional. Arguments `convertTo` and `convertBy` control the conversion of the node labels in the pathways. The default setting is `convertTo="none"` which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. The default thresholds for the differential expression analysis of genes (the moderated t-test from `limma` is used) are set with arguments `logFC.th` and `p.val.th`. The user can omit one of these criteria by setting the argument negative value, as is shown also in the example. The implementation returns also a gene-level statistics of the differential expression of genes. These statistics are later used in the visualization of a selected pathway.

3.5 TAPPA

TAPPA was among the first topology-based pathway analysis methods. It was inspired in chemoinformatics and their models for predicting the structure of molecules. In TAPPA, the gene expression values are standardized and sigma-transformed within a samples. Then, a pathway is seen a molecule, individual genes as atoms and the energy of a molecule is a score defined for one sample. This score is called Pathway Connectivity Index. The difference of expression is assessed via a common univariable two sample test - Mann-Whitney in our implemetation.

```
> tap<-TAPPA(hnrrnp.cnts, group, pathways, type="RNASeq")
```

```
14329 node labels mapped to the expression data
```

```
Average coverage 84.40644 %
```

```
0 (out of 267) pathways without a mapped node
```

```
> res(tap)
```

```
$results
```

	control.N
Acute myeloid leukemia	4
Adherens junction	4
Adipocytokine signaling pathway	4
Adrenergic signaling in cardiomyocytes	4
African trypanosomiasis	4
AGE-RAGE signaling pathway in diabetic complications	4
Alanine, aspartate and glutamate metabolism	4
Aldosterone synthesis and secretion	4
Aldosterone-regulated sodium reabsorption	4
Allograft rejection	4
alpha-Linolenic acid metabolism	4
Alzheimer's disease	4
Amino sugar and nucleotide sugar metabolism	4
Aminoacyl-tRNA biosynthesis	4
Amoebiasis	4
Amphetamine addiction	4
AMPK signaling pathway	4
Amyotrophic lateral sclerosis (ALS)	4
Antigen processing and presentation	4
Apoptosis	4
Arachidonic acid metabolism	4
Arginine and proline metabolism	4
Arginine biosynthesis	4
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	4
Ascorbate and aldarate metabolism	4
Asthma	4

Autoimmune thyroid disease	4
B cell receptor signaling pathway	4
Bacterial invasion of epithelial cells	4
Basal cell carcinoma	4
beta-Alanine metabolism	4
Bile secretion	4
Biosynthesis of unsaturated fatty acids	4
Biotin metabolism	4
Bladder cancer	4
Butanoate metabolism	4
Caffeine metabolism	4
Carbohydrate digestion and absorption	4
Cardiac muscle contraction	4
Cell adhesion molecules (CAMs)	4
Cell cycle	4
Central carbon metabolism in cancer	4
Chagas disease (American trypanosomiasis)	4
Chemical carcinogenesis	4
Choline metabolism in cancer	4
Cholinergic synapse	4
Chronic myeloid leukemia	4
Circadian entrainment	4
Circadian rhythm	4
Citrate cycle (TCA cycle)	4
Cocaine addiction	4
Colorectal cancer	4
Complement and coagulation cascades	4
Cysteine and methionine metabolism	4
Cytosolic DNA-sensing pathway	4
D-Glutamine and D-glutamate metabolism	4
Dilated cardiomyopathy	4
Dopaminergic synapse	4
Dorso-ventral axis formation	4
Drug metabolism - cytochrome P450	4
Drug metabolism - other enzymes	4
ECM-receptor interaction	4
Endocrine and other factor-regulated calcium reabsorption	4
Endocytosis	4
Endometrial cancer	4
Epithelial cell signaling in Helicobacter pylori infection	4
Epstein-Barr virus infection	4
ErbB signaling pathway	4
Estrogen signaling pathway	4
Ether lipid metabolism	4
Fanconi anemia pathway	4
Fat digestion and absorption	4

Fatty acid biosynthesis	4
Fatty acid degradation	4
Fatty acid elongation	4
Fc epsilon RI signaling pathway	4
Fc gamma R-mediated phagocytosis	4
Folate biosynthesis	4
FoxO signaling pathway	4
Fructose and mannose metabolism	4
GABAergic synapse	4
Galactose metabolism	4
Gap junction	4
Gastric acid secretion	4
Glioma	4
Glucagon signaling pathway	4
Glutamatergic synapse	4
Glutathione metabolism	4
Glycerolipid metabolism	4
Glycerophospholipid metabolism	4
Glycine, serine and threonine metabolism	4
Glycolysis / Gluconeogenesis	4
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	4
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	4
Glycosaminoglycan degradation	4
Glycosphingolipid biosynthesis - ganglio series	4
Glycosphingolipid biosynthesis - globo series	4
Glycosphingolipid biosynthesis - lacto and neolacto series	4
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	4
Glyoxylate and dicarboxylate metabolism	4
GnRH signaling pathway	4
Graft-versus-host disease	4
Hepatitis B	4
Hepatitis C	4
Herpes simplex infection	4
HIF-1 signaling pathway	4
Histidine metabolism	4
Huntington's disease	4
Hypertrophic cardiomyopathy (HCM)	4
Inflammatory bowel disease (IBD)	4
Inflammatory mediator regulation of TRP channels	4
Influenza A	4
Inositol phosphate metabolism	4
Insulin resistance	4
Insulin secretion	4
Insulin signaling pathway	4
Intestinal immune network for IgA production	4
Legionellosis	4

Leishmaniasis	4
Leukocyte transendothelial migration	4
Linoleic acid metabolism	4
Lipoic acid metabolism	4
Long-term depression	4
Long-term potentiation	4
Longevity regulating pathway	4
Longevity regulating pathway - multiple species	4
Lysine biosynthesis	4
Lysine degradation	4
Malaria	4
Maturity onset diabetes of the young	4
Measles	4
Melanogenesis	4
Melanoma	4
Metabolism of xenobiotics by cytochrome P450	4
Mineral absorption	4
Morphine addiction	4
mRNA surveillance pathway	4
mTOR signaling pathway	4
Mucin type O-Glycan biosynthesis	4
N-Glycan biosynthesis	4
Natural killer cell mediated cytotoxicity	4
Neuroactive ligand-receptor interaction	4
Neurotrophin signaling pathway	4
NF-kappa B signaling pathway	4
Nicotinate and nicotinamide metabolism	4
Nitrogen metabolism	4
NOD-like receptor signaling pathway	4
Non-alcoholic fatty liver disease (NAFLD)	4
Non-small cell lung cancer	4
Notch signaling pathway	4
One carbon pool by folate	4
Oocyte meiosis	4
Osteoclast differentiation	4
Ovarian steroidogenesis	4
Oxidative phosphorylation	4
p53 signaling pathway	4
Pancreatic cancer	4
Pancreatic secretion	4
Pantothenate and CoA biosynthesis	4
Parkinson's disease	4
Pathogenic Escherichia coli infection	4
Pentose and glucuronate interconversions	4
Pentose phosphate pathway	4
Peroxisome	4

Pertussis	4
Phagosome	4
Phenylalanine metabolism	4
Phenylalanine, tyrosine and tryptophan biosynthesis	4
Phosphatidylinositol signaling system	4
Phospholipase D signaling pathway	4
Phototransduction	4
Platelet activation	4
Porphyrin and chlorophyll metabolism	4
Primary bile acid biosynthesis	4
Prion diseases	4
Progesterone-mediated oocyte maturation	4
Prolactin signaling pathway	4
Propanoate metabolism	4
Prostate cancer	4
Protein processing in endoplasmic reticulum	4
Proximal tubule bicarbonate reclamation	4
Pyrimidine metabolism	4
Pyruvate metabolism	4
Regulation of autophagy	4
Regulation of lipolysis in adipocytes	4
Renal cell carcinoma	4
Renin secretion	4
Renin-angiotensin system	4
Retinol metabolism	4
Retrograde endocannabinoid signaling	4
Rheumatoid arthritis	4
Riboflavin metabolism	4
Ribosome biogenesis in eukaryotes	4
RIG-I-like receptor signaling pathway	4
RNA degradation	4
RNA transport	4
Salivary secretion	4
Salmonella infection	4
Selenocompound metabolism	4
Serotonergic synapse	4
Shigellosis	4
Signaling pathways regulating pluripotency of stem cells	4
Small cell lung cancer	4
SNARE interactions in vesicular transport	4
Sphingolipid metabolism	4
Sphingolipid signaling pathway	4
Staphylococcus aureus infection	4
Starch and sucrose metabolism	4
Steroid biosynthesis	4
Steroid hormone biosynthesis	4

Sulfur metabolism	4
Sulfur relay system	4
Synaptic vesicle cycle	4
Synthesis and degradation of ketone bodies	4
Systemic lupus erythematosus	4
T cell receptor signaling pathway	4
Taste transduction	4
Taurine and hypotaurine metabolism	4
Terpenoid backbone biosynthesis	4
TGF-beta signaling pathway	4
Thiamine metabolism	4
Thyroid cancer	4
Thyroid hormone signaling pathway	4
Thyroid hormone synthesis	4
Tight junction	4
TNF signaling pathway	4
Toll-like receptor signaling pathway	4
Toxoplasmosis	4
Transcriptional misregulation in cancer	4
Tryptophan metabolism	4
Type I diabetes mellitus	4
Type II diabetes mellitus	4
Tyrosine metabolism	4
Ubiquinone and other terpenoid-quinone biosynthesis	4
Valine, leucine and isoleucine degradation	4
Vascular smooth muscle contraction	4
Vasopressin-regulated water reabsorption	4
VEGF signaling pathway	4
Vibrio cholerae infection	4
Viral carcinogenesis	4
Viral myocarditis	4
Vitamin B6 metabolism	4
Vitamin digestion and absorption	4
Wnt signaling pathway	4
	control.Min.
Acute myeloid leukemia	0.43010
Adherens junction	0.54280
Adipocytokine signaling pathway	0.23880
Adrenergic signaling in cardiomyocytes	-0.29770
African trypanosomiasis	-0.25060
AGE-RAGE signaling pathway in diabetic complications	0.21520
Alanine, aspartate and glutamate metabolism	0.53230
Aldosterone synthesis and secretion	0.01368
Aldosterone-regulated sodium reabsorption	0.14740
Allograft rejection	-0.17710
alpha-Linolenic acid metabolism	0.02627

Alzheimer's disease	0.27330
Amino sugar and nucleotide sugar metabolism	0.45880
Aminoacyl-tRNA biosynthesis	0.26360
Amoebiasis	-0.11830
Amphetamine addiction	-0.15150
AMPK signaling pathway	0.47140
Amyotrophic lateral sclerosis (ALS)	0.17200
Antigen processing and presentation	-0.09176
Apoptosis	0.32620
Arachidonic acid metabolism	-0.78790
Arginine and proline metabolism	-0.01676
Arginine biosynthesis	0.26200
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.33120
Ascorbate and aldarate metabolism	-0.63220
Asthma	-0.44750
Autoimmune thyroid disease	-0.42880
B cell receptor signaling pathway	0.10910
Bacterial invasion of epithelial cells	0.44080
Basal cell carcinoma	0.14110
beta-Alanine metabolism	-0.29470
Bile secretion	-0.05664
Biosynthesis of unsaturated fatty acids	0.16110
Biotin metabolism	0.26100
Bladder cancer	0.45500
Butanoate metabolism	0.13680
Caffeine metabolism	-0.50050
Carbohydrate digestion and absorption	0.11980
Cardiac muscle contraction	-0.19480
Cell adhesion molecules (CAMs)	-0.22770
Cell cycle	0.80780
Central carbon metabolism in cancer	0.53770
Chagas disease (American trypanosomiasis)	0.28440
Chemical carcinogenesis	-0.92820
Choline metabolism in cancer	0.33170
Cholinergic synapse	0.10970
Chronic myeloid leukemia	0.56810
Circadian entrainment	-0.12730
Circadian rhythm	0.44840
Citrate cycle (TCA cycle)	0.91840
Cocaine addiction	-0.02875
Colorectal cancer	0.38700
Complement and coagulation cascades	-0.21290
Cysteine and methionine metabolism	0.48580
Cytosolic DNA-sensing pathway	0.23200
D-Glutamine and D-glutamate metabolism	0.31340
Dilated cardiomyopathy	0.21600

Dopaminergic synapse	-0.04728
Dorso-ventral axis formation	0.26560
Drug metabolism - cytochrome P450	-0.51500
Drug metabolism - other enzymes	0.04654
ECM-receptor interaction	0.39290
Endocrine and other factor-regulated calcium reabsorption	-0.14700
Endocytosis	0.65020
Endometrial cancer	0.48940
Epithelial cell signaling in Helicobacter pylori infection	0.13030
Epstein-Barr virus infection	0.33780
ErbB signaling pathway	0.35490
Estrogen signaling pathway	0.19060
Ether lipid metabolism	0.03850
Fanconi anemia pathway	0.51620
Fat digestion and absorption	0.35050
Fatty acid biosynthesis	0.34810
Fatty acid degradation	0.54190
Fatty acid elongation	0.25660
Fc epsilon RI signaling pathway	0.23400
Fc gamma R-mediated phagocytosis	0.33750
Folate biosynthesis	0.27450
FoxO signaling pathway	0.30950
Fructose and mannose metabolism	0.35070
GABAergic synapse	-0.46700
Galactose metabolism	0.41000
Gap junction	0.07133
Gastric acid secretion	0.09423
Glioma	0.42320
Glucagon signaling pathway	0.37340
Glutamatergic synapse	-0.18610
Glutathione metabolism	0.24970
Glycerolipid metabolism	0.68560
Glycerophospholipid metabolism	0.70650
Glycine, serine and threonine metabolism	-0.02037
Glycolysis / Gluconeogenesis	0.50390
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.42870
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.40150
Glycosaminoglycan degradation	0.37370
Glycosphingolipid biosynthesis - ganglio series	0.24680
Glycosphingolipid biosynthesis - globo series	-0.08908
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.28460
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.41310
Glyoxylate and dicarboxylate metabolism	0.26270
GnRH signaling pathway	0.22290
Graft-versus-host disease	-0.30010
Hepatitis B	0.29450

Hepatitis C	0.40530
Herpes simplex infection	0.29450
HIF-1 signaling pathway	0.50090
Histidine metabolism	-0.33180
Huntington's disease	0.76240
Hypertrophic cardiomyopathy (HCM)	0.23640
Inflammatory bowel disease (IBD)	-0.19630
Inflammatory mediator regulation of TRP channels	0.09881
Influenza A	0.25720
Inositol phosphate metabolism	0.99850
Insulin resistance	0.36720
Insulin secretion	-0.16120
Insulin signaling pathway	0.47100
Intestinal immune network for IgA production	-0.19980
Legionellosis	-0.10140
Leishmaniasis	-0.03977
Leukocyte transendothelial migration	0.05000
Linoleic acid metabolism	-1.32900
Lipoic acid metabolism	-0.19870
Long-term depression	0.15910
Long-term potentiation	0.09908
Longevity regulating pathway	0.61600
Longevity regulating pathway - multiple species	0.56580
Lysine biosynthesis	-0.15300
Lysine degradation	0.60710
Malaria	-0.26520
Maturity onset diabetes of the young	-0.18110
Measles	0.16990
Melanogenesis	0.11890
Melanoma	0.16840
Metabolism of xenobiotics by cytochrome P450	-1.17100
Mineral absorption	-0.03678
Morphine addiction	-0.34300
mRNA surveillance pathway	0.56860
mTOR signaling pathway	0.29450
Mucin type O-Glycan biosynthesis	-0.41130
N-Glycan biosynthesis	0.61800
Natural killer cell mediated cytotoxicity	0.05655
Neuroactive ligand-receptor interaction	-0.43350
Neurotrophin signaling pathway	0.32100
NF-kappa B signaling pathway	0.16290
Nicotinate and nicotinamide metabolism	-0.19140
Nitrogen metabolism	0.58700
NOD-like receptor signaling pathway	0.20350
Non-alcoholic fatty liver disease (NAFLD)	0.20710
Non-small cell lung cancer	0.47750

Notch signaling pathway	0.39260
One carbon pool by folate	0.71230
Oocyte meiosis	0.54680
Osteoclast differentiation	0.09978
Ovarian steroidogenesis	-0.03102
Oxidative phosphorylation	0.47500
p53 signaling pathway	0.29230
Pancreatic cancer	0.45480
Pancreatic secretion	0.04474
Pantothenate and CoA biosynthesis	0.11630
Parkinson's disease	0.12100
Pathogenic Escherichia coli infection	0.25100
Pentose and glucuronate interconversions	-0.30620
Pentose phosphate pathway	0.13540
Peroxisome	0.13180
Pertussis	0.08010
Phagosome	1.04700
Phenylalanine metabolism	-0.13950
Phenylalanine, tyrosine and tryptophan biosynthesis	0.30820
Phosphatidylinositol signaling system	1.24500
Phospholipase D signaling pathway	0.33820
Phototransduction	-0.51770
Platelet activation	0.24720
Porphyrin and chlorophyll metabolism	-0.05215
Primary bile acid biosynthesis	-0.29410
Prion diseases	0.31550
Progesterone-mediated oocyte maturation	0.20720
Prolactin signaling pathway	0.31730
Propanoate metabolism	0.31390
Prostate cancer	0.46960
Protein processing in endoplasmic reticulum	0.38010
Proximal tubule bicarbonate reclamation	0.16240
Pyrimidine metabolism	0.93980
Pyruvate metabolism	0.47000
Regulation of autophagy	0.24820
Regulation of lipolysis in adipocytes	0.17750
Renal cell carcinoma	0.42280
Renin secretion	0.19160
Renin-angiotensin system	-0.13250
Retinol metabolism	-1.76000
Retrograde endocannabinoid signaling	-0.07501
Rheumatoid arthritis	-0.20130
Riboflavin metabolism	0.37590
Ribosome biogenesis in eukaryotes	0.29940
RIG-I-like receptor signaling pathway	0.25990
RNA degradation	0.68450

RNA transport	0.37970
Salivary secretion	0.01503
Salmonella infection	0.37530
Selenocompound metabolism	0.35340
Serotonergic synapse	-0.17050
Shigellosis	0.32500
Signaling pathways regulating pluripotency of stem cells	0.36140
Small cell lung cancer	0.59260
SNARE interactions in vesicular transport	0.40260
Sphingolipid metabolism	0.67400
Sphingolipid signaling pathway	0.41640
Staphylococcus aureus infection	-0.15660
Starch and sucrose metabolism	0.19670
Steroid biosynthesis	0.37480
Steroid hormone biosynthesis	-1.08800
Sulfur metabolism	0.50160
Sulfur relay system	0.28280
Synaptic vesicle cycle	0.58440
Synthesis and degradation of ketone bodies	0.10350
Systemic lupus erythematosus	-0.29480
T cell receptor signaling pathway	0.18990
Taste transduction	-0.36880
Taurine and hypotaurine metabolism	-0.28520
Terpenoid backbone biosynthesis	0.35260
TGF-beta signaling pathway	0.21450
Thiamine metabolism	0.15000
Thyroid cancer	0.34550
Thyroid hormone signaling pathway	0.59810
Thyroid hormone synthesis	-0.08284
Tight junction	0.28510
TNF signaling pathway	0.28450
Toll-like receptor signaling pathway	0.07903
Toxoplasmosis	0.29220
Transcriptional misregulation in cancer	0.08348
Tryptophan metabolism	-0.29260
Type I diabetes mellitus	-0.43100
Type II diabetes mellitus	0.16630
Tyrosine metabolism	-0.40810
Ubiquinone and other terpenoid-quinone biosynthesis	0.28200
Valine, leucine and isoleucine degradation	0.50680
Vascular smooth muscle contraction	0.16990
Vasopressin-regulated water reabsorption	-0.02112
VEGF signaling pathway	0.29660
Vibrio cholerae infection	0.39990
Viral carcinogenesis	0.32470
Viral myocarditis	0.11220

Vitamin B6 metabolism	0.11830
Vitamin digestion and absorption	-0.51070
Wnt signaling pathway	0.17930
	control.1st.Qu.
Acute myeloid leukemia	0.436600
Adherens junction	0.543400
Adipocytokine signaling pathway	0.252200
Adrenergic signaling in cardiomyocytes	-0.293300
African trypanosomiasis	-0.237600
AGE-RAGE signaling pathway in diabetic complications	0.249300
Alanine, aspartate and glutamate metabolism	0.537800
Aldosterone synthesis and secretion	0.047200
Aldosterone-regulated sodium reabsorption	0.152300
Allograft rejection	-0.172600
alpha-Linolenic acid metabolism	0.054380
Alzheimer's disease	0.297200
Amino sugar and nucleotide sugar metabolism	0.465700
Aminoacyl-tRNA biosynthesis	0.264600
Amoebiasis	-0.108500
Amphetamine addiction	-0.143000
AMPK signaling pathway	0.473400
Amyotrophic lateral sclerosis (ALS)	0.174300
Antigen processing and presentation	-0.071850
Apoptosis	0.330900
Arachidonic acid metabolism	-0.767600
Arginine and proline metabolism	-0.015640
Arginine biosynthesis	0.264100
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.331700
Ascorbate and aldarate metabolism	-0.608000
Asthma	-0.434900
Autoimmune thyroid disease	-0.420000
B cell receptor signaling pathway	0.120100
Bacterial invasion of epithelial cells	0.452100
Basal cell carcinoma	0.162900
beta-Alanine metabolism	-0.224600
Bile secretion	-0.043030
Biosynthesis of unsaturated fatty acids	0.163700
Biotin metabolism	0.262200
Bladder cancer	0.457800
Butanoate metabolism	0.186500
Caffeine metabolism	-0.460900
Carbohydrate digestion and absorption	0.132500
Cardiac muscle contraction	-0.194600
Cell adhesion molecules (CAMs)	-0.224500
Cell cycle	0.810800
Central carbon metabolism in cancer	0.546600

Chagas disease (American trypanosomiasis)	0.295200
Chemical carcinogenesis	-0.888500
Choline metabolism in cancer	0.332700
Cholinergic synapse	0.147600
Chronic myeloid leukemia	0.568900
Circadian entrainment	-0.066160
Circadian rhythm	0.451100
Citrate cycle (TCA cycle)	0.919400
Cocaine addiction	0.001475
Colorectal cancer	0.394000
Complement and coagulation cascades	-0.210900
Cysteine and methionine metabolism	0.492500
Cytosolic DNA-sensing pathway	0.232900
D-Glutamine and D-glutamate metabolism	0.313700
Dilated cardiomyopathy	0.216700
Dopaminergic synapse	-0.003590
Dorso-ventral axis formation	0.266000
Drug metabolism - cytochrome P450	-0.507500
Drug metabolism - other enzymes	0.082450
ECM-receptor interaction	0.416300
Endocrine and other factor-regulated calcium reabsorption	-0.134300
Endocytosis	0.666700
Endometrial cancer	0.495500
Epithelial cell signaling in Helicobacter pylori infection	0.136500
Epstein-Barr virus infection	0.349700
ErbB signaling pathway	0.357500
Estrogen signaling pathway	0.208200
Ether lipid metabolism	0.044530
Fanconi anemia pathway	0.539400
Fat digestion and absorption	0.358400
Fatty acid biosynthesis	0.348900
Fatty acid degradation	0.614500
Fatty acid elongation	0.260600
Fc epsilon RI signaling pathway	0.234100
Fc gamma R-mediated phagocytosis	0.365400
Folate biosynthesis	0.275200
FoxO signaling pathway	0.309800
Fructose and mannose metabolism	0.442500
GABAergic synapse	-0.461800
Galactose metabolism	0.418100
Gap junction	0.098390
Gastric acid secretion	0.135500
Glioma	0.438300
Glucagon signaling pathway	0.385400
Glutamatergic synapse	-0.173700
Glutathione metabolism	0.256300

Glycerolipid metabolism	0.714300
Glycerophospholipid metabolism	0.741600
Glycine, serine and threonine metabolism	-0.016280
Glycolysis / Gluconeogenesis	0.512700
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.429200
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.401800
Glycosaminoglycan degradation	0.378500
Glycosphingolipid biosynthesis - ganglio series	0.251600
Glycosphingolipid biosynthesis - globo series	-0.086650
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.271700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.424700
Glyoxylate and dicarboxylate metabolism	0.264300
GnRH signaling pathway	0.235000
Graft-versus-host disease	-0.296400
Hepatitis B	0.298700
Hepatitis C	0.407600
Herpes simplex infection	0.298700
HIF-1 signaling pathway	0.516500
Histidine metabolism	-0.331300
Huntington's disease	0.779700
Hypertrophic cardiomyopathy (HCM)	0.237800
Inflammatory bowel disease (IBD)	-0.192800
Inflammatory mediator regulation of TRP channels	0.112800
Influenza A	0.276400
Inositol phosphate metabolism	1.006000
Insulin resistance	0.385100
Insulin secretion	-0.138600
Insulin signaling pathway	0.471900
Intestinal immune network for IgA production	-0.196100
Legionellosis	-0.099270
Leishmaniasis	-0.036290
Leukocyte transendothelial migration	0.057320
Linoleic acid metabolism	-1.325000
Lipoic acid metabolism	-0.180100
Long-term depression	0.193400
Long-term potentiation	0.145000
Longevity regulating pathway	0.624500
Longevity regulating pathway - multiple species	0.571900
Lysine biosynthesis	-0.137100
Lysine degradation	0.607700
Malaria	-0.257600
Maturity onset diabetes of the young	-0.170000
Measles	0.178400
Melanogenesis	0.162100
Melanoma	0.253800
Metabolism of xenobiotics by cytochrome P450	-1.154000

Mineral absorption	-0.029660
Morphine addiction	-0.311900
mRNA surveillance pathway	0.572000
mTOR signaling pathway	0.312300
Mucin type O-Glycan biosynthesis	-0.409800
N-Glycan biosynthesis	0.621100
Natural killer cell mediated cytotoxicity	0.076680
Neuroactive ligand-receptor interaction	-0.429600
Neurotrophin signaling pathway	0.327200
NF-kappa B signaling pathway	0.164900
Nicotinate and nicotinamide metabolism	-0.113100
Nitrogen metabolism	0.588300
NOD-like receptor signaling pathway	0.212900
Non-alcoholic fatty liver disease (NAFLD)	0.211000
Non-small cell lung cancer	0.484700
Notch signaling pathway	0.414200
One carbon pool by folate	0.770300
Oocyte meiosis	0.547600
Osteoclast differentiation	0.101600
Ovarian steroidogenesis	-0.021440
Oxidative phosphorylation	0.491900
p53 signaling pathway	0.294900
Pancreatic cancer	0.458400
Pancreatic secretion	0.052070
Pantothenate and CoA biosynthesis	0.131600
Parkinson's disease	0.146300
Pathogenic Escherichia coli infection	0.257900
Pentose and glucuronate interconversions	-0.234800
Pentose phosphate pathway	0.269000
Peroxisome	0.132400
Pertussis	0.094210
Phagosome	1.052000
Phenylalanine metabolism	-0.133200
Phenylalanine, tyrosine and tryptophan biosynthesis	0.312100
Phosphatidylinositol signaling system	1.261000
Phospholipase D signaling pathway	0.339600
Phototransduction	-0.437000
Platelet activation	0.250100
Porphyrin and chlorophyll metabolism	-0.030440
Primary bile acid biosynthesis	-0.280200
Prion diseases	0.318800
Progesterone-mediated oocyte maturation	0.218600
Prolactin signaling pathway	0.326200
Propanoate metabolism	0.328700
Prostate cancer	0.470000
Protein processing in endoplasmic reticulum	0.405400

Proximal tubule bicarbonate reclamation	0.162500
Pyrimidine metabolism	0.959300
Pyruvate metabolism	0.490300
Regulation of autophagy	0.250400
Regulation of lipolysis in adipocytes	0.197200
Renal cell carcinoma	0.432100
Renin secretion	0.203100
Renin-angiotensin system	-0.129700
Retinol metabolism	-1.736000
Retrograde endocannabinoid signaling	-0.042410
Rheumatoid arthritis	-0.199200
Riboflavin metabolism	0.378300
Ribosome biogenesis in eukaryotes	0.300800
RIG-I-like receptor signaling pathway	0.268600
RNA degradation	0.688500
RNA transport	0.381800
Salivary secretion	0.040560
Salmonella infection	0.382200
Selenocompound metabolism	0.355000
Serotonergic synapse	-0.132100
Shigellosis	0.331400
Signaling pathways regulating pluripotency of stem cells	0.366700
Small cell lung cancer	0.595100
SNARE interactions in vesicular transport	0.402900
Sphingolipid metabolism	0.703600
Sphingolipid signaling pathway	0.435000
Staphylococcus aureus infection	-0.154900
Starch and sucrose metabolism	0.232300
Steroid biosynthesis	0.396600
Steroid hormone biosynthesis	-1.056000
Sulfur metabolism	0.505100
Sulfur relay system	0.287800
Synaptic vesicle cycle	0.587000
Synthesis and degradation of ketone bodies	0.162800
Systemic lupus erythematosus	-0.292600
T cell receptor signaling pathway	0.190800
Taste transduction	-0.364200
Taurine and hypotaurine metabolism	-0.285200
Terpenoid backbone biosynthesis	0.353700
TGF-beta signaling pathway	0.229300
Thiamine metabolism	0.151800
Thyroid cancer	0.364100
Thyroid hormone signaling pathway	0.603900
Thyroid hormone synthesis	-0.037400
Tight junction	0.324400
TNF signaling pathway	0.295200

Toll-like receptor signaling pathway	0.084100
Toxoplasmosis	0.293100
Transcriptional misregulation in cancer	0.086670
Tryptophan metabolism	-0.287100
Type I diabetes mellitus	-0.428300
Type II diabetes mellitus	0.172600
Tyrosine metabolism	-0.390100
Ubiquinone and other terpenoid-quinone biosynthesis	0.284000
Valine, leucine and isoleucine degradation	0.547200
Vascular smooth muscle contraction	0.176700
Vasopressin-regulated water reabsorption	0.027050
VEGF signaling pathway	0.303800
Vibrio cholerae infection	0.401500
Viral carcinogenesis	0.328700
Viral myocarditis	0.134300
Vitamin B6 metabolism	0.134500
Vitamin digestion and absorption	-0.499100
Wnt signaling pathway	0.189000
control.Median	
Acute myeloid leukemia	0.4399000
Adherens junction	0.5491000
Adipocytokine signaling pathway	0.2637000
Adrenergic signaling in cardiomyocytes	-0.2834000
African trypanosomiasis	-0.2299000
AGE-RAGE signaling pathway in diabetic complications	0.2667000
Alanine, aspartate and glutamate metabolism	0.5444000
Aldosterone synthesis and secretion	0.1026000
Aldosterone-regulated sodium reabsorption	0.1641000
Allograft rejection	-0.1701000
alpha-Linolenic acid metabolism	0.0641200
Alzheimer's disease	0.3064000
Amino sugar and nucleotide sugar metabolism	0.4703000
Aminoacyl-tRNA biosynthesis	0.2770000
Amoebiasis	-0.0805500
Amphetamine addiction	-0.1326000
AMPK signaling pathway	0.4772000
Amyotrophic lateral sclerosis (ALS)	0.1777000
Antigen processing and presentation	-0.0551200
Apoptosis	0.3377000
Arachidonic acid metabolism	-0.7553000
Arginine and proline metabolism	-0.0096470
Arginine biosynthesis	0.2695000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.3359000
Ascorbate and aldarate metabolism	-0.5951000
Asthma	-0.4268000
Autoimmune thyroid disease	-0.4063000

B cell receptor signaling pathway	0.1282000
Bacterial invasion of epithelial cells	0.4651000
Basal cell carcinoma	0.1815000
beta-Alanine metabolism	-0.1935000
Bile secretion	-0.0284000
Biosynthesis of unsaturated fatty acids	0.1667000
Biotin metabolism	0.2629000
Bladder cancer	0.4681000
Butanoate metabolism	0.2048000
Caffeine metabolism	-0.4444000
Carbohydrate digestion and absorption	0.1503000
Cardiac muscle contraction	-0.1902000
Cell adhesion molecules (CAMs)	-0.2174000
Cell cycle	0.8318000
Central carbon metabolism in cancer	0.5544000
Chagas disease (American trypanosomiasis)	0.3088000
Chemical carcinogenesis	-0.8674000
Choline metabolism in cancer	0.3345000
Cholinergic synapse	0.1629000
Chronic myeloid leukemia	0.5717000
Circadian entrainment	-0.0231600
Circadian rhythm	0.4546000
Citrate cycle (TCA cycle)	0.9218000
Cocaine addiction	0.0135000
Colorectal cancer	0.4009000
Complement and coagulation cascades	-0.2083000
Cysteine and methionine metabolism	0.4961000
Cytosolic DNA-sensing pathway	0.2345000
D-Glutamine and D-glutamate metabolism	0.3140000
Dilated cardiomyopathy	0.2262000
Dopaminergic synapse	0.0263500
Dorso-ventral axis formation	0.2663000
Drug metabolism - cytochrome P450	-0.5033000
Drug metabolism - other enzymes	0.0946300
ECM-receptor interaction	0.4528000
Endocrine and other factor-regulated calcium reabsorption	-0.1277000
Endocytosis	0.6755000
Endometrial cancer	0.5097000
Epithelial cell signaling in Helicobacter pylori infection	0.1394000
Epstein-Barr virus infection	0.3545000
ErbB signaling pathway	0.3667000
Estrogen signaling pathway	0.2256000
Ether lipid metabolism	0.0519700
Fanconi anemia pathway	0.5514000
Fat digestion and absorption	0.3645000
Fatty acid biosynthesis	0.3498000

Fatty acid degradation	0.6478000
Fatty acid elongation	0.2624000
Fc epsilon RI signaling pathway	0.2357000
Fc gamma R-mediated phagocytosis	0.3788000
Folate biosynthesis	0.2839000
FoxO signaling pathway	0.3138000
Fructose and mannose metabolism	0.4775000
GABAergic synapse	-0.4524000
Galactose metabolism	0.4215000
Gap junction	0.1119000
Gastric acid secretion	0.1578000
Glioma	0.4437000
Glucagon signaling pathway	0.4168000
Glutamatergic synapse	-0.1439000
Glutathione metabolism	0.2661000
Glycerolipid metabolism	0.7392000
Glycerophospholipid metabolism	0.7863000
Glycine, serine and threonine metabolism	-0.0128100
Glycolysis / Gluconeogenesis	0.5276000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.4300000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.4026000
Glycosaminoglycan degradation	0.4015000
Glycosphingolipid biosynthesis - ganglio series	0.2583000
Glycosphingolipid biosynthesis - globo series	-0.0856000
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.2647000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.4371000
Glyoxylate and dicarboxylate metabolism	0.2864000
GnRH signaling pathway	0.2512000
Graft-versus-host disease	-0.2912000
Hepatitis B	0.3107000
Hepatitis C	0.4129000
Herpes simplex infection	0.3018000
HIF-1 signaling pathway	0.5354000
Histidine metabolism	-0.3225000
Huntington's disease	0.7866000
Hypertrophic cardiomyopathy (HCM)	0.2384000
Inflammatory bowel disease (IBD)	-0.1901000
Inflammatory mediator regulation of TRP channels	0.1258000
Influenza A	0.2893000
Inositol phosphate metabolism	1.0320000
Insulin resistance	0.3911000
Insulin secretion	-0.1234000
Insulin signaling pathway	0.4754000
Intestinal immune network for IgA production	-0.1935000
Legionellosis	-0.0985200
Leishmaniasis	-0.0338200

Leukocyte transendothelial migration	0.0693600
Linoleic acid metabolism	-1.3140000
Lipoic acid metabolism	-0.1734000
Long-term depression	0.2355000
Long-term potentiation	0.1790000
Longevity regulating pathway	0.6330000
Longevity regulating pathway - multiple species	0.5785000
Lysine biosynthesis	-0.1246000
Lysine degradation	0.6082000
Malaria	-0.2542000
Maturity onset diabetes of the young	-0.1635000
Measles	0.1890000
Melanogenesis	0.1795000
Melanoma	0.2872000
Metabolism of xenobiotics by cytochrome P450	-1.1420000
Mineral absorption	-0.0202200
Morphine addiction	-0.2829000
mRNA surveillance pathway	0.5742000
mTOR signaling pathway	0.3221000
Mucin type O-Glycan biosynthesis	-0.3286000
N-Glycan biosynthesis	0.6238000
Natural killer cell mediated cytotoxicity	0.0910200
Neuroactive ligand-receptor interaction	-0.4221000
Neurotrophin signaling pathway	0.3389000
NF-kappa B signaling pathway	0.1670000
Nicotinate and nicotinamide metabolism	-0.0778000
Nitrogen metabolism	0.5889000
NOD-like receptor signaling pathway	0.2165000
Non-alcoholic fatty liver disease (NAFLD)	0.2175000
Non-small cell lung cancer	0.4914000
Notch signaling pathway	0.4249000
One carbon pool by folate	0.8291000
Oocyte meiosis	0.5494000
Osteoclast differentiation	0.1077000
Ovarian steroidogenesis	0.0242100
Oxidative phosphorylation	0.5034000
p53 signaling pathway	0.2989000
Pancreatic cancer	0.4644000
Pancreatic secretion	0.0961200
Pantothenate and CoA biosynthesis	0.1395000
Parkinson's disease	0.1674000
Pathogenic Escherichia coli infection	0.2793000
Pentose and glucuronate interconversions	-0.2093000
Pentose phosphate pathway	0.3394000
Peroxisome	0.1327000
Pertussis	0.1016000

Phagosome	1.0730000
Phenylalanine metabolism	-0.1297000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.3136000
Phosphatidylinositol signaling system	1.2740000
Phospholipase D signaling pathway	0.3400000
Phototransduction	-0.4083000
Platelet activation	0.2605000
Porphyrin and chlorophyll metabolism	-0.0163000
Primary bile acid biosynthesis	-0.2752000
Prion diseases	0.3208000
Progesterone-mediated oocyte maturation	0.2225000
Prolactin signaling pathway	0.3414000
Propanoate metabolism	0.3348000
Prostate cancer	0.4738000
Protein processing in endoplasmic reticulum	0.4201000
Proximal tubule bicarbonate reclamation	0.1627000
Pyrimidine metabolism	0.9902000
Pyruvate metabolism	0.5065000
Regulation of autophagy	0.2549000
Regulation of lipolysis in adipocytes	0.2080000
Renal cell carcinoma	0.4360000
Renin secretion	0.2150000
Renin-angiotensin system	0.0005793
Retinol metabolism	-1.7240000
Retrograde endocannabinoid signaling	-0.0269400
Rheumatoid arthritis	-0.1968000
Riboflavin metabolism	0.3818000
Ribosome biogenesis in eukaryotes	0.3049000
RIG-I-like receptor signaling pathway	0.2748000
RNA degradation	0.6902000
RNA transport	0.3885000
Salivary secretion	0.0567400
Salmonella infection	0.3875000
Selenocompound metabolism	0.3578000
Serotonergic synapse	-0.0762200
Shigellosis	0.3455000
Signaling pathways regulating pluripotency of stem cells	0.3754000
Small cell lung cancer	0.5976000
SNARE interactions in vesicular transport	0.4079000
Sphingolipid metabolism	0.7296000
Sphingolipid signaling pathway	0.4447000
Staphylococcus aureus infection	-0.1491000
Starch and sucrose metabolism	0.2445000
Steroid biosynthesis	0.4066000
Steroid hormone biosynthesis	-1.0100000
Sulfur metabolism	0.5077000

Sulfur relay system	0.2898000
Synaptic vesicle cycle	0.5894000
Synthesis and degradation of ketone bodies	0.1865000
Systemic lupus erythematosus	-0.2741000
T cell receptor signaling pathway	0.1920000
Taste transduction	-0.3617000
Taurine and hypotaurine metabolism	-0.2734000
Terpenoid backbone biosynthesis	0.3613000
TGF-beta signaling pathway	0.2352000
Thiamine metabolism	0.1550000
Thyroid cancer	0.3736000
Thyroid hormone signaling pathway	0.6185000
Thyroid hormone synthesis	-0.0145500
Tight junction	0.3380000
TNF signaling pathway	0.3000000
Toll-like receptor signaling pathway	0.0864900
Toxoplasmosis	0.2953000
Transcriptional misregulation in cancer	0.0904200
Tryptophan metabolism	-0.2737000
Type I diabetes mellitus	-0.4157000
Type II diabetes mellitus	0.1799000
Tyrosine metabolism	-0.3835000
Ubiquinone and other terpenoid-quinone biosynthesis	0.2858000
Valine, leucine and isoleucine degradation	0.5630000
Vascular smooth muscle contraction	0.1913000
Vasopressin-regulated water reabsorption	0.0436700
VEGF signaling pathway	0.3138000
Vibrio cholerae infection	0.4023000
Viral carcinogenesis	0.3304000
Viral myocarditis	0.1488000
Vitamin B6 metabolism	0.1492000
Vitamin digestion and absorption	-0.4696000
Wnt signaling pathway	0.2125000
control.Mean	
Acute myeloid leukemia	0.438100
Adherens junction	0.549600
Adipocytokine signaling pathway	0.264200
Adrenergic signaling in cardiomyocytes	-0.279400
African trypanosomiasis	-0.229100
AGE-RAGE signaling pathway in diabetic complications	0.255500
Alanine, aspartate and glutamate metabolism	0.546300
Aldosterone synthesis and secretion	0.095020
Aldosterone-regulated sodium reabsorption	0.163200
Allograft rejection	-0.170700
alpha-Linolenic acid metabolism	0.068670
Alzheimer's disease	0.298600

Amino sugar and nucleotide sugar metabolism	0.468300
Aminoacyl-tRNA biosynthesis	0.278400
Amoebiasis	-0.077170
Amphetamine addiction	-0.133700
AMPK signaling pathway	0.479600
Amyotrophic lateral sclerosis (ALS)	0.177200
Antigen processing and presentation	-0.054660
Apoptosis	0.337100
Arachidonic acid metabolism	-0.754500
Arginine and proline metabolism	-0.004254
Arginine biosynthesis	0.272500
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.336500
Ascorbate and aldarate metabolism	-0.597600
Asthma	-0.425200
Autoimmune thyroid disease	-0.408800
B cell receptor signaling pathway	0.127500
Bacterial invasion of epithelial cells	0.463600
Basal cell carcinoma	0.181300
beta-Alanine metabolism	-0.213400
Bile secretion	-0.030380
Biosynthesis of unsaturated fatty acids	0.166900
Biotin metabolism	0.262700
Bladder cancer	0.467700
Butanoate metabolism	0.189600
Caffeine metabolism	-0.451400
Carbohydrate digestion and absorption	0.148400
Cardiac muscle contraction	-0.189100
Cell adhesion molecules (CAMs)	-0.216900
Cell cycle	0.831700
Central carbon metabolism in cancer	0.551600
Chagas disease (American trypanosomiasis)	0.307200
Chemical carcinogenesis	-0.879900
Choline metabolism in cancer	0.335700
Cholinergic synapse	0.159200
Chronic myeloid leukemia	0.574800
Circadian entrainment	-0.040230
Circadian rhythm	0.455000
Citrate cycle (TCA cycle)	0.949300
Cocaine addiction	0.004420
Colorectal cancer	0.402100
Complement and coagulation cascades	-0.202100
Cysteine and methionine metabolism	0.494500
Cytosolic DNA-sensing pathway	0.237200
D-Glutamine and D-glutamate metabolism	0.314300
Dilated cardiomyopathy	0.229800
Dopaminergic synapse	0.026380

Dorso-ventral axis formation	0.266900
Drug metabolism - cytochrome P450	-0.497100
Drug metabolism - other enzymes	0.082990
ECM-receptor interaction	0.474700
Endocrine and other factor-regulated calcium reabsorption	-0.123300
Endocytosis	0.672300
Endometrial cancer	0.511100
Epithelial cell signaling in Helicobacter pylori infection	0.137600
Epstein-Barr virus infection	0.352100
ErbB signaling pathway	0.368200
Estrogen signaling pathway	0.223400
Ether lipid metabolism	0.087480
Fanconi anemia pathway	0.546500
Fat digestion and absorption	0.362200
Fatty acid biosynthesis	0.349500
Fatty acid degradation	0.629300
Fatty acid elongation	0.265800
Fc epsilon RI signaling pathway	0.239600
Fc gamma R-mediated phagocytosis	0.369900
Folate biosynthesis	0.283800
FoxO signaling pathway	0.315100
Fructose and mannose metabolism	0.447100
GABAergic synapse	-0.454000
Galactose metabolism	0.420100
Gap junction	0.103400
Gastric acid secretion	0.149300
Glioma	0.439300
Glucagon signaling pathway	0.429200
Glutamatergic synapse	-0.144400
Glutathione metabolism	0.272500
Glycerolipid metabolism	0.736000
Glycerophospholipid metabolism	0.790900
Glycine, serine and threonine metabolism	0.014660
Glycolysis / Gluconeogenesis	0.531300
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.430400
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.403400
Glycosaminoglycan degradation	0.400900
Glycosphingolipid biosynthesis - ganglio series	0.260300
Glycosphingolipid biosynthesis - globo series	-0.080300
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.266700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.433300
Glyoxylate and dicarboxylate metabolism	0.288700
GnRH signaling pathway	0.249700
Graft-versus-host disease	-0.275500
Hepatitis B	0.312400
Hepatitis C	0.414300

Herpes simplex infection	0.302500
HIF-1 signaling pathway	0.532300
Histidine metabolism	-0.322500
Huntington's disease	0.781700
Hypertrophic cardiomyopathy (HCM)	0.238500
Inflammatory bowel disease (IBD)	-0.190400
Inflammatory mediator regulation of TRP channels	0.121400
Influenza A	0.285900
Inositol phosphate metabolism	1.045000
Insulin resistance	0.387400
Insulin secretion	-0.127200
Insulin signaling pathway	0.477300
Intestinal immune network for IgA production	-0.193600
Legionellosis	-0.089410
Leishmaniasis	-0.032410
Leukocyte transendothelial migration	0.068220
Linoleic acid metabolism	-1.297000
Lipoic acid metabolism	-0.178700
Long-term depression	0.235000
Long-term potentiation	0.172700
Longevity regulating pathway	0.634200
Longevity regulating pathway - multiple species	0.583200
Lysine biosynthesis	-0.126400
Lysine degradation	0.613400
Malaria	-0.223800
Maturity onset diabetes of the young	-0.166900
Measles	0.186800
Melanogenesis	0.167800
Melanoma	0.272900
Metabolism of xenobiotics by cytochrome P450	-1.132000
Mineral absorption	-0.020440
Morphine addiction	-0.291100
mRNA surveillance pathway	0.577200
mTOR signaling pathway	0.316900
Mucin type O-Glycan biosynthesis	-0.324000
N-Glycan biosynthesis	0.623100
Natural killer cell mediated cytotoxicity	0.087400
Neuroactive ligand-receptor interaction	-0.421700
Neurotrophin signaling pathway	0.337900
NF-kappa B signaling pathway	0.171200
Nicotinate and nicotinamide metabolism	-0.097000
Nitrogen metabolism	0.588700
NOD-like receptor signaling pathway	0.218100
Non-alcoholic fatty liver disease (NAFLD)	0.216300
Non-small cell lung cancer	0.490200
Notch signaling pathway	0.421000

One carbon pool by folate	0.814100
Oocyte meiosis	0.552800
Osteoclast differentiation	0.107800
Ovarian steroidogenesis	0.038170
Oxidative phosphorylation	0.500000
p53 signaling pathway	0.307000
Pancreatic cancer	0.463700
Pancreatic secretion	0.103600
Pantothenate and CoA biosynthesis	0.135100
Parkinson's disease	0.160400
Pathogenic Escherichia coli infection	0.278100
Pentose and glucuronate interconversions	-0.224000
Pentose phosphate pathway	0.297500
Peroxisome	0.132800
Pertussis	0.107200
Phagosome	1.079000
Phenylalanine metabolism	-0.120300
Phenylalanine, tyrosine and tryptophan biosynthesis	0.313500
Phosphatidylinositol signaling system	1.305000
Phospholipase D signaling pathway	0.344700
Phototransduction	-0.420600
Platelet activation	0.267200
Porphyrin and chlorophyll metabolism	-0.018500
Primary bile acid biosynthesis	-0.274700
Prion diseases	0.320200
Progesterone-mediated oocyte maturation	0.222100
Prolactin signaling pathway	0.339500
Propanoate metabolism	0.332900
Prostate cancer	0.483500
Protein processing in endoplasmic reticulum	0.412600
Proximal tubule bicarbonate reclamation	0.186600
Pyrimidine metabolism	1.003000
Pyruvate metabolism	0.517300
Regulation of autophagy	0.254800
Regulation of lipolysis in adipocytes	0.214400
Renal cell carcinoma	0.433200
Renin secretion	0.216700
Renin-angiotensin system	0.001284
Retinol metabolism	-1.732000
Retrograde endocannabinoid signaling	-0.018580
Rheumatoid arthritis	-0.184900
Riboflavin metabolism	0.381300
Ribosome biogenesis in eukaryotes	0.305200
RIG-I-like receptor signaling pathway	0.272600
RNA degradation	0.690900
RNA transport	0.390600

Salivary secretion	0.052540
Salmonella infection	0.392100
Selenocompound metabolism	0.372700
Serotonergic synapse	-0.079570
Shigellosis	0.345800
Signaling pathways regulating pluripotency of stem cells	0.375200
Small cell lung cancer	0.597200
SNARE interactions in vesicular transport	0.409300
Sphingolipid metabolism	0.755700
Sphingolipid signaling pathway	0.442400
Staphylococcus aureus infection	-0.139800
Starch and sucrose metabolism	0.235400
Steroid biosynthesis	0.401200
Steroid hormone biosynthesis	-1.007000
Sulfur metabolism	0.506800
Sulfur relay system	0.288500
Synaptic vesicle cycle	0.589100
Synthesis and degradation of ketone bodies	0.168200
Systemic lupus erythematosus	-0.270900
T cell receptor signaling pathway	0.193700
Taste transduction	-0.361600
Taurine and hypotaurine metabolism	-0.272100
Terpenoid backbone biosynthesis	0.363200
TGF-beta signaling pathway	0.232900
Thiamine metabolism	0.156600
Thyroid cancer	0.368100
Thyroid hormone signaling pathway	0.620100
Thyroid hormone synthesis	-0.023980
Tight junction	0.326300
TNF signaling pathway	0.298500
Toll-like receptor signaling pathway	0.086110
Toxoplasmosis	0.295300
Transcriptional misregulation in cancer	0.089800
Tryptophan metabolism	-0.275400
Type I diabetes mellitus	-0.414200
Type II diabetes mellitus	0.185200
Tyrosine metabolism	-0.370900
Ubiquinone and other terpenoid-quinone biosynthesis	0.285900
Valine, leucine and isoleucine degradation	0.550700
Vascular smooth muscle contraction	0.190000
Vasopressin-regulated water reabsorption	0.029110
VEGF signaling pathway	0.311600
Vibrio cholerae infection	0.402000
Viral carcinogenesis	0.329400
Viral myocarditis	0.143000
Vitamin B6 metabolism	0.145700

Vitamin digestion and absorption	-0.473300
Wnt signaling pathway	0.219700
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Acute myeloid leukemia	0.441400
Adherens junction	0.555300
Adipocytokine signaling pathway	0.275700
Adrenergic signaling in cardiomyocytes	-0.269500
African trypanosomiasis	-0.221400
AGE-RAGE signaling pathway in diabetic complications	0.272800
Alanine, aspartate and glutamate metabolism	0.552900
Aldosterone synthesis and secretion	0.150400
Aldosterone-regulated sodium reabsorption	0.174900
Allograft rejection	-0.168200
alpha-Linolenic acid metabolism	0.078400
Alzheimer's disease	0.307900
Amino sugar and nucleotide sugar metabolism	0.472900
Aminoacyl-tRNA biosynthesis	0.290800
Amoebiasis	-0.049270
Amphetamine addiction	-0.123300
AMPK signaling pathway	0.483400
Amyotrophic lateral sclerosis (ALS)	0.180600
Antigen processing and presentation	-0.037930
Apoptosis	0.343900
Arachidonic acid metabolism	-0.742200
Arginine and proline metabolism	0.001743
Arginine biosynthesis	0.277900
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.340800
Ascorbate and aldarate metabolism	-0.584700
Asthma	-0.417100
Autoimmune thyroid disease	-0.395100
B cell receptor signaling pathway	0.135700
Bacterial invasion of epithelial cells	0.476600
Basal cell carcinoma	0.199900
beta-Alanine metabolism	-0.182300
Bile secretion	-0.015750
Biosynthesis of unsaturated fatty acids	0.169900
Biotin metabolism	0.263400
Bladder cancer	0.478000
Butanoate metabolism	0.207900
Caffeine metabolism	-0.435000
Carbohydrate digestion and absorption	0.166200
Cardiac muscle contraction	-0.184600
Cell adhesion molecules (CAMs)	-0.209800
Cell cycle	0.852600
Central carbon metabolism in cancer	0.559400
Chagas disease (American trypanosomiasis)	0.320800

Chemical carcinogenesis	-0.858800
Choline metabolism in cancer	0.337600
Cholinergic synapse	0.174500
Chronic myeloid leukemia	0.577700
Circadian entrainment	0.002766
Circadian rhythm	0.458600
Citrate cycle (TCA cycle)	0.951700
Cocaine addiction	0.016440
Colorectal cancer	0.409000
Complement and coagulation cascades	-0.199600
Cysteine and methionine metabolism	0.498100
Cytosolic DNA-sensing pathway	0.238900
D-Glutamine and D-glutamate metabolism	0.314600
Dilated cardiomyopathy	0.239300
Dopaminergic synapse	0.056320
Dorso-ventral axis formation	0.267100
Drug metabolism - cytochrome P450	-0.492900
Drug metabolism - other enzymes	0.095170
ECM-receptor interaction	0.511100
Endocrine and other factor-regulated calcium reabsorption	-0.116600
Endocytosis	0.681100
Endometrial cancer	0.525200
Epithelial cell signaling in Helicobacter pylori infection	0.140600
Epstein-Barr virus infection	0.356900
ErbB signaling pathway	0.377400
Estrogen signaling pathway	0.240800
Ether lipid metabolism	0.094920
Fanconi anemia pathway	0.558500
Fat digestion and absorption	0.368300
Fatty acid biosynthesis	0.350400
Fatty acid degradation	0.662700
Fatty acid elongation	0.267600
Fc epsilon RI signaling pathway	0.241300
Fc gamma R-mediated phagocytosis	0.383300
Folate biosynthesis	0.292400
FoxO signaling pathway	0.319200
Fructose and mannose metabolism	0.482100
GABAergic synapse	-0.444700
Galactose metabolism	0.423500
Gap junction	0.116900
Gastric acid secretion	0.171600
Glioma	0.444700
Glucagon signaling pathway	0.460700
Glutamatergic synapse	-0.114500
Glutathione metabolism	0.282300
Glycerolipid metabolism	0.760900

Glycerophospholipid metabolism	0.835600
Glycine, serine and threonine metabolism	0.018130
Glycolysis / Gluconeogenesis	0.546200
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.431200
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.404100
Glycosaminoglycan degradation	0.424000
Glycosphingolipid biosynthesis - ganglio series	0.267000
Glycosphingolipid biosynthesis - globo series	-0.079240
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.259700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.445800
Glyoxylate and dicarboxylate metabolism	0.310800
GnRH signaling pathway	0.265900
Graft-versus-host disease	-0.270200
Hepatitis B	0.324300
Hepatitis C	0.419600
Herpes simplex infection	0.305600
HIF-1 signaling pathway	0.551100
Histidine metabolism	-0.313700
Huntington's disease	0.788600
Hypertrophic cardiomyopathy (HCM)	0.239100
Inflammatory bowel disease (IBD)	-0.187800
Inflammatory mediator regulation of TRP channels	0.134400
Influenza A	0.298700
Inositol phosphate metabolism	1.071000
Insulin resistance	0.393400
Insulin secretion	-0.112000
Insulin signaling pathway	0.480900
Intestinal immune network for IgA production	-0.190900
Legionellosis	-0.088660
Leishmaniasis	-0.029940
Leukocyte transendothelial migration	0.080250
Linoleic acid metabolism	-1.287000
Lipoic acid metabolism	-0.172000
Long-term depression	0.277100
Long-term potentiation	0.206600
Longevity regulating pathway	0.642700
Longevity regulating pathway - multiple species	0.589900
Lysine biosynthesis	-0.113900
Lysine degradation	0.613900
Malaria	-0.220400
Maturity onset diabetes of the young	-0.160500
Measles	0.197400
Melanogenesis	0.185200
Melanoma	0.306300
Metabolism of xenobiotics by cytochrome P450	-1.120000
Mineral absorption	-0.011000

Morphine addiction	-0.262000
mRNA surveillance pathway	0.579400
mTOR signaling pathway	0.326700
Mucin type O-Glycan biosynthesis	-0.242800
N-Glycan biosynthesis	0.625800
Natural killer cell mediated cytotoxicity	0.101700
Neuroactive ligand-receptor interaction	-0.414300
Neurotrophin signaling pathway	0.349700
NF-kappa B signaling pathway	0.173300
Nicotinate and nicotinamide metabolism	-0.061660
Nitrogen metabolism	0.589300
NOD-like receptor signaling pathway	0.221800
Non-alcoholic fatty liver disease (NAFLD)	0.222700
Non-small cell lung cancer	0.496900
Notch signaling pathway	0.431700
One carbon pool by folate	0.872900
Oocyte meiosis	0.554600
Osteoclast differentiation	0.113900
Ovarian steroidogenesis	0.083820
Oxidative phosphorylation	0.511500
p53 signaling pathway	0.311000
Pancreatic cancer	0.469700
Pancreatic secretion	0.147600
Pantothenate and CoA biosynthesis	0.143100
Parkinson's disease	0.181600
Pathogenic Escherichia coli infection	0.299500
Pentose and glucuronate interconversions	-0.198500
Pentose phosphate pathway	0.367900
Peroxisome	0.133100
Pertussis	0.114600
Phagosome	1.100000
Phenylalanine metabolism	-0.116800
Phenylalanine, tyrosine and tryptophan biosynthesis	0.315100
Phosphatidylinositol signaling system	1.317000
Phospholipase D signaling pathway	0.345200
Phototransduction	-0.392000
Platelet activation	0.277500
Porphyrin and chlorophyll metabolism	-0.004352
Primary bile acid biosynthesis	-0.269700
Prion diseases	0.322100
Progesterone-mediated oocyte maturation	0.225900
Prolactin signaling pathway	0.354700
Propanoate metabolism	0.339000
Prostate cancer	0.487300
Protein processing in endoplasmic reticulum	0.427300
Proximal tubule bicarbonate reclamation	0.186900

Pyrimidine metabolism	1.034000
Pyruvate metabolism	0.533400
Regulation of autophagy	0.259300
Regulation of lipolysis in adipocytes	0.225200
Renal cell carcinoma	0.437100
Renin secretion	0.228600
Renin-angiotensin system	0.131500
Retinol metabolism	-1.720000
Retrograde endocannabinoid signaling	-0.003103
Rheumatoid arthritis	-0.182500
Riboflavin metabolism	0.384700
Ribosome biogenesis in eukaryotes	0.309300
RIG-I-like receptor signaling pathway	0.278900
RNA degradation	0.692700
RNA transport	0.397400
Salivary secretion	0.068720
Salmonella infection	0.397400
Selenocompound metabolism	0.375400
Serotonergic synapse	-0.023680
Shigellosis	0.359900
Signaling pathways regulating pluripotency of stem cells	0.384000
Small cell lung cancer	0.599600
SNARE interactions in vesicular transport	0.414400
Sphingolipid metabolism	0.781700
Sphingolipid signaling pathway	0.452000
Staphylococcus aureus infection	-0.134000
Starch and sucrose metabolism	0.247600
Steroid biosynthesis	0.411300
Steroid hormone biosynthesis	-0.960900
Sulfur metabolism	0.509300
Sulfur relay system	0.290400
Synaptic vesicle cycle	0.591600
Synthesis and degradation of ketone bodies	0.192000
Systemic lupus erythematosus	-0.252400
T cell receptor signaling pathway	0.195000
Taste transduction	-0.359100
Taurine and hypotaurine metabolism	-0.260300
Terpenoid backbone biosynthesis	0.370800
TGF-beta signaling pathway	0.238700
Thiamine metabolism	0.159900
Thyroid cancer	0.377600
Thyroid hormone signaling pathway	0.634700
Thyroid hormone synthesis	-0.001132
Tight junction	0.339900
TNF signaling pathway	0.303200
Toll-like receptor signaling pathway	0.088490

Toxoplasmosis	0.297500
Transcriptional misregulation in cancer	0.093550
Tryptophan metabolism	-0.262100
Type I diabetes mellitus	-0.401600
Type II diabetes mellitus	0.192500
Tyrosine metabolism	-0.364400
Ubiquinone and other terpenoid-quinone biosynthesis	0.287700
Valine, leucine and isoleucine degradation	0.566500
Vascular smooth muscle contraction	0.204600
Vasopressin-regulated water reabsorption	0.045730
VEGF signaling pathway	0.321500
Vibrio cholerae infection	0.402800
Viral carcinogenesis	0.331100
Viral myocarditis	0.157500
Vitamin B6 metabolism	0.160500
Vitamin digestion and absorption	-0.443900
Wnt signaling pathway	0.243200
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Acute myeloid leukemia	0.442500
Adherens junction	0.557300
Adipocytokine signaling pathway	0.290600
Adrenergic signaling in cardiomyocytes	-0.253100
African trypanosomiasis	-0.205800
AGE-RAGE signaling pathway in diabetic complications	0.273400
Alanine, aspartate and glutamate metabolism	0.563900
Aldosterone synthesis and secretion	0.161200
Aldosterone-regulated sodium reabsorption	0.177300
Allograft rejection	-0.165300
alpha-Linolenic acid metabolism	0.120200
Alzheimer's disease	0.308400
Amino sugar and nucleotide sugar metabolism	0.473600
Aminoacyl-tRNA biosynthesis	0.295900
Amoebiasis	-0.029320
Amphetamine addiction	-0.118000
AMPK signaling pathway	0.492500
Amyotrophic lateral sclerosis (ALS)	0.181400
Antigen processing and presentation	-0.016660
Apoptosis	0.346700
Arachidonic acid metabolism	-0.719300
Arginine and proline metabolism	0.019040
Arginine biosynthesis	0.288800
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.343100
Ascorbate and aldarate metabolism	-0.568300
Asthma	-0.399900
Autoimmune thyroid disease	-0.393800
B cell receptor signaling pathway	0.144600

Bacterial invasion of epithelial cells	0.483400
Basal cell carcinoma	0.221000
beta-Alanine metabolism	-0.172000
Bile secretion	-0.008094
Biosynthesis of unsaturated fatty acids	0.173300
Biotin metabolism	0.264100
Bladder cancer	0.479600
Butanoate metabolism	0.211800
Caffeine metabolism	-0.416500
Carbohydrate digestion and absorption	0.173200
Cardiac muscle contraction	-0.181100
Cell adhesion molecules (CAMs)	-0.205000
Cell cycle	0.855300
Central carbon metabolism in cancer	0.560000
Chagas disease (American trypanosomiasis)	0.326600
Chemical carcinogenesis	-0.856600
Choline metabolism in cancer	0.342000
Cholinergic synapse	0.201200
Chronic myeloid leukemia	0.587700
Circadian entrainment	0.012730
Circadian rhythm	0.462400
Citrate cycle (TCA cycle)	1.035000
Cocaine addiction	0.019430
Colorectal cancer	0.419400
Complement and coagulation cascades	-0.179000
Cysteine and methionine metabolism	0.499900
Cytosolic DNA-sensing pathway	0.247900
D-Glutamine and D-glutamate metabolism	0.315700
Dilated cardiomyopathy	0.250900
Dopaminergic synapse	0.100100
Dorso-ventral axis formation	0.269200
Drug metabolism - cytochrome P450	-0.466700
Drug metabolism - other enzymes	0.096180
ECM-receptor interaction	0.600200
Endocrine and other factor-regulated calcium reabsorption	-0.090800
Endocytosis	0.687800
Endometrial cancer	0.535500
Epithelial cell signaling in Helicobacter pylori infection	0.141300
Epstein-Barr virus infection	0.361700
ErbB signaling pathway	0.384700
Estrogen signaling pathway	0.251900
Ether lipid metabolism	0.207500
Fanconi anemia pathway	0.567200
Fat digestion and absorption	0.369200
Fatty acid biosynthesis	0.350500
Fatty acid degradation	0.679900

Fatty acid elongation	0.281600
Fc epsilon RI signaling pathway	0.253200
Fc gamma R-mediated phagocytosis	0.384400
Folate biosynthesis	0.292800
FoxO signaling pathway	0.323300
Fructose and mannose metabolism	0.482800
GABAergic synapse	-0.444400
Galactose metabolism	0.427200
Gap junction	0.118600
Gastric acid secretion	0.187200
Glioma	0.446500
Glucagon signaling pathway	0.509900
Glutamatergic synapse	-0.103600
Glutathione metabolism	0.308200
Glycerolipid metabolism	0.780000
Glycerophospholipid metabolism	0.884300
Glycine, serine and threonine metabolism	0.104600
Glycolysis / Gluconeogenesis	0.566200
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.433000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.406800
Glycosaminoglycan degradation	0.426800
Glycosphingolipid biosynthesis - ganglio series	0.277900
Glycosphingolipid biosynthesis - globo series	-0.060910
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.252700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.445900
Glyoxylate and dicarboxylate metabolism	0.319200
GnRH signaling pathway	0.273600
Graft-versus-host disease	-0.219400
Hepatitis B	0.333600
Hepatitis C	0.426300
Herpes simplex infection	0.311800
HIF-1 signaling pathway	0.557400
Histidine metabolism	-0.313300
Huntington's disease	0.791100
Hypertrophic cardiomyopathy (HCM)	0.240800
Inflammatory bowel disease (IBD)	-0.185100
Inflammatory mediator regulation of TRP channels	0.135300
Influenza A	0.307800
Inositol phosphate metabolism	1.118000
Insulin resistance	0.400100
Insulin secretion	-0.100600
Insulin signaling pathway	0.487500
Intestinal immune network for IgA production	-0.187600
Legionellosis	-0.059190
Leishmaniasis	-0.022220
Leukocyte transendothelial migration	0.084170

Linoleic acid metabolism	-1.230000
Lipoic acid metabolism	-0.169300
Long-term depression	0.309800
Long-term potentiation	0.233500
Longevity regulating pathway	0.654600
Longevity regulating pathway - multiple species	0.610100
Lysine biosynthesis	-0.103500
Lysine degradation	0.630400
Malaria	-0.121500
Maturity onset diabetes of the young	-0.159500
Measles	0.199300
Melanogenesis	0.193300
Melanoma	0.348900
Metabolism of xenobiotics by cytochrome P450	-1.075000
Mineral absorption	-0.004526
Morphine addiction	-0.255400
mRNA surveillance pathway	0.591900
mTOR signaling pathway	0.328900
Mucin type O-Glycan biosynthesis	-0.227200
N-Glycan biosynthesis	0.626700
Natural killer cell mediated cytotoxicity	0.111000
Neuroactive ligand-receptor interaction	-0.409300
Neurotrophin signaling pathway	0.352900
NF-kappa B signaling pathway	0.188000
Nicotinate and nicotinamide metabolism	-0.040950
Nitrogen metabolism	0.590100
NOD-like receptor signaling pathway	0.236000
Non-alcoholic fatty liver disease (NAFLD)	0.223000
Non-small cell lung cancer	0.500300
Notch signaling pathway	0.441700
One carbon pool by folate	0.886100
Oocyte meiosis	0.565400
Osteoclast differentiation	0.116200
Ovarian steroidogenesis	0.135300
Oxidative phosphorylation	0.518100
p53 signaling pathway	0.338100
Pancreatic cancer	0.471300
Pancreatic secretion	0.177400
Pantothenate and CoA biosynthesis	0.145200
Parkinson's disease	0.185800
Pathogenic Escherichia coli infection	0.303000
Pentose and glucuronate interconversions	-0.171400
Pentose phosphate pathway	0.375900
Peroxisome	0.134100
Pertussis	0.145700
Phagosome	1.123000

Phenylalanine metabolism	-0.082140
Phenylalanine, tyrosine and tryptophan biosynthesis	0.318700
Phosphatidylinositol signaling system	1.428000
Phospholipase D signaling pathway	0.360500
Phototransduction	-0.348200
Platelet activation	0.300500
Porphyrin and chlorophyll metabolism	0.010770
Primary bile acid biosynthesis	-0.254500
Prion diseases	0.323600
Progesterone-mediated oocyte maturation	0.236000
Prolactin signaling pathway	0.358000
Propanoate metabolism	0.348300
Prostate cancer	0.516700
Protein processing in endoplasmic reticulum	0.430000
Proximal tubule bicarbonate reclamation	0.258700
Pyrimidine metabolism	1.092000
Pyruvate metabolism	0.586400
Regulation of autophagy	0.261200
Regulation of lipolysis in adipocytes	0.264100
Renal cell carcinoma	0.437900
Renin secretion	0.245100
Renin-angiotensin system	0.136500
Retinol metabolism	-1.720000
Retrograde endocannabinoid signaling	0.054580
Rheumatoid arthritis	-0.144400
Riboflavin metabolism	0.385500
Ribosome biogenesis in eukaryotes	0.311700
RIG-I-like receptor signaling pathway	0.281000
RNA degradation	0.698700
RNA transport	0.405800
Salivary secretion	0.081660
Salmonella infection	0.418300
Selenocompound metabolism	0.421800
Serotonergic synapse	0.004668
Shigellosis	0.367200
Signaling pathways regulating pluripotency of stem cells	0.388700
Small cell lung cancer	0.601000
SNARE interactions in vesicular transport	0.418900
Sphingolipid metabolism	0.889400
Sphingolipid signaling pathway	0.463700
Staphylococcus aureus infection	-0.104200
Starch and sucrose metabolism	0.255900
Steroid biosynthesis	0.416900
Steroid hormone biosynthesis	-0.918000
Sulfur metabolism	0.510300
Sulfur relay system	0.291500

Synaptic vesicle cycle	0.593300
Synthesis and degradation of ketone bodies	0.196400
Systemic lupus erythematosus	-0.240800
T cell receptor signaling pathway	0.200800
Taste transduction	-0.354100
Taurine and hypotaurine metabolism	-0.256300
Terpenoid backbone biosynthesis	0.377600
TGF-beta signaling pathway	0.246700
Thiamine metabolism	0.166500
Thyroid cancer	0.379700
Thyroid hormone signaling pathway	0.645000
Thyroid hormone synthesis	0.016000
Tight junction	0.343900
TNF signaling pathway	0.309400
Toll-like receptor signaling pathway	0.092430
Toxoplasmosis	0.298200
Transcriptional misregulation in cancer	0.094880
Tryptophan metabolism	-0.261600
Type I diabetes mellitus	-0.394400
Type II diabetes mellitus	0.214700
Tyrosine metabolism	-0.308600
Ubiquinone and other terpenoid-quinone biosynthesis	0.290200
Valine, leucine and isoleucine degradation	0.570100
Vascular smooth muscle contraction	0.207600
Vasopressin-regulated water reabsorption	0.050240
VEGF signaling pathway	0.322100
Vibrio cholerae infection	0.403200
Viral carcinogenesis	0.332200
Viral myocarditis	0.162200
Vitamin B6 metabolism	0.166100
Vitamin digestion and absorption	-0.443300
Wnt signaling pathway	0.274700
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Acute myeloid leukemia	4
Adherens junction	4
Adipocytokine signaling pathway	4
Adrenergic signaling in cardiomyocytes	4
African trypanosomiasis	4
AGE-RAGE signaling pathway in diabetic complications	4
Alanine, aspartate and glutamate metabolism	4
Aldosterone synthesis and secretion	4
Aldosterone-regulated sodium reabsorption	4
Allograft rejection	4
alpha-Linolenic acid metabolism	4
Alzheimer's disease	4
Amino sugar and nucleotide sugar metabolism	4

Aminoacyl-tRNA biosynthesis	4
Amoebiasis	4
Amphetamine addiction	4
AMPK signaling pathway	4
Amyotrophic lateral sclerosis (ALS)	4
Antigen processing and presentation	4
Apoptosis	4
Arachidonic acid metabolism	4
Arginine and proline metabolism	4
Arginine biosynthesis	4
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	4
Ascorbate and aldarate metabolism	4
Asthma	4
Autoimmune thyroid disease	4
B cell receptor signaling pathway	4
Bacterial invasion of epithelial cells	4
Basal cell carcinoma	4
beta-Alanine metabolism	4
Bile secretion	4
Biosynthesis of unsaturated fatty acids	4
Biotin metabolism	4
Bladder cancer	4
Butanoate metabolism	4
Caffeine metabolism	4
Carbohydrate digestion and absorption	4
Cardiac muscle contraction	4
Cell adhesion molecules (CAMs)	4
Cell cycle	4
Central carbon metabolism in cancer	4
Chagas disease (American trypanosomiasis)	4
Chemical carcinogenesis	4
Choline metabolism in cancer	4
Cholinergic synapse	4
Chronic myeloid leukemia	4
Circadian entrainment	4
Circadian rhythm	4
Citrate cycle (TCA cycle)	4
Cocaine addiction	4
Colorectal cancer	4
Complement and coagulation cascades	4
Cysteine and methionine metabolism	4
Cytosolic DNA-sensing pathway	4
D-Glutamine and D-glutamate metabolism	4
Dilated cardiomyopathy	4
Dopaminergic synapse	4
Dorso-ventral axis formation	4

Drug metabolism - cytochrome P450	4
Drug metabolism - other enzymes	4
ECM-receptor interaction	4
Endocrine and other factor-regulated calcium reabsorption	4
Endocytosis	4
Endometrial cancer	4
Epithelial cell signaling in Helicobacter pylori infection	4
Epstein-Barr virus infection	4
ErbB signaling pathway	4
Estrogen signaling pathway	4
Ether lipid metabolism	4
Fanconi anemia pathway	4
Fat digestion and absorption	4
Fatty acid biosynthesis	4
Fatty acid degradation	4
Fatty acid elongation	4
Fc epsilon RI signaling pathway	4
Fc gamma R-mediated phagocytosis	4
Folate biosynthesis	4
FoxO signaling pathway	4
Fructose and mannose metabolism	4
GABAergic synapse	4
Galactose metabolism	4
Gap junction	4
Gastric acid secretion	4
Glioma	4
Glucagon signaling pathway	4
Glutamatergic synapse	4
Glutathione metabolism	4
Glycerolipid metabolism	4
Glycerophospholipid metabolism	4
Glycine, serine and threonine metabolism	4
Glycolysis / Gluconeogenesis	4
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	4
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	4
Glycosaminoglycan degradation	4
Glycosphingolipid biosynthesis - ganglio series	4
Glycosphingolipid biosynthesis - globo series	4
Glycosphingolipid biosynthesis - lacto and neolacto series	4
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	4
Glyoxylate and dicarboxylate metabolism	4
GnRH signaling pathway	4
Graft-versus-host disease	4
Hepatitis B	4
Hepatitis C	4
Herpes simplex infection	4

HIF-1 signaling pathway	4
Histidine metabolism	4
Huntington's disease	4
Hypertrophic cardiomyopathy (HCM)	4
Inflammatory bowel disease (IBD)	4
Inflammatory mediator regulation of TRP channels	4
Influenza A	4
Inositol phosphate metabolism	4
Insulin resistance	4
Insulin secretion	4
Insulin signaling pathway	4
Intestinal immune network for IgA production	4
Legionellosis	4
Leishmaniasis	4
Leukocyte transendothelial migration	4
Linoleic acid metabolism	4
Lipoic acid metabolism	4
Long-term depression	4
Long-term potentiation	4
Longevity regulating pathway	4
Longevity regulating pathway - multiple species	4
Lysine biosynthesis	4
Lysine degradation	4
Malaria	4
Maturity onset diabetes of the young	4
Measles	4
Melanogenesis	4
Melanoma	4
Metabolism of xenobiotics by cytochrome P450	4
Mineral absorption	4
Morphine addiction	4
mRNA surveillance pathway	4
mTOR signaling pathway	4
Mucin type O-Glycan biosynthesis	4
N-Glycan biosynthesis	4
Natural killer cell mediated cytotoxicity	4
Neuroactive ligand-receptor interaction	4
Neurotrophin signaling pathway	4
NF-kappa B signaling pathway	4
Nicotinate and nicotinamide metabolism	4
Nitrogen metabolism	4
NOD-like receptor signaling pathway	4
Non-alcoholic fatty liver disease (NAFLD)	4
Non-small cell lung cancer	4
Notch signaling pathway	4
One carbon pool by folate	4

Oocyte meiosis	4
Osteoclast differentiation	4
Ovarian steroidogenesis	4
Oxidative phosphorylation	4
p53 signaling pathway	4
Pancreatic cancer	4
Pancreatic secretion	4
Pantothenate and CoA biosynthesis	4
Parkinson's disease	4
Pathogenic Escherichia coli infection	4
Pentose and glucuronate interconversions	4
Pentose phosphate pathway	4
Peroxisome	4
Pertussis	4
Phagosome	4
Phenylalanine metabolism	4
Phenylalanine, tyrosine and tryptophan biosynthesis	4
Phosphatidylinositol signaling system	4
Phospholipase D signaling pathway	4
Phototransduction	4
Platelet activation	4
Porphyrin and chlorophyll metabolism	4
Primary bile acid biosynthesis	4
Prion diseases	4
Progesterone-mediated oocyte maturation	4
Prolactin signaling pathway	4
Propanoate metabolism	4
Prostate cancer	4
Protein processing in endoplasmic reticulum	4
Proximal tubule bicarbonate reclamation	4
Pyrimidine metabolism	4
Pyruvate metabolism	4
Regulation of autophagy	4
Regulation of lipolysis in adipocytes	4
Renal cell carcinoma	4
Renin secretion	4
Renin-angiotensin system	4
Retinol metabolism	4
Retrograde endocannabinoid signaling	4
Rheumatoid arthritis	4
Riboflavin metabolism	4
Ribosome biogenesis in eukaryotes	4
RIG-I-like receptor signaling pathway	4
RNA degradation	4
RNA transport	4
Salivary secretion	4

Salmonella infection	4
Selenocompound metabolism	4
Serotonergic synapse	4
Shigellosis	4
Signaling pathways regulating pluripotency of stem cells	4
Small cell lung cancer	4
SNARE interactions in vesicular transport	4
Sphingolipid metabolism	4
Sphingolipid signaling pathway	4
Staphylococcus aureus infection	4
Starch and sucrose metabolism	4
Steroid biosynthesis	4
Steroid hormone biosynthesis	4
Sulfur metabolism	4
Sulfur relay system	4
Synaptic vesicle cycle	4
Synthesis and degradation of ketone bodies	4
Systemic lupus erythematosus	4
T cell receptor signaling pathway	4
Taste transduction	4
Taurine and hypotaurine metabolism	4
Terpenoid backbone biosynthesis	4
TGF-beta signaling pathway	4
Thiamine metabolism	4
Thyroid cancer	4
Thyroid hormone signaling pathway	4
Thyroid hormone synthesis	4
Tight junction	4
TNF signaling pathway	4
Toll-like receptor signaling pathway	4
Toxoplasmosis	4
Transcriptional misregulation in cancer	4
Tryptophan metabolism	4
Type I diabetes mellitus	4
Type II diabetes mellitus	4
Tyrosine metabolism	4
Ubiquinone and other terpenoid-quinone biosynthesis	4
Valine, leucine and isoleucine degradation	4
Vascular smooth muscle contraction	4
Vasopressin-regulated water reabsorption	4
VEGF signaling pathway	4
Vibrio cholerae infection	4
Viral carcinogenesis	4
Viral myocarditis	4
Vitamin B6 metabolism	4
Vitamin digestion and absorption	4

Wnt signaling pathway	4
	sample.Min.
Acute myeloid leukemia	0.418200
Adherens junction	0.543000
Adipocytokine signaling pathway	0.225300
Adrenergic signaling in cardiomyocytes	-0.382400
African trypanosomiasis	-0.254100
AGE-RAGE signaling pathway in diabetic complications	0.248200
Alanine, aspartate and glutamate metabolism	0.546200
Aldosterone synthesis and secretion	0.148300
Aldosterone-regulated sodium reabsorption	0.120100
Allograft rejection	-0.184100
alpha-Linolenic acid metabolism	0.011020
Alzheimer's disease	0.300100
Amino sugar and nucleotide sugar metabolism	0.373800
Aminoacyl-tRNA biosynthesis	0.226800
Amoebiasis	-0.078140
Amphetamine addiction	-0.081780
AMPK signaling pathway	0.468000
Amyotrophic lateral sclerosis (ALS)	0.172700
Antigen processing and presentation	-0.166600
Apoptosis	0.315900
Arachidonic acid metabolism	-0.911800
Arginine and proline metabolism	-0.093050
Arginine biosynthesis	0.189600
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.248700
Ascorbate and aldarate metabolism	-0.616100
Asthma	-0.381900
Autoimmune thyroid disease	-0.411500
B cell receptor signaling pathway	0.116700
Bacterial invasion of epithelial cells	0.458000
Basal cell carcinoma	0.035240
beta-Alanine metabolism	-0.262100
Bile secretion	-0.055040
Biosynthesis of unsaturated fatty acids	0.089280
Biotin metabolism	0.246400
Bladder cancer	0.423000
Butanoate metabolism	0.139800
Caffeine metabolism	-0.420200
Carbohydrate digestion and absorption	0.011090
Cardiac muscle contraction	-0.222000
Cell adhesion molecules (CAMs)	-0.240600
Cell cycle	0.916300
Central carbon metabolism in cancer	0.515200
Chagas disease (American trypanosomiasis)	0.288900
Chemical carcinogenesis	-0.885100

Choline metabolism in cancer	0.309000
Cholinergic synapse	0.113800
Chronic myeloid leukemia	0.550000
Circadian entrainment	-0.057760
Circadian rhythm	0.512700
Citrate cycle (TCA cycle)	0.913600
Cocaine addiction	-0.051550
Colorectal cancer	0.383600
Complement and coagulation cascades	-0.263000
Cysteine and methionine metabolism	0.459500
Cytosolic DNA-sensing pathway	0.208800
D-Glutamine and D-glutamate metabolism	0.326200
Dilated cardiomyopathy	0.067050
Dopaminergic synapse	-0.003907
Dorso-ventral axis formation	0.268900
Drug metabolism - cytochrome P450	-0.478700
Drug metabolism - other enzymes	0.030640
ECM-receptor interaction	0.205800
Endocrine and other factor-regulated calcium reabsorption	-0.175200
Endocytosis	0.599000
Endometrial cancer	0.484000
Epithelial cell signaling in Helicobacter pylori infection	0.163400
Epstein-Barr virus infection	0.357500
ErbB signaling pathway	0.323700
Estrogen signaling pathway	0.127600
Ether lipid metabolism	0.039850
Fanconi anemia pathway	0.554800
Fat digestion and absorption	0.292400
Fatty acid biosynthesis	0.350700
Fatty acid degradation	0.538700
Fatty acid elongation	0.275900
Fc epsilon RI signaling pathway	0.207400
Fc gamma R-mediated phagocytosis	0.341800
Folate biosynthesis	0.265500
FoxO signaling pathway	0.308700
Fructose and mannose metabolism	0.376700
GABAergic synapse	-0.539200
Galactose metabolism	0.361900
Gap junction	0.118500
Gastric acid secretion	0.155400
Glioma	0.378300
Glucagon signaling pathway	0.326400
Glutamatergic synapse	-0.233600
Glutathione metabolism	0.268200
Glycerolipid metabolism	0.559500
Glycerophospholipid metabolism	0.654700

Glycine, serine and threonine metabolism	-0.149900
Glycolysis / Gluconeogenesis	0.472400
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.397500
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.301900
Glycosaminoglycan degradation	0.344100
Glycosphingolipid biosynthesis - ganglio series	0.243000
Glycosphingolipid biosynthesis - globo series	-0.094750
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.382000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.404600
Glyoxylate and dicarboxylate metabolism	0.201900
GnRH signaling pathway	0.266300
Graft-versus-host disease	-0.327500
Hepatitis B	0.304000
Hepatitis C	0.397800
Herpes simplex infection	0.307600
HIF-1 signaling pathway	0.505800
Histidine metabolism	-0.353100
Huntington's disease	0.779900
Hypertrophic cardiomyopathy (HCM)	0.194100
Inflammatory bowel disease (IBD)	-0.182600
Inflammatory mediator regulation of TRP channels	0.097080
Influenza A	0.290000
Inositol phosphate metabolism	0.949800
Insulin resistance	0.337800
Insulin secretion	-0.153300
Insulin signaling pathway	0.431000
Intestinal immune network for IgA production	-0.215700
Legionellosis	-0.090740
Leishmaniasis	-0.070420
Leukocyte transendothelial migration	0.099990
Linoleic acid metabolism	-1.231000
Lipoic acid metabolism	-0.202000
Long-term depression	0.146400
Long-term potentiation	0.176700
Longevity regulating pathway	0.607500
Longevity regulating pathway - multiple species	0.530500
Lysine biosynthesis	-0.103400
Lysine degradation	0.622100
Malaria	-0.285600
Maturity onset diabetes of the young	-0.206800
Measles	0.178700
Melanogenesis	0.104500
Melanoma	0.243300
Metabolism of xenobiotics by cytochrome P450	-1.255000
Mineral absorption	-0.057190
Morphine addiction	-0.442100

mRNA surveillance pathway	0.613400
mTOR signaling pathway	0.272300
Mucin type O-Glycan biosynthesis	-0.530900
N-Glycan biosynthesis	0.570700
Natural killer cell mediated cytotoxicity	0.013510
Neuroactive ligand-receptor interaction	-0.447500
Neurotrophin signaling pathway	0.296000
NF-kappa B signaling pathway	0.158200
Nicotinate and nicotinamide metabolism	-0.159900
Nitrogen metabolism	0.601700
NOD-like receptor signaling pathway	0.201400
Non-alcoholic fatty liver disease (NAFLD)	0.184800
Non-small cell lung cancer	0.465700
Notch signaling pathway	0.203900
One carbon pool by folate	0.877700
Oocyte meiosis	0.618000
Osteoclast differentiation	0.104700
Ovarian steroidogenesis	-0.028140
Oxidative phosphorylation	0.465600
p53 signaling pathway	0.315700
Pancreatic cancer	0.455200
Pancreatic secretion	0.021750
Pantothenate and CoA biosynthesis	0.103200
Parkinson's disease	0.143600
Pathogenic Escherichia coli infection	0.256600
Pentose and glucuronate interconversions	-0.326600
Pentose phosphate pathway	0.069200
Peroxisome	0.110400
Pertussis	0.047410
Phagosome	0.935300
Phenylalanine metabolism	-0.120500
Phenylalanine, tyrosine and tryptophan biosynthesis	0.331800
Phosphatidylinositol signaling system	1.082000
Phospholipase D signaling pathway	0.245000
Phototransduction	-0.522500
Platelet activation	0.271300
Porphyrin and chlorophyll metabolism	-0.038650
Primary bile acid biosynthesis	-0.306600
Prion diseases	0.301700
Progesterone-mediated oocyte maturation	0.201400
Prolactin signaling pathway	0.325700
Propanoate metabolism	0.318600
Prostate cancer	0.434400
Protein processing in endoplasmic reticulum	0.403200
Proximal tubule bicarbonate reclamation	0.166500
Pyrimidine metabolism	1.004000

Pyruvate metabolism	0.421600
Regulation of autophagy	0.231300
Regulation of lipolysis in adipocytes	0.196200
Renal cell carcinoma	0.372200
Renin secretion	0.168700
Renin-angiotensin system	-0.205500
Retinol metabolism	-1.871000
Retrograde endocannabinoid signaling	-0.130200
Rheumatoid arthritis	-0.207000
Riboflavin metabolism	0.326500
Ribosome biogenesis in eukaryotes	0.306600
RIG-I-like receptor signaling pathway	0.252100
RNA degradation	0.732900
RNA transport	0.434800
Salivary secretion	0.034640
Salmonella infection	0.387500
Selenocompound metabolism	0.325900
Serotonergic synapse	-0.147400
Shigellosis	0.338400
Signaling pathways regulating pluripotency of stem cells	0.276600
Small cell lung cancer	0.549100
SNARE interactions in vesicular transport	0.362700
Sphingolipid metabolism	0.634100
Sphingolipid signaling pathway	0.363700
Staphylococcus aureus infection	-0.241700
Starch and sucrose metabolism	0.086230
Steroid biosynthesis	0.351000
Steroid hormone biosynthesis	-1.285000
Sulfur metabolism	0.506400
Sulfur relay system	0.232600
Synaptic vesicle cycle	0.558000
Synthesis and degradation of ketone bodies	0.062040
Systemic lupus erythematosus	-0.334000
T cell receptor signaling pathway	0.171500
Taste transduction	-0.333800
Taurine and hypotaurine metabolism	-0.358000
Terpenoid backbone biosynthesis	0.353500
TGF-beta signaling pathway	0.192100
Thiamine metabolism	0.078490
Thyroid cancer	0.319900
Thyroid hormone signaling pathway	0.575200
Thyroid hormone synthesis	-0.067000
Tight junction	0.295600
TNF signaling pathway	0.282400
Toll-like receptor signaling pathway	0.087530
Toxoplasmosis	0.284300

Transcriptional misregulation in cancer	0.086470
Tryptophan metabolism	-0.298700
Type I diabetes mellitus	-0.421500
Type II diabetes mellitus	0.142100
Tyrosine metabolism	-0.386100
Ubiquinone and other terpenoid-quinone biosynthesis	0.271800
Valine, leucine and isoleucine degradation	0.466300
Vascular smooth muscle contraction	0.129600
Vasopressin-regulated water reabsorption	-0.064550
VEGF signaling pathway	0.246100
Vibrio cholerae infection	0.366500
Viral carcinogenesis	0.337500
Viral myocarditis	0.132000
Vitamin B6 metabolism	0.002633
Vitamin digestion and absorption	-0.449500
Wnt signaling pathway	0.121500
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Acute myeloid leukemia	0.43100
Adherens junction	0.56390
Adipocytokine signaling pathway	0.23600
Adrenergic signaling in cardiomyocytes	-0.30470
African trypanosomiasis	-0.24640
AGE-RAGE signaling pathway in diabetic complications	0.26410
Alanine, aspartate and glutamate metabolism	0.56160
Aldosterone synthesis and secretion	0.16900
Aldosterone-regulated sodium reabsorption	0.12540
Allograft rejection	-0.17060
alpha-Linolenic acid metabolism	0.01279
Alzheimer's disease	0.30210
Amino sugar and nucleotide sugar metabolism	0.41310
Aminoacyl-tRNA biosynthesis	0.26900
Amoebiasis	-0.07763
Amphetamine addiction	-0.07970
AMPK signaling pathway	0.46830
Amyotrophic lateral sclerosis (ALS)	0.18190
Antigen processing and presentation	-0.14900
Apoptosis	0.32480
Arachidonic acid metabolism	-0.89600
Arginine and proline metabolism	-0.05943
Arginine biosynthesis	0.24160
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.31130
Ascorbate and aldarate metabolism	-0.56960
Asthma	-0.37410
Autoimmune thyroid disease	-0.40630
B cell receptor signaling pathway	0.13520
Bacterial invasion of epithelial cells	0.46310

Basal cell carcinoma	0.04187
beta-Alanine metabolism	-0.24960
Bile secretion	-0.04929
Biosynthesis of unsaturated fatty acids	0.10630
Biotin metabolism	0.25070
Bladder cancer	0.43560
Butanoate metabolism	0.16200
Caffeine metabolism	-0.40070
Carbohydrate digestion and absorption	0.03826
Cardiac muscle contraction	-0.20160
Cell adhesion molecules (CAMs)	-0.24060
Cell cycle	0.92890
Central carbon metabolism in cancer	0.52100
Chagas disease (American trypanosomiasis)	0.29020
Chemical carcinogenesis	-0.87820
Choline metabolism in cancer	0.31070
Cholinergic synapse	0.13870
Chronic myeloid leukemia	0.55100
Circadian entrainment	-0.04835
Circadian rhythm	0.51530
Citrate cycle (TCA cycle)	0.91690
Cocaine addiction	-0.00367
Colorectal cancer	0.39540
Complement and coagulation cascades	-0.25640
Cysteine and methionine metabolism	0.49920
Cytosolic DNA-sensing pathway	0.22010
D-Glutamine and D-glutamate metabolism	0.33290
Dilated cardiomyopathy	0.08611
Dopaminergic synapse	0.03035
Dorso-ventral axis formation	0.27560
Drug metabolism - cytochrome P450	-0.47600
Drug metabolism - other enzymes	0.06798
ECM-receptor interaction	0.21840
Endocrine and other factor-regulated calcium reabsorption	-0.11960
Endocytosis	0.61580
Endometrial cancer	0.49440
Epithelial cell signaling in Helicobacter pylori infection	0.16560
Epstein-Barr virus infection	0.36610
ErbB signaling pathway	0.32790
Estrogen signaling pathway	0.16380
Ether lipid metabolism	0.05559
Fanconi anemia pathway	0.63880
Fat digestion and absorption	0.31150
Fatty acid biosynthesis	0.35280
Fatty acid degradation	0.55090
Fatty acid elongation	0.27940

Fc epsilon RI signaling pathway	0.21440
Fc gamma R-mediated phagocytosis	0.34870
Folate biosynthesis	0.26590
FoxO signaling pathway	0.30950
Fructose and mannose metabolism	0.42540
GABAergic synapse	-0.48340
Galactose metabolism	0.36290
Gap junction	0.12260
Gastric acid secretion	0.17020
Glioma	0.38280
Glucagon signaling pathway	0.36500
Glutamatergic synapse	-0.17640
Glutathione metabolism	0.27440
Glycerolipid metabolism	0.59440
Glycerophospholipid metabolism	0.69320
Glycine, serine and threonine metabolism	-0.08987
Glycolysis / Gluconeogenesis	0.50870
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.40830
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.35750
Glycosaminoglycan degradation	0.34870
Glycosphingolipid biosynthesis - ganglio series	0.25230
Glycosphingolipid biosynthesis - globo series	-0.08943
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.30970
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.40940
Glyoxylate and dicarboxylate metabolism	0.23160
GnRH signaling pathway	0.28360
Graft-versus-host disease	-0.32370
Hepatitis B	0.31000
Hepatitis C	0.40270
Herpes simplex infection	0.30800
HIF-1 signaling pathway	0.51050
Histidine metabolism	-0.34440
Huntington's disease	0.78770
Hypertrophic cardiomyopathy (HCM)	0.20120
Inflammatory bowel disease (IBD)	-0.17620
Inflammatory mediator regulation of TRP channels	0.12410
Influenza A	0.29370
Inositol phosphate metabolism	1.01100
Insulin resistance	0.34300
Insulin secretion	-0.12750
Insulin signaling pathway	0.43800
Intestinal immune network for IgA production	-0.20220
Legionellosis	-0.08680
Leishmaniasis	-0.06280
Leukocyte transendothelial migration	0.11320
Linoleic acid metabolism	-1.23000

Lipoic acid metabolism	-0.15080
Long-term depression	0.16540
Long-term potentiation	0.21370
Longevity regulating pathway	0.64040
Longevity regulating pathway - multiple species	0.57910
Lysine biosynthesis	-0.10250
Lysine degradation	0.63120
Malaria	-0.19790
Maturity onset diabetes of the young	-0.19560
Measles	0.18060
Melanogenesis	0.11340
Melanoma	0.28380
Metabolism of xenobiotics by cytochrome P450	-1.19100
Mineral absorption	-0.04913
Morphine addiction	-0.34110
mRNA surveillance pathway	0.61490
mTOR signaling pathway	0.27980
Mucin type O-Glycan biosynthesis	-0.50470
N-Glycan biosynthesis	0.57790
Natural killer cell mediated cytotoxicity	0.01817
Neuroactive ligand-receptor interaction	-0.44540
Neurotrophin signaling pathway	0.30600
NF-kappa B signaling pathway	0.16760
Nicotinate and nicotinamide metabolism	-0.10680
Nitrogen metabolism	0.60640
NOD-like receptor signaling pathway	0.21970
Non-alcoholic fatty liver disease (NAFLD)	0.20290
Non-small cell lung cancer	0.48030
Notch signaling pathway	0.35610
One carbon pool by folate	0.95700
Oocyte meiosis	0.62270
Osteoclast differentiation	0.11050
Ovarian steroidogenesis	-0.01285
Oxidative phosphorylation	0.47590
p53 signaling pathway	0.33140
Pancreatic cancer	0.47640
Pancreatic secretion	0.02996
Pantothenate and CoA biosynthesis	0.10880
Parkinson's disease	0.19580
Pathogenic Escherichia coli infection	0.26820
Pentose and glucuronate interconversions	-0.30350
Pentose phosphate pathway	0.10060
Peroxisome	0.12260
Pertussis	0.07829
Phagosome	1.08200
Phenylalanine metabolism	-0.11860

Phenylalanine, tyrosine and tryptophan biosynthesis	0.33790
Phosphatidylinositol signaling system	1.25900
Phospholipase D signaling pathway	0.26780
Phototransduction	-0.46600
Platelet activation	0.27970
Porphyrin and chlorophyll metabolism	-0.01967
Primary bile acid biosynthesis	-0.28410
Prion diseases	0.30240
Progesterone-mediated oocyte maturation	0.23320
Prolactin signaling pathway	0.33360
Propanoate metabolism	0.33850
Prostate cancer	0.46610
Protein processing in endoplasmic reticulum	0.40560
Proximal tubule bicarbonate reclamation	0.16930
Pyrimidine metabolism	1.04000
Pyruvate metabolism	0.43480
Regulation of autophagy	0.24320
Regulation of lipolysis in adipocytes	0.20310
Renal cell carcinoma	0.39370
Renin secretion	0.20630
Renin-angiotensin system	-0.16310
Retinol metabolism	-1.83400
Retrograde endocannabinoid signaling	-0.08789
Rheumatoid arthritis	-0.17130
Riboflavin metabolism	0.33030
Ribosome biogenesis in eukaryotes	0.31680
RIG-I-like receptor signaling pathway	0.26140
RNA degradation	0.73440
RNA transport	0.43770
Salivary secretion	0.05459
Salmonella infection	0.39200
Selenocompound metabolism	0.32840
Serotonergic synapse	-0.13090
Shigellosis	0.34220
Signaling pathways regulating pluripotency of stem cells	0.29210
Small cell lung cancer	0.57190
SNARE interactions in vesicular transport	0.36610
Sphingolipid metabolism	0.64570
Sphingolipid signaling pathway	0.39090
Staphylococcus aureus infection	-0.19150
Starch and sucrose metabolism	0.14050
Steroid biosynthesis	0.35630
Steroid hormone biosynthesis	-1.26800
Sulfur metabolism	0.50690
Sulfur relay system	0.25350
Synaptic vesicle cycle	0.56580

Synthesis and degradation of ketone bodies	0.09597
Systemic lupus erythematosus	-0.32660
T cell receptor signaling pathway	0.17360
Taste transduction	-0.30940
Taurine and hypotaurine metabolism	-0.33640
Terpenoid backbone biosynthesis	0.37180
TGF-beta signaling pathway	0.20540
Thiamine metabolism	0.10780
Thyroid cancer	0.32530
Thyroid hormone signaling pathway	0.58610
Thyroid hormone synthesis	-0.01800
Tight junction	0.30890
TNF signaling pathway	0.28960
Toll-like receptor signaling pathway	0.09749
Toxoplasmosis	0.28780
Transcriptional misregulation in cancer	0.10220
Tryptophan metabolism	-0.28520
Type I diabetes mellitus	-0.41840
Type II diabetes mellitus	0.16230
Tyrosine metabolism	-0.37910
Ubiquinone and other terpenoid-quinone biosynthesis	0.27830
Valine, leucine and isoleucine degradation	0.52010
Vascular smooth muscle contraction	0.14900
Vasopressin-regulated water reabsorption	-0.06379
VEGF signaling pathway	0.25030
Vibrio cholerae infection	0.38300
Viral carcinogenesis	0.34490
Viral myocarditis	0.13200
Vitamin B6 metabolism	0.03600
Vitamin digestion and absorption	-0.43710
Wnt signaling pathway	0.13120
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Acute myeloid leukemia	0.437200
Adherens junction	0.572300
Adipocytokine signaling pathway	0.247100
Adrenergic signaling in cardiomyocytes	-0.248900
African trypanosomiasis	-0.211100
AGE-RAGE signaling pathway in diabetic complications	0.277400
Alanine, aspartate and glutamate metabolism	0.584800
Aldosterone synthesis and secretion	0.176400
Aldosterone-regulated sodium reabsorption	0.152700
Allograft rejection	-0.163900
alpha-Linolenic acid metabolism	0.023350
Alzheimer's disease	0.304500
Amino sugar and nucleotide sugar metabolism	0.431700
Aminoacyl-tRNA biosynthesis	0.294200

Amoebiasis	-0.069690
Amphetamine addiction	-0.056590
AMPK signaling pathway	0.474300
Amyotrophic lateral sclerosis (ALS)	0.185800
Antigen processing and presentation	-0.127200
Apoptosis	0.333200
Arachidonic acid metabolism	-0.853100
Arginine and proline metabolism	-0.039160
Arginine biosynthesis	0.268400
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.337600
Ascorbate and aldarate metabolism	-0.541800
Asthma	-0.371300
Autoimmune thyroid disease	-0.403500
B cell receptor signaling pathway	0.146100
Bacterial invasion of epithelial cells	0.480400
Basal cell carcinoma	0.046180
beta-Alanine metabolism	-0.223800
Bile secretion	-0.037730
Biosynthesis of unsaturated fatty acids	0.122600
Biotin metabolism	0.257300
Bladder cancer	0.443900
Butanoate metabolism	0.170200
Caffeine metabolism	-0.393800
Carbohydrate digestion and absorption	0.065030
Cardiac muscle contraction	-0.185600
Cell adhesion molecules (CAMs)	-0.224800
Cell cycle	0.949900
Central carbon metabolism in cancer	0.523500
Chagas disease (American trypanosomiasis)	0.297400
Chemical carcinogenesis	-0.856700
Choline metabolism in cancer	0.316400
Cholinergic synapse	0.179300
Chronic myeloid leukemia	0.563000
Circadian entrainment	-0.040960
Circadian rhythm	0.517300
Citrate cycle (TCA cycle)	0.920700
Cocaine addiction	0.020780
Colorectal cancer	0.404800
Complement and coagulation cascades	-0.241800
Cysteine and methionine metabolism	0.521900
Cytosolic DNA-sensing pathway	0.236200
D-Glutamine and D-glutamate metabolism	0.343500
Dilated cardiomyopathy	0.111000
Dopaminergic synapse	0.046550
Dorso-ventral axis formation	0.292400
Drug metabolism - cytochrome P450	-0.473500

Drug metabolism - other enzymes	0.081360
ECM-receptor interaction	0.258700
Endocrine and other factor-regulated calcium reabsorption	-0.098620
Endocytosis	0.631300
Endometrial cancer	0.511700
Epithelial cell signaling in Helicobacter pylori infection	0.173500
Epstein-Barr virus infection	0.369700
ErbB signaling pathway	0.354000
Estrogen signaling pathway	0.187100
Ether lipid metabolism	0.094050
Fanconi anemia pathway	0.681600
Fat digestion and absorption	0.318400
Fatty acid biosynthesis	0.363700
Fatty acid degradation	0.571600
Fatty acid elongation	0.292900
Fc epsilon RI signaling pathway	0.224800
Fc gamma R-mediated phagocytosis	0.351800
Folate biosynthesis	0.275700
FoxO signaling pathway	0.310300
Fructose and mannose metabolism	0.465500
GABAergic synapse	-0.418000
Galactose metabolism	0.367000
Gap junction	0.129700
Gastric acid secretion	0.191300
Glioma	0.409100
Glucagon signaling pathway	0.392000
Glutamatergic synapse	-0.132700
Glutathione metabolism	0.282100
Glycerolipid metabolism	0.608500
Glycerophospholipid metabolism	0.727800
Glycine, serine and threonine metabolism	-0.039600
Glycolysis / Gluconeogenesis	0.533000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.421600
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.402500
Glycosaminoglycan degradation	0.370700
Glycosphingolipid biosynthesis - ganglio series	0.256700
Glycosphingolipid biosynthesis - globo series	-0.085470
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.262900
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.433100
Glyoxylate and dicarboxylate metabolism	0.246500
GnRH signaling pathway	0.291700
Graft-versus-host disease	-0.311200
Hepatitis B	0.318300
Hepatitis C	0.404500
Herpes simplex infection	0.320500
HIF-1 signaling pathway	0.517200

Histidine metabolism	-0.339600
Huntington's disease	0.800600
Hypertrophic cardiomyopathy (HCM)	0.204400
Inflammatory bowel disease (IBD)	-0.169500
Inflammatory mediator regulation of TRP channels	0.136800
Influenza A	0.309900
Inositol phosphate metabolism	1.048000
Insulin resistance	0.346700
Insulin secretion	-0.112200
Insulin signaling pathway	0.450600
Intestinal immune network for IgA production	-0.197100
Legionellosis	-0.083030
Leishmaniasis	-0.051560
Leukocyte transendothelial migration	0.120400
Linoleic acid metabolism	-1.229000
Lipoic acid metabolism	-0.110600
Long-term depression	0.200000
Long-term potentiation	0.242300
Longevity regulating pathway	0.651800
Longevity regulating pathway - multiple species	0.602200
Lysine biosynthesis	-0.093210
Lysine degradation	0.635600
Malaria	-0.163800
Maturity onset diabetes of the young	-0.172400
Measles	0.184000
Melanogenesis	0.126000
Melanoma	0.302300
Metabolism of xenobiotics by cytochrome P450	-1.133000
Mineral absorption	-0.032990
Morphine addiction	-0.277000
mRNA surveillance pathway	0.615500
mTOR signaling pathway	0.288900
Mucin type O-Glycan biosynthesis	-0.455400
N-Glycan biosynthesis	0.644500
Natural killer cell mediated cytotoxicity	0.024950
Neuroactive ligand-receptor interaction	-0.406900
Neurotrophin signaling pathway	0.321200
NF-kappa B signaling pathway	0.177000
Nicotinate and nicotinamide metabolism	-0.077320
Nitrogen metabolism	0.613500
NOD-like receptor signaling pathway	0.228700
Non-alcoholic fatty liver disease (NAFLD)	0.213200
Non-small cell lung cancer	0.495100
Notch signaling pathway	0.418400
One carbon pool by folate	0.990700
Oocyte meiosis	0.637800

Osteoclast differentiation	0.113400
Ovarian steroidogenesis	0.020730
Oxidative phosphorylation	0.480800
p53 signaling pathway	0.337300
Pancreatic cancer	0.484000
Pancreatic secretion	0.060700
Pantothenate and CoA biosynthesis	0.111600
Parkinson's disease	0.215100
Pathogenic Escherichia coli infection	0.301000
Pentose and glucuronate interconversions	-0.285100
Pentose phosphate pathway	0.198600
Peroxisome	0.128800
Pertussis	0.089160
Phagosome	1.158000
Phenylalanine metabolism	-0.106300
Phenylalanine, tyrosine and tryptophan biosynthesis	0.341600
Phosphatidylinositol signaling system	1.326000
Phospholipase D signaling pathway	0.301500
Phototransduction	-0.408700
Platelet activation	0.293200
Porphyrin and chlorophyll metabolism	-0.009479
Primary bile acid biosynthesis	-0.272500
Prion diseases	0.310700
Progesterone-mediated oocyte maturation	0.244200
Prolactin signaling pathway	0.336700
Propanoate metabolism	0.350100
Prostate cancer	0.477600
Protein processing in endoplasmic reticulum	0.421800
Proximal tubule bicarbonate reclamation	0.176800
Pyrimidine metabolism	1.055000
Pyruvate metabolism	0.473500
Regulation of autophagy	0.247800
Regulation of lipolysis in adipocytes	0.208400
Renal cell carcinoma	0.414600
Renin secretion	0.219500
Renin-angiotensin system	-0.136600
Retinol metabolism	-1.814000
Retrograde endocannabinoid signaling	-0.042330
Rheumatoid arthritis	-0.151100
Riboflavin metabolism	0.355800
Ribosome biogenesis in eukaryotes	0.326500
RIG-I-like receptor signaling pathway	0.275000
RNA degradation	0.735000
RNA transport	0.441000
Salivary secretion	0.061390
Salmonella infection	0.416100

Selenocompound metabolism	0.344100
Serotonergic synapse	-0.117300
Shigellosis	0.372500
Signaling pathways regulating pluripotency of stem cells	0.322400
Small cell lung cancer	0.604100
SNARE interactions in vesicular transport	0.400800
Sphingolipid metabolism	0.750000
Sphingolipid signaling pathway	0.407900
Staphylococcus aureus infection	-0.172800
Starch and sucrose metabolism	0.167000
Steroid biosynthesis	0.382500
Steroid hormone biosynthesis	-1.183000
Sulfur metabolism	0.523300
Sulfur relay system	0.278100
Synaptic vesicle cycle	0.580600
Synthesis and degradation of ketone bodies	0.111800
Systemic lupus erythematosus	-0.309700
T cell receptor signaling pathway	0.180800
Taste transduction	-0.299100
Taurine and hypotaurine metabolism	-0.314800
Terpenoid backbone biosynthesis	0.385800
TGF-beta signaling pathway	0.222700
Thiamine metabolism	0.125000
Thyroid cancer	0.338300
Thyroid hormone signaling pathway	0.606700
Thyroid hormone synthesis	0.003465
Tight junction	0.316300
TNF signaling pathway	0.294100
Toll-like receptor signaling pathway	0.103400
Toxoplasmosis	0.292400
Transcriptional misregulation in cancer	0.113200
Tryptophan metabolism	-0.278900
Type I diabetes mellitus	-0.405300
Type II diabetes mellitus	0.173300
Tyrosine metabolism	-0.352400
Ubiquinone and other terpenoid-quinone biosynthesis	0.292800
Valine, leucine and isoleucine degradation	0.547200
Vascular smooth muscle contraction	0.166900
Vasopressin-regulated water reabsorption	-0.043810
VEGF signaling pathway	0.267600
Vibrio cholerae infection	0.389100
Viral carcinogenesis	0.349000
Viral myocarditis	0.147400
Vitamin B6 metabolism	0.053650
Vitamin digestion and absorption	-0.425600
Wnt signaling pathway	0.144700

	sample.Mean
Acute myeloid leukemia	0.433400
Adherens junction	0.566600
Adipocytokine signaling pathway	0.244500
Adrenergic signaling in cardiomyocytes	-0.267400
African trypanosomiasis	-0.208600
AGE-RAGE signaling pathway in diabetic complications	0.275400
Alanine, aspartate and glutamate metabolism	0.580500
Aldosterone synthesis and secretion	0.170600
Aldosterone-regulated sodium reabsorption	0.152200
Allograft rejection	-0.165000
alpha-Linolenic acid metabolism	0.030850
Alzheimer's disease	0.306100
Amino sugar and nucleotide sugar metabolism	0.424300
Aminoacyl-tRNA biosynthesis	0.283200
Amoebiasis	-0.067970
Amphetamine addiction	-0.057190
AMPK signaling pathway	0.476900
Amyotrophic lateral sclerosis (ALS)	0.188000
Antigen processing and presentation	-0.131700
Apoptosis	0.336100
Arachidonic acid metabolism	-0.855000
Arginine and proline metabolism	-0.046430
Arginine biosynthesis	0.260200
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.317000
Ascorbate and aldarate metabolism	-0.557300
Asthma	-0.373100
Autoimmune thyroid disease	-0.393300
B cell receptor signaling pathway	0.140900
Bacterial invasion of epithelial cells	0.479000
Basal cell carcinoma	0.058910
beta-Alanine metabolism	-0.210000
Bile secretion	-0.028470
Biosynthesis of unsaturated fatty acids	0.150100
Biotin metabolism	0.259000
Bladder cancer	0.447200
Butanoate metabolism	0.166100
Caffeine metabolism	-0.390400
Carbohydrate digestion and absorption	0.070840
Cardiac muscle contraction	-0.192300
Cell adhesion molecules (CAMs)	-0.222600
Cell cycle	0.952600
Central carbon metabolism in cancer	0.523400
Chagas disease (American trypanosomiasis)	0.297900
Chemical carcinogenesis	-0.851700
Choline metabolism in cancer	0.316500

Cholinergic synapse	0.173600
Chronic myeloid leukemia	0.565400
Circadian entrainment	-0.032680
Circadian rhythm	0.519500
Citrate cycle (TCA cycle)	0.921000
Cocaine addiction	0.007941
Colorectal cancer	0.403100
Complement and coagulation cascades	-0.237500
Cysteine and methionine metabolism	0.514100
Cytosolic DNA-sensing pathway	0.234300
D-Glutamine and D-glutamate metabolism	0.343600
Dilated cardiomyopathy	0.120000
Dopaminergic synapse	0.040610
Dorso-ventral axis formation	0.290400
Drug metabolism - cytochrome P450	-0.471000
Drug metabolism - other enzymes	0.069820
ECM-receptor interaction	0.291800
Endocrine and other factor-regulated calcium reabsorption	-0.112500
Endocytosis	0.625900
Endometrial cancer	0.512100
Epithelial cell signaling in Helicobacter pylori infection	0.175500
Epstein-Barr virus infection	0.368400
ErbB signaling pathway	0.354500
Estrogen signaling pathway	0.178300
Ether lipid metabolism	0.128800
Fanconi anemia pathway	0.655000
Fat digestion and absorption	0.316700
Fatty acid biosynthesis	0.364600
Fatty acid degradation	0.569100
Fatty acid elongation	0.295100
Fc epsilon RI signaling pathway	0.228900
Fc gamma R-mediated phagocytosis	0.353900
Folate biosynthesis	0.277000
FoxO signaling pathway	0.312300
Fructose and mannose metabolism	0.460900
GABAergic synapse	-0.429500
Galactose metabolism	0.405400
Gap junction	0.129100
Gastric acid secretion	0.190500
Glioma	0.408800
Glucagon signaling pathway	0.385800
Glutamatergic synapse	-0.150700
Glutathione metabolism	0.290300
Glycerolipid metabolism	0.620200
Glycerophospholipid metabolism	0.755300
Glycine, serine and threonine metabolism	-0.047450

Glycolysis / Gluconeogenesis	0.535000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.423200
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.385700
Glycosaminoglycan degradation	0.370500
Glycosphingolipid biosynthesis - ganglio series	0.255100
Glycosphingolipid biosynthesis - globo series	-0.085650
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.258400
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.437100
Glyoxylate and dicarboxylate metabolism	0.236700
GnRH signaling pathway	0.286200
Graft-versus-host disease	-0.309500
Hepatitis B	0.319300
Hepatitis C	0.407600
Herpes simplex infection	0.323700
HIF-1 signaling pathway	0.523800
Histidine metabolism	-0.339100
Huntington's disease	0.802800
Hypertrophic cardiomyopathy (HCM)	0.205600
Inflammatory bowel disease (IBD)	-0.170700
Inflammatory mediator regulation of TRP channels	0.131100
Influenza A	0.310800
Inositol phosphate metabolism	1.031000
Insulin resistance	0.351100
Insulin secretion	-0.112800
Insulin signaling pathway	0.448300
Intestinal immune network for IgA production	-0.200200
Legionellosis	-0.082330
Leishmaniasis	-0.052330
Leukocyte transendothelial migration	0.125100
Linoleic acid metabolism	-1.218000
Lipoic acid metabolism	-0.123900
Long-term depression	0.195000
Long-term potentiation	0.230700
Longevity regulating pathway	0.641500
Longevity regulating pathway - multiple species	0.590600
Lysine biosynthesis	-0.053640
Lysine degradation	0.635000
Malaria	-0.177200
Maturity onset diabetes of the young	-0.175900
Measles	0.185300
Melanogenesis	0.129200
Melanoma	0.334300
Metabolism of xenobiotics by cytochrome P450	-1.154000
Mineral absorption	-0.034030
Morphine addiction	-0.288000
mRNA surveillance pathway	0.616700

mTOR signaling pathway	0.288400
Mucin type O-Glycan biosynthesis	-0.440200
N-Glycan biosynthesis	0.645400
Natural killer cell mediated cytotoxicity	0.029310
Neuroactive ligand-receptor interaction	-0.407300
Neurotrophin signaling pathway	0.320900
NF-kappa B signaling pathway	0.178800
Nicotinate and nicotinamide metabolism	-0.091340
Nitrogen metabolism	0.612100
NOD-like receptor signaling pathway	0.226900
Non-alcoholic fatty liver disease (NAFLD)	0.214500
Non-small cell lung cancer	0.492400
Notch signaling pathway	0.374100
One carbon pool by folate	0.971600
Oocyte meiosis	0.645900
Osteoclast differentiation	0.115900
Ovarian steroidogenesis	0.025790
Oxidative phosphorylation	0.478900
p53 signaling pathway	0.335900
Pancreatic cancer	0.480500
Pancreatic secretion	0.073910
Pantothenate and CoA biosynthesis	0.111500
Parkinson's disease	0.202300
Pathogenic Escherichia coli infection	0.297200
Pentose and glucuronate interconversions	-0.285400
Pentose phosphate pathway	0.228500
Peroxisome	0.127200
Pertussis	0.086340
Phagosome	1.126000
Phenylalanine metabolism	-0.104500
Phenylalanine, tyrosine and tryptophan biosynthesis	0.340300
Phosphatidylinositol signaling system	1.276000
Phospholipase D signaling pathway	0.295700
Phototransduction	-0.421000
Platelet activation	0.293100
Porphyrin and chlorophyll metabolism	-0.010990
Primary bile acid biosynthesis	-0.275700
Prion diseases	0.319500
Progesterone-mediated oocyte maturation	0.234400
Prolactin signaling pathway	0.336700
Propanoate metabolism	0.349100
Prostate cancer	0.467100
Protein processing in endoplasmic reticulum	0.422200
Proximal tubule bicarbonate reclamation	0.176100
Pyrimidine metabolism	1.080000
Pyruvate metabolism	0.474900

Regulation of autophagy	0.244200
Regulation of lipolysis in adipocytes	0.212400
Renal cell carcinoma	0.413900
Renin secretion	0.209900
Renin-angiotensin system	-0.083320
Retinol metabolism	-1.799000
Retrograde endocannabinoid signaling	-0.034470
Rheumatoid arthritis	-0.159200
Riboflavin metabolism	0.355400
Ribosome biogenesis in eukaryotes	0.326900
RIG-I-like receptor signaling pathway	0.274600
RNA degradation	0.738000
RNA transport	0.445900
Salivary secretion	0.057850
Salmonella infection	0.418400
Selenocompound metabolism	0.349800
Serotonergic synapse	-0.110300
Shigellosis	0.379600
Signaling pathways regulating pluripotency of stem cells	0.320600
Small cell lung cancer	0.600600
SNARE interactions in vesicular transport	0.400000
Sphingolipid metabolism	0.771700
Sphingolipid signaling pathway	0.404600
Staphylococcus aureus infection	-0.178000
Starch and sucrose metabolism	0.150600
Steroid biosynthesis	0.392800
Steroid hormone biosynthesis	-1.165000
Sulfur metabolism	0.524300
Sulfur relay system	0.277200
Synaptic vesicle cycle	0.580600
Synthesis and degradation of ketone bodies	0.109400
Systemic lupus erythematosus	-0.302800
T cell receptor signaling pathway	0.180500
Taste transduction	-0.298100
Taurine and hypotaurine metabolism	-0.320000
Terpenoid backbone biosynthesis	0.381200
TGF-beta signaling pathway	0.220700
Thiamine metabolism	0.119500
Thyroid cancer	0.339200
Thyroid hormone signaling pathway	0.605300
Thyroid hormone synthesis	-0.011980
Tight junction	0.314000
TNF signaling pathway	0.293200
Toll-like receptor signaling pathway	0.103100
Toxoplasmosis	0.293300
Transcriptional misregulation in cancer	0.108300

Tryptophan metabolism	-0.277500
Type I diabetes mellitus	-0.394300
Type II diabetes mellitus	0.169200
Tyrosine metabolism	-0.344000
Ubiquinone and other terpenoid-quinone biosynthesis	0.293500
Valine, leucine and isoleucine degradation	0.533000
Vascular smooth muscle contraction	0.161200
Vasopressin-regulated water reabsorption	-0.017300
VEGF signaling pathway	0.267000
Vibrio cholerae infection	0.390800
Viral carcinogenesis	0.350200
Viral myocarditis	0.149900
Vitamin B6 metabolism	0.062810
Vitamin digestion and absorption	-0.426900
Wnt signaling pathway	0.147600
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Acute myeloid leukemia	0.4397000
Adherens junction	0.5751000
Adipocytokine signaling pathway	0.2555000
Adrenergic signaling in cardiomyocytes	-0.2115000
African trypanosomiasis	-0.1732000
AGE-RAGE signaling pathway in diabetic complications	0.2887000
Alanine, aspartate and glutamate metabolism	0.6036000
Aldosterone synthesis and secretion	0.1780000
Aldosterone-regulated sodium reabsorption	0.1796000
Allograft rejection	-0.1583000
alpha-Linolenic acid metabolism	0.0414100
Alzheimer's disease	0.3086000
Amino sugar and nucleotide sugar metabolism	0.4429000
Aminoacyl-tRNA biosynthesis	0.3084000
Amoebiasis	-0.0600300
Amphetamine addiction	-0.0340700
AMPK signaling pathway	0.4828000
Amyotrophic lateral sclerosis (ALS)	0.1919000
Antigen processing and presentation	-0.1099000
Apoptosis	0.3445000
Arachidonic acid metabolism	-0.8122000
Arginine and proline metabolism	-0.0261600
Arginine biosynthesis	0.2869000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.3433000
Ascorbate and aldarate metabolism	-0.5295000
Asthma	-0.3703000
Autoimmune thyroid disease	-0.3905000
B cell receptor signaling pathway	0.1518000
Bacterial invasion of epithelial cells	0.4963000
Basal cell carcinoma	0.0632100

beta-Alanine metabolism	-0.1841000
Bile secretion	-0.0169100
Biosynthesis of unsaturated fatty acids	0.1664000
Biotin metabolism	0.2656000
Bladder cancer	0.4555000
Butanoate metabolism	0.1744000
Caffeine metabolism	-0.3834000
Carbohydrate digestion and absorption	0.0976200
Cardiac muscle contraction	-0.1764000
Cell adhesion molecules (CAMs)	-0.2068000
Cell cycle	0.9737000
Central carbon metabolism in cancer	0.5259000
Chagas disease (American trypanosomiasis)	0.3052000
Chemical carcinogenesis	-0.8302000
Choline metabolism in cancer	0.3223000
Cholinergic synapse	0.2141000
Chronic myeloid leukemia	0.5773000
Circadian entrainment	-0.0252900
Circadian rhythm	0.5216000
Citrate cycle (TCA cycle)	0.9248000
Cocaine addiction	0.0323900
Colorectal cancer	0.4126000
Complement and coagulation cascades	-0.2230000
Cysteine and methionine metabolism	0.5368000
Cytosolic DNA-sensing pathway	0.2504000
D-Glutamine and D-glutamate metabolism	0.3542000
Dilated cardiomyopathy	0.1449000
Dopaminergic synapse	0.0568000
Dorso-ventral axis formation	0.3072000
Drug metabolism - cytochrome P450	-0.4684000
Drug metabolism - other enzymes	0.0832000
ECM-receptor interaction	0.3322000
Endocrine and other factor-regulated calcium reabsorption	-0.0915500
Endocytosis	0.6413000
Endometrial cancer	0.5294000
Epithelial cell signaling in Helicobacter pylori infection	0.1835000
Epstein-Barr virus infection	0.3721000
ErbB signaling pathway	0.3806000
Estrogen signaling pathway	0.2016000
Ether lipid metabolism	0.1673000
Fanconi anemia pathway	0.6977000
Fat digestion and absorption	0.3235000
Fatty acid biosynthesis	0.3755000
Fatty acid degradation	0.5897000
Fatty acid elongation	0.3086000
Fc epsilon RI signaling pathway	0.2392000

Fc gamma R-mediated phagocytosis	0.3570000
Folate biosynthesis	0.2868000
FoxO signaling pathway	0.3132000
Fructose and mannose metabolism	0.5011000
GABAergic synapse	-0.3642000
Galactose metabolism	0.4094000
Gap junction	0.1363000
Gastric acid secretion	0.2116000
Glioma	0.4351000
Glucagon signaling pathway	0.4129000
Glutamatergic synapse	-0.1070000
Glutathione metabolism	0.2980000
Glycerolipid metabolism	0.6344000
Glycerophospholipid metabolism	0.7899000
Glycine, serine and threonine metabolism	0.0028230
Glycolysis / Gluconeogenesis	0.5593000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.4365000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.4307000
Glycosaminoglycan degradation	0.3925000
Glycosphingolipid biosynthesis - ganglio series	0.2595000
Glycosphingolipid biosynthesis - globo series	-0.0817000
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.2116000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.4608000
Glyoxylate and dicarboxylate metabolism	0.2517000
GnRH signaling pathway	0.2943000
Graft-versus-host disease	-0.2969000
Hepatitis B	0.3277000
Hepatitis C	0.4095000
Herpes simplex infection	0.3363000
HIF-1 signaling pathway	0.5305000
Histidine metabolism	-0.3343000
Huntington's disease	0.8157000
Hypertrophic cardiomyopathy (HCM)	0.2088000
Inflammatory bowel disease (IBD)	-0.1640000
Inflammatory mediator regulation of TRP channels	0.1437000
Influenza A	0.3270000
Inositol phosphate metabolism	1.0670000
Insulin resistance	0.3548000
Insulin secretion	-0.0975500
Insulin signaling pathway	0.4609000
Intestinal immune network for IgA production	-0.1951000
Legionellosis	-0.0785600
Leishmaniasis	-0.0410900
Leukocyte transendothelial migration	0.1323000
Linoleic acid metabolism	-1.2170000
Lipoic acid metabolism	-0.0836300

Long-term depression	0.2296000
Long-term potentiation	0.2592000
Longevity regulating pathway	0.6530000
Longevity regulating pathway - multiple species	0.6138000
Lysine biosynthesis	-0.0443700
Lysine degradation	0.6393000
Malaria	-0.1431000
Maturity onset diabetes of the young	-0.1527000
Measles	0.1887000
Melanogenesis	0.1418000
Melanoma	0.3528000
Metabolism of xenobiotics by cytochrome P450	-1.0970000
Mineral absorption	-0.0178900
Morphine addiction	-0.2239000
mRNA surveillance pathway	0.6174000
mTOR signaling pathway	0.2976000
Mucin type O-Glycan biosynthesis	-0.3909000
N-Glycan biosynthesis	0.7120000
Natural killer cell mediated cytotoxicity	0.0361000
Neuroactive ligand-receptor interaction	-0.3689000
Neurotrophin signaling pathway	0.3362000
NF-kappa B signaling pathway	0.1882000
Nicotinate and nicotinamide metabolism	-0.0618900
Nitrogen metabolism	0.6193000
NOD-like receptor signaling pathway	0.2359000
Non-alcoholic fatty liver disease (NAFLD)	0.2247000
Non-small cell lung cancer	0.5072000
Notch signaling pathway	0.4364000
One carbon pool by folate	1.0050000
Oocyte meiosis	0.6610000
Osteoclast differentiation	0.1189000
Ovarian steroidogenesis	0.0593700
Oxidative phosphorylation	0.4838000
p53 signaling pathway	0.3418000
Pancreatic cancer	0.4881000
Pancreatic secretion	0.1046000
Pantothenate and CoA biosynthesis	0.1143000
Parkinson's disease	0.2216000
Pathogenic Escherichia coli infection	0.3300000
Pentose and glucuronate interconversions	-0.2671000
Pentose phosphate pathway	0.3265000
Peroxisome	0.1334000
Pertussis	0.0972000
Phagosome	1.2020000
Phenylalanine metabolism	-0.0923000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.3440000

Phosphatidylinositol signaling system	1.3430000
Phospholipase D signaling pathway	0.3294000
Phototransduction	-0.3637000
Platelet activation	0.3066000
Porphyrin and chlorophyll metabolism	-0.0007985
Primary bile acid biosynthesis	-0.2642000
Prion diseases	0.3279000
Progesterone-mediated oocyte maturation	0.2454000
Prolactin signaling pathway	0.3397000
Propanoate metabolism	0.3607000
Prostate cancer	0.4786000
Protein processing in endoplasmic reticulum	0.4385000
Proximal tubule bicarbonate reclamation	0.1836000
Pyrimidine metabolism	1.0950000
Pyruvate metabolism	0.5136000
Regulation of autophagy	0.2487000
Regulation of lipolysis in adipocytes	0.2177000
Renal cell carcinoma	0.4347000
Renin secretion	0.2231000
Renin-angiotensin system	-0.0568100
Retinol metabolism	-1.7800000
Retrograde endocannabinoid signaling	0.0110800
Rheumatoid arthritis	-0.1390000
Riboflavin metabolism	0.3809000
Ribosome biogenesis in eukaryotes	0.3366000
RIG-I-like receptor signaling pathway	0.2882000
RNA degradation	0.7386000
RNA transport	0.4491000
Salivary secretion	0.0646600
Salmonella infection	0.4425000
Selenocompound metabolism	0.3655000
Serotonergic synapse	-0.0967100
Shigellosis	0.4099000
Signaling pathways regulating pluripotency of stem cells	0.3509000
Small cell lung cancer	0.6328000
SNARE interactions in vesicular transport	0.4348000
Sphingolipid metabolism	0.8760000
Sphingolipid signaling pathway	0.4216000
Staphylococcus aureus infection	-0.1593000
Starch and sucrose metabolism	0.1771000
Steroid biosynthesis	0.4189000
Steroid hormone biosynthesis	-1.0800000
Sulfur metabolism	0.5407000
Sulfur relay system	0.3017000
Synaptic vesicle cycle	0.5954000
Synthesis and degradation of ketone bodies	0.1253000

Systemic lupus erythematosus	-0.2859000
T cell receptor signaling pathway	0.1877000
Taste transduction	-0.2879000
Taurine and hypotaurine metabolism	-0.2984000
Terpenoid backbone biosynthesis	0.3952000
TGF-beta signaling pathway	0.2381000
Thiamine metabolism	0.1367000
Thyroid cancer	0.3523000
Thyroid hormone signaling pathway	0.6260000
Thyroid hormone synthesis	0.0094840
Tight junction	0.3214000
TNF signaling pathway	0.2977000
Toll-like receptor signaling pathway	0.1090000
Toxoplasmosis	0.2979000
Transcriptional misregulation in cancer	0.1193000
Tryptophan metabolism	-0.2712000
Type I diabetes mellitus	-0.3812000
Type II diabetes mellitus	0.1802000
Tyrosine metabolism	-0.3173000
Ubiquinone and other terpenoid-quinone biosynthesis	0.3080000
Valine, leucine and isoleucine degradation	0.5601000
Vascular smooth muscle contraction	0.1791000
Vasopressin-regulated water reabsorption	0.0026760
VEGF signaling pathway	0.2843000
Vibrio cholerae infection	0.3969000
Viral carcinogenesis	0.3543000
Viral myocarditis	0.1653000
Vitamin B6 metabolism	0.0804600
Vitamin digestion and absorption	-0.4154000
Wnt signaling pathway	0.1611000
sample.Max.	
Acute myeloid leukemia	0.441000
Adherens junction	0.578600
Adipocytokine signaling pathway	0.258400
Adrenergic signaling in cardiomyocytes	-0.189300
African trypanosomiasis	-0.157900
AGE-RAGE signaling pathway in diabetic complications	0.298400
Alanine, aspartate and glutamate metabolism	0.606000
Aldosterone synthesis and secretion	0.181400
Aldosterone-regulated sodium reabsorption	0.183400
Allograft rejection	-0.148100
alpha-Linolenic acid metabolism	0.065700
Alzheimer's disease	0.315300
Amino sugar and nucleotide sugar metabolism	0.459900
Aminoacyl-tRNA biosynthesis	0.317800
Amoebiasis	-0.054380

Amphetamine addiction	-0.033780
AMPK signaling pathway	0.490900
Amyotrophic lateral sclerosis (ALS)	0.207500
Antigen processing and presentation	-0.106000
Apoptosis	0.361800
Arachidonic acid metabolism	-0.802100
Arginine and proline metabolism	-0.014370
Arginine biosynthesis	0.314500
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.343900
Ascorbate and aldarate metabolism	-0.529500
Asthma	-0.367800
Autoimmune thyroid disease	-0.354900
B cell receptor signaling pathway	0.154800
Bacterial invasion of epithelial cells	0.497100
Basal cell carcinoma	0.108000
beta-Alanine metabolism	-0.130200
Bile secretion	0.016630
Biosynthesis of unsaturated fatty acids	0.266000
Biotin metabolism	0.274800
Bladder cancer	0.478000
Butanoate metabolism	0.184200
Caffeine metabolism	-0.353800
Carbohydrate digestion and absorption	0.142200
Cardiac muscle contraction	-0.176300
Cell adhesion molecules (CAMs)	-0.200100
Cell cycle	0.994400
Central carbon metabolism in cancer	0.531300
Chagas disease (American trypanosomiasis)	0.307900
Chemical carcinogenesis	-0.808400
Choline metabolism in cancer	0.324100
Cholinergic synapse	0.222100
Chronic myeloid leukemia	0.585500
Circadian entrainment	0.008948
Circadian rhythm	0.530800
Citrate cycle (TCA cycle)	0.928800
Cocaine addiction	0.041760
Colorectal cancer	0.419300
Complement and coagulation cascades	-0.203500
Cysteine and methionine metabolism	0.553000
Cytosolic DNA-sensing pathway	0.256100
D-Glutamine and D-glutamate metabolism	0.361400
Dilated cardiomyopathy	0.190800
Dopaminergic synapse	0.073230
Dorso-ventral axis formation	0.307900
Drug metabolism - cytochrome P450	-0.458100
Drug metabolism - other enzymes	0.085890

ECM-receptor interaction	0.444100
Endocrine and other factor-regulated calcium reabsorption	-0.077590
Endocytosis	0.641900
Endometrial cancer	0.540900
Epithelial cell signaling in Helicobacter pylori infection	0.191500
Epstein-Barr virus infection	0.376800
ErbB signaling pathway	0.386200
Estrogen signaling pathway	0.211400
Ether lipid metabolism	0.287200
Fanconi anemia pathway	0.701900
Fat digestion and absorption	0.337500
Fatty acid biosynthesis	0.380200
Fatty acid degradation	0.594500
Fatty acid elongation	0.318800
Fc epsilon RI signaling pathway	0.258500
Fc gamma R-mediated phagocytosis	0.370200
Folate biosynthesis	0.290900
FoxO signaling pathway	0.320000
Fructose and mannose metabolism	0.535700
GABAergic synapse	-0.342800
Galactose metabolism	0.525700
Gap junction	0.138400
Gastric acid secretion	0.223900
Glioma	0.438900
Glucagon signaling pathway	0.432900
Glutamatergic synapse	-0.103900
Glutathione metabolism	0.329000
Glycerolipid metabolism	0.704300
Glycerophospholipid metabolism	0.911100
Glycine, serine and threonine metabolism	0.039310
Glycolysis / Gluconeogenesis	0.601500
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.451900
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.435900
Glycosaminoglycan degradation	0.396600
Glycosphingolipid biosynthesis - ganglio series	0.264000
Glycosphingolipid biosynthesis - globo series	-0.076920
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.125500
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.477700
Glyoxylate and dicarboxylate metabolism	0.252000
GnRH signaling pathway	0.295000
Graft-versus-host disease	-0.287900
Hepatitis B	0.336500
Hepatitis C	0.423700
Herpes simplex infection	0.346100
HIF-1 signaling pathway	0.555100
Histidine metabolism	-0.324100

Huntington's disease	0.830300
Hypertrophic cardiomyopathy (HCM)	0.219500
Inflammatory bowel disease (IBD)	-0.161100
Inflammatory mediator regulation of TRP channels	0.153600
Influenza A	0.333400
Inositol phosphate metabolism	1.079000
Insulin resistance	0.373200
Insulin secretion	-0.073550
Insulin signaling pathway	0.461000
Intestinal immune network for IgA production	-0.191100
Legionellosis	-0.072510
Leishmaniasis	-0.035780
Leukocyte transendothelial migration	0.159700
Linoleic acid metabolism	-1.183000
Lipoic acid metabolism	-0.072570
Long-term depression	0.233900
Long-term potentiation	0.261400
Longevity regulating pathway	0.655100
Longevity regulating pathway - multiple species	0.627400
Lysine biosynthesis	0.075300
Lysine degradation	0.646700
Malaria	-0.095390
Maturity onset diabetes of the young	-0.152000
Measles	0.194400
Melanogenesis	0.160300
Melanoma	0.489200
Metabolism of xenobiotics by cytochrome P450	-1.095000
Mineral absorption	-0.012960
Morphine addiction	-0.156100
mRNA surveillance pathway	0.622600
mTOR signaling pathway	0.303600
Mucin type O-Glycan biosynthesis	-0.319200
N-Glycan biosynthesis	0.722000
Natural killer cell mediated cytotoxicity	0.053840
Neuroactive ligand-receptor interaction	-0.368000
Neurotrophin signaling pathway	0.345200
NF-kappa B signaling pathway	0.202900
Nicotinate and nicotinamide metabolism	-0.050840
Nitrogen metabolism	0.619700
NOD-like receptor signaling pathway	0.248800
Non-alcoholic fatty liver disease (NAFLD)	0.246800
Non-small cell lung cancer	0.513500
Notch signaling pathway	0.455800
One carbon pool by folate	1.027000
Oocyte meiosis	0.689800
Osteoclast differentiation	0.132300

Ovarian steroidogenesis	0.089870
Oxidative phosphorylation	0.488200
p53 signaling pathway	0.353400
Pancreatic cancer	0.499000
Pancreatic secretion	0.152500
Pantothenate and CoA biosynthesis	0.119500
Parkinson's disease	0.235400
Pathogenic Escherichia coli infection	0.330400
Pentose and glucuronate interconversions	-0.244800
Pentose phosphate pathway	0.447700
Peroxisome	0.140700
Pertussis	0.119600
Phagosome	1.252000
Phenylalanine metabolism	-0.084930
Phenylalanine, tyrosine and tryptophan biosynthesis	0.346000
Phosphatidylinositol signaling system	1.369000
Phospholipase D signaling pathway	0.335000
Phototransduction	-0.344300
Platelet activation	0.314700
Porphyrin and chlorophyll metabolism	0.013640
Primary bile acid biosynthesis	-0.251400
Prion diseases	0.355200
Progesterone-mediated oocyte maturation	0.247900
Prolactin signaling pathway	0.347500
Propanoate metabolism	0.377500
Prostate cancer	0.478900
Protein processing in endoplasmic reticulum	0.442000
Proximal tubule bicarbonate reclamation	0.184400
Pyrimidine metabolism	1.206000
Pyruvate metabolism	0.531200
Regulation of autophagy	0.249700
Regulation of lipolysis in adipocytes	0.236600
Renal cell carcinoma	0.454200
Renin secretion	0.231700
Renin-angiotensin system	0.145400
Retinol metabolism	-1.696000
Retrograde endocannabinoid signaling	0.076980
Rheumatoid arthritis	-0.127500
Riboflavin metabolism	0.383500
Ribosome biogenesis in eukaryotes	0.347800
RIG-I-like receptor signaling pathway	0.296300
RNA degradation	0.749300
RNA transport	0.466800
Salivary secretion	0.073990
Salmonella infection	0.454100
Selenocompound metabolism	0.385000

Serotonergic synapse	-0.058990
Shigellosis	0.435000
Signaling pathways regulating pluripotency of stem cells	0.360700
Small cell lung cancer	0.645300
SNARE interactions in vesicular transport	0.435800
Sphingolipid metabolism	0.952600
Sphingolipid signaling pathway	0.438900
Staphylococcus aureus infection	-0.124600
Starch and sucrose metabolism	0.182400
Steroid biosynthesis	0.455100
Steroid hormone biosynthesis	-1.009000
Sulfur metabolism	0.544400
Sulfur relay system	0.319900
Synaptic vesicle cycle	0.603200
Synthesis and degradation of ketone bodies	0.152000
Systemic lupus erythematosus	-0.257900
T cell receptor signaling pathway	0.188800
Taste transduction	-0.260400
Taurine and hypotaurine metabolism	-0.292500
Terpenoid backbone biosynthesis	0.399900
TGF-beta signaling pathway	0.245200
Thiamine metabolism	0.149300
Thyroid cancer	0.360300
Thyroid hormone signaling pathway	0.632800
Thyroid hormone synthesis	0.012130
Tight junction	0.327800
TNF signaling pathway	0.301900
Toll-like receptor signaling pathway	0.118200
Toxoplasmosis	0.304200
Transcriptional misregulation in cancer	0.120200
Tryptophan metabolism	-0.253200
Type I diabetes mellitus	-0.345200
Type II diabetes mellitus	0.187900
Tyrosine metabolism	-0.285300
Ubiquinone and other terpenoid-quinone biosynthesis	0.316700
Valine, leucine and isoleucine degradation	0.571300
Vascular smooth muscle contraction	0.181400
Vasopressin-regulated water reabsorption	0.082960
VEGF signaling pathway	0.286600
Vibrio cholerae infection	0.418500
Viral carcinogenesis	0.365200
Viral myocarditis	0.172700
Vitamin B6 metabolism	0.141300
Vitamin digestion and absorption	-0.407000
Wnt signaling pathway	0.179700
	p.value

Acute myeloid leukemia	4.679187e-01
Adherens junction	1.226839e-01
Adipocytokine signaling pathway	1.952346e-01
Adrenergic signaling in cardiomyocytes	7.996300e-01
African trypanosomiasis	4.682416e-01
AGE-RAGE signaling pathway in diabetic complications	3.012445e-01
Alanine, aspartate and glutamate metabolism	9.493295e-02
Aldosterone synthesis and secretion	1.202823e-01
Aldosterone-regulated sodium reabsorption	5.774420e-01
Allograft rejection	5.133788e-01
alpha-Linolenic acid metabolism	1.608778e-01
Alzheimer's disease	4.586410e-01
Amino sugar and nucleotide sugar metabolism	9.246784e-02
Aminoacyl-tRNA biosynthesis	8.342750e-01
Amoebiasis	6.960623e-01
Amphetamine addiction	4.914580e-03
AMPK signaling pathway	7.178370e-01
Amyotrophic lateral sclerosis (ALS)	2.354015e-01
Antigen processing and presentation	1.139761e-02
Apoptosis	9.293740e-01
Arachidonic acid metabolism	2.546850e-02
Arginine and proline metabolism	8.425275e-02
Arginine biosynthesis	6.769146e-01
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	4.576018e-01
Ascorbate and aldarate metabolism	1.569735e-01
Asthma	9.807357e-03
Autoimmune thyroid disease	3.620127e-01
B cell receptor signaling pathway	2.844850e-01
Bacterial invasion of epithelial cells	3.133533e-01
Basal cell carcinoma	2.101500e-03
beta-Alanine metabolism	9.344103e-01
Bile secretion	9.248535e-01
Biosynthesis of unsaturated fatty acids	7.007793e-01
Biotin metabolism	5.909040e-01
Bladder cancer	1.837957e-01
Butanoate metabolism	2.993934e-01
Caffeine metabolism	3.638314e-02
Carbohydrate digestion and absorption	6.212188e-02
Cardiac muscle contraction	7.878523e-01
Cell adhesion molecules (CAMs)	6.529462e-01
Cell cycle	1.846657e-03
Central carbon metabolism in cancer	5.817186e-03
Chagas disease (American trypanosomiasis)	4.339063e-01
Chemical carcinogenesis	2.907213e-01
Choline metabolism in cancer	7.379284e-03
Cholinergic synapse	6.706821e-01

Chronic myeloid leukemia	3.874615e-01
Circadian entrainment	8.383082e-01
Circadian rhythm	2.025562e-05
Citrate cycle (TCA cycle)	3.967858e-01
Cocaine addiction	8.874662e-01
Colorectal cancer	9.205659e-01
Complement and coagulation cascades	7.306283e-02
Cysteine and methionine metabolism	4.010081e-01
Cytosolic DNA-sensing pathway	8.123825e-01
D-Glutamine and D-glutamate metabolism	3.422198e-02
Dilated cardiomyopathy	2.163240e-02
Dopaminergic synapse	7.009532e-01
Dorso-ventral axis formation	9.939906e-02
Drug metabolism - cytochrome P450	8.345425e-02
Drug metabolism - other enzymes	4.890267e-01
ECM-receptor interaction	4.307883e-02
Endocrine and other factor-regulated calcium reabsorption	6.800278e-01
Endocytosis	1.258608e-02
Endometrial cancer	9.539643e-01
Epithelial cell signaling in Helicobacter pylori infection	6.307648e-03
Epstein-Barr virus infection	4.731113e-02
ErbB signaling pathway	4.800363e-01
Estrogen signaling pathway	9.952757e-02
Ether lipid metabolism	5.729844e-01
Fanconi anemia pathway	4.506133e-02
Fat digestion and absorption	9.823653e-03
Fatty acid biosynthesis	1.323411e-01
Fatty acid degradation	1.408528e-01
Fatty acid elongation	5.623178e-02
Fc epsilon RI signaling pathway	4.241433e-01
Fc gamma R-mediated phagocytosis	2.615663e-01
Folate biosynthesis	4.454349e-01
FoxO signaling pathway	5.366351e-01
Fructose and mannose metabolism	7.790316e-01
GABAergic synapse	6.242181e-01
Galactose metabolism	7.394396e-01
Gap junction	9.655488e-02
Gastric acid secretion	1.564822e-01
Glioma	1.511666e-01
Glucagon signaling pathway	3.046274e-01
Glutamatergic synapse	8.664972e-01
Glutathione metabolism	3.771793e-01
Glycerolipid metabolism	2.321556e-02
Glycerophospholipid metabolism	6.202848e-01
Glycine, serine and threonine metabolism	2.701033e-01
Glycolysis / Gluconeogenesis	9.089287e-01

Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	5.834182e-01
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	6.083384e-01
Glycosaminoglycan degradation	1.698663e-01
Glycosphingolipid biosynthesis - ganglio series	5.480292e-01
Glycosphingolipid biosynthesis - globo series	5.091735e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	8.861219e-01
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	8.525705e-01
Glyoxylate and dicarboxylate metabolism	3.411235e-02
GnRH signaling pathway	4.250220e-02
Graft-versus-host disease	1.754120e-01
Hepatitis B	5.722936e-01
Hepatitis C	3.957628e-01
Herpes simplex infection	1.086049e-01
HIF-1 signaling pathway	6.362035e-01
Histidine metabolism	8.095896e-02
Huntington's disease	1.654663e-01
Hypertrophic cardiomyopathy (HCM)	7.195646e-03
Inflammatory bowel disease (IBD)	1.827232e-02
Inflammatory mediator regulation of TRP channels	5.418516e-01
Influenza A	1.549479e-01
Inositol phosphate metabolism	7.361464e-01
Insulin resistance	1.335977e-02
Insulin secretion	5.217811e-01
Insulin signaling pathway	2.261515e-02
Intestinal immune network for IgA production	3.193241e-01
Legionellosis	5.494098e-01
Leishmaniasis	8.114609e-02
Leukocyte transendothelial migration	1.189518e-02
Linoleic acid metabolism	3.211003e-02
Lipoic acid metabolism	1.551629e-01
Long-term depression	3.576669e-01
Long-term potentiation	1.530562e-01
Longevity regulating pathway	6.205017e-01
Longevity regulating pathway - multiple species	7.662647e-01
Lysine biosynthesis	1.904448e-01
Lysine degradation	3.002316e-02
Malaria	4.080270e-01
Maturity onset diabetes of the young	5.769450e-01
Measles	8.548674e-01
Melanogenesis	1.154453e-01
Melanoma	3.889056e-01
Metabolism of xenobiotics by cytochrome P450	6.339641e-01
Mineral absorption	3.341493e-01
Morphine addiction	9.645343e-01
mRNA surveillance pathway	2.120504e-03
mTOR signaling pathway	3.479779e-02

Mucin type O-Glycan biosynthesis	1.419736e-01
N-Glycan biosynthesis	6.200608e-01
Natural killer cell mediated cytotoxicity	8.703946e-03
Neuroactive ligand-receptor interaction	5.721175e-01
Neurotrophin signaling pathway	2.617666e-01
NF-kappa B signaling pathway	5.278251e-01
Nicotinate and nicotinamide metabolism	8.947444e-01
Nitrogen metabolism	1.198404e-02
NOD-like receptor signaling pathway	4.910424e-01
Non-alcoholic fatty liver disease (NAFLD)	9.007188e-01
Non-small cell lung cancer	8.601840e-01
Notch signaling pathway	4.779441e-01
One carbon pool by folate	2.349021e-02
Oocyte meiosis	8.275539e-03
Osteoclast differentiation	3.008375e-01
Ovarian steroidogenesis	8.036325e-01
Oxidative phosphorylation	1.070940e-01
p53 signaling pathway	7.371133e-02
Pancreatic cancer	1.658437e-01
Pancreatic secretion	5.256014e-01
Pantothenate and CoA biosynthesis	2.736899e-02
Parkinson's disease	1.491651e-01
Pathogenic Escherichia coli infection	4.480331e-01
Pentose and glucuronate interconversions	1.283518e-01
Pentose phosphate pathway	5.329301e-01
Peroxisome	4.364265e-01
Pertussis	3.423775e-01
Phagosome	5.492808e-01
Phenylalanine metabolism	3.569737e-01
Phenylalanine, tyrosine and tryptophan biosynthesis	6.245936e-04
Phosphatidylinositol signaling system	7.232668e-01
Phospholipase D signaling pathway	1.040732e-01
Phototransduction	9.942426e-01
Platelet activation	1.511475e-01
Porphyrin and chlorophyll metabolism	6.763440e-01
Primary bile acid biosynthesis	9.450461e-01
Prion diseases	9.646282e-01
Progesterone-mediated oocyte maturation	3.721440e-01
Prolactin signaling pathway	8.024226e-01
Propanoate metabolism	3.063600e-01
Prostate cancer	3.351046e-01
Protein processing in endoplasmic reticulum	5.522655e-01
Proximal tubule bicarbonate reclamation	6.942137e-01
Pyrimidine metabolism	2.150347e-01
Pyruvate metabolism	2.865093e-01
Regulation of autophagy	9.559723e-02

Regulation of lipolysis in adipocytes	9.251571e-01
Renal cell carcinoma	3.570001e-01
Renin secretion	7.198162e-01
Renin-angiotensin system	4.675981e-01
Retinol metabolism	1.682504e-01
Retrograde endocannabinoid signaling	7.722285e-01
Rheumatoid arthritis	2.880170e-01
Riboflavin metabolism	1.889055e-01
Ribosome biogenesis in eukaryotes	8.636707e-02
RIG-I-like receptor signaling pathway	8.665204e-01
RNA degradation	9.176075e-05
RNA transport	1.165443e-03
Salivary secretion	7.598067e-01
Salmonella infection	2.262457e-01
Selenocompound metabolism	3.287668e-01
Serotonergic synapse	5.225172e-01
Shigellosis	2.532261e-01
Signaling pathways regulating pluripotency of stem cells	6.684990e-02
Small cell lung cancer	8.860703e-01
SNARE interactions in vesicular transport	6.812914e-01
Sphingolipid metabolism	8.673091e-01
Sphingolipid signaling pathway	9.823105e-02
Staphylococcus aureus infection	2.228559e-01
Starch and sucrose metabolism	2.209481e-02
Steroid biosynthesis	7.601862e-01
Steroid hormone biosynthesis	9.406965e-02
Sulfur metabolism	1.841501e-01
Sulfur relay system	5.988330e-01
Synaptic vesicle cycle	4.780804e-01
Synthesis and degradation of ketone bodies	8.645675e-02
Systemic lupus erythematosus	1.943895e-01
T cell receptor signaling pathway	5.052094e-02
Taste transduction	2.196767e-02
Taurine and hypotaurine metabolism	4.036299e-02
Terpenoid backbone biosynthesis	1.941051e-01
TGF-beta signaling pathway	4.213100e-01
Thiamine metabolism	8.784280e-02
Thyroid cancer	5.796910e-02
Thyroid hormone signaling pathway	4.341664e-01
Thyroid hormone synthesis	6.848458e-01
Tight junction	4.670031e-01
TNF signaling pathway	4.547101e-01
Toll-like receptor signaling pathway	6.850776e-02
Toxoplasmosis	6.927603e-01
Transcriptional misregulation in cancer	9.484421e-02
Tryptophan metabolism	8.721772e-01

Type I diabetes mellitus	3.637074e-01
Type II diabetes mellitus	3.081460e-01
Tyrosine metabolism	4.305364e-01
Ubiquinone and other terpenoid-quinone biosynthesis	5.242640e-01
Valine, leucine and isoleucine degradation	5.477987e-01
Vascular smooth muscle contraction	1.088051e-01
Vasopressin-regulated water reabsorption	2.905184e-01
VEGF signaling pathway	1.547803e-02
Vibrio cholerae infection	3.723576e-01
Viral carcinogenesis	3.151456e-02
Viral myocarditis	6.685908e-01
Vitamin B6 metabolism	5.767118e-02
Vitamin digestion and absorption	6.983628e-02
Wnt signaling pathway	3.579422e-02
	q.value
Acute myeloid leukemia	0.732377935
Adherens junction	0.388764477
Adipocytokine signaling pathway	0.467031716
Adrenergic signaling in cardiomyocytes	0.899478632
African trypanosomiasis	0.732377935
AGE-RAGE signaling pathway in diabetic complications	0.621385385
Alanine, aspartate and glutamate metabolism	0.346924673
Aldosterone synthesis and secretion	0.386169372
Aldosterone-regulated sodium reabsorption	0.778430116
Allograft rejection	0.765640844
alpha-Linolenic acid metabolism	0.436157487
Alzheimer's disease	0.732377935
Amino sugar and nucleotide sugar metabolism	0.346924673
Aminoacyl-tRNA biosynthesis	0.925286827
Amoebiasis	0.838395017
Amphetamine addiction	0.149810712
AMPK signaling pathway	0.852546387
Amyotrophic lateral sclerosis (ALS)	0.541867704
Antigen processing and presentation	0.153550234
Apoptosis	0.952803580
Arachidonic acid metabolism	0.207143810
Arginine and proline metabolism	0.346924673
Arginine biosynthesis	0.838395017
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.732377935
Ascorbate and aldarate metabolism	0.430354199
Asthma	0.149810712
Autoimmune thyroid disease	0.672307677
B cell receptor signaling pathway	0.616834819
Bacterial invasion of epithelial cells	0.626706671
Basal cell carcinoma	0.073914715
beta-Alanine metabolism	0.953958595

Bile secretion	0.952482395
Biosynthesis of unsaturated fatty acids	0.838395017
Biotin metabolism	0.787871964
Bladder cancer	0.463223043
Butanoate metabolism	0.621385385
Caffeine metabolism	0.227627871
Carbohydrate digestion and absorption	0.309341616
Cardiac muscle contraction	0.894120754
Cell adhesion molecules (CAMs)	0.829785762
Cell cycle	0.073914715
Central carbon metabolism in cancer	0.149810712
Chagas disease (American trypanosomiasis)	0.724408590
Chemical carcinogenesis	0.616834819
Choline metabolism in cancer	0.149810712
Cholinergic synapse	0.838395017
Chronic myeloid leukemia	0.692649377
Circadian entrainment	0.925552942
Circadian rhythm	0.004942372
Citrate cycle (TCA cycle)	0.696516155
Cocaine addiction	0.937410197
Colorectal cancer	0.952482395
Complement and coagulation cascades	0.333066008
Cysteine and methionine metabolism	0.698899904
Cytosolic DNA-sensing pathway	0.905120234
D-Glutamine and D-glutamate metabolism	0.227627871
Dilated cardiomyopathy	0.197641796
Dopaminergic synapse	0.838395017
Dorso-ventral axis formation	0.346924673
Drug metabolism - cytochrome P450	0.346924673
Drug metabolism - other enzymes	0.744188485
ECM-receptor interaction	0.250267469
Endocrine and other factor-regulated calcium reabsorption	0.838395017
Endocytosis	0.153550234
Endometrial cancer	0.965839342
Epithelial cell signaling in Helicobacter pylori infection	0.149810712
Epstein-Barr virus infection	0.262361726
ErbB signaling pathway	0.736659528
Estrogen signaling pathway	0.346924673
Ether lipid metabolism	0.778430116
Fanconi anemia pathway	0.255696856
Fat digestion and absorption	0.149810712
Fatty acid biosynthesis	0.408749609
Fatty acid degradation	0.427673673
Fatty acid elongation	0.294676264
Fc epsilon RI signaling pathway	0.723713041
Fc gamma R-mediated phagocytosis	0.585973044

Folate biosynthesis	0.732377935
FoxO signaling pathway	0.765640844
Fructose and mannose metabolism	0.888241660
GABAergic synapse	0.805868895
Galactose metabolism	0.863269172
Gap junction	0.346924673
Gastric acid secretion	0.430354199
Glioma	0.430354199
Glucagon signaling pathway	0.621385385
Glutamatergic synapse	0.932261806
Glutathione metabolism	0.681716632
Glycerolipid metabolism	0.197641796
Glycerophospholipid metabolism	0.805331997
Glycine, serine and threonine metabolism	0.599138254
Glycolysis / Gluconeogenesis	0.947771848
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.782165077
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.802348972
Glycosaminoglycan degradation	0.440929592
Glycosphingolipid biosynthesis - ganglio series	0.765640844
Glycosphingolipid biosynthesis - globo series	0.765640844
Glycosphingolipid biosynthesis - lacto and neolacto series	0.937410197
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.932261806
Glyoxylate and dicarboxylate metabolism	0.227627871
GnRH signaling pathway	0.250267469
Graft-versus-host disease	0.450531978
Hepatitis B	0.778430116
Hepatitis C	0.696516155
Herpes simplex infection	0.358762802
HIF-1 signaling pathway	0.812741662
Histidine metabolism	0.346924673
Huntington's disease	0.439846423
Hypertrophic cardiomyopathy (HCM)	0.149810712
Inflammatory bowel disease (IBD)	0.193845492
Inflammatory mediator regulation of TRP channels	0.765640844
Influenza A	0.430354199
Inositol phosphate metabolism	0.863269172
Insulin resistance	0.155227767
Insulin secretion	0.765640844
Insulin signaling pathway	0.197641796
Intestinal immune network for IgA production	0.633455938
Legionellosis	0.765640844
Leishmaniasis	0.346924673
Leukocyte transendothelial migration	0.153550234
Linoleic acid metabolism	0.227627871
Lipoic acid metabolism	0.430354199
Long-term depression	0.671313312

Long-term potentiation	0.430354199
Longevity regulating pathway	0.805331997
Longevity regulating pathway - multiple species	0.881927301
Lysine biosynthesis	0.467031716
Lysine degradation	0.227627871
Malaria	0.706089301
Maturity onset diabetes of the young	0.778430116
Measles	0.932261806
Melanogenesis	0.375581985
Melanoma	0.692649377
Metabolism of xenobiotics by cytochrome P450	0.812741662
Mineral absorption	0.648932753
Morphine addiction	0.968597852
mRNA surveillance pathway	0.073914715
mTOR signaling pathway	0.227627871
Mucin type O-Glycan biosynthesis	0.427673673
N-Glycan biosynthesis	0.805331997
Natural killer cell mediated cytotoxicity	0.149810712
Neuroactive ligand-receptor interaction	0.778430116
Neurotrophin signaling pathway	0.585973044
NF-kappa B signaling pathway	0.765640844
Nicotinate and nicotinamide metabolism	0.941024273
Nitrogen metabolism	0.153550234
NOD-like receptor signaling pathway	0.744188485
Non-alcoholic fatty liver disease (NAFLD)	0.943241999
Non-small cell lung cancer	0.932261806
Notch signaling pathway	0.736659528
One carbon pool by folate	0.197641796
Oocyte meiosis	0.149810712
Osteoclast differentiation	0.621385385
Ovarian steroidogenesis	0.899478632
Oxidative phosphorylation	0.358762802
p53 signaling pathway	0.333066008
Pancreatic cancer	0.439846423
Pancreatic secretion	0.765640844
Pantothenate and CoA biosynthesis	0.215420416
Parkinson's disease	0.430354199
Pathogenic Escherichia coli infection	0.732377935
Pentose and glucuronate interconversions	0.401510883
Pentose phosphate pathway	0.765640844
Peroxisome	0.724408590
Pertussis	0.657796227
Phagosome	0.765640844
Phenylalanine metabolism	0.671313312
Phenylalanine, tyrosine and tryptophan biosynthesis	0.050800281
Phosphatidylinositol signaling system	0.852546387

Phospholipase D signaling pathway	0.357659999
Phototransduction	0.994242603
Platelet activation	0.430354199
Porphyrin and chlorophyll metabolism	0.838395017
Primary bile acid biosynthesis	0.960796874
Prion diseases	0.968597852
Progesterone-mediated oocyte maturation	0.678024365
Prolactin signaling pathway	0.899478632
Propanoate metabolism	0.621385385
Prostate cancer	0.648932753
Protein processing in endoplasmic reticulum	0.765640844
Proximal tubule bicarbonate reclamation	0.838395017
Pyrimidine metabolism	0.509402553
Pyruvate metabolism	0.616834819
Regulation of autophagy	0.346924673
Regulation of lipolysis in adipocytes	0.952482395
Renal cell carcinoma	0.671313312
Renin secretion	0.852546387
Renin-angiotensin system	0.732377935
Retinol metabolism	0.440929592
Retrograde endocannabinoid signaling	0.884618571
Rheumatoid arthritis	0.616834819
Riboflavin metabolism	0.467031716
Ribosome biogenesis in eukaryotes	0.346924673
RIG-I-like receptor signaling pathway	0.932261806
RNA degradation	0.011194812
RNA transport	0.071092044
Salivary secretion	0.879077846
Salmonella infection	0.525751931
Selenocompound metabolism	0.646928181
Serotonergic synapse	0.765640844
Shigellosis	0.577450264
Signaling pathways regulating pluripotency of stem cells	0.326227490
Small cell lung cancer	0.937410197
SNARE interactions in vesicular transport	0.838395017
Sphingolipid metabolism	0.932261806
Sphingolipid signaling pathway	0.346924673
Staphylococcus aureus infection	0.522854145
Starch and sucrose metabolism	0.197641796
Steroid biosynthesis	0.879077846
Steroid hormone biosynthesis	0.346924673
Sulfur metabolism	0.463223043
Sulfur relay system	0.794104689
Synaptic vesicle cycle	0.736659528
Synthesis and degradation of ketone bodies	0.346924673
Systemic lupus erythematosus	0.467031716

T cell receptor signaling pathway	0.273935753
Taste transduction	0.197641796
Taurine and hypotaurine metabolism	0.246214209
Terpenoid backbone biosynthesis	0.467031716
TGF-beta signaling pathway	0.723713041
Thiamine metabolism	0.346924673
Thyroid cancer	0.294676264
Thyroid hormone signaling pathway	0.724408590
Thyroid hormone synthesis	0.838395017
Tight junction	0.732377935
TNF signaling pathway	0.732377935
Toll-like receptor signaling pathway	0.327693329
Toxoplasmosis	0.838395017
Transcriptional misregulation in cancer	0.346924673
Tryptophan metabolism	0.933382647
Type I diabetes mellitus	0.672307677
Type II diabetes mellitus	0.621385385
Tyrosine metabolism	0.724408590
Ubiquinone and other terpenoid-quinone biosynthesis	0.765640844
Valine, leucine and isoleucine degradation	0.765640844
Vascular smooth muscle contraction	0.358762802
Vasopressin-regulated water reabsorption	0.616834819
VEGF signaling pathway	0.171665409
Vibrio cholerae infection	0.678024365
Viral carcinogenesis	0.227627871
Viral myocarditis	0.838395017
Vitamin B6 metabolism	0.294676264
Vitamin digestion and absorption	0.327693329
Wnt signaling pathway	0.227627871

\$errors

named list()

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. The user can also specified whether the normalization step (standardization and sigma-transformation) should be performed (**normalize=TRUE**). If **verbose=TRUE**, function prints out the titles of pathways as their are analysed. The implementation returns also a gene-level statistics of the differential expression of genes. These statistics are later used in the visualization of a selected pathway.

3.6 PRS

PRS is another method that works with gene-level statistics and a list of differentially expressed genes. The pathway topology is incorporated as the number of downstream differentially expressed genes. The gene-level log fold-changes are weighted by this number and summed up into a pathway-level score. A statistical significance is assessed by a permutations of genes.

```
> Prs<-PRS(hnrrnp.cnts, group, pathways, type="RNASeq", logFC.th=-1, nperm=100)
```

```
14329 node labels mapped to the expression data
```

```
Average coverage 84.40644 %
```

```
0 (out of 267) pathways without a mapped node
```

```
> res(Prs)
```

```
$results
```

	nPRS
Acute myeloid leukemia	-0.527636683
Adherens junction	-0.081671732
Adipocytokine signaling pathway	0.023886496
Adrenergic signaling in cardiomyocytes	0.539874243
African trypanosomiasis	0.188997337
AGE-RAGE signaling pathway in diabetic complications	0.165718383
Alanine, aspartate and glutamate metabolism	0.359156766
Aldosterone synthesis and secretion	0.125530190
Aldosterone-regulated sodium reabsorption	1.350559913
Allograft rejection	-1.806295188
alpha-Linolenic acid metabolism	-0.324581589
Alzheimer's disease	-3.004963914
Amino sugar and nucleotide sugar metabolism	-0.726523100
Aminoacyl-tRNA biosynthesis	0.583844064
Amoebiasis	-0.117401419
Amphetamine addiction	0.728001185
AMPK signaling pathway	-2.736332569
Amyotrophic lateral sclerosis (ALS)	0.843729441
Antigen processing and presentation	-2.098086074
Apoptosis	-10.705993097
Arachidonic acid metabolism	-0.037677598
Arginine and proline metabolism	0.463856201
Arginine biosynthesis	0.397165731
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.646654488
Ascorbate and aldarate metabolism	0.169868884
Asthma	0.134781196
Autoimmune thyroid disease	0.137683008
B cell receptor signaling pathway	-0.218939521
Bacterial invasion of epithelial cells	0.449081107

Basal cell carcinoma	-0.479242395
beta-Alanine metabolism	-0.256103788
Bile secretion	-0.225812362
Biosynthesis of unsaturated fatty acids	-0.814642695
Biotin metabolism	0.157015935
Bladder cancer	-0.272286596
Butanoate metabolism	0.268775819
Caffeine metabolism	-0.050518726
Carbohydrate digestion and absorption	-0.230071303
Cardiac muscle contraction	0.163864463
Cell adhesion molecules (CAMs)	-1.559033026
Cell cycle	4.037297515
Central carbon metabolism in cancer	-0.568472105
Chagas disease (American trypanosomiasis)	-0.269174414
Chemical carcinogenesis	-1.027237811
Choline metabolism in cancer	-0.344598691
Cholinergic synapse	0.004996646
Chronic myeloid leukemia	-0.216715583
Circadian entrainment	-0.256748649
Circadian rhythm	0.553854758
Citrate cycle (TCA cycle)	-3.321474618
Cocaine addiction	-0.005016759
Colorectal cancer	2.311404741
Complement and coagulation cascades	-0.727038670
Cysteine and methionine metabolism	0.723832027
Cytosolic DNA-sensing pathway	-0.459933711
D-Glutamine and D-glutamate metabolism	0.466394634
Dilated cardiomyopathy	-0.209272210
Dopaminergic synapse	0.734651722
Dorso-ventral axis formation	1.478532182
Drug metabolism - cytochrome P450	-0.057018598
Drug metabolism - other enzymes	1.136827972
ECM-receptor interaction	-10.867392626
Endocrine and other factor-regulated calcium reabsorption	0.419003153
Endocytosis	0.663562343
Endometrial cancer	2.948791084
Epithelial cell signaling in Helicobacter pylori infection	0.790121815
Epstein-Barr virus infection	0.556747459
ErbB signaling pathway	-0.482747377
Estrogen signaling pathway	-0.162793982
Ether lipid metabolism	-0.133378371
Fanconi anemia pathway	0.901800359
Fat digestion and absorption	-1.007023107
Fatty acid biosynthesis	-12.923469851
Fatty acid degradation	-0.114188119
Fatty acid elongation	0.732379388

Fc epsilon RI signaling pathway	-0.503616190
Fc gamma R-mediated phagocytosis	0.022352406
Folate biosynthesis	-0.282431465
FoxO signaling pathway	0.961173727
Fructose and mannose metabolism	-4.635302619
GABAergic synapse	0.259063308
Galactose metabolism	-1.567655442
Gap junction	0.313632560
Gastric acid secretion	-0.103178621
Glioma	0.731840391
Glucagon signaling pathway	0.246498469
Glutamatergic synapse	-0.107447457
Glutathione metabolism	-1.415278017
Glycerolipid metabolism	-1.530454662
Glycerophospholipid metabolism	-0.645166522
Glycine, serine and threonine metabolism	1.359355941
Glycolysis / Gluconeogenesis	-6.859919180
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	-9.257702091
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.002950149
Glycosaminoglycan degradation	-2.524888462
Glycosphingolipid biosynthesis - ganglio series	-0.325087972
Glycosphingolipid biosynthesis - globo series	0.046394470
Glycosphingolipid biosynthesis - lacto and neolacto series	0.116627580
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	-1.554481198
Glyoxylate and dicarboxylate metabolism	1.422793514
GnRH signaling pathway	-0.265372949
Graft-versus-host disease	-2.917843938
Hepatitis B	-0.040961775
Hepatitis C	1.181045777
Herpes simplex infection	1.777481630
HIF-1 signaling pathway	-0.822610036
Histidine metabolism	0.188718240
Huntington's disease	1.685199067
Hypertrophic cardiomyopathy (HCM)	0.566167039
Inflammatory bowel disease (IBD)	0.069466383
Inflammatory mediator regulation of TRP channels	-0.412185493
Influenza A	0.988917106
Inositol phosphate metabolism	0.117921661
Insulin resistance	-0.572514945
Insulin secretion	-0.160549300
Insulin signaling pathway	-6.591400856
Intestinal immune network for IgA production	0.188952402
Legionellosis	0.614504224
Leishmaniasis	0.086880926
Leukocyte transendothelial migration	0.262236823
Linoleic acid metabolism	-0.054235374

Lipoic acid metabolism	0.138831232
Long-term depression	0.364417547
Long-term potentiation	0.408054738
Longevity regulating pathway	0.396787057
Longevity regulating pathway - multiple species	0.814832753
Lysine biosynthesis	-0.015413366
Lysine degradation	0.263392249
Malaria	0.067883049
Maturity onset diabetes of the young	0.137503488
Measles	-0.306670873
Melanogenesis	0.186142401
Melanoma	0.412593253
Metabolism of xenobiotics by cytochrome P450	-0.300902488
Mineral absorption	-0.089306429
Morphine addiction	0.122739575
mRNA surveillance pathway	1.748932285
mTOR signaling pathway	-0.648163786
Mucin type O-Glycan biosynthesis	0.355850166
N-Glycan biosynthesis	-0.241030048
Natural killer cell mediated cytotoxicity	-1.062310643
Neuroactive ligand-receptor interaction	0.149289740
Neurotrophin signaling pathway	-0.416057154
NF-kappa B signaling pathway	-0.023591933
Nicotinate and nicotinamide metabolism	-0.435302901
Nitrogen metabolism	0.162118151
NOD-like receptor signaling pathway	0.842291647
Non-alcoholic fatty liver disease (NAFLD)	0.226066407
Non-small cell lung cancer	-0.439182609
Notch signaling pathway	0.201953010
One carbon pool by folate	0.332490457
Oocyte meiosis	-0.273519081
Osteoclast differentiation	0.055090013
Ovarian steroidogenesis	-0.149249504
Oxidative phosphorylation	2.435257811
p53 signaling pathway	0.271156469
Pancreatic cancer	-0.627104089
Pancreatic secretion	-0.497171182
Pantothenate and CoA biosynthesis	-1.102941137
Parkinson's disease	-2.404864738
Pathogenic Escherichia coli infection	1.403937989
Pentose and glucuronate interconversions	-0.496010289
Pentose phosphate pathway	-18.845061962
Peroxisome	0.975842003
Pertussis	-0.015201518
Phagosome	0.509641114
Phenylalanine metabolism	0.219992097

Phenylalanine, tyrosine and tryptophan biosynthesis	0.315392274
Phosphatidylinositol signaling system	-0.245167939
Phospholipase D signaling pathway	-0.148990212
Phototransduction	0.387932381
Platelet activation	0.098446284
Porphyrin and chlorophyll metabolism	0.195556150
Primary bile acid biosynthesis	0.222586056
Prion diseases	-0.837683185
Progesterone-mediated oocyte maturation	2.701361847
Prolactin signaling pathway	-0.986244954
Propanoate metabolism	0.453658651
Prostate cancer	1.648906049
Protein processing in endoplasmic reticulum	0.628453025
Proximal tubule bicarbonate reclamation	0.092113245
Pyrimidine metabolism	1.610470656
Pyruvate metabolism	0.171203043
Regulation of autophagy	0.570169198
Regulation of lipolysis in adipocytes	-0.400952469
Renal cell carcinoma	-0.953284007
Renin secretion	-0.051109194
Renin-angiotensin system	0.168392757
Retinol metabolism	-0.080391999
Retrograde endocannabinoid signaling	0.044883852
Rheumatoid arthritis	-0.012674682
Riboflavin metabolism	0.080673432
Ribosome biogenesis in eukaryotes	0.119006417
RIG-I-like receptor signaling pathway	0.867875785
RNA degradation	0.899802164
RNA transport	2.868892928
Salivary secretion	-0.084770098
Salmonella infection	-1.355521007
Selenocompound metabolism	-0.405982981
Serotonergic synapse	-0.029207924
Shigellosis	0.138845406
Signaling pathways regulating pluripotency of stem cells	-0.033980633
Small cell lung cancer	-6.337904319
SNARE interactions in vesicular transport	0.173827920
Sphingolipid metabolism	0.060077745
Sphingolipid signaling pathway	-0.280386883
Staphylococcus aureus infection	-0.717232567
Starch and sucrose metabolism	-2.925578199
Steroid biosynthesis	0.230652522
Steroid hormone biosynthesis	0.104476541
Sulfur metabolism	0.212436368
Sulfur relay system	0.079151640
Synaptic vesicle cycle	3.862648418

Synthesis and degradation of ketone bodies	0.240684863
Systemic lupus erythematosus	-1.058932786
T cell receptor signaling pathway	0.096233268
Taste transduction	-0.183331775
Taurine and hypotaurine metabolism	-0.049138783
Terpenoid backbone biosynthesis	0.340027145
TGF-beta signaling pathway	-0.903606565
Thiamine metabolism	0.104275717
Thyroid cancer	5.021616644
Thyroid hormone signaling pathway	0.383177435
Thyroid hormone synthesis	-0.055651874
Tight junction	0.318704889
TNF signaling pathway	-0.061109967
Toll-like receptor signaling pathway	0.024908413
Toxoplasmosis	-2.744185946
Transcriptional misregulation in cancer	0.220044383
Tryptophan metabolism	-0.445130862
Type I diabetes mellitus	-0.013201611
Type II diabetes mellitus	-0.465227670
Tyrosine metabolism	0.190561957
Ubiquinone and other terpenoid-quinone biosynthesis	0.443730801
Valine, leucine and isoleucine degradation	0.276293980
Vascular smooth muscle contraction	0.099825158
Vasopressin-regulated water reabsorption	-0.048299247
VEGF signaling pathway	-0.041292909
Vibrio cholerae infection	0.182071972
Viral carcinogenesis	-0.037571569
Viral myocarditis	0.798055802
Vitamin B6 metabolism	-0.246684903
Vitamin digestion and absorption	-0.017293477
Wnt signaling pathway	-0.196002678
p.value	
Acute myeloid leukemia	0.90
Adherens junction	0.72
Adipocytokine signaling pathway	0.58
Adrenergic signaling in cardiomyocytes	0.20
African trypanosomiasis	0.38
AGE-RAGE signaling pathway in diabetic complications	0.58
Alanine, aspartate and glutamate metabolism	0.17
Aldosterone synthesis and secretion	0.61
Aldosterone-regulated sodium reabsorption	0.03
Allograft rejection	0.95
alpha-Linolenic acid metabolism	0.84
Alzheimer's disease	0.98
Amino sugar and nucleotide sugar metabolism	0.90
Aminoacyl-tRNA biosynthesis	0.15

Amoebiasis	0.70
Amphetamine addiction	0.00
AMPK signaling pathway	0.97
Amyotrophic lateral sclerosis (ALS)	0.03
Antigen processing and presentation	0.97
Apoptosis	1.00
Arachidonic acid metabolism	0.72
Arginine and proline metabolism	0.19
Arginine biosynthesis	0.12
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.01
Ascorbate and aldarate metabolism	0.45
Asthma	0.57
Autoimmune thyroid disease	0.42
B cell receptor signaling pathway	0.77
Bacterial invasion of epithelial cells	0.22
Basal cell carcinoma	0.84
beta-Alanine metabolism	0.82
Bile secretion	0.71
Biosynthesis of unsaturated fatty acids	0.95
Biotin metabolism	0.66
Bladder cancer	0.87
Butanoate metabolism	0.29
Caffeine metabolism	0.28
Carbohydrate digestion and absorption	0.77
Cardiac muscle contraction	0.53
Cell adhesion molecules (CAMs)	0.95
Cell cycle	0.00
Central carbon metabolism in cancer	0.87
Chagas disease (American trypanosomiasis)	0.89
Chemical carcinogenesis	0.91
Choline metabolism in cancer	0.80
Cholinergic synapse	0.57
Chronic myeloid leukemia	0.70
Circadian entrainment	0.75
Circadian rhythm	0.20
Citrate cycle (TCA cycle)	0.99
Cocaine addiction	0.57
Colorectal cancer	0.00
Complement and coagulation cascades	0.85
Cysteine and methionine metabolism	0.02
Cytosolic DNA-sensing pathway	0.85
D-Glutamine and D-glutamate metabolism	0.12
Dilated cardiomyopathy	0.75
Dopaminergic synapse	0.15
Dorso-ventral axis formation	0.01
Drug metabolism - cytochrome P450	0.76

Drug metabolism - other enzymes	0.07
ECM-receptor interaction	1.00
Endocrine and other factor-regulated calcium reabsorption	0.23
Endocytosis	0.14
Endometrial cancer	0.01
Epithelial cell signaling in Helicobacter pylori infection	0.03
Epstein-Barr virus infection	0.09
ErbB signaling pathway	0.84
Estrogen signaling pathway	0.77
Ether lipid metabolism	0.74
Fanconi anemia pathway	0.07
Fat digestion and absorption	0.98
Fatty acid biosynthesis	1.00
Fatty acid degradation	0.76
Fatty acid elongation	0.05
Fc epsilon RI signaling pathway	0.83
Fc gamma R-mediated phagocytosis	0.57
Folate biosynthesis	0.97
FoxO signaling pathway	0.04
Fructose and mannose metabolism	0.99
GABAergic synapse	0.28
Galactose metabolism	0.98
Gap junction	0.31
Gastric acid secretion	0.68
Glioma	0.12
Glucagon signaling pathway	0.50
Glutamatergic synapse	0.69
Glutathione metabolism	0.94
Glycerolipid metabolism	0.97
Glycerophospholipid metabolism	0.89
Glycine, serine and threonine metabolism	0.02
Glycolysis / Gluconeogenesis	1.00
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	1.00
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.79
Glycosaminoglycan degradation	0.97
Glycosphingolipid biosynthesis - ganglio series	0.84
Glycosphingolipid biosynthesis - globo series	0.39
Glycosphingolipid biosynthesis - lacto and neolacto series	0.63
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.97
Glyoxylate and dicarboxylate metabolism	0.04
GnRH signaling pathway	0.83
Graft-versus-host disease	1.00
Hepatitis B	0.73
Hepatitis C	0.02
Herpes simplex infection	0.00
HIF-1 signaling pathway	0.92

Histidine metabolism	0.61
Huntington's disease	0.00
Hypertrophic cardiomyopathy (HCM)	0.14
Inflammatory bowel disease (IBD)	0.51
Inflammatory mediator regulation of TRP channels	0.72
Influenza A	0.05
Inositol phosphate metabolism	0.54
Insulin resistance	0.90
Insulin secretion	0.73
Insulin signaling pathway	1.00
Intestinal immune network for IgA production	0.36
Legionellosis	0.08
Leishmaniasis	0.74
Leukocyte transendothelial migration	0.53
Linoleic acid metabolism	0.58
Lipoic acid metabolism	0.22
Long-term depression	0.29
Long-term potentiation	0.23
Longevity regulating pathway	0.27
Longevity regulating pathway - multiple species	0.10
Lysine biosynthesis	0.78
Lysine degradation	0.34
Malaria	0.49
Maturity onset diabetes of the young	0.48
Measles	0.79
Melanogenesis	0.55
Melanoma	0.22
Metabolism of xenobiotics by cytochrome P450	0.80
Mineral absorption	0.71
Morphine addiction	0.45
mRNA surveillance pathway	0.02
mTOR signaling pathway	0.87
Mucin type O-Glycan biosynthesis	0.22
N-Glycan biosynthesis	0.73
Natural killer cell mediated cytotoxicity	0.88
Neuroactive ligand-receptor interaction	0.24
Neurotrophin signaling pathway	0.82
NF-kappa B signaling pathway	0.68
Nicotinate and nicotinamide metabolism	0.84
Nitrogen metabolism	0.07
NOD-like receptor signaling pathway	0.05
Non-alcoholic fatty liver disease (NAFLD)	0.40
Non-small cell lung cancer	0.83
Notch signaling pathway	0.44
One carbon pool by folate	0.27
Oocyte meiosis	0.73

Osteoclast differentiation	0.63
Ovarian steroidogenesis	0.77
Oxidative phosphorylation	0.01
p53 signaling pathway	0.42
Pancreatic cancer	0.84
Pancreatic secretion	0.81
Pantothenate and CoA biosynthesis	0.91
Parkinson's disease	0.98
Pathogenic Escherichia coli infection	0.01
Pentose and glucuronate interconversions	0.89
Pentose phosphate pathway	1.00
Peroxisome	0.06
Pertussis	0.67
Phagosome	0.08
Phenylalanine metabolism	0.29
Phenylalanine, tyrosine and tryptophan biosynthesis	0.13
Phosphatidylinositol signaling system	0.77
Phospholipase D signaling pathway	0.71
Phototransduction	0.32
Platelet activation	0.61
Porphyrin and chlorophyll metabolism	0.49
Primary bile acid biosynthesis	0.58
Prion diseases	0.91
Progesterone-mediated oocyte maturation	0.01
Prolactin signaling pathway	0.92
Propanoate metabolism	0.05
Prostate cancer	0.05
Protein processing in endoplasmic reticulum	0.13
Proximal tubule bicarbonate reclamation	0.51
Pyrimidine metabolism	0.02
Pyruvate metabolism	0.45
Regulation of autophagy	0.09
Regulation of lipolysis in adipocytes	0.79
Renal cell carcinoma	0.96
Renin secretion	0.62
Renin-angiotensin system	0.70
Retinol metabolism	0.69
Retrograde endocannabinoid signaling	0.56
Rheumatoid arthritis	0.54
Riboflavin metabolism	0.79
Ribosome biogenesis in eukaryotes	0.24
RIG-I-like receptor signaling pathway	0.10
RNA degradation	0.04
RNA transport	0.00
Salivary secretion	0.73
Salmonella infection	0.98

Selenocompound metabolism	0.80
Serotonergic synapse	0.62
Shigellosis	0.46
Signaling pathways regulating pluripotency of stem cells	0.65
Small cell lung cancer	1.00
SNARE interactions in vesicular transport	0.55
Sphingolipid metabolism	0.57
Sphingolipid signaling pathway	0.81
Staphylococcus aureus infection	0.95
Starch and sucrose metabolism	0.98
Steroid biosynthesis	0.52
Steroid hormone biosynthesis	0.60
Sulfur metabolism	0.15
Sulfur relay system	0.64
Synaptic vesicle cycle	0.00
Synthesis and degradation of ketone bodies	0.18
Systemic lupus erythematosus	0.95
T cell receptor signaling pathway	0.55
Taste transduction	0.77
Taurine and hypotaurine metabolism	0.75
Terpenoid backbone biosynthesis	0.11
TGF-beta signaling pathway	0.92
Thiamine metabolism	0.69
Thyroid cancer	0.00
Thyroid hormone signaling pathway	0.32
Thyroid hormone synthesis	0.70
Tight junction	0.22
TNF signaling pathway	0.68
Toll-like receptor signaling pathway	0.59
Toxoplasmosis	0.96
Transcriptional misregulation in cancer	0.23
Tryptophan metabolism	0.80
Type I diabetes mellitus	0.56
Type II diabetes mellitus	0.80
Tyrosine metabolism	0.43
Ubiquinone and other terpenoid-quinone biosynthesis	0.04
Valine, leucine and isoleucine degradation	0.29
Vascular smooth muscle contraction	0.62
Vasopressin-regulated water reabsorption	0.78
VEGF signaling pathway	0.66
Vibrio cholerae infection	0.55
Viral carcinogenesis	0.83
Viral myocarditis	0.06
Vitamin B6 metabolism	0.85
Vitamin digestion and absorption	0.62
Wnt signaling pathway	0.67

	q.value
Acute myeloid leukemia	1.0000000
Adherens junction	1.0000000
Adipocytokine signaling pathway	1.0000000
Adrenergic signaling in cardiomyocytes	0.8413793
African trypanosomiasis	1.0000000
AGE-RAGE signaling pathway in diabetic complications	1.0000000
Alanine, aspartate and glutamate metabolism	0.7681481
Aldosterone synthesis and secretion	1.0000000
Aldosterone-regulated sodium reabsorption	0.3327273
Allograft rejection	1.0000000
alpha-Linolenic acid metabolism	1.0000000
Alzheimer's disease	1.0000000
Amino sugar and nucleotide sugar metabolism	1.0000000
Aminoacyl-tRNA biosynthesis	0.6905660
Amoebiasis	1.0000000
Amphetamine addiction	0.0000000
AMPK signaling pathway	1.0000000
Amyotrophic lateral sclerosis (ALS)	0.3327273
Antigen processing and presentation	1.0000000
Apoptosis	1.0000000
Arachidonic acid metabolism	1.0000000
Arginine and proline metabolism	0.8278571
Arginine biosynthesis	0.6365217
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.1742857
Ascorbate and aldarate metabolism	1.0000000
Asthma	1.0000000
Autoimmune thyroid disease	1.0000000
B cell receptor signaling pathway	1.0000000
Bacterial invasion of epithelial cells	0.8503030
Basal cell carcinoma	1.0000000
beta-Alanine metabolism	1.0000000
Bile secretion	1.0000000
Biosynthesis of unsaturated fatty acids	1.0000000
Biotin metabolism	1.0000000
Bladder cancer	1.0000000
Butanoate metabolism	0.9310526
Caffeine metabolism	0.9310526
Carbohydrate digestion and absorption	1.0000000
Cardiac muscle contraction	1.0000000
Cell adhesion molecules (CAMs)	1.0000000
Cell cycle	0.0000000
Central carbon metabolism in cancer	1.0000000
Chagas disease (American trypanosomiasis)	1.0000000
Chemical carcinogenesis	1.0000000
Choline metabolism in cancer	1.0000000

Cholinergic synapse	1.0000000
Chronic myeloid leukemia	1.0000000
Circadian entrainment	1.0000000
Circadian rhythm	0.8413793
Citrate cycle (TCA cycle)	1.0000000
Cocaine addiction	1.0000000
Colorectal cancer	0.0000000
Complement and coagulation cascades	1.0000000
Cysteine and methionine metabolism	0.2568421
Cytosolic DNA-sensing pathway	1.0000000
D-Glutamine and D-glutamate metabolism	0.6365217
Dilated cardiomyopathy	1.0000000
Dopaminergic synapse	0.6905660
Dorso-ventral axis formation	0.1742857
Drug metabolism - cytochrome P450	1.0000000
Drug metabolism - other enzymes	0.4744444
ECM-receptor interaction	1.0000000
Endocrine and other factor-regulated calcium reabsorption	0.8503030
Endocytosis	0.6832000
Endometrial cancer	0.1742857
Epithelial cell signaling in Helicobacter pylori infection	0.3327273
Epstein-Barr virus infection	0.5490000
ErbB signaling pathway	1.0000000
Estrogen signaling pathway	1.0000000
Ether lipid metabolism	1.0000000
Fanconi anemia pathway	0.4744444
Fat digestion and absorption	1.0000000
Fatty acid biosynthesis	1.0000000
Fatty acid degradation	1.0000000
Fatty acid elongation	0.3935484
Fc epsilon RI signaling pathway	1.0000000
Fc gamma R-mediated phagocytosis	1.0000000
Folate biosynthesis	1.0000000
FoxO signaling pathway	0.3753846
Fructose and mannose metabolism	1.0000000
GABAergic synapse	0.9310526
Galactose metabolism	1.0000000
Gap junction	0.9823377
Gastric acid secretion	1.0000000
Glioma	0.6365217
Glucagon signaling pathway	1.0000000
Glutamatergic synapse	1.0000000
Glutathione metabolism	1.0000000
Glycerolipid metabolism	1.0000000
Glycerophospholipid metabolism	1.0000000
Glycine, serine and threonine metabolism	0.2568421

Glycolysis / Gluconeogenesis	1.0000000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	1.0000000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	1.0000000
Glycosaminoglycan degradation	1.0000000
Glycosphingolipid biosynthesis - ganglio series	1.0000000
Glycosphingolipid biosynthesis - globo series	1.0000000
Glycosphingolipid biosynthesis - lacto and neolacto series	1.0000000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	1.0000000
Glyoxylate and dicarboxylate metabolism	0.3753846
GnRH signaling pathway	1.0000000
Graft-versus-host disease	1.0000000
Hepatitis B	1.0000000
Hepatitis C	0.2568421
Herpes simplex infection	0.0000000
HIF-1 signaling pathway	1.0000000
Histidine metabolism	1.0000000
Huntington's disease	0.0000000
Hypertrophic cardiomyopathy (HCM)	0.6832000
Inflammatory bowel disease (IBD)	1.0000000
Inflammatory mediator regulation of TRP channels	1.0000000
Influenza A	0.3935484
Inositol phosphate metabolism	1.0000000
Insulin resistance	1.0000000
Insulin secretion	1.0000000
Insulin signaling pathway	1.0000000
Intestinal immune network for IgA production	1.0000000
Legionellosis	0.5136842
Leishmaniasis	1.0000000
Leukocyte transendothelial migration	1.0000000
Linoleic acid metabolism	1.0000000
Lipoic acid metabolism	0.8503030
Long-term depression	0.9310526
Long-term potentiation	0.8503030
Longevity regulating pathway	0.9310526
Longevity regulating pathway - multiple species	0.5809524
Lysine biosynthesis	1.0000000
Lysine degradation	1.0000000
Malaria	1.0000000
Maturity onset diabetes of the young	1.0000000
Measles	1.0000000
Melanogenesis	1.0000000
Melanoma	0.8503030
Metabolism of xenobiotics by cytochrome P450	1.0000000
Mineral absorption	1.0000000
Morphine addiction	1.0000000
mRNA surveillance pathway	0.2568421

mTOR signaling pathway	1.0000000
Mucin type O-Glycan biosynthesis	0.8503030
N-Glycan biosynthesis	1.0000000
Natural killer cell mediated cytotoxicity	1.0000000
Neuroactive ligand-receptor interaction	0.8611765
Neurotrophin signaling pathway	1.0000000
NF-kappa B signaling pathway	1.0000000
Nicotinate and nicotinamide metabolism	1.0000000
Nitrogen metabolism	0.4744444
NOD-like receptor signaling pathway	0.3935484
Non-alcoholic fatty liver disease (NAFLD)	1.0000000
Non-small cell lung cancer	1.0000000
Notch signaling pathway	1.0000000
One carbon pool by folate	0.9310526
Oocyte meiosis	1.0000000
Osteoclast differentiation	1.0000000
Ovarian steroidogenesis	1.0000000
Oxidative phosphorylation	0.1742857
p53 signaling pathway	1.0000000
Pancreatic cancer	1.0000000
Pancreatic secretion	1.0000000
Pantothenate and CoA biosynthesis	1.0000000
Parkinson's disease	1.0000000
Pathogenic Escherichia coli infection	0.1742857
Pentose and glucuronate interconversions	1.0000000
Pentose phosphate pathway	1.0000000
Peroxisome	0.4436364
Pertussis	1.0000000
Phagosome	0.5136842
Phenylalanine metabolism	0.9310526
Phenylalanine, tyrosine and tryptophan biosynthesis	0.6608333
Phosphatidylinositol signaling system	1.0000000
Phospholipase D signaling pathway	1.0000000
Phototransduction	0.9883544
Platelet activation	1.0000000
Porphyrin and chlorophyll metabolism	1.0000000
Primary bile acid biosynthesis	1.0000000
Prion diseases	1.0000000
Progesterone-mediated oocyte maturation	0.1742857
Prolactin signaling pathway	1.0000000
Propanoate metabolism	0.3935484
Prostate cancer	0.3935484
Protein processing in endoplasmic reticulum	0.6608333
Proximal tubule bicarbonate reclamation	1.0000000
Pyrimidine metabolism	0.2568421
Pyruvate metabolism	1.0000000

Regulation of autophagy	0.5490000
Regulation of lipolysis in adipocytes	1.0000000
Renal cell carcinoma	1.0000000
Renin secretion	1.0000000
Renin-angiotensin system	1.0000000
Retinol metabolism	1.0000000
Retrograde endocannabinoid signaling	1.0000000
Rheumatoid arthritis	1.0000000
Riboflavin metabolism	1.0000000
Ribosome biogenesis in eukaryotes	0.8611765
RIG-I-like receptor signaling pathway	0.5809524
RNA degradation	0.3753846
RNA transport	0.0000000
Salivary secretion	1.0000000
Salmonella infection	1.0000000
Selenocompound metabolism	1.0000000
Serotonergic synapse	1.0000000
Shigellosis	1.0000000
Signaling pathways regulating pluripotency of stem cells	1.0000000
Small cell lung cancer	1.0000000
SNARE interactions in vesicular transport	1.0000000
Sphingolipid metabolism	1.0000000
Sphingolipid signaling pathway	1.0000000
Staphylococcus aureus infection	1.0000000
Starch and sucrose metabolism	1.0000000
Steroid biosynthesis	1.0000000
Steroid hormone biosynthesis	1.0000000
Sulfur metabolism	0.6905660
Sulfur relay system	1.0000000
Synaptic vesicle cycle	0.0000000
Synthesis and degradation of ketone bodies	0.7985455
Systemic lupus erythematosus	1.0000000
T cell receptor signaling pathway	1.0000000
Taste transduction	1.0000000
Taurine and hypotaurine metabolism	1.0000000
Terpenoid backbone biosynthesis	0.6241860
TGF-beta signaling pathway	1.0000000
Thiamine metabolism	1.0000000
Thyroid cancer	0.0000000
Thyroid hormone signaling pathway	0.9883544
Thyroid hormone synthesis	1.0000000
Tight junction	0.8503030
TNF signaling pathway	1.0000000
Toll-like receptor signaling pathway	1.0000000
Toxoplasmosis	1.0000000
Transcriptional misregulation in cancer	0.8503030

```

Tryptophan metabolism 1.0000000
Type I diabetes mellitus 1.0000000
Type II diabetes mellitus 1.0000000
Tyrosine metabolism 1.0000000
Ubiquinone and other terpenoid-quinone biosynthesis 0.3753846
Valine, leucine and isoleucine degradation 0.9310526
Vascular smooth muscle contraction 1.0000000
Vasopressin-regulated water reabsorption 1.0000000
VEGF signaling pathway 1.0000000
Vibrio cholerae infection 1.0000000
Viral carcinogenesis 1.0000000
Viral myocarditis 0.4436364
Vitamin B6 metabolism 1.0000000
Vitamin digestion and absorption 1.0000000
Wnt signaling pathway 1.0000000

$errors
named list()

```

Arguments of this functions are almost the same as in SPIA. Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). Alternatively, the user can supply the results of the differential expression analysis of genes in two forms:

1. a data.frame with columns: *ID* gene identifiers (they must match with the node labels), *logFC* log fold-changes, *t* - t-statistics, *pval* p-values, *padj* adjusted p-values. Then the user sets **type** to **DEtable**
2. a list with two slots: named vector of log fold-changes of differentially expressed genes and a vector of names of all genes analysed. Then the user sets **type** to **DElist**

The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. The default thresholds for the differential expression analysis of genes (the moderated t-test from **limma** is used) are set with arguments **logFC.th** and **p.val.th**. The user can omit one of these criteria by setting the argument negative value, as is shown also in the example. The implementation returns also a gene-level statistics of the differential expression of genes. These statistics are later used in the visualization of a selected pathway. There is one extra argument **nperm** which controls the number of permutations.

3.7 PWEA

The last method available in this package is called PathWay Enrichment Analysis (PWEA). This is actually a weighted form of common Gene Set Enrichment Analysis (GSEA). The weights are called Topological Influence Factor (TIF) and are defined as a geometric mean of ratios of Pearson's correlation coefficient and the distance of two genes in a pathway. The weights of genes outside a pathway are assigned randomly from normal distribution with parameters estimated from the weights of genes in all pathways. A statistical significance of a pathway is assessed via Kolmogorov-Smirnov-like test statistic comparing two cumulative distribution functions with class label permutations.

```
> pwe<-PWEA(hnrrnp.cnts, group, pathways, type="RNASeq", nperm=100)
> #528 node labels mapped to the expression data
> #Average coverage 83.16538
> #0 (out of 10) pathways without a mapped node
> #Acute myeloid leukemia
> #Adherens junction
> #Adipocytokine signaling pathway
> #Adrenergic signaling in cardiomyocytes
> #African trypanosomiasis
> #Alanine, aspartate and glutamate metabolism
> #Alcoholism
> #Aldosterone-regulated sodium reabsorption
> #Allograft rejection
> #alpha-Linolenic acid metabolism
> res(pwe)
> #
```

	ES	p	p.adj
> #Acute myeloid leukemia	0.3526104	0.29	0.4142857
> #Adherens junction	0.3829831	1.00	1.0000000
> #Adipocytokine signaling pathway	0.3102945	1.00	1.0000000
> #Adrenergic signaling in cardiomyocytes	0.3611207	0.20	0.3333333
> #African trypanosomiasis	0.3272899	0.20	0.3333333
> #Alanine, aspartate and glutamate metabolism	0.2720946	0.20	0.3333333
> #Alcoholism	0.4708293	0.86	1.0000000
> #Aldosterone-regulated sodium reabsorption	0.3951037	0.20	0.3333333
> #Allograft rejection	0.9421248	0.03	0.3000000
> #alpha-Linolenic acid metabolism	0.6587026	0.20	0.3333333

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the **type** argument which decides on the type of the data ("MA" is used for expression microarray and "RNASeq" for RNA-Seq data). The others arguments are optional. Arguments **convertTo** and **convertBy** control the conversion of the node labels in the pathways. The default setting is **convertTo="none"** which performs no conversion. Please note, that the node labels should be the same as the rownames of gene expression data matrix. The **alpha** parameter sets a threshold for gene weights.

The purpose of this filtering is to reduce the possibility that a weight of a gene that is tightly correlated with a few genes are lowered by the weak correlation with other genes in a pathway. The implementation returns also a gene-level statistics of the differential expression of genes. These statistics are later used in the visualization of a selected pathway. The **nperm** argument controls the number of permutations.

Chapter 4

Outputs and visualization of the results for one pathway

All the functions mentioned in this vignette return an object of class `topResult`. It is a list with three slots. The first one is called `res` and contains a data frame of the results for all the pathways. The actual informations there differ among the methods and are described in the manual. The second slot is called `topo.sig` and it is a list of topological significances of genes in pathways. The term topological significance means scores used to measure the importance of a gene in a pathway. The higher the score the more important gene. It is `NULL` for TAPPA and DEGraph method, because they do not provide any measure of this kind. The last slot contains the log fold-changes or test statistics of differential expression at gene level. They are necessary in the `plot` function for all the methods except TopologyGSA and clipper.

The `plot()` function has three necessary arguments when it is to be applied on `topResult` object. The first one is an output from any of the methods. The second one is either a name of a pathway or its number in a list of pathways. And the last one is a list of pathways used in the analysis.

The final visualization of the results for one pathway is method specific. Three arguments that are common to all methods are:

- `IDs` - the type of gene labels in the original data, `"entrez"` by default
- `graphIDs` - the type of gene labels to be used in plot, `"symbol"` by default
- `layout` - the layout of the graph from Rgraphviz package, `"dot"` by default, other possibilities are e.g. `"neato"` or `"twopi"`

The significant cliques are enhanced in the results of TopologyGSA and clipper. Since the whole analysis with these method is done on transformed topology (moralized then triangulated graphs), the transformed topology is also drawn in the visualization. The user can specify the color which used for edges between nodes from a significant clique (default value is `cli.color="red"` and

can be either a character or a function that returns a color palette) and the color of nodes (default value is `cli.node.color="white"`). The `alpha` controls the significance threshold for the cliques. If `add.legend=TRUE` then a legend is drawn containing the colors of edges of individual cliques, their genes and p-value. The `intersp` can be used to adjust the space between items of legened.

```
> #Fails during check
> library(gageData)
> data(hnrnp.cnts)
> group<-c(rep("sample",4), rep("control",4))
> hnrnp.cnts<-hnrnp.cnts[rowSums(hnrnp.cnts)>0,]
> res<-clipper(hnrnp.cnts, group, pathways[1:2], type="RNASeq", testCliques=TRUE)
> plot(res,1, pathways)
>
```

In the visualization of the results from PRS, PWEA or SPIA method, the nodes are colored accoring to the selected gene-level statistic and the size of node reflects the topological significance of a node. Because TAPPA and DEGraph do not provide any specific topological or statistical measure at gene-level, only the coloring of the nodes according to gene-level statistics is used. The user can specify the number of breaks for gene statistics and topological significance of genes (default values are 100 and 5, `breaks=c(100,5)`), colors in the pallete for the gene statistics (default is `pallete.colors=c("blue","white", "red")`) and a color for missing nodes `na.col="grey"`. The `stats` argument controls the label of the gene statistics and `title` controls whether the name of a pathway and its p-value should be written as a title. The user can also adjust the size of the nodes (`nodesize`) and font (`fontsize`)

```
> library(gageData)
> data(hnrnp.cnts)
> group<-c(rep("sample",4), rep("control",4))
> hnrnp.cnts<-hnrnp.cnts[rowSums(hnrnp.cnts)>0,]
> pathways<-pathways("hsapiens", "kegg")[50:55]
> spi<-SPIA(hnrnp.cnts, group, pathways, type="RNASeq", logFC.th=-1)
> plot(spi,"Complement and coagulation cascades", pathways, fontsize=50)
>
```

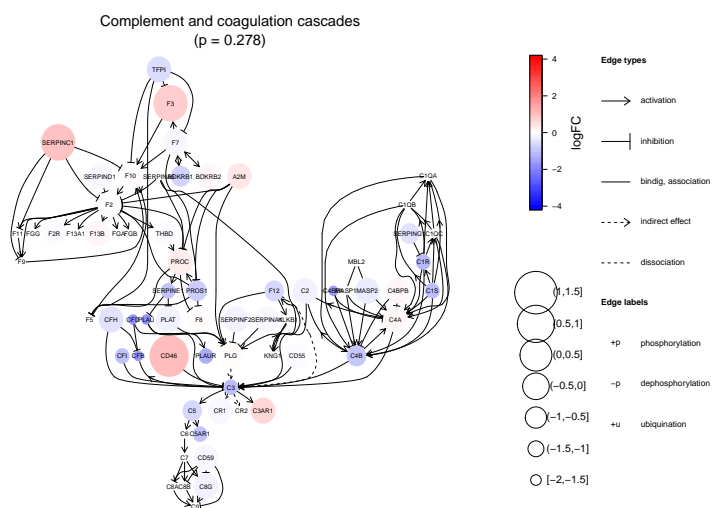


Figure 4.1:

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