

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

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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       = 12-10-2016

> 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: "2016-10-12"
```

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 31.3021 %
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]]
> #
> #Acute myeloid leukemia          alphaVar alphaMean mean.q.value var.q.value
> #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 31.3021 %
```

```
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	-0.513	0.264	0.471
Adherens junction	-0.294	0.596	0.432
Adipocytokine signaling pathway	0.185	0.670	0.145
Adrenergic signaling in cardiomyocytes	-0.336	0.516	0.718
African trypanosomiasis	0.000	1.000	0.435
	pGFdr	pGFWER	
Acute myeloid leukemia	0.58875	1.000	
Adherens junction	0.58875	1.000	
Adipocytokine signaling pathway	0.58875	0.725	
Adrenergic signaling in cardiomyocytes	0.71800	1.000	
African trypanosomiasis	0.58875	1.000	
	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 cheminformatics 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 31.3021 %
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 31.3021 %
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 -0.9825057 0.92
Adherens junction      2.4305686 0.02
Adipocytokine signaling pathway 0.6042630 0.20
Adrenergic signaling in cardiomyocytes -0.8511907 0.89
African trypanosomiasis 0.8611580 0.12
              q.value
Acute myeloid leukemia 0.9200000
Adherens junction      0.1000000
Adipocytokine signaling pathway 0.3333333
Adrenergic signaling in cardiomyocytes 0.9200000
African trypanosomiasis 0.3000000

$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 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(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")
```

14848 node labels mapped to the expression data
Average coverage 84.50669 %
0 (out of 274) 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-regulated sodium reabsorption	1.738535e-01
Aldosterone synthesis and secretion	1.269940e-02
Allograft rejection	8.546771e-01
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1.742709e-03
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	9.186695e-03
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	4.097132e-02
Glucagon signaling pathway	1.713701e-02
Glutathione metabolism	NA
Glycerolipid metabolism	NA
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 and isoglobo 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
Hedgehog signaling pathway	2.278731e-01
Hepatitis C	1.605871e-02
Herpes simplex infection	4.689919e-02
Hippo signaling pathway -multiple species	7.499680e-02

Histidine metabolism	NA
Homologous recombination	8.215243e-01
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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	7.259594e-01
Neurotrophin signaling pathway	4.308852e-01
N-Glycan biosynthesis	4.306460e-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-angiotensin system	3.720312e-01
Renin secretion	3.308961e-03
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
Taste transduction	1.446835e-01
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	4.019857e-02
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	0.0736505919
Adherens junction	0.2193668626
Adipocytokine signaling pathway	0.1592301978
African trypanosomiasis	0.2946804690
AGE-RAGE signaling pathway in diabetic complications	0.0070898612
Alanine, aspartate and glutamate metabolism	NA
Aldosterone-regulated sodium reabsorption	0.2577828241
Aldosterone synthesis and secretion	0.0481830078
Allograft rejection	0.8915264429
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.0136317090
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	0.0382285070
Amoebiasis	0.1265834469
AMPK signaling pathway	0.0159218802
Amyotrophic lateral sclerosis (ALS)	0.0218115325
Antigen processing and presentation	0.1987691796
Arachidonic acid metabolism	NA
Arginine and proline metabolism	0.2693499921
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.0128354012
Ascorbate and aldarate metabolism	NA
Asthma	0.3580613329
Autoimmune thyroid disease	0.8915264429
B cell receptor signaling pathway	0.2240839364
beta-Alanine metabolism	0.1016698197
Bile secretion	0.0795773641

Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	0.0108526687
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	0.0108526687
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.1521455959
Central carbon metabolism in cancer	0.0294272875
Chagas disease (American trypanosomiasis)	0.0112265993
Chemical carcinogenesis	NA
Choline metabolism in cancer	0.3474117741
Chronic myeloid leukemia	0.1161209432
Circadian rhythm	0.1129524361
Citrate cycle (TCA cycle)	0.0136317090
Cocaine addiction	0.0307964271
Colorectal cancer	0.1592301978
Cysteine and methionine metabolism	0.1800522773
Cytosolic DNA-sensing pathway	0.0817790900
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	0.0135569553
Dorso-ventral axis formation	0.0736505919
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	0.6295500289
Endocytosis	0.0148922174
Endometrial cancer	0.0817790900
Epstein-Barr virus infection	0.4386420124
Ether lipid metabolism	NA
Fanconi anemia pathway	0.0927245715
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	0.0515508578
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	0.0609313988
Gastric acid secretion	0.0927245715
Glucagon signaling pathway	0.0564098565
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	0.0060252129
Glycolysis / Gluconeogenesis	0.0296192311
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA

Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo and isoglobo series	0.9648593562
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	0.0004920035
GnRH signaling pathway	0.4445810776
Graft-versus-host disease	0.8915264429
Hedgehog signaling pathway	0.3095010941
Hepatitis C	0.0559884634
Herpes simplex infection	0.1016698197
Hippo signaling pathway -multiple species	0.1443968254
Histidine metabolism	NA
Homologous recombination	0.8915264429
Huntington's disease	0.0135569553
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	0.8737413463
Inflammatory mediator regulation of TRP channels	0.2537316249
Influenza A	0.2201663054
Inositol phosphate metabolism	NA
Insulin resistance	0.1592699255
Insulin secretion	0.3018564079
Insulin signaling pathway	0.0913845940
Intestinal immune network for IgA production	0.3095010941
Legionellosis	0.4726121257
Leishmaniasis	0.9648593562
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	0.8546580251
Maturity onset diabetes of the young	0.8933720550
Measles	0.3316126890
Melanogenesis	0.0817790900
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	0.4807542270
mRNA surveillance pathway	0.0060252129
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	0.8287500784
Neurotrophin signaling pathway	0.5053108474
N-Glycan biosynthesis	0.5053108474
Nicotinate and nicotinamide metabolism	0.0431774318
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	0.0515508578
Non-alcoholic fatty liver disease (NAFLD)	0.1893031785
One carbon pool by folate	0.0128354012

Oocyte meiosis	0.1413712261
Osteoclast differentiation	0.0410873636
Ovarian steroidogenesis	0.8903369060
Oxidative phosphorylation	NA
Pancreatic cancer	0.3580613329
Pancreatic secretion	0.0795773641
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	0.0209295015
Pathogenic Escherichia coli infection	0.4996474965
Pentose and glucuronate interconversions	0.2537316249
Pentose phosphate pathway	0.9648593562
Peroxisome	NA
Pertussis	0.0564098565
Phagosome	0.0801468420
Phenylalanine metabolism	0.0564098565
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	0.0707314856
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	0.0296192311
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	0.0035887340
Pyruvate metabolism	0.0190638170
Regulation of autophagy	0.0112265993
Regulation of lipolysis in adipocytes	0.3095010941
Renal cell carcinoma	0.0707314856
Renin-angiotensin system	0.4614618323
Renin secretion	0.0194025467
Retinol metabolism	NA
Rheumatoid arthritis	0.8915264429
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	0.8624840244
RNA degradation	0.0376745409
RNA transport	0.1987691796
Salivary secretion	0.8915264429
Salmonella infection	0.1228964748
Selenocompound metabolism	NA
Shigellosis	0.4592372807
SNARE interactions in vesicular transport	0.1413712261
Sphingolipid metabolism	NA
Staphylococcus aureus infection	0.2414025796
Starch and sucrose metabolism	0.0190638170
Steroid biosynthesis	NA

Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	0.0564098565
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	0.0622051563
Taste transduction	0.2276118962
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	0.0927245715
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	0.0060252129
Thyroid hormone synthesis	0.5270176865
Tight junction	0.2584515526
TNF signaling pathway	0.2864111800
Toxoplasmosis	0.9648593562
Transcriptional misregulation in cancer	0.1517667812
Tryptophan metabolism	NA
Type I diabetes mellitus	0.8915264429
Type II diabetes mellitus	0.2442098494
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	0.1805612286
Vasopressin-regulated water reabsorption	0.0366767530
VEGF signaling pathway	0.1016698197
Vibrio cholerae infection	0.4280030126
Viral carcinogenesis	0.0135569553
Viral myocarditis	0.4996474965
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	0.1800522773
	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	7.337280e-01
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	4.755887e-02
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	NA
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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	NA
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	7.254616e-01
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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	3.785431e-01
Renin secretion	NA
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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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
Acute myeloid leukemia	Comp1.pFourier 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-regulated sodium reabsorption	1.738535e-01
Aldosterone synthesis and secretion	1.269940e-02
Allograft rejection	8.546771e-01
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1.742709e-03
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	9.186695e-03
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	4.097132e-02
Glucagon signaling pathway	1.713701e-02
Glutathione metabolism	NA
Glycerolipid metabolism	NA
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 and isoglobo 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
Hedgehog signaling pathway	2.278731e-01
Hepatitis C	1.605871e-02
Herpes simplex infection	4.689919e-02
Hippo signaling pathway -multiple species	7.499680e-02
Histidine metabolism	NA
Homologous recombination	8.215243e-01
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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	7.259594e-01
Neurotrophin signaling pathway	4.308852e-01
N-Glycan biosynthesis	4.306460e-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-angiotensin system	3.720312e-01
Renin secretion	3.308961e-03
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
Taste transduction	1.446835e-01
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	4.019857e-02
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
	Compl.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-regulated sodium reabsorption	3
Aldosterone synthesis and secretion	3
Allograft rejection	1
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	1
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	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 and isoglobo 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
Hedgehog signaling pathway	4
Hepatitis C	2

Herpes simplex infection	2
Hippo signaling pathway -multiple species	2
Histidine metabolism	NA
Homologous recombination	1
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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	2
Neurotrophin signaling pathway	5
N-Glycan biosynthesis	2
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-angiotensin system	1
Renin secretion	2
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
Taste transduction	2
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	3
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
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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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	9.033627e-02
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1.493874e-02
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	4.408723e-02
Herpes simplex infection	7.392980e-03
Hippo signaling pathway -multiple species	6.094599e-01
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	3.503275e-02
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	5.956817e-03
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	NA
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-angiotensin system	NA
Renin secretion	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
Taste transduction	2.333172e-01
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	6.226573e-03
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-regulated sodium reabsorption	1.750243e-01
Aldosterone synthesis and secretion	4.354083e-02
Allograft rejection	2.734131e-01
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	4.394902e-02
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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	8.445878e-03
Glucagon signaling pathway	9.572648e-04
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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1.098787e-02
Herpes simplex infection	1.198945e-02
Hippo signaling pathway -multiple species	3.631951e-01
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	9.669939e-01
Neurotrophin signaling pathway	1.967410e-02
N-Glycan biosynthesis	2.261001e-01
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	4.381604e-02
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-angiotensin system	NA
Renin secretion	1.742709e-03
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
Taste transduction	7.498701e-02
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	6.678164e-03
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

Acute myeloid leukemia

Comp2.k

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-regulated sodium reabsorption	2
Aldosterone synthesis and secretion	3
Allograft rejection	1
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	1
Hippo signaling pathway -multiple species	1
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	1
Neurotrophin signaling pathway	4
N-Glycan biosynthesis	1
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-angiotensin system	NA
Renin secretion	2
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
Taste transduction	1
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	1
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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.559033e-02
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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)	4.514380e-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	2.619489e-03
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 and isoglobo 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

Hedgehog signaling pathway	NA
Hepatitis C	1.772990e-01
Herpes simplex infection	5.089027e-02
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	3.606624e-02
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	6.726537e-02
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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA

T cell receptor signaling pathway	6.171019e-04
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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	7.282288e-02
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	6.140781e-01
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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)	9.354989e-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	7.420075e-02
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 and isoglobo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	4.268875e-02
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	3.200578e-01
Herpes simplex infection	5.412498e-03
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	5.023725e-02
Neurotrophin signaling pathway	4.268875e-02
N-Glycan biosynthesis	7.188636e-02
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	4.138198e-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-angiotensin system	NA
Renin secretion	9.329192e-01
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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	3.033232e-01
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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	2
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1

Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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)	2
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	1
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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	1
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	1
Neurotrophin signaling pathway	2
N-Glycan biosynthesis	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	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-angiotensin system	NA
Renin secretion	2

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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	1
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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	0.1165044772
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.0023446943
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	0.0289689238
Herpes simplex infection	0.0028533350
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	0.4099728734
Neurotrophin signaling pathway	0.1219609340
N-Glycan biosynthesis	NA
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-angiotensin system	NA
Renin secretion	0.1356989861
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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	0.0289689238
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
	Comp4.pFourier
Acute myeloid leukemia	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	1.496570e-01
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.018559e-06
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	5.104709e-02
Herpes simplex infection	1.151402e-02
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	NA
Huntington's disease	4.334308e-02
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	4.268875e-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	4.268875e-02
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mRNA surveillance pathway	2.544490e-03
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	1.633723e-01
Neurotrophin signaling pathway	2.412372e-02
N-Glycan biosynthesis	NA
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-angiotensin system	NA
Renin secretion	2.564463e-01
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

Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	5.104709e-02
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
	Comp4.k
Acute myeloid leukemia	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	2
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	1
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	1
Neurotrophin signaling pathway	1

N-Glycan biosynthesis	NA
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-angiotensin system	NA
Renin secretion	2
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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	1
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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA

alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.003296e-04
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1.397149e-03
Herpes simplex infection	2.609499e-03
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	4.655277e-03
N-Glycan biosynthesis	NA
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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	3.731617e-03
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1.537225e-01
Herpes simplex infection	4.620056e-01
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA

Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	7.786257e-02
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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	7.119866e-01
N-Glycan biosynthesis	NA
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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	1
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	1
N-Glycan biosynthesis	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	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1.537627e-04
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	7.712749e-03
Herpes simplex infection	9.670449e-01
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA

Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	3.114995e-02
N-Glycan biosynthesis	NA
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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA

Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.069767e-02
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	6.073678e-01
Herpes simplex infection	7.953202e-01
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	1.507586e-03
N-Glycan biosynthesis	NA
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
Porphyryn 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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	1
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	1
N-Glycan biosynthesis	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	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.138043e-04
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	3.519424e-05
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	2.416589e-05
N-Glycan biosynthesis	NA
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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.084033e-02
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	2.385081e-02
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	3.637256e-06
N-Glycan biosynthesis	NA
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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	1
N-Glycan biosynthesis	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	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.014168963
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	0.005007935
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA

Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.016614655
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	0.006826353
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	2.609499e-03
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	0.4620055564

Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	0.0004686003
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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

Comp10.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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	0.5986167
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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

Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA

T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	4.767311e-06
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA

Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	9.057618e-05
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1.653004e-05
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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

Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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.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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	0.01509456
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA

N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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-regulated sodium reabsorption	NA
Aldosterone synthesis and secretion	NA
Allograft rejection	NA

alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	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 and isoglobo 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
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Hippo signaling pathway -multiple species	NA
Histidine metabolism	NA
Homologous recombination	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
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	NA
Neurotrophin signaling pathway	NA
N-Glycan biosynthesis	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-angiotensin system	NA
Renin secretion	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
Taste transduction	NA
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	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
Vitamin digestion and absorption

NA
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)

14848 node labels mapped to the expression data
Average coverage 84.50669 %
0 (out of 274) pathways without a mapped node

> res(spi)

```

\$results

	pSize
Acute myeloid leukemia	50
Adherens junction	66
Adipocytokine signaling pathway	57
Adrenergic signaling in cardiomyocytes	125
African trypanosomiasis	20
AGE-RAGE signaling pathway in diabetic complications	85
Alanine, aspartate and glutamate metabolism	30
Aldosterone-regulated sodium reabsorption	25
Aldosterone synthesis and secretion	55
Allograft rejection	15
alpha-Linolenic acid metabolism	15
Alzheimer's disease	45
Aminoacyl-tRNA biosynthesis	13
Amino sugar and nucleotide sugar metabolism	40
Amoebiasis	34
Amphetamine addiction	52
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
Bacterial invasion of epithelial cells	51
Basal cell carcinoma	41
B cell receptor signaling pathway	64
beta-Alanine metabolism	28
Bile secretion	20
Biosynthesis of unsaturated fatty acids	6
Biotin metabolism	2
Bladder cancer	29
Breast cancer	123
Butanoate metabolism	20
Caffeine metabolism	3
Carbohydrate digestion and absorption	14
Cardiac muscle contraction	10
Cell adhesion molecules (CAMs)	67
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	76
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	106
Dorso-ventral axis formation	13
Drug metabolism - cytochrome P450	39
Drug metabolism - other enzymes	27
ECM-receptor interaction	69
EGFR tyrosine kinase inhibitor resistance	74
Endocrine and other factor-regulated calcium reabsorption	32
Endocrine resistance	89
Endocytosis	94
Endometrial cancer	42
Epithelial cell signaling in Helicobacter pylori infection	32
Epstein-Barr virus infection	76
ErbB signaling pathway	77
Estrogen signaling pathway	78
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	48
Glioma	60
Glucagon signaling pathway	77
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 and isoglobo series	11
Glycosphingolipid biosynthesis - lacto and neolacto series	20
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	23
Glyoxylate and dicarboxylate metabolism	23
GnRH signaling pathway	77
Graft-versus-host disease	11
Hedgehog signaling pathway	42
Hepatitis B	116
Hepatitis C	80
Herpes simplex infection	87
HIF-1 signaling pathway	91
Hippo signaling pathway -multiple species	25
Histidine metabolism	21
Homologous recombination	18
Huntington's disease	26
Hypertrophic cardiomyopathy (HCM)	22
Inflammatory bowel disease (IBD)	33
Inflammatory mediator regulation of TRP channels	73
Influenza A	96
Inositol phosphate metabolism	64
Insulin resistance	85
Insulin secretion	43
Insulin signaling pathway	124
Intestinal immune network for IgA production	20
Legionellosis	37
Leishmaniasis	43
Leukocyte transendothelial migration	73
Linoleic acid metabolism	16
Lipoic acid metabolism	3
Longevity regulating pathway	72
Longevity regulating pathway - multiple species	54
Long-term depression	47
Long-term potentiation	56
Lysine biosynthesis	2
Lysine degradation	52
Malaria	10
Maturity onset diabetes of the young	11

Measles	74
Melanogenesis	88
Melanoma	56
Metabolism of xenobiotics by cytochrome P450	43
Mineral absorption	4
Morphine addiction	43
mRNA surveillance pathway	63
mTOR signaling pathway	131
Mucin type O-Glycan biosynthesis	24
Natural killer cell mediated cytotoxicity	88
Neuroactive ligand-receptor interaction	14
Neurotrophin signaling pathway	106
NF-kappa B signaling pathway	69
N-Glycan biosynthesis	46
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	103
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	22
Platelet activation	95
Platinum drug resistance	38
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	96
Pyruvate metabolism	36
Regulation of autophagy	17
Regulation of lipolysis in adipocytes	42
Renal cell carcinoma	52
Renin-angiotensin system	2
Renin secretion	40
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	37
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	23
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
Taste transduction	24
Taurine and hypotaurine metabolism	8
T cell receptor signaling pathway	79
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	88
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	43
African trypanosomiasis	3
AGE-RAGE signaling pathway in diabetic complications	32
Alanine, aspartate and glutamate metabolism	11
Aldosterone-regulated sodium reabsorption	9
Aldosterone synthesis and secretion	20
Allograft rejection	6
alpha-Linolenic acid metabolism	6
Alzheimer's disease	21
Aminoacyl-tRNA biosynthesis	6
Amino sugar and nucleotide sugar metabolism	20
Amoebiasis	10
Amphetamine addiction	21
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
Bacterial invasion of epithelial cells	15
Basal cell carcinoma	20
B cell receptor signaling pathway	23
beta-Alanine metabolism	12
Bile secretion	5
Biosynthesis of unsaturated fatty acids	3
Biotin metabolism	0
Bladder cancer	15
Breast cancer	50
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	23
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	34
Dorso-ventral axis formation	7
Drug metabolism - cytochrome P450	10
Drug metabolism - other enzymes	13
ECM-receptor interaction	31
EGFR tyrosine kinase inhibitor resistance	35
Endocrine and other factor-regulated calcium reabsorption	7
Endocrine resistance	37
Endocytosis	34
Endometrial cancer	19

Epithelial cell signaling in Helicobacter pylori infection	15
Epstein-Barr virus infection	28
ErbB signaling pathway	30
Estrogen signaling pathway	30
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	14
Glioma	24
Glucagon signaling pathway	24
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 and isoglobo series	4
Glycosphingolipid biosynthesis - lacto and neolacto series	4
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	10
Glyoxylate and dicarboxylate metabolism	12
GnRH signaling pathway	30
Graft-versus-host disease	5
Hedgehog signaling pathway	13
Hepatitis B	48
Hepatitis C	39
Herpes simplex infection	38
HIF-1 signaling pathway	35
Hippo signaling pathway -multiple species	6
Histidine metabolism	8
Homologous recombination	10
Huntington's disease	13

Hypertrophic cardiomyopathy (HCM)	7
Inflammatory bowel disease (IBD)	6
Inflammatory mediator regulation of TRP channels	25
Influenza A	32
Inositol phosphate metabolism	22
Insulin resistance	29
Insulin secretion	12
Insulin signaling pathway	48
Intestinal immune network for IgA production	5
Legionellosis	10
Leishmaniasis	15
Leukocyte transendothelial migration	26
Linoleic acid metabolism	4
Lipoic acid metabolism	1
Longevity regulating pathway	24
Longevity regulating pathway - multiple species	20
Long-term depression	16
Long-term potentiation	23
Lysine biosynthesis	1
Lysine degradation	17
Malaria	1
Maturity onset diabetes of the young	4
Measles	24
Melanogenesis	32
Melanoma	21
Metabolism of xenobiotics by cytochrome P450	15
Mineral absorption	1
Morphine addiction	6
mRNA surveillance pathway	38
mTOR signaling pathway	61
Mucin type O-Glycan biosynthesis	8
Natural killer cell mediated cytotoxicity	34
Neuroactive ligand-receptor interaction	5
Neurotrophin signaling pathway	39
NF-kappa B signaling pathway	19
N-Glycan biosynthesis	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	47
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	5
Platelet activation	32
Platinum drug resistance	15
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	36
Pyruvate metabolism	16
Regulation of autophagy	10
Regulation of lipolysis in adipocytes	12
Renal cell carcinoma	26
Renin-angiotensin system	0
Renin secretion	13
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	10
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
Taste transduction	5
Taurine and hypotaurine metabolism	3
T cell receptor signaling pathway	31
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	31
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	0.757
African trypanosomiasis	0.992
AGE-RAGE signaling pathway in diabetic complications	0.493
Alanine, aspartate and glutamate metabolism	0.584
Aldosterone-regulated sodium reabsorption	0.616
Aldosterone synthesis and secretion	0.590
Allograft rejection	0.501
alpha-Linolenic acid metabolism	0.501
Alzheimer's disease	0.118
Aminoacyl-tRNA biosynthesis	0.339
Amino sugar and nucleotide sugar metabolism	0.064
Amoebiasis	0.864
Amphetamine addiction	0.355
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
Bacterial invasion of epithelial cells	0.900
Basal cell carcinoma	0.082
B cell receptor signaling pathway	0.617
beta-Alanine metabolism	0.323
Bile secretion	0.914
Biosynthesis of unsaturated fatty acids	0.394
Biotin metabolism	1.000
Bladder cancer	0.075
Breast cancer	0.227
Butanoate metabolism	0.809
Caffeine metabolism	0.750
Carbohydrate digestion and absorption	0.421
Cardiac muscle contraction	0.540
Cell adhesion molecules (CAMs)	0.947
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	0.912
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	0.877
Dorso-ventral axis formation	0.166
Drug metabolism - cytochrome P450	0.953
Drug metabolism - other enzymes	0.159
ECM-receptor interaction	0.108
EGFR tyrosine kinase inhibitor resistance	0.045
Endocrine and other factor-regulated calcium reabsorption	0.979
Endocrine resistance	0.216
Endocytosis	0.606
Endometrial cancer	0.172
Epithelial cell signaling in Helicobacter pylori infection	0.165
Epsstein-Barr virus infection	0.555
ErbB signaling pathway	0.403
Estrogen signaling pathway	0.437
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	0.901
Glioma	0.361
Glucagon signaling pathway	0.882
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 and isoglobo 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	0.403
Graft-versus-host disease	0.385
Hedgehog signaling pathway	0.835
Hepatitis B	0.189
Hepatitis C	0.021
Herpes simplex infection	0.120
HIF-1 signaling pathway	0.426
Hippo signaling pathway -multiple species	0.944
Histidine metabolism	0.541
Homologous recombination	0.085
Huntington's disease	0.122
Hypertrophic cardiomyopathy (HCM)	0.763
Inflammatory bowel disease (IBD)	0.995
Inflammatory mediator regulation of TRP channels	0.727
Influenza A	0.803
Inositol phosphate metabolism	0.712
Insulin resistance	0.746
Insulin secretion	0.921
Insulin signaling pathway	0.379
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
Longevity regulating pathway	0.778
Longevity regulating pathway - multiple species	0.550
Long-term depression	0.714
Long-term potentiation	0.308
Lysine biosynthesis	0.603
Lysine degradation	0.784
Malaria	0.990
Maturity onset diabetes of the young	0.629
Measles	0.826
Melanogenesis	0.590

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	0.015
Mucin type O-Glycan biosynthesis	0.716
Natural killer cell mediated cytotoxicity	0.415
Neuroactive ligand-receptor interaction	0.638
Neurotrophin signaling pathway	0.555
NF-kappa B signaling pathway	0.963
N-Glycan biosynthesis	0.322
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	0.044
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	0.951
Platelet activation	0.781
Platinum drug resistance	0.436
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	0.499
Pyruvate metabolism	0.224
Regulation of autophagy	0.056
Regulation of lipolysis in adipocytes	0.904
Renal cell carcinoma	0.038
Renin-angiotensin system	1.000
Renin secretion	0.773
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	0.926
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	0.194
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
Taste transduction	0.973
Taurine and hypotaurine metabolism	0.619
T cell receptor signaling pathway	0.381
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	0.674
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	-10189.265
Adherens junction	-22707.370
Adipocytokine signaling pathway	-16433.516
Adrenergic signaling in cardiomyocytes	-12092.816
African trypanosomiasis	-585.250
AGE-RAGE signaling pathway in diabetic complications	-9618.544
Alanine, aspartate and glutamate metabolism	0.000
Aldosterone-regulated sodium reabsorption	514.875
Aldosterone synthesis and secretion	8948.966
Allograft rejection	0.000
alpha-Linolenic acid metabolism	0.000
Alzheimer's disease	-23022.000
Aminoacyl-tRNA biosynthesis	0.000
Amino sugar and nucleotide sugar metabolism	0.000
Amoebiasis	-290.875
Amphetamine addiction	280.582
AMPK signaling pathway	9084.618
Amyotrophic lateral sclerosis (ALS)	-37674.000
Antigen processing and presentation	-14907.250
Apoptosis	-2542.830
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
Bacterial invasion of epithelial cells	-5537.750
Basal cell carcinoma	-9706.542
B cell receptor signaling pathway	4845.068
beta-Alanine metabolism	0.000
Bile secretion	-23.000
Biosynthesis of unsaturated fatty acids	0.000
Biotin metabolism	NA
Bladder cancer	-6030.625
Breast cancer	42335.646
Butanoate metabolism	0.000
Caffeine metabolism	0.000
Carbohydrate digestion and absorption	250.000
Cardiac muscle contraction	0.000
Cell adhesion molecules (CAMs)	-10085.396
Cell cycle	15097.085
Central carbon metabolism in cancer	-20452.994
Chagas disease (American trypanosomiasis)	-33508.689
Chemical carcinogenesis	0.000
Choline metabolism in cancer	-4214.080
Cholinergic synapse	1520.731
Chronic myeloid leukemia	-12972.125
Circadian entrainment	10004.943
Circadian rhythm	-1424.228
Citrate cycle (TCA cycle)	0.000
Cocaine addiction	-1282.875
Colorectal cancer	27279.750
Complement and coagulation cascades	-2834.939
Cysteine and methionine metabolism	0.000
Cytosolic DNA-sensing pathway	-1577.250
D-Glutamine and D-glutamate metabolism	0.000
Dilated cardiomyopathy	0.000
Dopaminergic synapse	-3528.642
Dorso-ventral axis formation	4538.250
Drug metabolism - cytochrome P450	0.000
Drug metabolism - other enzymes	0.000
ECM-receptor interaction	-158446.875
EGFR tyrosine kinase inhibitor resistance	-1623.118
Endocrine and other factor-regulated calcium reabsorption	9220.250
Endocrine resistance	-16050.655
Endocytosis	0.000
Endometrial cancer	21612.250
Epithelial cell signaling in Helicobacter pylori infection	6735.187
Epstein-Barr virus infection	8184.717

ErbB signaling pathway	-13676.164
Estrogen signaling pathway	-14926.488
Ether lipid metabolism	0.000
Fanconi anemia pathway	-2806.625
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	-5718.106
Fc gamma R-mediated phagocytosis	4595.508
Folate biosynthesis	0.000
FoxO signaling pathway	-4813.423
Fructose and mannose metabolism	0.000
GABAergic synapse	172.531
Galactose metabolism	0.000
Gap junction	242.250
Gastric acid secretion	2933.875
Glioma	2367.881
Glucagon signaling pathway	1446.145
Glutamatergic synapse	2429.827
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 and isoglobo 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	29541.250
Graft-versus-host disease	0.000
Hedgehog signaling pathway	-1938.417
Hepatitis B	-41403.125
Hepatitis C	197.597
Herpes simplex infection	-30543.562
HIF-1 signaling pathway	334.057
Hippo signaling pathway -multiple species	1350.917
Histidine metabolism	0.000
Homologous recombination	0.000
Huntington's disease	2449.625
Hypertrophic cardiomyopathy (HCM)	0.000
Inflammatory bowel disease (IBD)	946.121

Inflammatory mediator regulation of TRP channels	-4642.521
Influenza A	1016.443
Inositol phosphate metabolism	0.000
Insulin resistance	59999.876
Insulin secretion	-1652.713
Insulin signaling pathway	47120.990
Intestinal immune network for IgA production	309.000
Legionellosis	2638.938
Leishmaniasis	10057.708
Leukocyte transendothelial migration	-19292.330
Linoleic acid metabolism	0.000
Lipoic acid metabolism	0.000
Longevity regulating pathway	19297.811
Longevity regulating pathway - multiple species	3731.414
Long-term depression	NA
Long-term potentiation	-8369.789
Lysine biosynthesis	0.000
Lysine degradation	0.000
Malaria	0.000
Maturity onset diabetes of the young	500.250
Measles	9516.725
Melanogenesis	-18139.089
Melanoma	1255.261
Metabolism of xenobiotics by cytochrome P450	0.000
Mineral absorption	-408.500
Morphine addiction	96.066
mRNA surveillance pathway	0.000
mTOR signaling pathway	14842.479
Mucin type O-Glycan biosynthesis	0.000
Natural killer cell mediated cytotoxicity	15070.759
Neuroactive ligand-receptor interaction	145.000
Neurotrophin signaling pathway	16051.583
NF-kappa B signaling pathway	-22026.235
N-Glycan biosynthesis	0.000
Nicotinate and nicotinamide metabolism	0.000
Nitrogen metabolism	0.000
NOD-like receptor signaling pathway	379.292
Non-alcoholic fatty liver disease (NAFLD)	590.517
Non-small cell lung cancer	-13105.519
Notch signaling pathway	25580.768
One carbon pool by folate	0.000
Oocyte meiosis	9511.398
Osteoclast differentiation	-33224.047
Ovarian steroidogenesis	210.750
Oxidative phosphorylation	0.000
p53 signaling pathway	3511.373

Pancreatic cancer	-1650.719
Pancreatic secretion	-23.000
Pantothenate and CoA biosynthesis	0.000
Parkinson's disease	-42571.625
Pathogenic Escherichia coli infection	98683.000
Pentose and glucuronate interconversions	0.000
Pentose phosphate pathway	0.000
Peroxisome	0.000
Pertussis	-3515.764
Phagosome	0.000
Phenylalanine metabolism	0.000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.000
Phosphatidylinositol signaling system	0.000
Phospholipase D signaling pathway	15501.704
Phototransduction	-2848.250
Platelet activation	5285.498
Platinum drug resistance	-7200.914
Porphyrin and chlorophyll metabolism	0.000
Primary bile acid biosynthesis	0.000
Prion diseases	-11285.161
Progesterone-mediated oocyte maturation	141253.250
Prolactin signaling pathway	-15732.556
Propanoate metabolism	0.000
Prostate cancer	75201.428
Protein processing in endoplasmic reticulum	9277.958
Proximal tubule bicarbonate reclamation	0.000
Pyrimidine metabolism	0.000
Pyruvate metabolism	0.000
Regulation of autophagy	4351.750
Regulation of lipolysis in adipocytes	-8379.000
Renal cell carcinoma	-6079.901
Renin-angiotensin system	NA
Renin secretion	3422.500
Retinol metabolism	0.000
Retrograde endocannabinoid signaling	-0.385
Rheumatoid arthritis	0.000
Riboflavin metabolism	0.000
Ribosome biogenesis in eukaryotes	0.000
RIG-I-like receptor signaling pathway	8807.500
RNA degradation	1944.250
RNA transport	-174.375
Salivary secretion	2898.250
Salmonella infection	-99606.223
Selenocompound metabolism	0.000
Serotonergic synapse	1776.009
Shigellosis	2259.000

Signaling pathways regulating pluripotency of stem cells	NA
Small cell lung cancer	-217035.392
SNARE interactions in vesicular transport	-1229.167
Sphingolipid metabolism	0.000
Sphingolipid signaling pathway	-54232.225
Staphylococcus aureus infection	-15663.831
Starch and sucrose metabolism	0.000
Steroid biosynthesis	0.000
Steroid hormone biosynthesis	0.000
Sulfur metabolism	0.000
Sulfur relay system	-1319.250
Synaptic vesicle cycle	0.000
Synthesis and degradation of ketone bodies	0.000
Systemic lupus erythematosus	-4195.125
Taste transduction	47.750
Taurine and hypotaurine metabolism	0.000
T cell receptor signaling pathway	10981.931
Terpenoid backbone biosynthesis	0.000
TGF-beta signaling pathway	-20022.763
Thiamine metabolism	0.000
Thyroid cancer	20852.625
Thyroid hormone signaling pathway	-692.953
Thyroid hormone synthesis	-280.625
Tight junction	-4463.375
TNF signaling pathway	-37354.333
Toll-like receptor signaling pathway	-11877.416
Toxoplasmosis	-10068.562
Transcriptional misregulation in cancer	-388.000
Tryptophan metabolism	0.000
Type I diabetes mellitus	NA
Type II diabetes mellitus	2305.969
Tyrosine metabolism	0.000
Ubiquinone and other terpenoid-quinone biosynthesis	0.000
Valine, leucine and isoleucine degradation	0.000
Vascular smooth muscle contraction	-3087.481
Vasopressin-regulated water reabsorption	-2997.193
VEGF signaling pathway	822.421
Vibrio cholerae infection	-232.317
Viral carcinogenesis	2204.875
Viral myocarditis	6798.250
Vitamin B6 metabolism	0.000
Vitamin digestion and absorption	NA
Wnt signaling pathway	15726.059
	pPERT
Acute myeloid leukemia	0.23400
Adherens junction	0.12200

Adipocytokine signaling pathway	0.08800
Adrenergic signaling in cardiomyocytes	0.36400
African trypanosomiasis	0.45600
AGE-RAGE signaling pathway in diabetic complications	0.52400
Alanine, aspartate and glutamate metabolism	NA
Aldosterone-regulated sodium reabsorption	0.55600
Aldosterone synthesis and secretion	0.26600
Allograft rejection	1.00000
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.10400
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	NA
Amoebiasis	0.94200
Amphetamine addiction	0.95800
AMPK signaling pathway	0.28600
Amyotrophic lateral sclerosis (ALS)	0.07400
Antigen processing and presentation	0.06400
Apoptosis	0.86600
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.04800
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
Bacterial invasion of epithelial cells	0.67400
Basal cell carcinoma	0.53000
B cell receptor signaling pathway	0.51600
beta-Alanine metabolism	NA
Bile secretion	0.89600
Biosynthesis of unsaturated fatty acids	NA
Biotin metabolism	NA
Bladder cancer	0.48800
Breast cancer	0.20200
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	0.82800
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.43600
Cell cycle	0.68600
Central carbon metabolism in cancer	0.42400
Chagas disease (American trypanosomiasis)	0.12200
Chemical carcinogenesis	NA
Choline metabolism in cancer	0.67400
Cholinergic synapse	0.82200
Chronic myeloid leukemia	0.33200

Circadian entrainment	0.28000
Circadian rhythm	0.49600
Citrate cycle (TCA cycle)	NA
Cocaine addiction	0.70200
Colorectal cancer	0.00200
Complement and coagulation cascades	0.59200
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	0.46400
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	1.00000
Dopaminergic synapse	0.53600
Dorso-ventral axis formation	0.09200
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
ECM-receptor interaction	0.00200
EGFR tyrosine kinase inhibitor resistance	0.93600
Endocrine and other factor-regulated calcium reabsorption	0.06800
Endocrine resistance	0.59800
Endocytosis	NA
Endometrial cancer	0.13000
Epithelial cell signaling in Helicobacter pylori infection	0.31800
Epstein-Barr virus infection	0.26800
ErbB signaling pathway	0.49800
Estrogen signaling pathway	0.57000
Ether lipid metabolism	NA
Fanconi anemia pathway	0.28200
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Fc epsilon RI signaling pathway	0.74000
Fc gamma R-mediated phagocytosis	0.68600
Folate biosynthesis	NA
FoxO signaling pathway	0.79000
Fructose and mannose metabolism	NA
GABAergic synapse	0.90200
Galactose metabolism	NA
Gap junction	0.96600
Gastric acid secretion	0.25000
Glioma	0.86200
Glucagon signaling pathway	0.81800
Glutamatergic synapse	0.49200
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 and isoglobo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	0.15000
Graft-versus-host disease	1.00000
Hedgehog signaling pathway	0.51000
Hepatitis B	0.27400
Hepatitis C	0.98600
Herpes simplex infection	0.16200
HIF-1 signaling pathway	0.98000
Hippo signaling pathway -multiple species	0.41000
Histidine metabolism	NA
Homologous recombination	1.00000
Huntington's disease	0.20000
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	0.86600
Inflammatory mediator regulation of TRP channels	0.67400
Influenza A	0.89000
Inositol phosphate metabolism	NA
Insulin resistance	0.03200
Insulin secretion	0.67000
Insulin signaling pathway	0.16200
Intestinal immune network for IgA production	0.54400
Legionellosis	0.34400
Leishmaniasis	0.15000
Leukocyte transendothelial migration	0.33000
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Longevity regulating pathway	0.05000
Longevity regulating pathway - multiple species	0.55600
Long-term depression	NA
Long-term potentiation	0.65000
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	1.00000
Maturity onset diabetes of the young	0.62800
Measles	0.24600
Melanogenesis	0.61600
Melanoma	0.93800
Metabolism of xenobiotics by cytochrome P450	NA

Mineral absorption	0.11000
Morphine addiction	0.89600
mRNA surveillance pathway	1.00000
mTOR signaling pathway	0.43600
Mucin type O-Glycan biosynthesis	NA
Natural killer cell mediated cytotoxicity	0.57000
Neuroactive ligand-receptor interaction	0.80200
Neurotrophin signaling pathway	0.32200
NF-kappa B signaling pathway	0.13400
N-Glycan biosynthesis	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	0.95000
Non-alcoholic fatty liver disease (NAFLD)	0.96400
Non-small cell lung cancer	0.50400
Notch signaling pathway	0.10400
One carbon pool by folate	NA
Oocyte meiosis	0.59200
Osteoclast differentiation	0.12600
Ovarian steroidogenesis	0.65600
Oxidative phosphorylation	NA
p53 signaling pathway	0.38600
Pancreatic cancer	0.87200
Pancreatic secretion	0.75000
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	0.02800
Pathogenic Escherichia coli infection	0.00001
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Peroxisome	NA
Pertussis	0.67000
Phagosome	NA
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phospholipase D signaling pathway	0.41600
Phototransduction	0.29000
Platelet activation	0.82200
Platinum drug resistance	0.41600
Porphyryn and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	0.13400
Progesterone-mediated oocyte maturation	0.00200
Prolactin signaling pathway	0.48400
Propanoate metabolism	NA
Prostate cancer	0.01200

Protein processing in endoplasmic reticulum	0.39000
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of autophagy	0.36400
Regulation of lipolysis in adipocytes	0.29400
Renal cell carcinoma	0.54400
Renin-angiotensin system	NA
Renin secretion	0.32400
Retinol metabolism	NA
Retrograde endocannabinoid signaling	0.99800
Rheumatoid arthritis	1.00000
Riboflavin metabolism	NA
Ribosome biogenesis in eukaryotes	NA
RIG-I-like receptor signaling pathway	0.29400
RNA degradation	0.15600
RNA transport	0.88600
Salivary secretion	0.27600
Salmonella infection	0.01000
Selenocompound metabolism	NA
Serotonergic synapse	0.56000
Shigellosis	0.63800
Signaling pathways regulating pluripotency of stem cells	NA
Small cell lung cancer	0.01000
SNARE interactions in vesicular transport	0.50600
Sphingolipid metabolism	NA
Sphingolipid signaling pathway	0.10000
Staphylococcus aureus infection	0.11600
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Sulfur relay system	0.27000
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	0.14800
Taste transduction	0.76000
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	0.36000
Terpenoid backbone biosynthesis	NA
TGF-beta signaling pathway	0.12800
Thiamine metabolism	NA
Thyroid cancer	0.02400
Thyroid hormone signaling pathway	0.93200
Thyroid hormone synthesis	0.96200
Tight junction	0.40600

TNF signaling pathway	0.06400
Toll-like receptor signaling pathway	0.47600
Toxoplasmosis	0.39000
Transcriptional misregulation in cancer	0.28800
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	0.66200
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vascular smooth muscle contraction	0.83000
Vasopressin-regulated water reabsorption	0.39600
VEGF signaling pathway	0.94800
Vibrio cholerae infection	0.60000
Viral carcinogenesis	0.13000
Viral myocarditis	0.12000
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Wnt signaling pathway	0.20200
	pG
Acute myeloid leukemia	0.305
Adherens junction	0.018
Adipocytokine signaling pathway	0.225
Adrenergic signaling in cardiomyocytes	0.631
African trypanosomiasis	0.811
AGE-RAGE signaling pathway in diabetic complications	0.608
Alanine, aspartate and glutamate metabolism	0.584
Aldosterone-regulated sodium reabsorption	0.709
Aldosterone synthesis and secretion	0.448
Allograft rejection	0.847
alpha-Linolenic acid metabolism	0.501
Alzheimer's disease	0.066
Aminoacyl-tRNA biosynthesis	0.339
Amino sugar and nucleotide sugar metabolism	0.064
Amoebiasis	0.981
Amphetamine addiction	0.707
AMPK signaling pathway	0.035
Amyotrophic lateral sclerosis (ALS)	0.021
Antigen processing and presentation	0.045
Apoptosis	0.553
Arachidonic acid metabolism	0.486
Arginine and proline metabolism	0.745
Arginine biosynthesis	0.709
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.056
Ascorbate and aldarate metabolism	1.000
Asthma	1.000

Autoimmune thyroid disease	1.000
Bacterial invasion of epithelial cells	0.910
Basal cell carcinoma	0.180
B cell receptor signaling pathway	0.683
beta-Alanine metabolism	0.323
Bile secretion	0.983
Biosynthesis of unsaturated fatty acids	0.394
Biotin metabolism	1.000
Bladder cancer	0.158
Breast cancer	0.187
Butanoate metabolism	0.809
Caffeine metabolism	0.750
Carbohydrate digestion and absorption	0.716
Cardiac muscle contraction	0.540
Cell adhesion molecules (CAMs)	0.778
Cell cycle	0.015
Central carbon metabolism in cancer	0.282
Chagas disease (American trypanosomiasis)	0.230
Chemical carcinogenesis	0.886
Choline metabolism in cancer	0.281
Cholinergic synapse	0.976
Chronic myeloid leukemia	0.336
Circadian entrainment	0.604
Circadian rhythm	0.702
Citrate cycle (TCA cycle)	0.075
Cocaine addiction	0.836
Colorectal cancer	0.001
Complement and coagulation cascades	0.173
Cysteine and methionine metabolism	0.419
Cytosolic DNA-sensing pathway	0.586
D-Glutamine and D-glutamate metabolism	0.473
Dilated cardiomyopathy	1.000
Dopaminergic synapse	0.825
Dorso-ventral axis formation	0.079
Drug metabolism - cytochrome P450	0.953
Drug metabolism - other enzymes	0.159
ECM-receptor interaction	0.002
EGFR tyrosine kinase inhibitor resistance	0.176
Endocrine and other factor-regulated calcium reabsorption	0.247
Endocrine resistance	0.394
Endocytosis	0.606
Endometrial cancer	0.107
Epithelial cell signaling in Helicobacter pylori infection	0.207
Epstein-Barr virus infection	0.432
ErbB signaling pathway	0.523
Estrogen signaling pathway	0.595

Ether lipid metabolism	0.728
Fanconi anemia pathway	0.057
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	0.677
Fc gamma R-mediated phagocytosis	0.738
Folate biosynthesis	0.019
FoxO signaling pathway	0.327
Fructose and mannose metabolism	0.000
GABAergic synapse	0.995
Galactose metabolism	0.010
Gap junction	0.978
Gastric acid secretion	0.561
Glioma	0.674
Glucagon signaling pathway	0.957
Glutamatergic synapse	0.821
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 and isoglobo 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	0.230
Graft-versus-host disease	0.752
Hedgehog signaling pathway	0.789
Hepatitis B	0.205
Hepatitis C	0.101
Herpes simplex infection	0.096
HIF-1 signaling pathway	0.782
Hippo signaling pathway -multiple species	0.754
Histidine metabolism	0.541
Homologous recombination	0.295
Huntington's disease	0.115
Hypertrophic cardiomyopathy (HCM)	0.763
Inflammatory bowel disease (IBD)	0.990
Inflammatory mediator regulation of TRP channels	0.840
Influenza A	0.955

Inositol phosphate metabolism	0.712
Insulin resistance	0.113
Insulin secretion	0.915
Insulin signaling pathway	0.233
Intestinal immune network for IgA production	0.845
Legionellosis	0.683
Leishmaniasis	0.331
Leukocyte transendothelial migration	0.540
Linoleic acid metabolism	0.899
Lipoic acid metabolism	0.750
Longevity regulating pathway	0.165
Longevity regulating pathway - multiple species	0.668
Long-term depression	0.714
Long-term potentiation	0.522
Lysine biosynthesis	0.603
Lysine degradation	0.784
Malaria	1.000
Maturity onset diabetes of the young	0.762
Measles	0.527
Melanogenesis	0.731
Melanoma	0.838
Metabolism of xenobiotics by cytochrome P450	0.668
Mineral absorption	0.313
Morphine addiction	0.994
mRNA surveillance pathway	NaN
mTOR signaling pathway	0.039
Mucin type O-Glycan biosynthesis	0.716
Natural killer cell mediated cytotoxicity	0.578
Neuroactive ligand-receptor interaction	0.855
Neurotrophin signaling pathway	0.486
NF-kappa B signaling pathway	0.393
N-Glycan biosynthesis	0.322
Nicotinate and nicotinamide metabolism	0.045
Nitrogen metabolism	0.473
NOD-like receptor signaling pathway	0.886
Non-alcoholic fatty liver disease (NAFLD)	0.618
Non-small cell lung cancer	0.509
Notch signaling pathway	0.224
One carbon pool by folate	0.184
Oocyte meiosis	0.121
Osteoclast differentiation	0.300
Ovarian steroidogenesis	0.865
Oxidative phosphorylation	0.015
p53 signaling pathway	0.527
Pancreatic cancer	0.239
Pancreatic secretion	0.948

Pantothenate and CoA biosynthesis	0.385
Parkinson's disease	0.118
Pathogenic Escherichia coli infection	0.000
Pentose and glucuronate interconversions	0.709
Pentose phosphate pathway	0.009
Peroxisome	0.131
Pertussis	0.711
Phagosome	0.982
Phenylalanine metabolism	0.259
Phenylalanine, tyrosine and tryptophan biosynthesis	0.750
Phosphatidylinositol signaling system	0.709
Phospholipase D signaling pathway	0.625
Phototransduction	0.631
Platelet activation	0.927
Platinum drug resistance	0.491
Porphyrin and chlorophyll metabolism	0.928
Primary bile acid biosynthesis	0.638
Prion diseases	0.239
Progesterone-mediated oocyte maturation	0.003
Prolactin signaling pathway	0.427
Propanoate metabolism	0.584
Prostate cancer	0.002
Protein processing in endoplasmic reticulum	0.348
Proximal tubule bicarbonate reclamation	0.514
Pyrimidine metabolism	0.499
Pyruvate metabolism	0.224
Regulation of autophagy	0.100
Regulation of lipolysis in adipocytes	0.618
Renal cell carcinoma	0.101
Renin-angiotensin system	1.000
Renin secretion	0.597
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	0.022
RNA degradation	0.245
RNA transport	0.154
Salivary secretion	0.604
Salmonella infection	0.049
Selenocompound metabolism	0.638
Serotonergic synapse	0.880
Shigellosis	0.893
Signaling pathways regulating pluripotency of stem cells	0.311
Small cell lung cancer	0.006

SNARE interactions in vesicular transport	0.706
Sphingolipid metabolism	0.157
Sphingolipid signaling pathway	0.177
Staphylococcus aureus infection	0.186
Starch and sucrose metabolism	0.194
Steroid biosynthesis	0.914
Steroid hormone biosynthesis	0.864
Sulfur metabolism	0.902
Sulfur relay system	0.571
Synaptic vesicle cycle	0.085
Synthesis and degradation of ketone bodies	0.708
Systemic lupus erythematosus	0.361
Taste transduction	0.963
Taurine and hypotaurine metabolism	0.619
T cell receptor signaling pathway	0.410
Terpenoid backbone biosynthesis	0.541
TGF-beta signaling pathway	0.132
Thiamine metabolism	0.750
Thyroid cancer	0.020
Thyroid hormone signaling pathway	0.771
Thyroid hormone synthesis	0.979
Tight junction	0.756
TNF signaling pathway	0.120
Toll-like receptor signaling pathway	0.751
Toxoplasmosis	0.564
Transcriptional misregulation in cancer	0.575
Tryptophan metabolism	0.470
Type I diabetes mellitus	1.000
Type II diabetes mellitus	0.838
Tyrosine metabolism	0.716
Ubiquinone and other terpenoid-quinone biosynthesis	0.708
Valine, leucine and isoleucine degradation	0.635
Vascular smooth muscle contraction	0.884
Vasopressin-regulated water reabsorption	0.609
VEGF signaling pathway	0.900
Vibrio cholerae infection	0.903
Viral carcinogenesis	0.314
Viral myocarditis	0.283
Vitamin B6 metabolism	0.267
Vitamin digestion and absorption	1.000
Wnt signaling pathway	0.377
	pGFdr
Acute myeloid leukemia	0.89945652
Adherens junction	0.28947368
Adipocytokine signaling pathway	0.83445946
Adrenergic signaling in cardiomyocytes	1.00000000

African trypanosomiasis	1.00000000
AGE-RAGE signaling pathway in diabetic complications	1.00000000
Alanine, aspartate and glutamate metabolism	1.00000000
Aldosterone-regulated sodium reabsorption	1.00000000
Aldosterone synthesis and secretion	1.00000000
Allograft rejection	1.00000000
alpha-Linolenic acid metabolism	1.00000000
Alzheimer's disease	0.56896552
Aminoacyl-tRNA biosynthesis	0.90159574
Amino sugar and nucleotide sugar metabolism	0.56896552
Amoebiasis	1.00000000
Amphetamine addiction	1.00000000
AMPK signaling pathway	0.41666667
Amyotrophic lateral sclerosis (ALS)	0.28947368
Antigen processing and presentation	0.46875000
Apoptosis	1.00000000
Arachidonic acid metabolism	1.00000000
Arginine and proline metabolism	1.00000000
Arginine biosynthesis	1.00000000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.52777778
Ascorbate and aldarate metabolism	1.00000000
Asthma	1.00000000
Autoimmune thyroid disease	1.00000000
Bacterial invasion of epithelial cells	1.00000000
Basal cell carcinoma	0.79237288
B cell receptor signaling pathway	1.00000000
beta-Alanine metabolism	0.89945652
Bile secretion	1.00000000
Biosynthesis of unsaturated fatty acids	0.97524752
Biotin metabolism	1.00000000
Bladder cancer	0.77941176
Breast cancer	0.79237288
Butanoate metabolism	1.00000000
Caffeine metabolism	1.00000000
Carbohydrate digestion and absorption	1.00000000
Cardiac muscle contraction	1.00000000
Cell adhesion molecules (CAMs)	1.00000000
Cell cycle	0.28571429
Central carbon metabolism in cancer	0.88271605
Chagas disease (American trypanosomiasis)	0.83445946
Chemical carcinogenesis	1.00000000
Choline metabolism in cancer	0.88271605
Cholinergic synapse	1.00000000
Chronic myeloid leukemia	0.90159574
Circadian entrainment	1.00000000
Circadian rhythm	1.00000000

Citrate cycle (TCA cycle)	0.62500000
Cocaine addiction	1.00000000
Colorectal cancer	0.08333333
Complement and coagulation cascades	0.79237288
Cysteine and methionine metabolism	1.00000000
Cytosolic DNA-sensing pathway	1.00000000
D-Glutamine and D-glutamate metabolism	1.00000000
Dilated cardiomyopathy	1.00000000
Dopaminergic synapse	1.00000000
Dorso-ventral axis formation	0.63709677
Drug metabolism - cytochrome P450	1.00000000
Drug metabolism - other enzymes	0.77941176
ECM-receptor interaction	0.10000000
EGFR tyrosine kinase inhibitor resistance	0.79237288
Endocrine and other factor-regulated calcium reabsorption	0.83445946
Endocrine resistance	0.97524752
Endocytosis	1.00000000
Endometrial cancer	0.70212766
Epithelial cell signaling in Helicobacter pylori infection	0.83445946
Epstein-Barr virus infection	1.00000000
ErbB signaling pathway	1.00000000
Estrogen signaling pathway	1.00000000
Ether lipid metabolism	1.00000000
Fanconi anemia pathway	0.52777778
Fat digestion and absorption	0.70212766
Fatty acid biosynthesis	1.00000000
Fatty acid degradation	0.83445946
Fatty acid elongation	1.00000000
Fc epsilon RI signaling pathway	1.00000000
Fc gamma R-mediated phagocytosis	1.00000000
Folate biosynthesis	0.28947368
FoxO signaling pathway	0.89945652
Fructose and mannose metabolism	0.00000000
GABAergic synapse	1.00000000
Galactose metabolism	0.22727273
Gap junction	1.00000000
Gastric acid secretion	1.00000000
Glioma	1.00000000
Glucagon signaling pathway	1.00000000
Glutamatergic synapse	1.00000000
Glutathione metabolism	0.88271605
Glycerolipid metabolism	0.22500000
Glycerophospholipid metabolism	0.10714286
Glycine, serine and threonine metabolism	0.70212766
Glycolysis / Gluconeogenesis	0.83445946
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.28571429

Glycosaminoglycan biosynthesis - heparan sulfate / heparin	1.00000000
Glycosaminoglycan degradation	0.41250000
Glycosphingolipid biosynthesis - ganglio series	0.85197368
Glycosphingolipid biosynthesis - globo and isoglobo series	1.00000000
Glycosphingolipid biosynthesis - lacto and neolacto series	1.00000000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.89945652
Glyoxylate and dicarboxylate metabolism	0.68243243
GnRH signaling pathway	0.83445946
Graft-versus-host disease	1.00000000
Hedgehog signaling pathway	1.00000000
Hepatitis B	0.83445946
Hepatitis C	0.68243243
Herpes simplex infection	0.68243243
HIF-1 signaling pathway	1.00000000
Hippo signaling pathway -multiple species	1.00000000
Histidine metabolism	1.00000000
Homologous recombination	0.89939024
Huntington's disease	0.70212766
Hypertrophic cardiomyopathy (HCM)	1.00000000
Inflammatory bowel disease (IBD)	1.00000000
Inflammatory mediator regulation of TRP channels	1.00000000
Influenza A	1.00000000
Inositol phosphate metabolism	1.00000000
Insulin resistance	0.70212766
Insulin secretion	1.00000000
Insulin signaling pathway	0.83445946
Intestinal immune network for IgA production	1.00000000
Legionellosis	1.00000000
Leishmaniasis	0.89945652
Leukocyte transendothelial migration	1.00000000
Linoleic acid metabolism	1.00000000
Lipoic acid metabolism	1.00000000
Longevity regulating pathway	0.79237288
Longevity regulating pathway - multiple species	1.00000000
Long-term depression	1.00000000
Long-term potentiation	1.00000000
Lysine biosynthesis	1.00000000
Lysine degradation	1.00000000
Malaria	1.00000000
Maturity onset diabetes of the young	1.00000000
Measles	1.00000000
Melanogenesis	1.00000000
Melanoma	1.00000000
Metabolism of xenobiotics by cytochrome P450	1.00000000
Mineral absorption	0.89945652
Morphine addiction	1.00000000

mRNA surveillance pathway	NaN
mTOR signaling pathway	0.44318182
Mucin type O-Glycan biosynthesis	1.00000000
Natural killer cell mediated cytotoxicity	1.00000000
Neuroactive ligand-receptor interaction	1.00000000
Neurotrophin signaling pathway	1.00000000
NF-kappa B signaling pathway	0.97524752
N-Glycan biosynthesis	0.89945652
Nicotinate and nicotinamide metabolism	0.46875000
Nitrogen metabolism	1.00000000
NOD-like receptor signaling pathway	1.00000000
Non-alcoholic fatty liver disease (NAFLD)	1.00000000
Non-small cell lung cancer	1.00000000
Notch signaling pathway	0.83445946
One carbon pool by folate	0.79237288
Oocyte meiosis	0.70212766
Osteoclast differentiation	0.89945652
Ovarian steroidogenesis	1.00000000
Oxidative phosphorylation	0.28571429
p53 signaling pathway	1.00000000
Pancreatic cancer	0.83445946
Pancreatic secretion	1.00000000
Pantothenate and CoA biosynthesis	0.97524752
Parkinson's disease	0.70212766
Pathogenic Escherichia coli infection	0.00000000
Pentose and glucuronate interconversions	1.00000000
Pentose phosphate pathway	0.22500000
Peroxisome	0.70212766
Pertussis	1.00000000
Phagosome	1.00000000
Phenylalanine metabolism	0.85197368
Phenylalanine, tyrosine and tryptophan biosynthesis	1.00000000
Phosphatidylinositol signaling system	1.00000000
Phospholipase D signaling pathway	1.00000000
Phototransduction	1.00000000
Platelet activation	1.00000000
Platinum drug resistance	1.00000000
Porphyrin and chlorophyll metabolism	1.00000000
Primary bile acid biosynthesis	1.00000000
Prion diseases	0.83445946
Progesterone-mediated oocyte maturation	0.10714286
Prolactin signaling pathway	1.00000000
Propanoate metabolism	1.00000000
Prostate cancer	0.10000000
Protein processing in endoplasmic reticulum	0.91578947
Proximal tubule bicarbonate reclamation	1.00000000

Pyrimidine metabolism	1.00000000
Pyruvate metabolism	0.83445946
Regulation of autophagy	0.68243243
Regulation of lipolysis in adipocytes	1.00000000
Renal cell carcinoma	0.68243243
Renin-angiotensin system	1.00000000
Renin secretion	1.00000000
Retinol metabolism	1.00000000
Retrograde endocannabinoid signaling	1.00000000
Rheumatoid arthritis	1.00000000
Riboflavin metabolism	1.00000000
Ribosome biogenesis in eukaryotes	1.00000000
RIG-I-like receptor signaling pathway	0.28947368
RNA degradation	0.83445946
RNA transport	0.77941176
Salivary secretion	1.00000000
Salmonella infection	0.49000000
Selenocompound metabolism	1.00000000
Serotonergic synapse	1.00000000
Shigellosis	1.00000000
Signaling pathways regulating pluripotency of stem cells	0.89945652
Small cell lung cancer	0.18750000
SNARE interactions in vesicular transport	1.00000000
Sphingolipid metabolism	0.77941176
Sphingolipid signaling pathway	0.79237288
Staphylococcus aureus infection	0.79237288
Starch and sucrose metabolism	0.80833333
Steroid biosynthesis	1.00000000
Steroid hormone biosynthesis	1.00000000
Sulfur metabolism	1.00000000
Sulfur relay system	1.00000000
Synaptic vesicle cycle	0.66406250
Synthesis and degradation of ketone bodies	1.00000000
Systemic lupus erythematosus	0.94010417
Taste transduction	1.00000000
Taurine and hypotaurine metabolism	1.00000000
T cell receptor signaling pathway	1.00000000
Terpenoid backbone biosynthesis	1.00000000
TGF-beta signaling pathway	0.70212766
Thiamine metabolism	1.00000000
Thyroid cancer	0.28947368
Thyroid hormone signaling pathway	1.00000000
Thyroid hormone synthesis	1.00000000
Tight junction	1.00000000
TNF signaling pathway	0.70212766
Toll-like receptor signaling pathway	1.00000000

Toxoplasmosis	1.00000000
Transcriptional misregulation in cancer	1.00000000
Tryptophan metabolism	1.00000000
Type I diabetes mellitus	1.00000000
Type II diabetes mellitus	1.00000000
Tyrosine metabolism	1.00000000
Ubiquinone and other terpenoid-quinone biosynthesis	1.00000000
Valine, leucine and isoleucine degradation	1.00000000
Vascular smooth muscle contraction	1.00000000
Vasopressin-regulated water reabsorption	1.00000000
VEGF signaling pathway	1.00000000
Vibrio cholerae infection	1.00000000
Viral carcinogenesis	0.89945652
Viral myocarditis	0.88271605
Vitamin B6 metabolism	0.86688312
Vitamin digestion and absorption	1.00000000
Wnt signaling pathway	0.97164948
	pGFWER
Acute myeloid leukemia	1.00
Adherens junction	1.00
Adipocytokine signaling pathway	1.00
Adrenergic signaling in cardiomyocytes	1.00
African trypanosomiasis	1.00
AGE-RAGE signaling pathway in diabetic complications	1.00
Alanine, aspartate and glutamate metabolism	1.00
Aldosterone-regulated sodium reabsorption	1.00
Aldosterone synthesis and secretion	1.00
Allograft rejection	1.00
alpha-Linolenic acid metabolism	1.00
Alzheimer's disease	1.00
Aminoacyl-tRNA biosynthesis	1.00
Amino sugar and nucleotide sugar metabolism	1.00
Amoebiasis	1.00
Amphetamine addiction	1.00
AMPK signaling pathway	1.00
Amyotrophic lateral sclerosis (ALS)	1.00
Antigen processing and presentation	1.00
Apoptosis	1.00
Arachidonic acid metabolism	1.00
Arginine and proline metabolism	1.00
Arginine biosynthesis	1.00
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	1.00
Ascorbate and aldarate metabolism	1.00
Asthma	1.00
Autoimmune thyroid disease	1.00
Bacterial invasion of epithelial cells	1.00

Basal cell carcinoma	1.00
B cell receptor signaling pathway	1.00
beta-Alanine metabolism	1.00
Bile secretion	1.00
Biosynthesis of unsaturated fatty acids	1.00
Biotin metabolism	1.00
Bladder cancer	1.00
Breast cancer	1.00
Butanoate metabolism	1.00
Caffeine metabolism	1.00
Carbohydrate digestion and absorption	1.00
Cardiac muscle contraction	1.00
Cell adhesion molecules (CAMs)	1.00
Cell cycle	1.00
Central carbon metabolism in cancer	1.00
Chagas disease (American trypanosomiasis)	1.00
Chemical carcinogenesis	1.00
Choline metabolism in cancer	1.00
Cholinergic synapse	1.00
Chronic myeloid leukemia	1.00
Circadian entrainment	1.00
Circadian rhythm	1.00
Citrate cycle (TCA cycle)	1.00
Cocaine addiction	1.00
Colorectal cancer	0.25
Complement and coagulation cascades	1.00
Cysteine and methionine metabolism	1.00
Cytosolic DNA-sensing pathway	1.00
D-Glutamine and D-glutamate metabolism	1.00
Dilated cardiomyopathy	1.00
Dopaminergic synapse	1.00
Dorso-ventral axis formation	1.00
Drug metabolism - cytochrome P450	1.00
Drug metabolism - other enzymes	1.00
ECM-receptor interaction	0.50
EGFR tyrosine kinase inhibitor resistance	1.00
Endocrine and other factor-regulated calcium reabsorption	1.00
Endocrine resistance	1.00
Endocytosis	1.00
Endometrial cancer	1.00
Epithelial cell signaling in Helicobacter pylori infection	1.00
Epstein-Barr virus infection	1.00
ErbB signaling pathway	1.00
Estrogen signaling pathway	1.00
Ether lipid metabolism	1.00
Fanconi anemia pathway	1.00

Fat digestion and absorption	1.00
Fatty acid biosynthesis	1.00
Fatty acid degradation	1.00
Fatty acid elongation	1.00
Fc epsilon RI signaling pathway	1.00
Fc gamma R-mediated phagocytosis	1.00
Folate biosynthesis	1.00
FoxO signaling pathway	1.00
Fructose and mannose metabolism	0.00
GABAergic synapse	1.00
Galactose metabolism	1.00
Gap junction	1.00
Gastric acid secretion	1.00
Glioma	1.00
Glucagon signaling pathway	1.00
Glutamatergic synapse	1.00
Glutathione metabolism	1.00
Glycerolipid metabolism	1.00
Glycerophospholipid metabolism	0.75
Glycine, serine and threonine metabolism	1.00
Glycolysis / Gluconeogenesis	1.00
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	1.00
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	1.00
Glycosaminoglycan degradation	1.00
Glycosphingolipid biosynthesis - ganglio series	1.00
Glycosphingolipid biosynthesis - globo and isoglobo series	1.00
Glycosphingolipid biosynthesis - lacto and neolacto series	1.00
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	1.00
Glyoxylate and dicarboxylate metabolism	1.00
GnRH signaling pathway	1.00
Graft-versus-host disease	1.00
Hedgehog signaling pathway	1.00
Hepatitis B	1.00
Hepatitis C	1.00
Herpes simplex infection	1.00
HIF-1 signaling pathway	1.00
Hippo signaling pathway -multiple species	1.00
Histidine metabolism	1.00
Homologous recombination	1.00
Huntington's disease	1.00
Hypertrophic cardiomyopathy (HCM)	1.00
Inflammatory bowel disease (IBD)	1.00
Inflammatory mediator regulation of TRP channels	1.00
Influenza A	1.00
Inositol phosphate metabolism	1.00
Insulin resistance	1.00

Insulin secretion	1.00
Insulin signaling pathway	1.00
Intestinal immune network for IgA production	1.00
Legionellosis	1.00
Leishmaniasis	1.00
Leukocyte transendothelial migration	1.00
Linoleic acid metabolism	1.00
Lipoic acid metabolism	1.00
Longevity regulating pathway	1.00
Longevity regulating pathway - multiple species	1.00
Long-term depression	1.00
Long-term potentiation	1.00
Lysine biosynthesis	1.00
Lysine degradation	1.00
Malaria	1.00
Maturity onset diabetes of the young	1.00
Measles	1.00
Melanogenesis	1.00
Melanoma	1.00
Metabolism of xenobiotics by cytochrome P450	1.00
Mineral absorption	1.00
Morphine addiction	1.00
mRNA surveillance pathway	NaN
mTOR signaling pathway	1.00
Mucin type O-Glycan biosynthesis	1.00
Natural killer cell mediated cytotoxicity	1.00
Neuroactive ligand-receptor interaction	1.00
Neurotrophin signaling pathway	1.00
NF-kappa B signaling pathway	1.00
N-Glycan biosynthesis	1.00
Nicotinate and nicotinamide metabolism	1.00
Nitrogen metabolism	1.00
NOD-like receptor signaling pathway	1.00
Non-alcoholic fatty liver disease (NAFLD)	1.00
Non-small cell lung cancer	1.00
Notch signaling pathway	1.00
One carbon pool by folate	1.00
Oocyte meiosis	1.00
Osteoclast differentiation	1.00
Ovarian steroidogenesis	1.00
Oxidative phosphorylation	1.00
p53 signaling pathway	1.00
Pancreatic cancer	1.00
Pancreatic secretion	1.00
Pantothenate and CoA biosynthesis	1.00
Parkinson's disease	1.00

Pathogenic Escherichia coli infection	0.00
Pentose and glucuronate interconversions	1.00
Pentose phosphate pathway	1.00
Peroxisome	1.00
Pertussis	1.00
Phagosome	1.00
Phenylalanine metabolism	1.00
Phenylalanine, tyrosine and tryptophan biosynthesis	1.00
Phosphatidylinositol signaling system	1.00
Phospholipase D signaling pathway	1.00
Phototransduction	1.00
Platelet activation	1.00
Platinum drug resistance	1.00
Porphyrin and chlorophyll metabolism	1.00
Primary bile acid biosynthesis	1.00
Prion diseases	1.00
Progesterone-mediated oocyte maturation	0.75
Prolactin signaling pathway	1.00
Propanoate metabolism	1.00
Prostate cancer	0.50
Protein processing in endoplasmic reticulum	1.00
Proximal tubule bicarbonate reclamation	1.00
Pyrimidine metabolism	1.00
Pyruvate metabolism	1.00
Regulation of autophagy	1.00
Regulation of lipolysis in adipocytes	1.00
Renal cell carcinoma	1.00
Renin-angiotensin system	1.00
Renin secretion	1.00
Retinol metabolism	1.00
Retrograde endocannabinoid signaling	1.00
Rheumatoid arthritis	1.00
Riboflavin metabolism	1.00
Ribosome biogenesis in eukaryotes	1.00
RIG-I-like receptor signaling pathway	1.00
RNA degradation	1.00
RNA transport	1.00
Salivary secretion	1.00
Salmonella infection	1.00
Selenocompound metabolism	1.00
Serotonergic synapse	1.00
Shigellosis	1.00
Signaling pathways regulating pluripotency of stem cells	1.00
Small cell lung cancer	1.00
SNARE interactions in vesicular transport	1.00
Sphingolipid metabolism	1.00

Sphingolipid signaling pathway	1.00
Staphylococcus aureus infection	1.00
Starch and sucrose metabolism	1.00
Steroid biosynthesis	1.00
Steroid hormone biosynthesis	1.00
Sulfur metabolism	1.00
Sulfur relay system	1.00
Synaptic vesicle cycle	1.00
Synthesis and degradation of ketone bodies	1.00
Systemic lupus erythematosus	1.00
Taste transduction	1.00
Taurine and hypotaurine metabolism	1.00
T cell receptor signaling pathway	1.00
Terpenoid backbone biosynthesis	1.00
TGF-beta signaling pathway	1.00
Thiamine metabolism	1.00
Thyroid cancer	1.00
Thyroid hormone signaling pathway	1.00
Thyroid hormone synthesis	1.00
Tight junction	1.00
TNF signaling pathway	1.00
Toll-like receptor signaling pathway	1.00
Toxoplasmosis	1.00
Transcriptional misregulation in cancer	1.00
Tryptophan metabolism	1.00
Type I diabetes mellitus	1.00
Type II diabetes mellitus	1.00
Tyrosine metabolism	1.00
Ubiquinone and other terpenoid-quinone biosynthesis	1.00
Valine, leucine and isoleucine degradation	1.00
Vascular smooth muscle contraction	1.00
Vasopressin-regulated water reabsorption	1.00
VEGF signaling pathway	1.00
Vibrio cholerae infection	1.00
Viral carcinogenesis	1.00
Viral myocarditis	1.00
Vitamin B6 metabolism	1.00
Vitamin digestion and absorption	1.00
Wnt signaling pathway	1.00
	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-regulated sodium reabsorption	Activated
Aldosterone synthesis and secretion	Activated
Allograft rejection	Inhibited
alpha-Linolenic acid metabolism	Inhibited
Alzheimer's disease	Inhibited
Aminoacyl-tRNA biosynthesis	Inhibited
Amino sugar and nucleotide sugar metabolism	Inhibited
Amoebiasis	Inhibited
Amphetamine addiction	Activated
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>
Bacterial invasion of epithelial cells	Inhibited
Basal cell carcinoma	Inhibited
B cell receptor signaling pathway	Activated
beta-Alanine metabolism	Inhibited
Bile secretion	Inhibited
Biosynthesis of unsaturated fatty acids	Inhibited
Biotin metabolism	<NA>
Bladder cancer	Inhibited
Breast cancer	Activated
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
EGFR tyrosine kinase inhibitor resistance	Inhibited
Endocrine and other factor-regulated calcium reabsorption	Activated
Endocrine resistance	Inhibited
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 and isoglobo 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
Hedgehog signaling pathway	Inhibited
Hepatitis B	Inhibited
Hepatitis C	Activated
Herpes simplex infection	Inhibited
HIF-1 signaling pathway	Activated
Hippo signaling pathway -multiple species	Activated
Histidine metabolism	Inhibited
Homologous recombination	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
Longevity regulating pathway	Activated
Longevity regulating pathway - multiple species	Activated
Long-term depression	<NA>
Long-term potentiation	Inhibited
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
Natural killer cell mediated cytotoxicity	Activated
Neuroactive ligand-receptor interaction	Activated
Neurotrophin signaling pathway	Activated
NF-kappa B signaling pathway	Inhibited
N-Glycan biosynthesis	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
Platinum drug resistance	Inhibited
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-angiotensin system	<NA>
Renin secretion	Activated
Retinol metabolism	Inhibited
Retrograde endocannabinoid signaling	Inhibited
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
Taste transduction	Activated
Taurine and hypotaurine metabolism	Inhibited
T cell receptor signaling pathway	Activated
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 cheminformatics 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 implementation.

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

```
14848 node labels mapped to the expression data
```

```
Average coverage 84.50669 %
```

```
0 (out of 274) 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-regulated sodium reabsorption	4
Aldosterone synthesis and secretion	4
Allograft rejection	4
alpha-Linolenic acid metabolism	4
Alzheimer's disease	4
Aminoacyl-tRNA biosynthesis	4
Amino sugar and nucleotide sugar metabolism	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
Bacterial invasion of epithelial cells	4
Basal cell carcinoma	4
B cell receptor signaling pathway	4
beta-Alanine metabolism	4
Bile secretion	4
Biosynthesis of unsaturated fatty acids	4
Biotin metabolism	4
Bladder cancer	4
Breast 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
EGFR tyrosine kinase inhibitor resistance	4
Endocrine and other factor-regulated calcium reabsorption	4
Endocrine resistance	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 and isoglobo 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
Hedgehog signaling pathway	4
Hepatitis B	4
Hepatitis C	4
Herpes simplex infection	4
HIF-1 signaling pathway	4
Hippo signaling pathway -multiple species	4
Histidine metabolism	4
Homologous recombination	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
Longevity regulating pathway	4
Longevity regulating pathway - multiple species	4
Long-term depression	4
Long-term potentiation	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
Natural killer cell mediated cytotoxicity	4
Neuroactive ligand-receptor interaction	4
Neurotrophin signaling pathway	4
NF-kappa B signaling pathway	4
N-Glycan biosynthesis	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
Platinum drug resistance	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-angiotensin system	4
Renin secretion	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
Taste transduction	4
Taurine and hypotaurine metabolism	4
T cell receptor signaling pathway	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	-0.29540

African trypanosomiasis	-0.25060
AGE-RAGE signaling pathway in diabetic complications	0.21520
Alanine, aspartate and glutamate metabolism	0.53230
Aldosterone-regulated sodium reabsorption	0.14740
Aldosterone synthesis and secretion	0.01342
Allograft rejection	-0.17710
alpha-Linolenic acid metabolism	0.02627
Alzheimer's disease	0.26840
Aminoacyl-tRNA biosynthesis	0.26360
Amino sugar and nucleotide sugar metabolism	0.45880
Amoebiasis	-0.11830
Amphetamine addiction	-0.14800
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
Bacterial invasion of epithelial cells	0.44080
Basal cell carcinoma	0.14110
B cell receptor signaling pathway	0.10910
beta-Alanine metabolism	-0.29470
Bile secretion	-0.05664
Biosynthesis of unsaturated fatty acids	0.16110
Biotin metabolism	0.26100
Bladder cancer	0.45500
Breast cancer	0.37910
Butanoate metabolism	0.13680
Caffeine metabolism	-0.50050
Carbohydrate digestion and absorption	0.11980
Cardiac muscle contraction	-0.19480
Cell adhesion molecules (CAMs)	-0.22440
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	-0.12680
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	-0.04670
Dorso-ventral axis formation	0.26260
Drug metabolism - cytochrome P450	-0.51500
Drug metabolism - other enzymes	0.04654
ECM-receptor interaction	0.39290
EGFR tyrosine kinase inhibitor resistance	0.49760
Endocrine and other factor-regulated calcium reabsorption	-0.14700
Endocrine resistance	0.46570
Endocytosis	0.65690
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	0.18800
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	0.09198
Glioma	0.41590
Glucagon signaling pathway	0.37040
Glutamatergic synapse	-0.18610
Glutathione metabolism	0.24970
Glycerolipid metabolism	0.68560
Glycerophospholipid metabolism	0.70650
Glycine, serine and threonine metabolism	-0.02547
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 and isoglobo 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	0.22080
Graft-versus-host disease	-0.30010
Hedgehog signaling pathway	0.20770
Hepatitis B	0.29450
Hepatitis C	0.40530
Herpes simplex infection	0.29450
HIF-1 signaling pathway	0.50090
Hippo signaling pathway -multiple species	0.32800
Histidine metabolism	-0.33180
Homologous recombination	0.18630
Huntington's disease	0.76240
Hypertrophic cardiomyopathy (HCM)	0.23640
Inflammatory bowel disease (IBD)	-0.19630
Inflammatory mediator regulation of TRP channels	0.09724
Influenza A	0.25720
Inositol phosphate metabolism	0.99850
Insulin resistance	0.36720
Insulin secretion	-0.16120
Insulin signaling pathway	0.46930
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
Longevity regulating pathway	0.61600
Longevity regulating pathway - multiple species	0.56580
Long-term depression	0.15910
Long-term potentiation	0.09905
Lysine biosynthesis	-0.15300
Lysine degradation	0.61030
Malaria	-0.26520
Maturity onset diabetes of the young	-0.18110
Measles	0.16990
Melanogenesis	0.11740
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	0.47680
Mucin type O-Glycan biosynthesis	-0.41130
Natural killer cell mediated cytotoxicity	0.05655
Neuroactive ligand-receptor interaction	-0.43350
Neurotrophin signaling pathway	0.31840
NF-kappa B signaling pathway	0.16290
N-Glycan biosynthesis	0.61800
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	0.54260
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	-0.49600
Platelet activation	0.24720
Platinum drug resistance	0.39080
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	1.04300
Pyruvate metabolism	0.47050
Regulation of autophagy	0.24820
Regulation of lipolysis in adipocytes	0.17750
Renal cell carcinoma	0.42280
Renin-angiotensin system	-0.13250
Renin secretion	0.18810
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	0.01468
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	0.38520
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
Taste transduction	-0.36880
Taurine and hypotaurine metabolism	-0.28520
T cell receptor signaling pathway	0.18990
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	0.16800
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
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Acute myeloid leukemia	0.436600
Adherens junction	0.543400
Adipocytokine signaling pathway	0.252200
Adrenergic signaling in cardiomyocytes	-0.291100
African trypanosomiasis	-0.237600
AGE-RAGE signaling pathway in diabetic complications	0.249300
Alanine, aspartate and glutamate metabolism	0.537800
Aldosterone-regulated sodium reabsorption	0.152300
Aldosterone synthesis and secretion	0.046340
Allograft rejection	-0.172600
alpha-Linolenic acid metabolism	0.054380
Alzheimer's disease	0.292800
Aminoacyl-tRNA biosynthesis	0.264600
Amino sugar and nucleotide sugar metabolism	0.465700
Amoebiasis	-0.108500
Amphetamine addiction	-0.139700
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
Bacterial invasion of epithelial cells	0.452100

Basal cell carcinoma	0.162900
B cell receptor signaling pathway	0.120100
beta-Alanine metabolism	-0.224600
Bile secretion	-0.043030
Biosynthesis of unsaturated fatty acids	0.163700
Biotin metabolism	0.262200
Bladder cancer	0.457800
Breast cancer	0.386000
Butanoate metabolism	0.186500
Caffeine metabolism	-0.460900
Carbohydrate digestion and absorption	0.132500
Cardiac muscle contraction	-0.194600
Cell adhesion molecules (CAMs)	-0.221800
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	-0.067600
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	-0.003451
Dorso-ventral axis formation	0.264800
Drug metabolism - cytochrome P450	-0.507500
Drug metabolism - other enzymes	0.082450
ECM-receptor interaction	0.416300
EGFR tyrosine kinase inhibitor resistance	0.507100
Endocrine and other factor-regulated calcium reabsorption	-0.134300
Endocrine resistance	0.466700
Endocytosis	0.673100
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	0.205300
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	0.132300
Glioma	0.430600
Glucagon signaling pathway	0.382300
Glutamatergic synapse	-0.173700
Glutathione metabolism	0.256300
Glycerolipid metabolism	0.714300
Glycerophospholipid metabolism	0.741600
Glycine, serine and threonine metabolism	-0.021360
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 and isoglobo 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	0.233700
Graft-versus-host disease	-0.296400
Hedgehog signaling pathway	0.216800
Hepatitis B	0.298700
Hepatitis C	0.407600
Herpes simplex infection	0.298700
HIF-1 signaling pathway	0.516500
Hippo signaling pathway -multiple species	0.330300
Histidine metabolism	-0.331300
Homologous recombination	0.191900
Huntington's disease	0.779700
Hypertrophic cardiomyopathy (HCM)	0.237800
Inflammatory bowel disease (IBD)	-0.192800
Inflammatory mediator regulation of TRP channels	0.111000
Influenza A	0.276400
Inositol phosphate metabolism	1.006000
Insulin resistance	0.385100

Insulin secretion	-0.138600
Insulin signaling pathway	0.469300
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
Longevity regulating pathway	0.624500
Longevity regulating pathway - multiple species	0.571900
Long-term depression	0.193400
Long-term potentiation	0.145900
Lysine biosynthesis	-0.137100
Lysine degradation	0.610400
Malaria	-0.257600
Maturity onset diabetes of the young	-0.170000
Measles	0.178400
Melanogenesis	0.160000
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	0.495600
Mucin type O-Glycan biosynthesis	-0.409800
Natural killer cell mediated cytotoxicity	0.076680
Neuroactive ligand-receptor interaction	-0.429600
Neurotrophin signaling pathway	0.324300
NF-kappa B signaling pathway	0.164900
N-Glycan biosynthesis	0.621100
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	0.544400
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	-0.420100
Platelet activation	0.250100
Platinum drug resistance	0.398700
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	1.058000
Pyruvate metabolism	0.491600
Regulation of autophagy	0.250400
Regulation of lipolysis in adipocytes	0.197200
Renal cell carcinoma	0.432100
Renin-angiotensin system	-0.129700
Renin secretion	0.200100
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	0.039430
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	0.393100
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
Taste transduction	-0.364200
Taurine and hypotaurine metabolism	-0.285200
T cell receptor signaling pathway	0.190800
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	0.174700
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
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Acute myeloid leukemia	0.4399000
Adherens junction	0.5491000
Adipocytokine signaling pathway	0.2637000
Adrenergic signaling in cardiomyocytes	-0.2813000
African trypanosomiasis	-0.2299000
AGE-RAGE signaling pathway in diabetic complications	0.2667000

Alanine, aspartate and glutamate metabolism	0.5444000
Aldosterone-regulated sodium reabsorption	0.1641000
Aldosterone synthesis and secretion	0.1009000
Allograft rejection	-0.1701000
alpha-Linolenic acid metabolism	0.0641200
Alzheimer's disease	0.3018000
Aminoacyl-tRNA biosynthesis	0.2770000
Amino sugar and nucleotide sugar metabolism	0.4703000
Amoebiasis	-0.0805500
Amphetamine addiction	-0.1291000
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
Bacterial invasion of epithelial cells	0.4651000
Basal cell carcinoma	0.1815000
B cell receptor signaling pathway	0.1282000
beta-Alanine metabolism	-0.1935000
Bile secretion	-0.0284000
Biosynthesis of unsaturated fatty acids	0.1667000
Biotin metabolism	0.2629000
Bladder cancer	0.4681000
Breast cancer	0.3914000
Butanoate metabolism	0.2048000
Caffeine metabolism	-0.4444000
Carbohydrate digestion and absorption	0.1503000
Cardiac muscle contraction	-0.1902000
Cell adhesion molecules (CAMs)	-0.2146000
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	-0.0247600
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	0.0263100
Dorso-ventral axis formation	0.2659000
Drug metabolism - cytochrome P450	-0.5033000
Drug metabolism - other enzymes	0.0946300
ECM-receptor interaction	0.4528000
EGFR tyrosine kinase inhibitor resistance	0.5161000
Endocrine and other factor-regulated calcium reabsorption	-0.1277000
Endocrine resistance	0.4725000
Endocytosis	0.6820000
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	0.2223000
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	0.1541000
Glioma	0.4360000
Glucagon signaling pathway	0.4147000
Glutamatergic synapse	-0.1439000
Glutathione metabolism	0.2661000
Glycerolipid metabolism	0.7392000
Glycerophospholipid metabolism	0.7863000
Glycine, serine and threonine metabolism	-0.0179200
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 and isoglobo 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	0.2499000
Graft-versus-host disease	-0.2912000
Hedgehog signaling pathway	0.2254000
Hepatitis B	0.3107000
Hepatitis C	0.4129000
Herpes simplex infection	0.3018000
HIF-1 signaling pathway	0.5354000
Hippo signaling pathway -multiple species	0.3408000
Histidine metabolism	-0.3225000
Homologous recombination	0.1954000
Huntington's disease	0.7866000
Hypertrophic cardiomyopathy (HCM)	0.2384000
Inflammatory bowel disease (IBD)	-0.1901000
Inflammatory mediator regulation of TRP channels	0.1238000
Influenza A	0.2893000
Inositol phosphate metabolism	1.0320000
Insulin resistance	0.3911000
Insulin secretion	-0.1234000
Insulin signaling pathway	0.4730000
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
Longevity regulating pathway	0.6330000
Longevity regulating pathway - multiple species	0.5785000
Long-term depression	0.2355000
Long-term potentiation	0.1788000
Lysine biosynthesis	-0.1246000
Lysine degradation	0.6110000
Malaria	-0.2542000
Maturity onset diabetes of the young	-0.1635000
Measles	0.1890000
Melanogenesis	0.1772000
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	0.5054000

Mucin type O-Glycan biosynthesis	-0.3286000
Natural killer cell mediated cytotoxicity	0.0910200
Neuroactive ligand-receptor interaction	-0.4221000
Neurotrophin signaling pathway	0.3359000
NF-kappa B signaling pathway	0.1670000
N-Glycan biosynthesis	0.6238000
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	0.5465000
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	-0.3930000
Platelet activation	0.2605000
Platinum drug resistance	0.4039000
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	1.0910000
Pyruvate metabolism	0.5083000

Regulation of autophagy	0.2549000
Regulation of lipolysis in adipocytes	0.2080000
Renal cell carcinoma	0.4360000
Renin-angiotensin system	0.0005793
Renin secretion	0.2114000
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	0.0553400
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	0.3960000
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
Taste transduction	-0.3617000
Taurine and hypotaurine metabolism	-0.2734000
T cell receptor signaling pathway	0.1920000
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	0.1891000
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	-0.277300
African trypanosomiasis	-0.229100
AGE-RAGE signaling pathway in diabetic complications	0.255500
Alanine, aspartate and glutamate metabolism	0.546300
Aldosterone-regulated sodium reabsorption	0.163200
Aldosterone synthesis and secretion	0.093410
Allograft rejection	-0.170700
alpha-Linolenic acid metabolism	0.068670
Alzheimer's disease	0.293700
Aminoacyl-tRNA biosynthesis	0.278400
Amino sugar and nucleotide sugar metabolism	0.468300
Amoebiasis	-0.077170
Amphetamine addiction	-0.130100
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
Bacterial invasion of epithelial cells	0.463600
Basal cell carcinoma	0.181300
B cell receptor signaling pathway	0.127500

beta-Alanine metabolism	-0.213400
Bile secretion	-0.030380
Biosynthesis of unsaturated fatty acids	0.166900
Biotin metabolism	0.262700
Bladder cancer	0.467700
Breast cancer	0.392600
Butanoate metabolism	0.189600
Caffeine metabolism	-0.451400
Carbohydrate digestion and absorption	0.148400
Cardiac muscle contraction	-0.189100
Cell adhesion molecules (CAMs)	-0.213900
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	-0.041440
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	0.026340
Dorso-ventral axis formation	0.265500
Drug metabolism - cytochrome P450	-0.497100
Drug metabolism - other enzymes	0.082990
ECM-receptor interaction	0.474700
EGFR tyrosine kinase inhibitor resistance	0.513800
Endocrine and other factor-regulated calcium reabsorption	-0.123300
Endocrine resistance	0.475600
Endocytosis	0.678700
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	0.220200
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	0.145800
Glioma	0.431600
Glucagon signaling pathway	0.426800
Glutamatergic synapse	-0.144400
Glutathione metabolism	0.272500
Glycerolipid metabolism	0.736000
Glycerophospholipid metabolism	0.790900
Glycine, serine and threonine metabolism	0.009559
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 and isoglobo 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	0.247900
Graft-versus-host disease	-0.275500
Hedgehog signaling pathway	0.228000
Hepatitis B	0.312400
Hepatitis C	0.414300
Herpes simplex infection	0.302500
HIF-1 signaling pathway	0.532300
Hippo signaling pathway -multiple species	0.342400
Histidine metabolism	-0.322500
Homologous recombination	0.194600
Huntington's disease	0.781700
Hypertrophic cardiomyopathy (HCM)	0.238500
Inflammatory bowel disease (IBD)	-0.190400
Inflammatory mediator regulation of TRP channels	0.119500
Influenza A	0.285900
Inositol phosphate metabolism	1.045000
Insulin resistance	0.387400
Insulin secretion	-0.127200
Insulin signaling pathway	0.474900

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
Longevity regulating pathway	0.634200
Longevity regulating pathway - multiple species	0.583200
Long-term depression	0.235000
Long-term potentiation	0.172400
Lysine biosynthesis	-0.126400
Lysine degradation	0.616500
Malaria	-0.223800
Maturity onset diabetes of the young	-0.166900
Measles	0.186800
Melanogenesis	0.165700
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	0.499300
Mucin type O-Glycan biosynthesis	-0.324000
Natural killer cell mediated cytotoxicity	0.087400
Neuroactive ligand-receptor interaction	-0.421700
Neurotrophin signaling pathway	0.335000
NF-kappa B signaling pathway	0.171200
N-Glycan biosynthesis	0.623100
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	0.549100
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	-0.404000
Platelet activation	0.267200
Platinum drug resistance	0.403200
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	1.096000
Pyruvate metabolism	0.519400
Regulation of autophagy	0.254800
Regulation of lipolysis in adipocytes	0.214400
Renal cell carcinoma	0.433200
Renin-angiotensin system	0.001284
Renin secretion	0.213200
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	0.051270
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	0.395100
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
Taste transduction	-0.361600
Taurine and hypotaurine metabolism	-0.272100
T cell receptor signaling pathway	0.193700
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	0.187900
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
	control.3rd.Qu.
Acute myeloid leukemia	0.441400
Adherens junction	0.555300
Adipocytokine signaling pathway	0.275700
Adrenergic signaling in cardiomyocytes	-0.267500
African trypanosomiasis	-0.221400
AGE-RAGE signaling pathway in diabetic complications	0.272800
Alanine, aspartate and glutamate metabolism	0.552900
Aldosterone-regulated sodium reabsorption	0.174900

Aldosterone synthesis and secretion	0.147900
Allograft rejection	-0.168200
alpha-Linolenic acid metabolism	0.078400
Alzheimer's disease	0.302700
Aminoacyl-tRNA biosynthesis	0.290800
Amino sugar and nucleotide sugar metabolism	0.472900
Amoebiasis	-0.049270
Amphetamine addiction	-0.119600
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
Bacterial invasion of epithelial cells	0.476600
Basal cell carcinoma	0.199900
B cell receptor signaling pathway	0.135700
beta-Alanine metabolism	-0.182300
Bile secretion	-0.015750
Biosynthesis of unsaturated fatty acids	0.169900
Biotin metabolism	0.263400
Bladder cancer	0.478000
Breast cancer	0.398000
Butanoate metabolism	0.207900
Caffeine metabolism	-0.435000
Carbohydrate digestion and absorption	0.166200
Cardiac muscle contraction	-0.184600
Cell adhesion molecules (CAMs)	-0.206800
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	0.001394
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	0.056100
Dorso-ventral axis formation	0.266700
Drug metabolism - cytochrome P450	-0.492900
Drug metabolism - other enzymes	0.095170
ECM-receptor interaction	0.511100
EGFR tyrosine kinase inhibitor resistance	0.522800
Endocrine and other factor-regulated calcium reabsorption	-0.116600
Endocrine resistance	0.481500
Endocytosis	0.687500
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	0.237300
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	0.167600
Glioma	0.437000
Glucagon signaling pathway	0.459200
Glutamatergic synapse	-0.114500
Glutathione metabolism	0.282300
Glycerolipid metabolism	0.760900
Glycerophospholipid metabolism	0.835600
Glycine, serine and threonine metabolism	0.013000
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 and isoglobo 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	0.264000
Graft-versus-host disease	-0.270200
Hedgehog signaling pathway	0.236600
Hepatitis B	0.324300
Hepatitis C	0.419600
Herpes simplex infection	0.305600
HIF-1 signaling pathway	0.551100
Hippo signaling pathway -multiple species	0.352800
Histidine metabolism	-0.313700
Homologous recombination	0.198200
Huntington's disease	0.788600
Hypertrophic cardiomyopathy (HCM)	0.239100
Inflammatory bowel disease (IBD)	-0.187800
Inflammatory mediator regulation of TRP channels	0.132200
Influenza A	0.298700
Inositol phosphate metabolism	1.071000
Insulin resistance	0.393400
Insulin secretion	-0.112000
Insulin signaling pathway	0.478700
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
Longevity regulating pathway	0.642700
Longevity regulating pathway - multiple species	0.589900
Long-term depression	0.277100
Long-term potentiation	0.205300
Lysine biosynthesis	-0.113900
Lysine degradation	0.617100
Malaria	-0.220400
Maturity onset diabetes of the young	-0.160500
Measles	0.197400
Melanogenesis	0.182900
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	0.509000
Mucin type O-Glycan biosynthesis	-0.242800
Natural killer cell mediated cytotoxicity	0.101700

Neuroactive ligand-receptor interaction	-0.414300
Neurotrophin signaling pathway	0.346600
NF-kappa B signaling pathway	0.173300
N-Glycan biosynthesis	0.625800
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	0.551200
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	-0.377000
Platelet activation	0.277500
Platinum drug resistance	0.408400
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	1.129000
Pyruvate metabolism	0.536100
Regulation of autophagy	0.259300
Regulation of lipolysis in adipocytes	0.225200

Renal cell carcinoma	0.437100
Renin-angiotensin system	0.131500
Renin secretion	0.224500
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	0.067180
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	0.397900
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
Taste transduction	-0.359100
Taurine and hypotaurine metabolism	-0.260300
T cell receptor signaling pathway	0.195000
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	0.202300
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	-0.251300
African trypanosomiasis	-0.205800
AGE-RAGE signaling pathway in diabetic complications	0.273400
Alanine, aspartate and glutamate metabolism	0.563900
Aldosterone-regulated sodium reabsorption	0.177300
Aldosterone synthesis and secretion	0.158500
Allograft rejection	-0.165300
alpha-Linolenic acid metabolism	0.120200
Alzheimer's disease	0.303000
Aminoacyl-tRNA biosynthesis	0.295900
Amino sugar and nucleotide sugar metabolism	0.473600
Amoebiasis	-0.029320
Amphetamine addiction	-0.114200
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
Bacterial invasion of epithelial cells	0.483400
Basal cell carcinoma	0.221000
B cell receptor signaling pathway	0.144600
beta-Alanine metabolism	-0.172000
Bile secretion	-0.008094

Biosynthesis of unsaturated fatty acids	0.173300
Biotin metabolism	0.264100
Bladder cancer	0.479600
Breast cancer	0.408400
Butanoate metabolism	0.211800
Caffeine metabolism	-0.416500
Carbohydrate digestion and absorption	0.173200
Cardiac muscle contraction	-0.181100
Cell adhesion molecules (CAMs)	-0.202100
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	0.010580
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	0.099440
Dorso-ventral axis formation	0.267500
Drug metabolism - cytochrome P450	-0.466700
Drug metabolism - other enzymes	0.096180
ECM-receptor interaction	0.600200
EGFR tyrosine kinase inhibitor resistance	0.525400
Endocrine and other factor-regulated calcium reabsorption	-0.090800
Endocrine resistance	0.491800
Endocytosis	0.693900
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	0.248400
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	0.183000
Glioma	0.438700
Glucagon signaling pathway	0.507300
Glutamatergic synapse	-0.103600
Glutathione metabolism	0.308200
Glycerolipid metabolism	0.780000
Glycerophospholipid metabolism	0.884300
Glycine, serine and threonine metabolism	0.099540
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 and isoglobo 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	0.270900
Graft-versus-host disease	-0.219400
Hedgehog signaling pathway	0.253300
Hepatitis B	0.333600
Hepatitis C	0.426300
Herpes simplex infection	0.311800
HIF-1 signaling pathway	0.557400
Hippo signaling pathway -multiple species	0.359900
Histidine metabolism	-0.313300
Homologous recombination	0.201400
Huntington's disease	0.791100
Hypertrophic cardiomyopathy (HCM)	0.240800
Inflammatory bowel disease (IBD)	-0.185100
Inflammatory mediator regulation of TRP channels	0.133100
Influenza A	0.307800
Inositol phosphate metabolism	1.118000
Insulin resistance	0.400100
Insulin secretion	-0.100600
Insulin signaling pathway	0.484400
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
Longevity regulating pathway	0.654600
Longevity regulating pathway - multiple species	0.610100
Long-term depression	0.309800
Long-term potentiation	0.233000
Lysine biosynthesis	-0.103500
Lysine degradation	0.633700
Malaria	-0.121500
Maturity onset diabetes of the young	-0.159500
Measles	0.199300
Melanogenesis	0.191000
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	0.509600
Mucin type O-Glycan biosynthesis	-0.227200
Natural killer cell mediated cytotoxicity	0.111000
Neuroactive ligand-receptor interaction	-0.409300
Neurotrophin signaling pathway	0.350000
NF-kappa B signaling pathway	0.188000
N-Glycan biosynthesis	0.626700
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	0.561000
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	-0.334000
Platelet activation	0.300500
Platinum drug resistance	0.414200
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	1.159000
Pyruvate metabolism	0.590500
Regulation of autophagy	0.261200
Regulation of lipolysis in adipocytes	0.264100
Renal cell carcinoma	0.437900
Renin-angiotensin system	0.136500
Renin secretion	0.241900
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	0.079710
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	0.403100
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
Taste transduction	-0.354100
Taurine and hypotaurine metabolism	-0.256300
T cell receptor signaling pathway	0.200800
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	0.205500
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
	sample.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-regulated sodium reabsorption	4
Aldosterone synthesis and secretion	4
Allograft rejection	4

alpha-Linolenic acid metabolism	4
Alzheimer's disease	4
Aminoacyl-tRNA biosynthesis	4
Amino sugar and nucleotide sugar metabolism	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
Bacterial invasion of epithelial cells	4
Basal cell carcinoma	4
B cell receptor signaling pathway	4
beta-Alanine metabolism	4
Bile secretion	4
Biosynthesis of unsaturated fatty acids	4
Biotin metabolism	4
Bladder cancer	4
Breast 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
EGFR tyrosine kinase inhibitor resistance	4
Endocrine and other factor-regulated calcium reabsorption	4
Endocrine resistance	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 and isoglobo 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
Hedgehog signaling pathway	4
Hepatitis B	4
Hepatitis C	4
Herpes simplex infection	4
HIF-1 signaling pathway	4
Hippo signaling pathway -multiple species	4
Histidine metabolism	4
Homologous recombination	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
Longevity regulating pathway	4
Longevity regulating pathway - multiple species	4
Long-term depression	4
Long-term potentiation	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
Natural killer cell mediated cytotoxicity	4
Neuroactive ligand-receptor interaction	4
Neurotrophin signaling pathway	4

NF-kappa B signaling pathway	4
N-Glycan biosynthesis	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
Platinum drug resistance	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-angiotensin system	4

Renin secretion	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
Taste transduction	4
Taurine and hypotaurine metabolism	4
T cell receptor signaling pathway	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	-0.379200
African trypanosomiasis	-0.254100
AGE-RAGE signaling pathway in diabetic complications	0.248200
Alanine, aspartate and glutamate metabolism	0.546200
Aldosterone-regulated sodium reabsorption	0.120100
Aldosterone synthesis and secretion	0.146500
Allograft rejection	-0.184100
alpha-Linolenic acid metabolism	0.011020
Alzheimer's disease	0.301800
Aminoacyl-tRNA biosynthesis	0.226800
Amino sugar and nucleotide sugar metabolism	0.373800
Amoebiasis	-0.078140
Amphetamine addiction	-0.073190
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
Bacterial invasion of epithelial cells	0.458000
Basal cell carcinoma	0.035240
B cell receptor signaling pathway	0.116700
beta-Alanine metabolism	-0.262100
Bile secretion	-0.055040
Biosynthesis of unsaturated fatty acids	0.089280
Biotin metabolism	0.246400

Bladder cancer	0.423000
Breast cancer	0.268800
Butanoate metabolism	0.139800
Caffeine metabolism	-0.420200
Carbohydrate digestion and absorption	0.011090
Cardiac muscle contraction	-0.222000
Cell adhesion molecules (CAMs)	-0.241700
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	-0.060990
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	-0.001926
Dorso-ventral axis formation	0.260500
Drug metabolism - cytochrome P450	-0.478700
Drug metabolism - other enzymes	0.030640
ECM-receptor interaction	0.205800
EGFR tyrosine kinase inhibitor resistance	0.373100
Endocrine and other factor-regulated calcium reabsorption	-0.175200
Endocrine resistance	0.384900
Endocytosis	0.605600
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	0.124800
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	0.152000
Glioma	0.372100
Glucagon signaling pathway	0.336800
Glutamatergic synapse	-0.233600
Glutathione metabolism	0.268200
Glycerolipid metabolism	0.559500
Glycerophospholipid metabolism	0.654700
Glycine, serine and threonine metabolism	-0.154500
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 and isoglobo 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	0.268800
Graft-versus-host disease	-0.327500
Hedgehog signaling pathway	0.160500
Hepatitis B	0.304000
Hepatitis C	0.397800
Herpes simplex infection	0.307600
HIF-1 signaling pathway	0.505800
Hippo signaling pathway -multiple species	0.368800
Histidine metabolism	-0.353100
Homologous recombination	0.213400
Huntington's disease	0.779900
Hypertrophic cardiomyopathy (HCM)	0.194100
Inflammatory bowel disease (IBD)	-0.182600
Inflammatory mediator regulation of TRP channels	0.095900
Influenza A	0.290000
Inositol phosphate metabolism	0.949800
Insulin resistance	0.337800
Insulin secretion	-0.153300
Insulin signaling pathway	0.432800
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
Longevity regulating pathway	0.607500
Longevity regulating pathway - multiple species	0.530500
Long-term depression	0.146400
Long-term potentiation	0.191900
Lysine biosynthesis	-0.103400
Lysine degradation	0.630900
Malaria	-0.285600
Maturity onset diabetes of the young	-0.206800
Measles	0.178700
Melanogenesis	0.102600
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	0.416100
Mucin type O-Glycan biosynthesis	-0.530900
Natural killer cell mediated cytotoxicity	0.013510
Neuroactive ligand-receptor interaction	-0.447500
Neurotrophin signaling pathway	0.295000
NF-kappa B signaling pathway	0.158200
N-Glycan biosynthesis	0.570700
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	0.620700
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	-0.507200
Platelet activation	0.271300
Platinum drug resistance	0.380100
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	1.109000
Pyruvate metabolism	0.422800
Regulation of autophagy	0.231300
Regulation of lipolysis in adipocytes	0.196200
Renal cell carcinoma	0.372200
Renin-angiotensin system	-0.205500
Renin secretion	0.176500
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	0.035800
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	0.271300
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
Taste transduction	-0.333800
Taurine and hypotaurine metabolism	-0.358000
T cell receptor signaling pathway	0.171500
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	0.128900
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
	sample.1st.Qu.
Acute myeloid leukemia	0.43100
Adherens junction	0.56390
Adipocytokine signaling pathway	0.23600
Adrenergic signaling in cardiomyocytes	-0.30230
African trypanosomiasis	-0.24640
AGE-RAGE signaling pathway in diabetic complications	0.26410
Alanine, aspartate and glutamate metabolism	0.56160
Aldosterone-regulated sodium reabsorption	0.12540
Aldosterone synthesis and secretion	0.16770
Allograft rejection	-0.17060
alpha-Linolenic acid metabolism	0.01279
Alzheimer's disease	0.30510

Aminoacyl-tRNA biosynthesis	0.26900
Amino sugar and nucleotide sugar metabolism	0.41310
Amoebiasis	-0.07763
Amphetamine addiction	-0.07079
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
Bacterial invasion of epithelial cells	0.46310
Basal cell carcinoma	0.04187
B cell receptor signaling pathway	0.13520
beta-Alanine metabolism	-0.24960
Bile secretion	-0.04929
Biosynthesis of unsaturated fatty acids	0.10630
Biotin metabolism	0.25070
Bladder cancer	0.43560
Breast cancer	0.28910
Butanoate metabolism	0.16200
Caffeine metabolism	-0.40070
Carbohydrate digestion and absorption	0.03826
Cardiac muscle contraction	-0.20160
Cell adhesion molecules (CAMs)	-0.23850
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	-0.05114
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	0.03244
Dorso-ventral axis formation	0.26500
Drug metabolism - cytochrome P450	-0.47600
Drug metabolism - other enzymes	0.06798
ECM-receptor interaction	0.21840
EGFR tyrosine kinase inhibitor resistance	0.37480
Endocrine and other factor-regulated calcium reabsorption	-0.11960
Endocrine resistance	0.40930
Endocytosis	0.62230
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	0.16090
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	0.16630
Glioma	0.37640
Glucagon signaling pathway	0.37440
Glutamatergic synapse	-0.17640
Glutathione metabolism	0.27440
Glycerolipid metabolism	0.59440
Glycerophospholipid metabolism	0.69320
Glycine, serine and threonine metabolism	-0.09217
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 and isoglobo 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	0.28510

Graft-versus-host disease	-0.32370
Hedgehog signaling pathway	0.18130
Hepatitis B	0.31000
Hepatitis C	0.40270
Herpes simplex infection	0.30800
HIF-1 signaling pathway	0.51050
Hippo signaling pathway -multiple species	0.37110
Histidine metabolism	-0.34440
Homologous recombination	0.22290
Huntington's disease	0.78770
Hypertrophic cardiomyopathy (HCM)	0.20120
Inflammatory bowel disease (IBD)	-0.17620
Inflammatory mediator regulation of TRP channels	0.12240
Influenza A	0.29370
Inositol phosphate metabolism	1.01100
Insulin resistance	0.34300
Insulin secretion	-0.12750
Insulin signaling pathway	0.44170
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
Longevity regulating pathway	0.64040
Longevity regulating pathway - multiple species	0.57910
Long-term depression	0.16540
Long-term potentiation	0.22760
Lysine biosynthesis	-0.10250
Lysine degradation	0.64070
Malaria	-0.19790
Maturity onset diabetes of the young	-0.19560
Measles	0.18060
Melanogenesis	0.11170
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	0.42950
Mucin type O-Glycan biosynthesis	-0.50470
Natural killer cell mediated cytotoxicity	0.01817
Neuroactive ligand-receptor interaction	-0.44540
Neurotrophin signaling pathway	0.30490
NF-kappa B signaling pathway	0.16760
N-Glycan biosynthesis	0.57790

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	0.62390
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	-0.45260
Platelet activation	0.27970
Platinum drug resistance	0.41180
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	1.14300
Pyruvate metabolism	0.43650
Regulation of autophagy	0.24320
Regulation of lipolysis in adipocytes	0.20310
Renal cell carcinoma	0.39370
Renin-angiotensin system	-0.16310
Renin secretion	0.21220
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	0.05482
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	0.29770
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
Taste transduction	-0.30940
Taurine and hypotaurine metabolism	-0.33640
T cell receptor signaling pathway	0.17360
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	0.14810
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
	sample.Median
Acute myeloid leukemia	0.437200
Adherens junction	0.572300
Adipocytokine signaling pathway	0.247100
Adrenergic signaling in cardiomyocytes	-0.246900
African trypanosomiasis	-0.211100
AGE-RAGE signaling pathway in diabetic complications	0.277400
Alanine, aspartate and glutamate metabolism	0.584800
Aldosterone-regulated sodium reabsorption	0.152700
Aldosterone synthesis and secretion	0.175200
Allograft rejection	-0.163900
alpha-Linolenic acid metabolism	0.023350
Alzheimer's disease	0.308200
Aminoacyl-tRNA biosynthesis	0.294200
Amino sugar and nucleotide sugar metabolism	0.431700
Amoebiasis	-0.069690
Amphetamine addiction	-0.048600
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
Bacterial invasion of epithelial cells	0.480400
Basal cell carcinoma	0.046180
B cell receptor signaling pathway	0.146100
beta-Alanine metabolism	-0.223800
Bile secretion	-0.037730
Biosynthesis of unsaturated fatty acids	0.122600
Biotin metabolism	0.257300
Bladder cancer	0.443900
Breast cancer	0.297100

Butanoate metabolism	0.170200
Caffeine metabolism	-0.393800
Carbohydrate digestion and absorption	0.065030
Cardiac muscle contraction	-0.185600
Cell adhesion molecules (CAMs)	-0.221700
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	-0.043450
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	0.048570
Dorso-ventral axis formation	0.284500
Drug metabolism - cytochrome P450	-0.473500
Drug metabolism - other enzymes	0.081360
ECM-receptor interaction	0.258700
EGFR tyrosine kinase inhibitor resistance	0.429500
Endocrine and other factor-regulated calcium reabsorption	-0.098620
Endocrine resistance	0.420600
Endocytosis	0.637500
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	0.184100
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	0.187000
Glioma	0.402200
Glucagon signaling pathway	0.400100
Glutamatergic synapse	-0.132700
Glutathione metabolism	0.282100
Glycerolipid metabolism	0.608500
Glycerophospholipid metabolism	0.727800
Glycine, serine and threonine metabolism	-0.042310
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 and isoglobo 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	0.293500
Graft-versus-host disease	-0.311200
Hedgehog signaling pathway	0.211000
Hepatitis B	0.318300
Hepatitis C	0.404500
Herpes simplex infection	0.320500
HIF-1 signaling pathway	0.517200
Hippo signaling pathway -multiple species	0.376800
Histidine metabolism	-0.339600
Homologous recombination	0.232500
Huntington's disease	0.800600
Hypertrophic cardiomyopathy (HCM)	0.204400
Inflammatory bowel disease (IBD)	-0.169500
Inflammatory mediator regulation of TRP channels	0.134900
Influenza A	0.309900
Inositol phosphate metabolism	1.048000
Insulin resistance	0.346700
Insulin secretion	-0.112200
Insulin signaling pathway	0.454100
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

Longevity regulating pathway	0.651800
Longevity regulating pathway - multiple species	0.602200
Long-term depression	0.200000
Long-term potentiation	0.254200
Lysine biosynthesis	-0.093210
Lysine degradation	0.644800
Malaria	-0.163800
Maturity onset diabetes of the young	-0.172400
Measles	0.184000
Melanogenesis	0.125000
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	0.442800
Mucin type O-Glycan biosynthesis	-0.455400
Natural killer cell mediated cytotoxicity	0.024950
Neuroactive ligand-receptor interaction	-0.406900
Neurotrophin signaling pathway	0.320100
NF-kappa B signaling pathway	0.177000
N-Glycan biosynthesis	0.644500
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	0.639100
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	-0.396800
Platelet activation	0.293200
Platinum drug resistance	0.423300
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	1.160000
Pyruvate metabolism	0.476900
Regulation of autophagy	0.247800
Regulation of lipolysis in adipocytes	0.208400
Renal cell carcinoma	0.414600
Renin-angiotensin system	-0.136600
Renin secretion	0.224400
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	0.061730
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	0.309500
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
Taste transduction	-0.299100
Taurine and hypotaurine metabolism	-0.314800
T cell receptor signaling pathway	0.180800
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	0.165700
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	-0.265200
African trypanosomiasis	-0.208600
AGE-RAGE signaling pathway in diabetic complications	0.275400
Alanine, aspartate and glutamate metabolism	0.580500
Aldosterone-regulated sodium reabsorption	0.152200
Aldosterone synthesis and secretion	0.169000
Allograft rejection	-0.165000
alpha-Linolenic acid metabolism	0.030850
Alzheimer's disease	0.309100
Aminoacyl-tRNA biosynthesis	0.283200
Amino sugar and nucleotide sugar metabolism	0.424300

Amoebiasis	-0.067970
Amphetamine addiction	-0.049090
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
Bacterial invasion of epithelial cells	0.479000
Basal cell carcinoma	0.058910
B cell receptor signaling pathway	0.140900
beta-Alanine metabolism	-0.210000
Bile secretion	-0.028470
Biosynthesis of unsaturated fatty acids	0.150100
Biotin metabolism	0.259000
Bladder cancer	0.447200
Breast cancer	0.306600
Butanoate metabolism	0.166100
Caffeine metabolism	-0.390400
Carbohydrate digestion and absorption	0.070840
Cardiac muscle contraction	-0.192300
Cell adhesion molecules (CAMs)	-0.221000
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	-0.035990
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	0.042510
Dorso-ventral axis formation	0.283400

Drug metabolism - cytochrome P450	-0.471000
Drug metabolism - other enzymes	0.069820
ECM-receptor interaction	0.291800
EGFR tyrosine kinase inhibitor resistance	0.431800
Endocrine and other factor-regulated calcium reabsorption	-0.112500
Endocrine resistance	0.418700
Endocytosis	0.632200
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	0.175300
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	0.186200
Glioma	0.402000
Glucagon signaling pathway	0.393700
Glutamatergic synapse	-0.150700
Glutathione metabolism	0.290300
Glycerolipid metabolism	0.620200
Glycerophospholipid metabolism	0.755300
Glycine, serine and threonine metabolism	-0.050360
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 and isoglobo 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	0.288300
Graft-versus-host disease	-0.309500
Hedgehog signaling pathway	0.206900

Hepatitis B	0.319300
Hepatitis C	0.407600
Herpes simplex infection	0.323700
HIF-1 signaling pathway	0.523800
Hippo signaling pathway -multiple species	0.377400
Histidine metabolism	-0.339100
Homologous recombination	0.231300
Huntington's disease	0.802800
Hypertrophic cardiomyopathy (HCM)	0.205600
Inflammatory bowel disease (IBD)	-0.170700
Inflammatory mediator regulation of TRP channels	0.129300
Influenza A	0.310800
Inositol phosphate metabolism	1.031000
Insulin resistance	0.351100
Insulin secretion	-0.112800
Insulin signaling pathway	0.451100
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
Longevity regulating pathway	0.641500
Longevity regulating pathway - multiple species	0.590600
Long-term depression	0.195000
Long-term potentiation	0.242900
Lysine biosynthesis	-0.053640
Lysine degradation	0.644200
Malaria	-0.177200
Maturity onset diabetes of the young	-0.175900
Measles	0.185300
Melanogenesis	0.128200
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	0.442000
Mucin type O-Glycan biosynthesis	-0.440200
Natural killer cell mediated cytotoxicity	0.029310
Neuroactive ligand-receptor interaction	-0.407300
Neurotrophin signaling pathway	0.319600
NF-kappa B signaling pathway	0.178800
N-Glycan biosynthesis	0.645400
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	0.647500
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	-0.408600
Platelet activation	0.293100
Platinum drug resistance	0.414900
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	1.182000
Pyruvate metabolism	0.478200
Regulation of autophagy	0.244200
Regulation of lipolysis in adipocytes	0.212400
Renal cell carcinoma	0.413900
Renin-angiotensin system	-0.083320
Renin secretion	0.215600
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	0.058380
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	0.310900
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
Taste transduction	-0.298100
Taurine and hypotaurine metabolism	-0.320000
T cell receptor signaling pathway	0.180500
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	0.160100
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
	sample.3rd.Qu.
Acute myeloid leukemia	0.4397000
Adherens junction	0.5751000
Adipocytokine signaling pathway	0.2555000
Adrenergic signaling in cardiomyocytes	-0.2098000
African trypanosomiasis	-0.1732000
AGE-RAGE signaling pathway in diabetic complications	0.2887000
Alanine, aspartate and glutamate metabolism	0.6036000
Aldosterone-regulated sodium reabsorption	0.1796000
Aldosterone synthesis and secretion	0.1766000
Allograft rejection	-0.1583000
alpha-Linolenic acid metabolism	0.0414100
Alzheimer's disease	0.3122000
Aminoacyl-tRNA biosynthesis	0.3084000
Amino sugar and nucleotide sugar metabolism	0.4429000
Amoebiasis	-0.0600300
Amphetamine addiction	-0.0269000
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
Bacterial invasion of epithelial cells	0.4963000
Basal cell carcinoma	0.0632100
B cell receptor signaling pathway	0.1518000
beta-Alanine metabolism	-0.1841000
Bile secretion	-0.0169100
Biosynthesis of unsaturated fatty acids	0.1664000
Biotin metabolism	0.2656000
Bladder cancer	0.4555000
Breast cancer	0.3146000
Butanoate metabolism	0.1744000
Caffeine metabolism	-0.3834000

Carbohydrate digestion and absorption	0.0976200
Cardiac muscle contraction	-0.1764000
Cell adhesion molecules (CAMs)	-0.2041000
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	-0.0283000
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	0.0586400
Dorso-ventral axis formation	0.3029000
Drug metabolism - cytochrome P450	-0.4684000
Drug metabolism - other enzymes	0.0832000
ECM-receptor interaction	0.3322000
EGFR tyrosine kinase inhibitor resistance	0.4866000
Endocrine and other factor-regulated calcium reabsorption	-0.0915500
Endocrine resistance	0.4300000
Endocytosis	0.6474000
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	0.1986000
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	0.2069000
Glioma	0.4278000
Glucagon signaling pathway	0.4193000
Glutamatergic synapse	-0.1070000
Glutathione metabolism	0.2980000
Glycerolipid metabolism	0.6344000
Glycerophospholipid metabolism	0.7899000
Glycine, serine and threonine metabolism	-0.0004955
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 and isoglobo 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	0.2968000
Graft-versus-host disease	-0.2969000
Hedgehog signaling pathway	0.2366000
Hepatitis B	0.3277000
Hepatitis C	0.4095000
Herpes simplex infection	0.3363000
HIF-1 signaling pathway	0.5305000
Hippo signaling pathway -multiple species	0.3830000
Histidine metabolism	-0.3343000
Homologous recombination	0.2408000
Huntington's disease	0.8157000
Hypertrophic cardiomyopathy (HCM)	0.2088000
Inflammatory bowel disease (IBD)	-0.1640000
Inflammatory mediator regulation of TRP channels	0.1418000
Influenza A	0.3270000
Inositol phosphate metabolism	1.0670000
Insulin resistance	0.3548000
Insulin secretion	-0.0975500
Insulin signaling pathway	0.4635000
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
Longevity regulating pathway	0.6530000
Longevity regulating pathway - multiple species	0.6138000

Long-term depression	0.2296000
Long-term potentiation	0.2695000
Lysine biosynthesis	-0.0443700
Lysine degradation	0.6484000
Malaria	-0.1431000
Maturity onset diabetes of the young	-0.1527000
Measles	0.1887000
Melanogenesis	0.1416000
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	0.4554000
Mucin type O-Glycan biosynthesis	-0.3909000
Natural killer cell mediated cytotoxicity	0.0361000
Neuroactive ligand-receptor interaction	-0.3689000
Neurotrophin signaling pathway	0.3348000
NF-kappa B signaling pathway	0.1882000
N-Glycan biosynthesis	0.7120000
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	0.6628000
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	-0.3528000
Platelet activation	0.3066000
Platinum drug resistance	0.4264000
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	1.1990000
Pyruvate metabolism	0.5186000
Regulation of autophagy	0.2487000
Regulation of lipolysis in adipocytes	0.2177000
Renal cell carcinoma	0.4347000
Renin-angiotensin system	-0.0568100
Renin secretion	0.2279000
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	0.0652900
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	0.3228000
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

Taste transduction	-0.2879000
Taurine and hypotaurine metabolism	-0.2984000
T cell receptor signaling pathway	0.1877000
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	0.1777000
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	0.44100
Adherens junction	0.57860
Adipocytokine signaling pathway	0.25840
Adrenergic signaling in cardiomyocytes	-0.18780
African trypanosomiasis	-0.15790
AGE-RAGE signaling pathway in diabetic complications	0.29840
Alanine, aspartate and glutamate metabolism	0.60600
Aldosterone-regulated sodium reabsorption	0.18340
Aldosterone synthesis and secretion	0.17910
Allograft rejection	-0.14810
alpha-Linolenic acid metabolism	0.06570
Alzheimer's disease	0.31820
Aminoacyl-tRNA biosynthesis	0.31780
Amino sugar and nucleotide sugar metabolism	0.45990
Amoebiasis	-0.05438
Amphetamine addiction	-0.02598

AMPK signaling pathway	0.49090
Amyotrophic lateral sclerosis (ALS)	0.20750
Antigen processing and presentation	-0.10600
Apoptosis	0.36180
Arachidonic acid metabolism	-0.80210
Arginine and proline metabolism	-0.01437
Arginine biosynthesis	0.31450
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.34390
Ascorbate and aldarate metabolism	-0.52950
Asthma	-0.36780
Autoimmune thyroid disease	-0.35490
Bacterial invasion of epithelial cells	0.49710
Basal cell carcinoma	0.10800
B cell receptor signaling pathway	0.15480
beta-Alanine metabolism	-0.13020
Bile secretion	0.01663
Biosynthesis of unsaturated fatty acids	0.26600
Biotin metabolism	0.27480
Bladder cancer	0.47800
Breast cancer	0.36360
Butanoate metabolism	0.18420
Caffeine metabolism	-0.35380
Carbohydrate digestion and absorption	0.14220
Cardiac muscle contraction	-0.17630
Cell adhesion molecules (CAMs)	-0.19890
Cell cycle	0.99440
Central carbon metabolism in cancer	0.53130
Chagas disease (American trypanosomiasis)	0.30790
Chemical carcinogenesis	-0.80840
Choline metabolism in cancer	0.32410
Cholinergic synapse	0.22210
Chronic myeloid leukemia	0.58550
Circadian entrainment	0.00392
Circadian rhythm	0.53080
Citrate cycle (TCA cycle)	0.92880
Cocaine addiction	0.04176
Colorectal cancer	0.41930
Complement and coagulation cascades	-0.20350
Cysteine and methionine metabolism	0.55300
Cytosolic DNA-sensing pathway	0.25610
D-Glutamine and D-glutamate metabolism	0.36140
Dilated cardiomyopathy	0.19080
Dopaminergic synapse	0.07482
Dorso-ventral axis formation	0.30400
Drug metabolism - cytochrome P450	-0.45810
Drug metabolism - other enzymes	0.08589

ECM-receptor interaction	0.44410
EGFR tyrosine kinase inhibitor resistance	0.49530
Endocrine and other factor-regulated calcium reabsorption	-0.07759
Endocrine resistance	0.44860
Endocytosis	0.64810
Endometrial cancer	0.54090
Epithelial cell signaling in Helicobacter pylori infection	0.19150
Epstein-Barr virus infection	0.37680
ErbB signaling pathway	0.38620
Estrogen signaling pathway	0.20820
Ether lipid metabolism	0.28720
Fanconi anemia pathway	0.70190
Fat digestion and absorption	0.33750
Fatty acid biosynthesis	0.38020
Fatty acid degradation	0.59450
Fatty acid elongation	0.31880
Fc epsilon RI signaling pathway	0.25850
Fc gamma R-mediated phagocytosis	0.37020
Folate biosynthesis	0.29090
FoxO signaling pathway	0.32000
Fructose and mannose metabolism	0.53570
GABAergic synapse	-0.34280
Galactose metabolism	0.52570
Gap junction	0.13840
Gastric acid secretion	0.21870
Glioma	0.43160
Glucagon signaling pathway	0.43770
Glutamatergic synapse	-0.10390
Glutathione metabolism	0.32900
Glycerolipid metabolism	0.70430
Glycerophospholipid metabolism	0.91110
Glycine, serine and threonine metabolism	0.03774
Glycolysis / Gluconeogenesis	0.60150
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.45190
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.43590
Glycosaminoglycan degradation	0.39660
Glycosphingolipid biosynthesis - ganglio series	0.26400
Glycosphingolipid biosynthesis - globo and isoglobo series	-0.07692
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.12550
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.47770
Glyoxylate and dicarboxylate metabolism	0.25200
GnRH signaling pathway	0.29760
Graft-versus-host disease	-0.28790
Hedgehog signaling pathway	0.24510
Hepatitis B	0.33650
Hepatitis C	0.42370

Herpes simplex infection	0.34610
HIF-1 signaling pathway	0.55510
Hippo signaling pathway -multiple species	0.38720
Histidine metabolism	-0.32410
Homologous recombination	0.24680
Huntington's disease	0.83030
Hypertrophic cardiomyopathy (HCM)	0.21950
Inflammatory bowel disease (IBD)	-0.16110
Inflammatory mediator regulation of TRP channels	0.15140
Influenza A	0.33340
Inositol phosphate metabolism	1.07900
Insulin resistance	0.37320
Insulin secretion	-0.07355
Insulin signaling pathway	0.46360
Intestinal immune network for IgA production	-0.19110
Legionellosis	-0.07251
Leishmaniasis	-0.03578
Leukocyte transendothelial migration	0.15970
Linoleic acid metabolism	-1.18300
Lipoic acid metabolism	-0.07257
Longevity regulating pathway	0.65510
Longevity regulating pathway - multiple species	0.62740
Long-term depression	0.23390
Long-term potentiation	0.27140
Lysine biosynthesis	0.07530
Lysine degradation	0.65610
Malaria	-0.09539
Maturity onset diabetes of the young	-0.15200
Measles	0.19440
Melanogenesis	0.16000
Melanoma	0.48920
Metabolism of xenobiotics by cytochrome P450	-1.09500
Mineral absorption	-0.01296
Morphine addiction	-0.15610
mRNA surveillance pathway	0.62260
mTOR signaling pathway	0.46630
Mucin type O-Glycan biosynthesis	-0.31920
Natural killer cell mediated cytotoxicity	0.05384
Neuroactive ligand-receptor interaction	-0.36800
Neurotrophin signaling pathway	0.34330
NF-kappa B signaling pathway	0.20290
N-Glycan biosynthesis	0.72200
Nicotinate and nicotinamide metabolism	-0.05084
Nitrogen metabolism	0.61970
NOD-like receptor signaling pathway	0.24880
Non-alcoholic fatty liver disease (NAFLD)	0.24680

Non-small cell lung cancer	0.51350
Notch signaling pathway	0.45580
One carbon pool by folate	1.02700
Oocyte meiosis	0.69120
Osteoclast differentiation	0.13230
Ovarian steroidogenesis	0.08987
Oxidative phosphorylation	0.48820
p53 signaling pathway	0.35340
Pancreatic cancer	0.49900
Pancreatic secretion	0.15250
Pantothenate and CoA biosynthesis	0.11950
Parkinson's disease	0.23540
Pathogenic Escherichia coli infection	0.33040
Pentose and glucuronate interconversions	-0.24480
Pentose phosphate pathway	0.44770
Peroxisome	0.14070
Pertussis	0.11960
Phagosome	1.25200
Phenylalanine metabolism	-0.08493
Phenylalanine, tyrosine and tryptophan biosynthesis	0.34600
Phosphatidylinositol signaling system	1.36900
Phospholipase D signaling pathway	0.33500
Phototransduction	-0.33380
Platelet activation	0.31470
Platinum drug resistance	0.43290
Porphyrin and chlorophyll metabolism	0.01364
Primary bile acid biosynthesis	-0.25140
Prion diseases	0.35520
Progesterone-mediated oocyte maturation	0.24790
Prolactin signaling pathway	0.34750
Propanoate metabolism	0.37750
Prostate cancer	0.47890
Protein processing in endoplasmic reticulum	0.44200
Proximal tubule bicarbonate reclamation	0.18440
Pyrimidine metabolism	1.29900
Pyruvate metabolism	0.53600
Regulation of autophagy	0.24970
Regulation of lipolysis in adipocytes	0.23660
Renal cell carcinoma	0.45420
Renin-angiotensin system	0.14540
Renin secretion	0.23710
Retinol metabolism	-1.69600
Retrograde endocannabinoid signaling	0.07698
Rheumatoid arthritis	-0.12750
Riboflavin metabolism	0.38350
Ribosome biogenesis in eukaryotes	0.34780

RIG-I-like receptor signaling pathway	0.29630
RNA degradation	0.74930
RNA transport	0.46680
Salivary secretion	0.07423
Salmonella infection	0.45410
Selenocompound metabolism	0.38500
Serotonergic synapse	-0.05899
Shigellosis	0.43500
Signaling pathways regulating pluripotency of stem cells	0.36070
Small cell lung cancer	0.64530
SNARE interactions in vesicular transport	0.43580
Sphingolipid metabolism	0.95260
Sphingolipid signaling pathway	0.43890
Staphylococcus aureus infection	-0.12460
Starch and sucrose metabolism	0.35310
Steroid biosynthesis	0.45510
Steroid hormone biosynthesis	-1.00900
Sulfur metabolism	0.54440
Sulfur relay system	0.31990
Synaptic vesicle cycle	0.60320
Synthesis and degradation of ketone bodies	0.15200
Systemic lupus erythematosus	-0.25790
Taste transduction	-0.26040
Taurine and hypotaurine metabolism	-0.29250
T cell receptor signaling pathway	0.18880
Terpenoid backbone biosynthesis	0.39990
TGF-beta signaling pathway	0.24520
Thiamine metabolism	0.14930
Thyroid cancer	0.36030
Thyroid hormone signaling pathway	0.63280
Thyroid hormone synthesis	0.01213
Tight junction	0.32780
TNF signaling pathway	0.30190
Toll-like receptor signaling pathway	0.11820
Toxoplasmosis	0.30420
Transcriptional misregulation in cancer	0.12020
Tryptophan metabolism	-0.25320
Type I diabetes mellitus	-0.34520
Type II diabetes mellitus	0.18790
Tyrosine metabolism	-0.28530
Ubiquinone and other terpenoid-quinone biosynthesis	0.31670
Valine, leucine and isoleucine degradation	0.57130
Vascular smooth muscle contraction	0.17990
Vasopressin-regulated water reabsorption	0.08296
VEGF signaling pathway	0.28660
Vibrio cholerae infection	0.41850

Viral carcinogenesis	0.36520
Viral myocarditis	0.17270
Vitamin B6 metabolism	0.14130
Vitamin digestion and absorption	-0.40700
Wnt signaling pathway	0.17970
	p.value
Acute myeloid leukemia	4.679187e-01
Adherens junction	1.226839e-01
Adipocytokine signaling pathway	1.952346e-01
Adrenergic signaling in cardiomyocytes	7.967590e-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-regulated sodium reabsorption	5.774420e-01
Aldosterone synthesis and secretion	1.160445e-01
Allograft rejection	5.133788e-01
alpha-Linolenic acid metabolism	1.608778e-01
Alzheimer's disease	1.691319e-01
Aminoacyl-tRNA biosynthesis	8.342750e-01
Amino sugar and nucleotide sugar metabolism	9.246784e-02
Amoebiasis	6.960623e-01
Amphetamine addiction	3.314156e-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
Bacterial invasion of epithelial cells	3.133533e-01
Basal cell carcinoma	2.101500e-03
B cell receptor signaling pathway	2.844850e-01
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
Breast cancer	1.904335e-02
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)	5.890342e-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	8.805035e-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	6.608167e-01
Dorso-ventral axis formation	2.200867e-01
Drug metabolism - cytochrome P450	8.345425e-02
Drug metabolism - other enzymes	4.890267e-01
ECM-receptor interaction	4.307883e-02
EGFR tyrosine kinase inhibitor resistance	8.896369e-02
Endocrine and other factor-regulated calcium reabsorption	6.800278e-01
Endocrine resistance	1.527509e-02
Endocytosis	1.182425e-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	9.892045e-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	1.552802e-01
Glioma	1.548034e-01
Glucagon signaling pathway	4.187923e-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	2.890067e-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 and isoglobo 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	2.891585e-02
Graft-versus-host disease	1.754120e-01
Hedgehog signaling pathway	3.881699e-01
Hepatitis B	5.722936e-01
Hepatitis C	3.957628e-01
Herpes simplex infection	1.086049e-01
HIF-1 signaling pathway	6.362035e-01
Hippo signaling pathway -multiple species	1.185621e-02
Histidine metabolism	8.095896e-02
Homologous recombination	9.539433e-03
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	5.283217e-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	4.314436e-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
Longevity regulating pathway	6.205017e-01
Longevity regulating pathway - multiple species	7.662647e-01
Long-term depression	3.576669e-01
Long-term potentiation	9.067169e-02

Lysine biosynthesis	1.904448e-01
Lysine degradation	1.179388e-02
Malaria	4.080270e-01
Maturity onset diabetes of the young	5.769450e-01
Measles	8.548674e-01
Melanogenesis	1.235638e-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	6.489611e-03
Mucin type O-Glycan biosynthesis	1.419736e-01
Natural killer cell mediated cytotoxicity	8.703946e-03
Neuroactive ligand-receptor interaction	5.721175e-01
Neurotrophin signaling pathway	2.978916e-01
NF-kappa B signaling pathway	5.278251e-01
N-Glycan biosynthesis	6.200608e-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	7.021160e-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	9.316823e-01
Platelet activation	1.511475e-01

Platinum drug resistance	4.113775e-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	1.357200e-01
Pyruvate metabolism	3.134621e-01
Regulation of autophagy	9.559723e-02
Regulation of lipolysis in adipocytes	9.251571e-01
Renal cell carcinoma	3.570001e-01
Renin-angiotensin system	4.675981e-01
Renin secretion	8.958129e-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	6.766149e-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	1.301751e-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
Taste transduction	2.196767e-02
Taurine and hypotaurine metabolism	4.036299e-02

T cell receptor signaling pathway	5.052094e-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	1.146833e-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	0.721034658
Adherens junction	0.378225654
Adipocytokine signaling pathway	0.453739602
Adrenergic signaling in cardiomyocytes	0.900498971
African trypanosomiasis	0.721034658
AGE-RAGE signaling pathway in diabetic complications	0.614734631
Alanine, aspartate and glutamate metabolism	0.331053773
Aldosterone-regulated sodium reabsorption	0.770946517
Aldosterone synthesis and secretion	0.364089702
Allograft rejection	0.753458724
alpha-Linolenic acid metabolism	0.425055981
Alzheimer's disease	0.426364459
Aminoacyl-tRNA biosynthesis	0.926562067
Amino sugar and nucleotide sugar metabolism	0.331053773
Amoebiasis	0.828017196
Amphetamine addiction	0.103981657
AMPK signaling pathway	0.845901796
Amyotrophic lateral sclerosis (ALS)	0.527551673

Antigen processing and presentation	0.125333099
Apoptosis	0.949542413
Arachidonic acid metabolism	0.182645537
Arginine and proline metabolism	0.331053773
Arginine biosynthesis	0.826107002
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.721034658
Ascorbate and aldarate metabolism	0.419152531
Asthma	0.125333099
Autoimmune thyroid disease	0.666354492
Bacterial invasion of epithelial cells	0.619519493
Basal cell carcinoma	0.076035219
B cell receptor signaling pathway	0.613202130
beta-Alanine metabolism	0.949542413
Bile secretion	0.949542413
Biosynthesis of unsaturated fatty acids	0.829696274
Biotin metabolism	0.776528257
Bladder cancer	0.448754235
Breast cancer	0.159329394
Butanoate metabolism	0.614734631
Caffeine metabolism	0.212376022
Carbohydrate digestion and absorption	0.294199855
Cardiac muscle contraction	0.894800581
Cell adhesion molecules (CAMs)	0.776528257
Cell cycle	0.076035219
Central carbon metabolism in cancer	0.125333099
Chagas disease (American trypanosomiasis)	0.706729343
Chemical carcinogenesis	0.613202130
Choline metabolism in cancer	0.125333099
Cholinergic synapse	0.826107002
Chronic myeloid leukemia	0.682624502
Circadian entrainment	0.939890376
Circadian rhythm	0.005084161
Citrate cycle (TCA cycle)	0.686849976
Cocaine addiction	0.939890376
Colorectal cancer	0.949542413
Complement and coagulation cascades	0.318992133
Cysteine and methionine metabolism	0.689404408
Cytosolic DNA-sensing pathway	0.906257816
D-Glutamine and D-glutamate metabolism	0.209505306
Dilated cardiomyopathy	0.172308923
Dopaminergic synapse	0.826107002
Dorso-ventral axis formation	0.506805195
Drug metabolism - cytochrome P450	0.331053773
Drug metabolism - other enzymes	0.733640732
ECM-receptor interaction	0.235418144
EGFR tyrosine kinase inhibitor resistance	0.331053773

Endocrine and other factor-regulated calcium reabsorption	0.826107002
Endocrine resistance	0.138749471
Endocytosis	0.125333099
Endometrial cancer	0.961626632
Epithelial cell signaling in Helicobacter pylori infection	0.125333099
Epstein-Barr virus infection	0.247397788
ErbB signaling pathway	0.725838068
Estrogen signaling pathway	0.331053773
Ether lipid metabolism	0.770946517
Fanconi anemia pathway	0.240646684
Fat digestion and absorption	0.125333099
Fatty acid biosynthesis	0.395447697
Fatty acid degradation	0.409602103
Fatty acid elongation	0.279812392
Fc epsilon RI signaling pathway	0.705032901
Fc gamma R-mediated phagocytosis	0.575904823
Folate biosynthesis	0.716282275
FoxO signaling pathway	0.756715729
Fructose and mannose metabolism	0.888804257
GABAergic synapse	0.795323594
Galactose metabolism	0.859256176
Gap junction	0.331053773
Gastric acid secretion	0.419089656
Glioma	0.419089656
Glucagon signaling pathway	0.704992040
Glutamatergic synapse	0.938338767
Glutathione metabolism	0.676228573
Glycerolipid metabolism	0.173413047
Glycerophospholipid metabolism	0.794622079
Glycine, serine and threonine metabolism	0.613202130
Glycolysis / Gluconeogenesis	0.946643625
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.774804082
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.791155069
Glycosaminoglycan degradation	0.426364459
Glycosphingolipid biosynthesis - ganglio series	0.757478946
Glycosphingolipid biosynthesis - globo and isoglobo series	0.753458724
Glycosphingolipid biosynthesis - lacto and neolacto series	0.939890376
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.938338767
Glyoxylate and dicarboxylate metabolism	0.209505306
GnRH signaling pathway	0.196158882
Graft-versus-host disease	0.435924973
Hedgehog signaling pathway	0.682624502
Hepatitis B	0.770946517
Hepatitis C	0.686849976
Herpes simplex infection	0.349484974
HIF-1 signaling pathway	0.802447649

Hippo signaling pathway -multiple species	0.125333099
Histidine metabolism	0.331053773
Homologous recombination	0.125333099
Huntington's disease	0.426364459
Hypertrophic cardiomyopathy (HCM)	0.125333099
Inflammatory bowel disease (IBD)	0.158150089
Inflammatory mediator regulation of TRP channels	0.753458724
Influenza A	0.419089656
Inositol phosphate metabolism	0.859256176
Insulin resistance	0.128973134
Insulin secretion	0.753458724
Insulin signaling pathway	0.235418144
Intestinal immune network for IgA production	0.626174603
Legionellosis	0.757478946
Leishmaniasis	0.331053773
Leukocyte transendothelial migration	0.125333099
Linoleic acid metabolism	0.206656849
Lipoic acid metabolism	0.419089656
Longevity regulating pathway	0.794622079
Longevity regulating pathway - multiple species	0.882258903
Long-term depression	0.664995549
Long-term potentiation	0.331053773
Lysine biosynthesis	0.453739602
Lysine degradation	0.125333099
Malaria	0.696699187
Maturity onset diabetes of the young	0.770946517
Measles	0.938338767
Melanogenesis	0.378225654
Melanoma	0.682624502
Metabolism of xenobiotics by cytochrome P450	0.802447649
Mineral absorption	0.642070681
Morphine addiction	0.964628189
mRNA surveillance pathway	0.076035219
mTOR signaling pathway	0.125333099
Mucin type O-Glycan biosynthesis	0.409602103
Natural killer cell mediated cytotoxicity	0.125333099
Neuroactive ligand-receptor interaction	0.770946517
Neurotrophin signaling pathway	0.614734631
NF-kappa B signaling pathway	0.753458724
N-Glycan biosynthesis	0.794622079
Nicotinate and nicotinamide metabolism	0.940790927
Nitrogen metabolism	0.125333099
NOD-like receptor signaling pathway	0.733640732
Non-alcoholic fatty liver disease (NAFLD)	0.942001739
Non-small cell lung cancer	0.938338767
Notch signaling pathway	0.725838068

One carbon pool by folate	0.173413047
Oocyte meiosis	0.125333099
Osteoclast differentiation	0.614734631
Ovarian steroidogenesis	0.900498971
Oxidative phosphorylation	0.349098582
p53 signaling pathway	0.318992133
Pancreatic cancer	0.426364459
Pancreatic secretion	0.753458724
Pantothenate and CoA biosynthesis	0.190822661
Parkinson's disease	0.419089656
Pathogenic Escherichia coli infection	0.716282275
Pentose and glucuronate interconversions	0.388148334
Pentose phosphate pathway	0.755737015
Peroxisome	0.706729343
Pertussis	0.651036089
Phagosome	0.757478946
Phenylalanine metabolism	0.664995549
Phenylalanine, tyrosine and tryptophan biosynthesis	0.052257666
Phosphatidylinositol signaling system	0.848317616
Phospholipase D signaling pathway	0.343715425
Phototransduction	0.949542413
Platelet activation	0.419089656
Platinum drug resistance	0.697673939
Porphyrin and chlorophyll metabolism	0.826107002
Primary bile acid biosynthesis	0.956478115
Prion diseases	0.964628189
Progesterone-mediated oocyte maturation	0.672386823
Prolactin signaling pathway	0.900498971
Propanoate metabolism	0.618757231
Prostate cancer	0.642070681
Protein processing in endoplasmic reticulum	0.757478946
Proximal tubule bicarbonate reclamation	0.828017196
Pyrimidine metabolism	0.400773317
Pyruvate metabolism	0.619519493
Regulation of autophagy	0.331053773
Regulation of lipolysis in adipocytes	0.949542413
Renal cell carcinoma	0.664995549
Renin-angiotensin system	0.721034658
Renin secretion	0.940790927
Retinol metabolism	0.426364459
Retrograde endocannabinoid signaling	0.885065548
Rheumatoid arthritis	0.613202130
Riboflavin metabolism	0.453739602
Ribosome biogenesis in eukaryotes	0.331053773
RIG-I-like receptor signaling pathway	0.938338767
RNA degradation	0.011515975

RNA transport	0.073131570
Salivary secretion	0.826107002
Salmonella infection	0.511600655
Selenocompound metabolism	0.639693503
Serotonergic synapse	0.753458724
Shigellosis	0.562475763
Signaling pathways regulating pluripotency of stem cells	0.310728218
Small cell lung cancer	0.939890376
SNARE interactions in vesicular transport	0.826107002
Sphingolipid metabolism	0.938338767
Sphingolipid signaling pathway	0.331053773
Staphylococcus aureus infection	0.508516565
Starch and sucrose metabolism	0.128973134
Steroid biosynthesis	0.879293680
Steroid hormone biosynthesis	0.331053773
Sulfur metabolism	0.448754235
Sulfur relay system	0.782849448
Synaptic vesicle cycle	0.725838068
Synthesis and degradation of ketone bodies	0.331053773
Systemic lupus erythematosus	0.453739602
Taste transduction	0.172308923
Taurine and hypotaurine metabolism	0.230252483
T cell receptor signaling pathway	0.258790928
Terpenoid backbone biosynthesis	0.453739602
TGF-beta signaling pathway	0.704992040
Thiamine metabolism	0.331053773
Thyroid cancer	0.279812392
Thyroid hormone signaling pathway	0.706729343
Thyroid hormone synthesis	0.826424492
Tight junction	0.721034658
TNF signaling pathway	0.721034658
Toll-like receptor signaling pathway	0.312644504
Toxoplasmosis	0.828017196
Transcriptional misregulation in cancer	0.331053773
Tryptophan metabolism	0.939555726
Type I diabetes mellitus	0.666354492
Type II diabetes mellitus	0.618757231
Tyrosine metabolism	0.706729343
Ubiquinone and other terpenoid-quinone biosynthesis	0.753458724
Valine, leucine and isoleucine degradation	0.757478946
Vascular smooth muscle contraction	0.364089702
Vasopressin-regulated water reabsorption	0.613202130
VEGF signaling pathway	0.138749471
Vibrio cholerae infection	0.672386823
Viral carcinogenesis	0.206656849
Viral myocarditis	0.826107002

```
Vitamin B6 metabolism 0.279812392
Vitamin digestion and absorption 0.313016198
Wnt signaling pathway 0.212376022
```

```
$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(hnrnp.cnts, group, pathways, type="RNASeq", logFC.th=-1, nperm=100)
```

```
14848 node labels mapped to the expression data
Average coverage 84.50669 %
0 (out of 274) pathways without a mapped node
```

```
> res(Prs)
```

```
$results
nPRS
Acute myeloid leukemia -4.658062e-01
Adherens junction -1.281351e-01
Adipocytokine signaling pathway -5.503883e-02
Adrenergic signaling in cardiomyocytes 5.192324e-01
African trypanosomiasis 1.245676e-01
AGE-RAGE signaling pathway in diabetic complications 1.636506e-01
Alanine, aspartate and glutamate metabolism 2.715570e-01
```

Aldosterone-regulated sodium reabsorption	1.098328e+00
Aldosterone synthesis and secretion	1.090628e-01
Allograft rejection	-1.821225e+00
alpha-Linolenic acid metabolism	6.841846e-02
Alzheimer's disease	-3.027601e+00
Aminoacyl-tRNA biosynthesis	3.039614e-01
Amino sugar and nucleotide sugar metabolism	-5.504469e-01
Amoebiasis	1.035701e-01
Amphetamine addiction	1.192319e+00
AMPK signaling pathway	-3.048236e+00
Amyotrophic lateral sclerosis (ALS)	1.000775e+00
Antigen processing and presentation	-3.809495e+00
Apoptosis	-8.919821e+00
Arachidonic acid metabolism	-8.150928e-03
Arginine and proline metabolism	1.426629e-01
Arginine biosynthesis	3.101668e-01
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	4.543392e+00
Ascorbate and aldarate metabolism	1.770349e-01
Asthma	1.255393e-01
Autoimmune thyroid disease	1.178099e-01
Bacterial invasion of epithelial cells	5.020865e-01
Basal cell carcinoma	3.662470e-02
B cell receptor signaling pathway	-3.578218e-02
beta-Alanine metabolism	-3.746958e-01
Bile secretion	9.896003e-02
Biosynthesis of unsaturated fatty acids	-7.033174e-01
Biotin metabolism	1.318976e-01
Bladder cancer	-5.611182e-01
Breast cancer	6.617825e+00
Butanoate metabolism	2.570057e-01
Caffeine metabolism	1.199888e-01
Carbohydrate digestion and absorption	1.311664e-02
Cardiac muscle contraction	1.143430e-01
Cell adhesion molecules (CAMs)	-1.157282e+00
Cell cycle	2.930033e+00
Central carbon metabolism in cancer	-2.844962e-01
Chagas disease (American trypanosomiasis)	-4.344155e-01
Chemical carcinogenesis	-9.874978e-01
Choline metabolism in cancer	-3.341513e-01
Cholinergic synapse	1.775689e-01
Chronic myeloid leukemia	4.103043e-03
Circadian entrainment	-2.508907e-01
Circadian rhythm	4.987443e-01
Citrate cycle (TCA cycle)	-2.014628e+00
Cocaine addiction	1.349442e-01
Colorectal cancer	1.751622e+00

Complement and coagulation cascades	-1.384916e-01
Cysteine and methionine metabolism	6.969064e-01
Cytosolic DNA-sensing pathway	-1.043935e+00
D-Glutamine and D-glutamate metabolism	1.858160e-01
Dilated cardiomyopathy	5.750559e-02
Dopaminergic synapse	5.431100e-01
Dorso-ventral axis formation	5.681450e-01
Drug metabolism - cytochrome P450	-4.431013e-01
Drug metabolism - other enzymes	1.156975e+00
ECM-receptor interaction	-8.058474e+00
EGFR tyrosine kinase inhibitor resistance	-1.273813e+00
Endocrine and other factor-regulated calcium reabsorption	3.337649e-01
Endocrine resistance	6.862157e-02
Endocytosis	4.988478e-01
Endometrial cancer	2.111484e+00
Epithelial cell signaling in Helicobacter pylori infection	7.485604e-01
Epstein-Barr virus infection	6.910101e-01
ErbB signaling pathway	-3.672800e-01
Estrogen signaling pathway	5.251267e-02
Ether lipid metabolism	1.038812e-01
Fanconi anemia pathway	5.298694e-01
Fat digestion and absorption	-2.208424e+00
Fatty acid biosynthesis	-3.205979e+01
Fatty acid degradation	-1.311844e-01
Fatty acid elongation	5.938463e-01
Fc epsilon RI signaling pathway	-1.859888e-01
Fc gamma R-mediated phagocytosis	8.206795e-02
Folate biosynthesis	-6.306231e+00
FoxO signaling pathway	9.462974e-01
Fructose and mannose metabolism	-4.238530e+00
GABAergic synapse	2.851379e-01
Galactose metabolism	-9.462636e-01
Gap junction	4.306995e-01
Gastric acid secretion	-2.807028e-02
Glioma	8.698238e-01
Glucagon signaling pathway	1.000097e-02
Glutamatergic synapse	4.469940e-02
Glutathione metabolism	-2.328184e+00
Glycerolipid metabolism	-6.166867e-01
Glycerophospholipid metabolism	-3.017101e-03
Glycine, serine and threonine metabolism	2.086519e+00
Glycolysis / Gluconeogenesis	-1.563923e+00
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	-8.356786e+00
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	-8.772951e-02
Glycosaminoglycan degradation	-2.284002e+00
Glycosphingolipid biosynthesis - ganglio series	-4.620939e-01

Glycosphingolipid biosynthesis - globo and isoglobo series	1.365759e-02
Glycosphingolipid biosynthesis - lacto and neolacto series	9.118909e-02
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	-8.485172e-01
Glyoxylate and dicarboxylate metabolism	2.596662e+00
GnRH signaling pathway	-6.236780e-01
Graft-versus-host disease	-1.851877e+00
Hedgehog signaling pathway	2.976677e-01
Hepatitis B	-5.335570e-02
Hepatitis C	1.307682e+00
Herpes simplex infection	1.967751e+00
HIF-1 signaling pathway	-4.328276e-01
Hippo signaling pathway -multiple species	2.132887e-01
Histidine metabolism	-1.161925e-01
Homologous recombination	-1.235711e-02
Huntington's disease	5.759140e-01
Hypertrophic cardiomyopathy (HCM)	5.610292e-01
Inflammatory bowel disease (IBD)	1.770595e-01
Inflammatory mediator regulation of TRP channels	2.279337e-02
Influenza A	1.010536e+00
Inositol phosphate metabolism	2.283401e-01
Insulin resistance	-9.526290e-01
Insulin secretion	-1.086740e-02
Insulin signaling pathway	-5.113096e+00
Intestinal immune network for IgA production	1.880491e-01
Legionellosis	8.103679e-01
Leishmaniasis	-1.832468e-01
Leukocyte transendothelial migration	2.160008e-01
Linoleic acid metabolism	2.551862e-01
Lipoic acid metabolism	5.318398e-02
Longevity regulating pathway	3.313130e-01
Longevity regulating pathway - multiple species	4.186019e-01
Long-term depression	4.274477e-01
Long-term potentiation	2.878363e-01
Lysine biosynthesis	1.894979e-04
Lysine degradation	1.951878e-01
Malaria	1.335796e-01
Maturity onset diabetes of the young	1.446900e-01
Measles	-4.059481e-01
Melanogenesis	-3.590077e-02
Melanoma	6.611187e-01
Metabolism of xenobiotics by cytochrome P450	-6.973161e-01
Mineral absorption	1.857240e-01
Morphine addiction	2.954752e-01
mRNA surveillance pathway	1.608934e+00
mTOR signaling pathway	-1.361672e-01
Mucin type O-Glycan biosynthesis	3.348980e-01

Natural killer cell mediated cytotoxicity	-7.285236e-01
Neuroactive ligand-receptor interaction	4.566568e-02
Neurotrophin signaling pathway	-3.309411e-01
NF-kappa B signaling pathway	-4.370726e-02
N-Glycan biosynthesis	-1.359711e-01
Nicotinate and nicotinamide metabolism	-9.685168e-02
Nitrogen metabolism	1.865394e-01
NOD-like receptor signaling pathway	1.034012e+00
Non-alcoholic fatty liver disease (NAFLD)	3.032729e-01
Non-small cell lung cancer	-1.396148e-01
Notch signaling pathway	2.484792e-01
One carbon pool by folate	3.681469e-01
Oocyte meiosis	-3.515924e-01
Osteoclast differentiation	1.892556e-01
Ovarian steroidogenesis	6.491617e-02
Oxidative phosphorylation	1.961660e+00
p53 signaling pathway	2.287203e-01
Pancreatic cancer	-2.589566e-01
Pancreatic secretion	-3.008519e-01
Pantothenate and CoA biosynthesis	-5.734500e-01
Parkinson's disease	-3.022930e+00
Pathogenic Escherichia coli infection	1.555892e+00
Pentose and glucuronate interconversions	-3.515364e-01
Pentose phosphate pathway	-2.995075e+00
Peroxisome	3.776075e-01
Pertussis	-3.283536e-02
Phagosome	7.880076e-01
Phenylalanine metabolism	7.633882e-02
Phenylalanine, tyrosine and tryptophan biosynthesis	-2.079648e-02
Phosphatidylinositol signaling system	-3.562396e-01
Phospholipase D signaling pathway	1.808119e-01
Phototransduction	2.758612e-01
Platelet activation	2.879560e-01
Platinum drug resistance	-2.403247e-01
Porphyrin and chlorophyll metabolism	1.770312e-01
Primary bile acid biosynthesis	1.936836e-01
Prion diseases	-9.134830e-01
Progesterone-mediated oocyte maturation	1.734617e+00
Prolactin signaling pathway	-8.626750e-01
Propanoate metabolism	1.138779e+00
Prostate cancer	1.874233e+00
Protein processing in endoplasmic reticulum	5.532470e-01
Proximal tubule bicarbonate reclamation	1.391306e-01
Pyrimidine metabolism	1.387313e+00
Pyruvate metabolism	3.299971e-01
Regulation of autophagy	7.699122e-01

Regulation of lipolysis in adipocytes	5.431210e-02
Renal cell carcinoma	-1.148914e+00
Renin-angiotensin system	3.609298e-02
Renin secretion	-1.345344e-01
Retinol metabolism	2.765149e-03
Retrograde endocannabinoid signaling	1.261077e-01
Rheumatoid arthritis	2.668391e-01
Riboflavin metabolism	-1.722660e-01
Ribosome biogenesis in eukaryotes	1.374631e-01
RIG-I-like receptor signaling pathway	5.587933e-01
RNA degradation	1.066012e+00
RNA transport	6.125994e+00
Salivary secretion	-9.998357e-02
Salmonella infection	-1.570363e+00
Selenocompound metabolism	-3.593215e-02
Serotonergic synapse	1.708897e-01
Shigellosis	2.405904e-01
Signaling pathways regulating pluripotency of stem cells	-2.217559e-02
Small cell lung cancer	-8.336824e+00
SNARE interactions in vesicular transport	-6.006174e-02
Sphingolipid metabolism	9.324521e-02
Sphingolipid signaling pathway	-6.566756e-01
Staphylococcus aureus infection	-1.861455e+00
Starch and sucrose metabolism	-2.207207e+00
Steroid biosynthesis	2.219926e-01
Steroid hormone biosynthesis	3.384280e-02
Sulfur metabolism	3.035539e-01
Sulfur relay system	1.667441e-01
Synaptic vesicle cycle	2.324311e+00
Synthesis and degradation of ketone bodies	3.042236e-01
Systemic lupus erythematosus	-1.580214e+00
Taste transduction	-2.307234e-01
Taurine and hypotaurine metabolism	-5.069526e-02
T cell receptor signaling pathway	2.842341e-01
Terpenoid backbone biosynthesis	3.796330e-01
TGF-beta signaling pathway	-5.944598e-01
Thiamine metabolism	9.515968e-02
Thyroid cancer	4.302846e+00
Thyroid hormone signaling pathway	2.889934e-01
Thyroid hormone synthesis	3.580635e-02
Tight junction	6.380122e-01
TNF signaling pathway	-3.977888e-02
Toll-like receptor signaling pathway	7.555026e-02
Toxoplasmosis	-4.466076e+00
Transcriptional misregulation in cancer	3.101665e-01
Tryptophan metabolism	-6.635912e-01

Type I diabetes mellitus	1.458550e-01
Type II diabetes mellitus	-5.959618e-02
Tyrosine metabolism	1.330273e-01
Ubiquinone and other terpenoid-quinone biosynthesis	8.857791e-01
Valine, leucine and isoleucine degradation	2.510030e-01
Vascular smooth muscle contraction	1.217284e-01
Vasopressin-regulated water reabsorption	-3.214258e-01
VEGF signaling pathway	3.078177e-03
Vibrio cholerae infection	-6.647153e-02
Viral carcinogenesis	-1.065577e-01
Viral myocarditis	1.116022e+00
Vitamin B6 metabolism	-2.652842e-01
Vitamin digestion and absorption	2.005481e-01
Wnt signaling pathway	-2.820645e-01
	p.value
Acute myeloid leukemia	0.87
Adherens junction	0.70
Adipocytokine signaling pathway	0.57
Adrenergic signaling in cardiomyocytes	0.24
African trypanosomiasis	0.36
AGE-RAGE signaling pathway in diabetic complications	0.56
Alanine, aspartate and glutamate metabolism	0.24
Aldosterone-regulated sodium reabsorption	0.00
Aldosterone synthesis and secretion	0.61
Allograft rejection	0.97
alpha-Linolenic acid metabolism	0.69
Alzheimer's disease	0.99
Aminoacyl-tRNA biosynthesis	0.08
Amino sugar and nucleotide sugar metabolism	0.88
Amoebiasis	0.67
Amphetamine addiction	0.06
AMPK signaling pathway	0.99
Amyotrophic lateral sclerosis (ALS)	0.06
Antigen processing and presentation	0.98
Apoptosis	1.00
Arachidonic acid metabolism	0.67
Arginine and proline metabolism	0.28
Arginine biosynthesis	0.15
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.00
Ascorbate and aldarate metabolism	0.46
Asthma	0.56
Autoimmune thyroid disease	0.48
Bacterial invasion of epithelial cells	0.10
Basal cell carcinoma	0.87
B cell receptor signaling pathway	0.74
beta-Alanine metabolism	0.84

Bile secretion	0.65
Biosynthesis of unsaturated fatty acids	0.96
Biotin metabolism	0.60
Bladder cancer	0.88
Breast cancer	0.00
Butanoate metabolism	0.35
Caffeine metabolism	0.31
Carbohydrate digestion and absorption	0.81
Cardiac muscle contraction	0.59
Cell adhesion molecules (CAMs)	0.96
Cell cycle	0.00
Central carbon metabolism in cancer	0.78
Chagas disease (American trypanosomiasis)	0.85
Chemical carcinogenesis	0.94
Choline metabolism in cancer	0.75
Cholinergic synapse	0.50
Chronic myeloid leukemia	0.63
Circadian entrainment	0.74
Circadian rhythm	0.22
Citrate cycle (TCA cycle)	0.99
Cocaine addiction	0.52
Colorectal cancer	0.01
Complement and coagulation cascades	0.95
Cysteine and methionine metabolism	0.09
Cytosolic DNA-sensing pathway	0.88
D-Glutamine and D-glutamate metabolism	0.08
Dilated cardiomyopathy	0.64
Dopaminergic synapse	0.20
Dorso-ventral axis formation	0.03
Drug metabolism - cytochrome P450	0.85
Drug metabolism - other enzymes	0.05
ECM-receptor interaction	1.00
EGFR tyrosine kinase inhibitor resistance	0.91
Endocrine and other factor-regulated calcium reabsorption	0.20
Endocrine resistance	0.63
Endocytosis	0.13
Endometrial cancer	0.00
Epithelial cell signaling in Helicobacter pylori infection	0.05
Epstein-Barr virus infection	0.10
ErbB signaling pathway	0.85
Estrogen signaling pathway	0.68
Ether lipid metabolism	0.63
Fanconi anemia pathway	0.16
Fat digestion and absorption	0.98
Fatty acid biosynthesis	1.00
Fatty acid degradation	0.75

Fatty acid elongation	0.15
Fc epsilon RI signaling pathway	0.83
Fc gamma R-mediated phagocytosis	0.62
Folate biosynthesis	1.00
FoxO signaling pathway	0.06
Fructose and mannose metabolism	0.99
GABAergic synapse	0.35
Galactose metabolism	0.98
Gap junction	0.20
Gastric acid secretion	0.63
Glioma	0.09
Glucagon signaling pathway	0.54
Glutamatergic synapse	0.57
Glutathione metabolism	0.99
Glycerolipid metabolism	0.97
Glycerophospholipid metabolism	0.76
Glycine, serine and threonine metabolism	0.01
Glycolysis / Gluconeogenesis	0.99
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	1.00
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.77
Glycosaminoglycan degradation	0.99
Glycosphingolipid biosynthesis - ganglio series	0.84
Glycosphingolipid biosynthesis - globo and isoglobo series	0.38
Glycosphingolipid biosynthesis - lacto and neolacto series	0.70
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.95
Glyoxylate and dicarboxylate metabolism	0.00
GnRH signaling pathway	0.83
Graft-versus-host disease	0.97
Hedgehog signaling pathway	0.20
Hepatitis B	0.65
Hepatitis C	0.02
Herpes simplex infection	0.01
HIF-1 signaling pathway	0.88
Hippo signaling pathway -multiple species	0.39
Histidine metabolism	0.72
Homologous recombination	0.43
Huntington's disease	0.03
Hypertrophic cardiomyopathy (HCM)	0.12
Inflammatory bowel disease (IBD)	0.62
Inflammatory mediator regulation of TRP channels	0.63
Influenza A	0.04
Inositol phosphate metabolism	0.47
Insulin resistance	0.89
Insulin secretion	0.71
Insulin signaling pathway	0.99
Intestinal immune network for IgA production	0.43

Legionellosis	0.12
Leishmaniasis	0.79
Leukocyte transendothelial migration	0.53
Linoleic acid metabolism	0.41
Lipoic acid metabolism	0.32
Longevity regulating pathway	0.34
Longevity regulating pathway - multiple species	0.07
Long-term depression	0.28
Long-term potentiation	0.25
Lysine biosynthesis	0.82
Lysine degradation	0.37
Malaria	0.45
Maturity onset diabetes of the young	0.50
Measles	0.83
Melanogenesis	0.62
Melanoma	0.12
Metabolism of xenobiotics by cytochrome P450	0.86
Mineral absorption	0.63
Morphine addiction	0.40
mRNA surveillance pathway	0.03
mTOR signaling pathway	0.78
Mucin type O-Glycan biosynthesis	0.19
Natural killer cell mediated cytotoxicity	0.84
Neuroactive ligand-receptor interaction	0.34
Neurotrophin signaling pathway	0.80
NF-kappa B signaling pathway	0.72
N-Glycan biosynthesis	0.79
Nicotinate and nicotinamide metabolism	0.86
Nitrogen metabolism	0.17
NOD-like receptor signaling pathway	0.04
Non-alcoholic fatty liver disease (NAFLD)	0.37
Non-small cell lung cancer	0.76
Notch signaling pathway	0.37
One carbon pool by folate	0.29
Oocyte meiosis	0.74
Osteoclast differentiation	0.62
Ovarian steroidogenesis	0.70
Oxidative phosphorylation	0.01
p53 signaling pathway	0.34
Pancreatic cancer	0.80
Pancreatic secretion	0.72
Pantothenate and CoA biosynthesis	0.93
Parkinson's disease	0.98
Pathogenic Escherichia coli infection	0.01
Pentose and glucuronate interconversions	0.86
Pentose phosphate pathway	0.99

Peroxisome	0.10
Pertussis	0.64
Phagosome	0.09
Phenylalanine metabolism	0.40
Phenylalanine, tyrosine and tryptophan biosynthesis	0.18
Phosphatidylinositol signaling system	0.81
Phospholipase D signaling pathway	0.57
Phototransduction	0.28
Platelet activation	0.45
Platinum drug resistance	0.76
Porphyrin and chlorophyll metabolism	0.64
Primary bile acid biosynthesis	0.50
Prion diseases	0.95
Progesterone-mediated oocyte maturation	0.00
Prolactin signaling pathway	0.93
Propanoate metabolism	0.04
Prostate cancer	0.00
Protein processing in endoplasmic reticulum	0.14
Proximal tubule bicarbonate reclamation	0.49
Pyrimidine metabolism	0.03
Pyruvate metabolism	0.19
Regulation of autophagy	0.15
Regulation of lipolysis in adipocytes	0.73
Renal cell carcinoma	0.95
Renin-angiotensin system	0.69
Renin secretion	0.65
Retinol metabolism	0.68
Retrograde endocannabinoid signaling	0.49
Rheumatoid arthritis	0.40
Riboflavin metabolism	0.89
Ribosome biogenesis in eukaryotes	0.28
RIG-I-like receptor signaling pathway	0.12
RNA degradation	0.08
RNA transport	0.00
Salivary secretion	0.62
Salmonella infection	0.97
Selenocompound metabolism	0.84
Serotonergic synapse	0.51
Shigellosis	0.47
Signaling pathways regulating pluripotency of stem cells	0.60
Small cell lung cancer	1.00
SNARE interactions in vesicular transport	0.61
Sphingolipid metabolism	0.61
Sphingolipid signaling pathway	0.85
Staphylococcus aureus infection	0.98
Starch and sucrose metabolism	0.99

Steroid biosynthesis	0.48
Steroid hormone biosynthesis	0.64
Sulfur metabolism	0.17
Sulfur relay system	0.67
Synaptic vesicle cycle	0.00
Synthesis and degradation of ketone bodies	0.17
Systemic lupus erythematosus	0.95
Taste transduction	0.75
Taurine and hypotaurine metabolism	0.73
T cell receptor signaling pathway	0.51
Terpenoid backbone biosynthesis	0.15
TGF-beta signaling pathway	0.88
Thiamine metabolism	0.67
Thyroid cancer	0.00
Thyroid hormone signaling pathway	0.34
Thyroid hormone synthesis	0.67
Tight junction	0.15
TNF signaling pathway	0.70
Toll-like receptor signaling pathway	0.61
Toxoplasmosis	1.00
Transcriptional misregulation in cancer	0.12
Tryptophan metabolism	0.84
Type I diabetes mellitus	0.54
Type II diabetes mellitus	0.82
Tyrosine metabolism	0.52
Ubiquinone and other terpenoid-quinone biosynthesis	0.03
Valine, leucine and isoleucine degradation	0.49
Vascular smooth muscle contraction	0.62
Vasopressin-regulated water reabsorption	0.81
VEGF signaling pathway	0.65
Vibrio cholerae infection	0.64
Viral carcinogenesis	0.82
Viral myocarditis	0.03
Vitamin B6 metabolism	0.86
Vitamin digestion and absorption	0.59
Wnt signaling pathway	0.74
	q.value
Acute myeloid leukemia	1.0000000
Adherens junction	1.0000000
Adipocytokine signaling pathway	1.0000000
Adrenergic signaling in cardiomyocytes	0.8991045
African trypanosomiasis	1.0000000
AGE-RAGE signaling pathway in diabetic complications	1.0000000
Alanine, aspartate and glutamate metabolism	0.8991045
Aldosterone-regulated sodium reabsorption	0.0000000
Aldosterone synthesis and secretion	1.0000000

Allograft rejection	1.0000000
alpha-Linolenic acid metabolism	1.0000000
Alzheimer's disease	1.0000000
Aminoacyl-tRNA biosynthesis	0.5737143
Amino sugar and nucleotide sugar metabolism	1.0000000
Amoebiasis	1.0000000
Amphetamine addiction	0.4858065
AMPK signaling pathway	1.0000000
Amyotrophic lateral sclerosis (ALS)	0.4858065
Antigen processing and presentation	1.0000000
Apoptosis	1.0000000
Arachidonic acid metabolism	1.0000000
Arginine and proline metabolism	0.9761111
Arginine biosynthesis	0.7103774
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.0000000
Ascorbate and aldarate metabolism	1.0000000
Asthma	1.0000000
Autoimmune thyroid disease	1.0000000
Bacterial invasion of epithelial cells	0.6121951
Basal cell carcinoma	1.0000000
B cell receptor signaling pathway	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
Breast cancer	0.0000000
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	0.0000000
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	0.8495385
Citrate cycle (TCA cycle)	1.0000000
Cocaine addiction	1.0000000
Colorectal cancer	0.1568750
Complement and coagulation cascades	1.0000000
Cysteine and methionine metabolism	0.5944737

Cytosolic DNA-sensing pathway	1.0000000
D-Glutamine and D-glutamate metabolism	0.5737143
Dilated cardiomyopathy	1.0000000
Dopaminergic synapse	0.7843750
Dorso-ventral axis formation	0.3273913
Drug metabolism - cytochrome P450	1.0000000
Drug metabolism - other enzymes	0.4482143
ECM-receptor interaction	1.0000000
EGFR tyrosine kinase inhibitor resistance	1.0000000
Endocrine and other factor-regulated calcium reabsorption	0.7843750
Endocrine resistance	1.0000000
Endocytosis	0.6942553
Endometrial cancer	0.0000000
Epithelial cell signaling in Helicobacter pylori infection	0.4482143
Epstein-Barr virus infection	0.6121951
ErbB signaling pathway	1.0000000
Estrogen signaling pathway	1.0000000
Ether lipid metabolism	1.0000000
Fanconi anemia pathway	0.7437037
Fat digestion and absorption	1.0000000
Fatty acid biosynthesis	1.0000000
Fatty acid degradation	1.0000000
Fatty acid elongation	0.7103774
Fc epsilon RI signaling pathway	1.0000000
Fc gamma R-mediated phagocytosis	1.0000000
Folate biosynthesis	1.0000000
FoxO signaling pathway	0.4858065
Fructose and mannose metabolism	1.0000000
GABAergic synapse	1.0000000
Galactose metabolism	1.0000000
Gap junction	0.7843750
Gastric acid secretion	1.0000000
Glioma	0.5944737
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	0.1568750
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 and isoglobo series	1.0000000
Glycosphingolipid biosynthesis - lacto and neolacto series	1.0000000

Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	1.0000000
Glyoxylate and dicarboxylate metabolism	0.0000000
GnRH signaling pathway	1.0000000
Graft-versus-host disease	1.0000000
Hedgehog signaling pathway	0.7843750
Hepatitis B	1.0000000
Hepatitis C	0.2952941
Herpes simplex infection	0.1568750
HIF-1 signaling pathway	1.0000000
Hippo signaling pathway -multiple species	1.0000000
Histidine metabolism	1.0000000
Homologous recombination	1.0000000
Huntington's disease	0.3273913
Hypertrophic cardiomyopathy (HCM)	0.6547826
Inflammatory bowel disease (IBD)	1.0000000
Inflammatory mediator regulation of TRP channels	1.0000000
Influenza A	0.3861538
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	0.6547826
Leishmaniasis	1.0000000
Leukocyte transendothelial migration	1.0000000
Linoleic acid metabolism	1.0000000
Lipoic acid metabolism	1.0000000
Longevity regulating pathway	1.0000000
Longevity regulating pathway - multiple species	0.5490625
Long-term depression	0.9761111
Long-term potentiation	0.9227941
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	0.6547826
Metabolism of xenobiotics by cytochrome P450	1.0000000
Mineral absorption	1.0000000
Morphine addiction	1.0000000
mRNA surveillance pathway	0.3273913
mTOR signaling pathway	1.0000000
Mucin type O-Glycan biosynthesis	0.7843750
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
N-Glycan biosynthesis	1.0000000
Nicotinate and nicotinamide metabolism	1.0000000
Nitrogen metabolism	0.7485965
NOD-like receptor signaling pathway	0.3861538
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	0.9971233
Oocyte meiosis	1.0000000
Osteoclast differentiation	1.0000000
Ovarian steroidogenesis	1.0000000
Oxidative phosphorylation	0.1568750
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	0.1568750
Pentose and glucuronate interconversions	1.0000000
Pentose phosphate pathway	1.0000000
Peroxisome	0.6121951
Pertussis	1.0000000
Phagosome	0.5944737
Phenylalanine metabolism	1.0000000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.7789655
Phosphatidylinositol signaling system	1.0000000
Phospholipase D signaling pathway	1.0000000
Phototransduction	0.9761111
Platelet activation	1.0000000
Platinum drug resistance	1.0000000
Porphyrin and chlorophyll metabolism	1.0000000
Primary bile acid biosynthesis	1.0000000
Prion diseases	1.0000000
Progesterone-mediated oocyte maturation	0.0000000
Prolactin signaling pathway	1.0000000
Propanoate metabolism	0.3861538
Prostate cancer	0.0000000
Protein processing in endoplasmic reticulum	0.7103774
Proximal tubule bicarbonate reclamation	1.0000000
Pyrimidine metabolism	0.3273913
Pyruvate metabolism	0.7843750
Regulation of autophagy	0.7103774
Regulation of lipolysis in adipocytes	1.0000000
Renal cell carcinoma	1.0000000

Renin-angiotensin system	1.0000000
Renin secretion	1.0000000
Retinol metabolism	1.0000000
Retrograde endocannabinoid signaling	1.0000000
Rheumatoid arthritis	1.0000000
Riboflavin metabolism	1.0000000
Ribosome biogenesis in eukaryotes	0.9761111
RIG-I-like receptor signaling pathway	0.6547826
RNA degradation	0.5737143
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	0.7485965
Sulfur relay system	1.0000000
Synaptic vesicle cycle	0.0000000
Synthesis and degradation of ketone bodies	0.7485965
Systemic lupus erythematosus	1.0000000
Taste transduction	1.0000000
Taurine and hypotaurine metabolism	1.0000000
T cell receptor signaling pathway	1.0000000
Terpenoid backbone biosynthesis	0.7103774
TGF-beta signaling pathway	1.0000000
Thiamine metabolism	1.0000000
Thyroid cancer	0.0000000
Thyroid hormone signaling pathway	1.0000000
Thyroid hormone synthesis	1.0000000
Tight junction	0.7103774
TNF signaling pathway	1.0000000
Toll-like receptor signaling pathway	1.0000000
Toxoplasmosis	1.0000000
Transcriptional misregulation in cancer	0.6547826
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	0.3273913
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	0.3273913
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(hnrnp.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 `pallette.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)
>
```

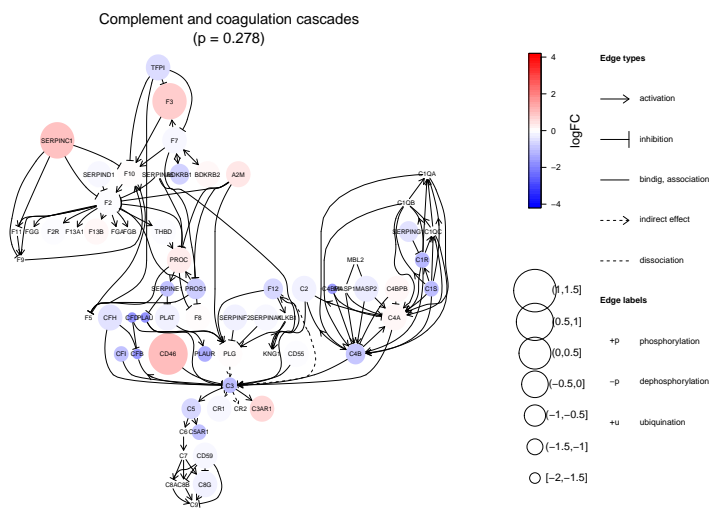


Figure 4.1:

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