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 *et al.*(2010)]	M	imported
DEGraph	[Jacob *et al.*(2010)]	M	imported
clipper	[Martini *et al.*(2012)]	M	imported
SPIA	[Tarca *et al.*(2009)], [Draghici *et al.*(2007)]	U	imported
TBS	[Al-Haj Ibrahim *et al.*(2012)]	U	de novo
PWEA	[Hung *et al.*(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 preprocessing 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 differentiall expression analysis, the user can prepare the data by his preffered 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 topologifal 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 interchangable. 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        = 07-10-2015

> 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: "2015-10-07"
```

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 simply 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 idendifiers of pathways, compares them agains the supplied vector of the identifiers from expression data and filters pathways with too many nodes, too few edges, not enought identifiers common with the expression data and transforms the pathways into formats reqiured in individual methods.

The normalized gene expression data or count data can be in two formats. One is an simple matrix were rows refer to genes and the other one is an `ExpressionSet`. There are four acceptable formats for the clincal 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 demonstrantion 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 conatains 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 computationaly 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 Gausian 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 convariance 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 optimalized 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 expresion 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 31.36501 %
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 subsituted 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 follwed with a search for the most affected path in the graph.

The method can be applied with

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

```
> #1: In getJunctionTreePaths(graph, root) :
> #  The DAG presents cliques that are not connected.
> #2: In prunePaths(clipped, pruneLevel) : pathSummary is NULL
> #3: In getJunctionTreePaths(graph, root) :
> #  The DAG presents cliques that are not connected.
> #4: In prunePaths(clipped, pruneLevel) : pathSummary is NULL
> res(cli)$results[[1]]
> #                                    alphaVar alphaMean mean.q.value var.q.value
> #Acute myeloid leukemia                0.735     0.009       0.0150     0.91875
> #Adherens junction                     0.101     0.022       0.0275     0.26500
> #Adipocytokine signaling pathway       0.656     0.001       0.0050     0.91875
> #Adrenergic signaling in cardiomyocytes 0.106    0.061       0.0610     0.26500
> #African trypanosomiasis               0.953     0.007       0.0150     0.95300
```

Apart from the expected arguments: a gene expression data matrix, a vector of class labels and a list of pathways, the user needs to specify the `type` argument which decides on the type of the data (`"MA"` is used for expression microarray and `"RNASeq"` for RNA-Seq data). The others arguments are optional. Arguments `convertTo` and `convertBy` control the conversion of the node labels in the pathways. The default setting is `convertTo="none"` which performs no conversion. Please note, that the node labels should be the same as the rownames 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 contating 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 pertubation factor. The authors assume that a differentially expressed gene at the begining 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 pertubation 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 31.36501 %
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                -0.498 0.306 0.517
Adherens junction                     -0.252 0.624 0.445
Adipocytokine signaling pathway        0.182 0.656 0.143
Adrenergic signaling in cardiomyocytes -0.350 0.544 0.737
African trypanosomiasis                0.000 1.000 0.435
                                       pGFdr pGFWER
Acute myeloid leukemia                0.64625  1.000
Adherens junction                     0.64625  1.000
Adipocytokine signaling pathway       0.64625  0.715
Adrenergic signaling in cardiomyocytes 0.73700  1.000
African trypanosomiasis               0.64625  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 agrument 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 chemointformatics 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 31.36501 %
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 perfomed (`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 expresed genes. The pathway topology is incorporated as the number of downstream differentially expressed genes. The gene-level log fold-changes are weigted by this number and sumed 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 31.36501 %
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                -0.8070567    0.93
Adherens junction                      2.0423828    0.05
Adipocytokine signaling pathway        0.4260766    0.24
Adrenergic signaling in cardiomyocytes -0.7194908    0.91
African trypanosomiasis                1.3209263    0.09
                                      q.value
Acute myeloid leukemia                  0.930
Adherens junction                       0.225
Adipocytokine signaling pathway         0.400
Adrenergic signaling in cardiomyocytes  0.930
African trypanosomiasis                 0.225

$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 agrument 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 weigthed form of common Gene Set Enrichment Analysis (GSEA). The weights are called Topological Influence Factor (TIF) and are defined as a geometic 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-Simirnov-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 possiblity that a weight of a gene that is tighly 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 metioned in the previus chapter were designed for the microarray data. However, the RNA-Seq technology is gaining popularity and becomes widely used. Unfortunatelly, 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 Gausian 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 testes via a likelihood ratio test. Then, when the null hypothesis of equality of covariance matrices is not rejected, the differential expression is testes via multivariate analysis of variance. On the other hand, when the convariance 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.

Unfortunatelly, 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 expresion 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")
```

```
13438 node labels mapped to the expression data
Average coverage 84.29152 %
0 (out of 250) 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
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	1.276149e-04
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
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
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
Endometrial cancer	3.359916e-02
Epstein-Barr virus infection	3.434329e-01
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	1.418699e-02
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	1.983813e-02
Gastric acid secretion	8.445878e-03
Glucagon signaling pathway	1.713701e-02
Glutathione metabolism	NA
Glycerolipid metabolism	3.922077e-03
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	1.938295e-04
Glycolysis / Gluconeogenesis	6.199374e-03
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	9.608565e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	3.813981e-06
GnRH signaling pathway	3.515292e-01
Graft-versus-host disease	8.546771e-01
Hedgehog signaling pathway	5.897501e-01
Hepatitis C	1.605871e-02
Herpes simplex infection	4.689919e-02
Histidine metabolism	NA
Huntington's disease	1.576390e-03
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	7.856899e-01
Inflammatory mediator regulation of TRP channels	1.691544e-01
Influenza A	1.365372e-01

Inositol phosphate metabolism	NA
Insulin resistance	8.889484e-02
Insulin secretion	2.152774e-01
Insulin signaling pathway	3.825402e-02
Intestinal immune network for IgA production	2.279272e-01
Legionellosis	3.846843e-01
Leishmaniasis	9.648594e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	7.552792e-01
Maturity onset diabetes of the young	8.656706e-01
Measles	2.467815e-01
Melanogenesis	3.257857e-02
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	3.950384e-01
mTOR signaling pathway	4.081232e-03
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
Pertussis	1.710487e-02
Phenylalanine metabolism	1.766262e-02
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	3.377759e-03
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	6.085264e-03

Progesterone-mediated oocyte maturation	8.405478e-03
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	5.563929e-05
Pyruvate metabolism	3.017727e-03
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
RIG-I-like receptor signaling pathway	7.688811e-01
Salivary secretion	8.569712e-01
Salmonella infection	6.001921e-02
Selenocompound metabolism	NA
Shigellosis	3.666778e-01
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
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	2.073505e-02
Taste transduction	3.215493e-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	1.371003e-01
TNF signaling pathway	2.000467e-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	0.0725736012
Adherens junction	0.2265962990
Adipocytokine signaling pathway	0.1652888471
African trypanosomiasis	0.3053971479
Alanine, aspartate and glutamate metabolism	NA
Aldosterone-regulated sodium reabsorption	0.2652380817
Aldosterone synthesis and secretion	0.0457947967
Allograft rejection	0.8945576085
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.0050620568
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	0.0364405587
Amoebiasis	0.1288505121
AMPK signaling pathway	0.0186043262
Amyotrophic lateral sclerosis (ALS)	0.0211159387
Antigen processing and presentation	0.2063284513
Arachidonic acid metabolism	NA
Arginine and proline metabolism	0.2799220652
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.0142084906
Ascorbate and aldarate metabolism	NA
Asthma	0.3715927205
Autoimmune thyroid disease	0.8945576085
B cell receptor signaling pathway	0.2293665778
beta-Alanine metabolism	0.1042093759
Bile secretion	0.0781960920
Biotin metabolism	NA
Bladder cancer	0.0114415732
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	0.0114415732
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.1587580999
Chagas disease (American trypanosomiasis)	0.0129454004
Chemical carcinogenesis	NA
Choline metabolism in cancer	0.3614723372
Chronic myeloid leukemia	0.1185963897
Circadian rhythm	0.1155633169
Citrate cycle (TCA cycle)	0.0152696276
Cocaine addiction	0.0305944231
Colorectal cancer	0.1652888471

Cysteine and methionine metabolism	0.1862274317
Cytosolic DNA-sensing pathway	0.0815979625
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	0.0144300329
Dorso-ventral axis formation	0.0725736012
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	0.6376837502
Endometrial cancer	0.0815979625
Epstein-Barr virus infection	0.4491045529
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	0.0489133721
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	0.0590184362
Gastric acid secretion	0.0346572254
Glucagon signaling pathway	0.0536659139
Glutathione metabolism	NA
Glycerolipid metabolism	0.0211159387
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	0.0055581421
Glycolysis / Gluconeogenesis	0.0295090200
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	0.9648593562
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	0.0004538637
GnRH signaling pathway	0.4546954095
Graft-versus-host disease	0.8945576085
Hedgehog signaling pathway	0.6813618060
Hepatitis C	0.0530829466
Herpes simplex infection	0.1042093759
Histidine metabolism	NA
Huntington's disease	0.0144300329
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	0.8738046471
Inflammatory mediator regulation of TRP channels	0.2614204620
Influenza A	0.2265962990
Inositol phosphate metabolism	NA
Insulin resistance	0.1652888471

Insulin secretion	0.3124148188
Insulin signaling pathway	0.0910445583
Intestinal immune network for IgA production	0.3228968133
Legionellosis	0.4818676876
Leishmaniasis	0.9648593562
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	0.8559830763
Maturity onset diabetes of the young	0.8957808776
Measles	0.3454941504
Melanogenesis	0.0815979625
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	0.4896829635
mTOR signaling pathway	0.0211159387
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	0.8306650495
Neurotrophin signaling pathway	0.5127534103
N-Glycan biosynthesis	0.5127534103
Nicotinate and nicotinamide metabolism	0.0410750423
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	0.0489133721
Non-alcoholic fatty liver disease (NAFLD)	0.1951730445
One carbon pool by folate	0.0142084906
Oocyte meiosis	0.1455649876
Osteoclast differentiation	0.0391249513
Ovarian steroidogenesis	0.8897617529
Oxidative phosphorylation	NA
Pancreatic cancer	0.3715927205
Pancreatic secretion	0.0781960920
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	0.0211159387
Pathogenic Escherichia coli infection	0.5079472888
Pentose and glucuronate interconversions	0.2614204620
Pentose phosphate pathway	0.9648593562
Pertussis	0.0536659139
Phenylalanine metabolism	0.0538936343
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	0.0211159387
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	0.0295090200
Progesterone-mediated oocyte maturation	0.0346572254
Propanoate metabolism	NA

Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	0.0033105376
Pyruvate metabolism	0.0211159387
Regulation of lipolysis in adipocytes	0.3228968133
Renal cell carcinoma	0.0687548571
Renin-angiotensin system	0.4709757246
Renin secretion	0.0211159387
Retinol metabolism	NA
Rheumatoid arthritis	0.8945576085
Riboflavin metabolism	NA
RIG-I-like receptor signaling pathway	0.8631778466
Salivary secretion	0.8945576085
Salmonella infection	0.1253032601
Selenocompound metabolism	NA
Shigellosis	0.4691899099
Sphingolipid metabolism	NA
Staphylococcus aureus infection	0.2497730232
Starch and sucrose metabolism	0.0211159387
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	0.0601822244
Taste transduction	0.4299366451
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	0.0937966730
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	0.0055581421
Thyroid hormone synthesis	0.5342986124
Tight junction	0.2265962990
TNF signaling pathway	0.2975694846
Toxoplasmosis	0.9648593562
Transcriptional misregulation in cancer	0.1586688363
Tryptophan metabolism	NA
Type I diabetes mellitus	0.8945576085
Type II diabetes mellitus	0.2523123157
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	0.1864525009
Vasopressin-regulated water reabsorption	0.0346572254
VEGF signaling pathway	0.1042093759
Vibrio cholerae infection	0.4386938717
Viral carcinogenesis	0.0144300329
Viral myocarditis	0.5079472888

Vitamin B6 metabolism	NA
Vitamin digestion and absorption	0.1862274317
	Comp1.p
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	3.321571e-01
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	2.779362e-03
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	9.739993e-02
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	6.812957e-05
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	2.725203e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	4.975241e-05
GnRH signaling pathway	NA
Graft-versus-host disease	7.337280e-01
Hedgehog signaling pathway	NA
Hepatitis C	NA
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA

Intestinal immune network for IgA production	2.520118e-01
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	7.793022e-01
Maturity onset diabetes of the young	4.820172e-01
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	5.837847e-03
mTOR signaling 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	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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	9.307516e-05

Pyruvate metabolism	7.213830e-05
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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	9.048986e-02
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	7.428724e-04
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	3.693798e-02
Taste transduction	1.708324e-01
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

	Comp1.pFourier
Acute myeloid leukemia	2.683394e-02
Adherens junction	1.343409e-01
Adipocytokine signaling pathway	8.665537e-02
African trypanosomiasis	2.078754e-01
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	1.276149e-04
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
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
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
Endometrial cancer	3.359916e-02
Epstein-Barr virus infection	3.434329e-01
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	1.418699e-02
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	1.983813e-02
Gastric acid secretion	8.445878e-03
Glucagon signaling pathway	1.713701e-02
Glutathione metabolism	NA
Glycerolipid metabolism	3.922077e-03
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	1.938295e-04
Glycolysis / Gluconeogenesis	6.199374e-03
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	9.608565e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	3.813981e-06
GnRH signaling pathway	3.515292e-01
Graft-versus-host disease	8.546771e-01
Hedgehog signaling pathway	5.897501e-01
Hepatitis C	1.605871e-02
Herpes simplex infection	4.689919e-02
Histidine metabolism	NA
Huntington's disease	1.576390e-03
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	7.856899e-01
Inflammatory mediator regulation of TRP channels	1.691544e-01
Influenza A	1.365372e-01
Inositol phosphate metabolism	NA
Insulin resistance	8.889484e-02
Insulin secretion	2.152774e-01
Insulin signaling pathway	3.825402e-02
Intestinal immune network for IgA production	2.279272e-01
Legionellosis	3.846843e-01

Leishmaniasis	9.648594e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	7.552792e-01
Maturity onset diabetes of the young	8.656706e-01
Measles	2.467815e-01
Melanogenesis	3.257857e-02
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	3.950384e-01
mTOR signaling pathway	4.081232e-03
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
Pertussis	1.710487e-02
Phenylalanine metabolism	1.766262e-02
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	3.377759e-03
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	6.085264e-03
Progesterone-mediated oocyte maturation	8.405478e-03
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	5.563929e-05
Pyruvate metabolism	3.017727e-03
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
RIG-I-like receptor signaling pathway	7.688811e-01
Salivary secretion	8.569712e-01
Salmonella infection	6.001921e-02
Selenocompound metabolism	NA
Shigellosis	3.666778e-01
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
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	2.073505e-02
Taste transduction	3.215493e-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	1.371003e-01
TNF signaling pathway	2.000467e-01
Toxoplasmosis	9.648594e-01
Transcriptional misregulation in cancer	8.000109e-02
Tryptophan metabolism	NA
Type I diabetes mellitus	8.546771e-01
Type II diabetes mellitus	1.590204e-01
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	1.049775e-01
Vasopressin-regulated water reabsorption	8.245162e-03
VEGF signaling pathway	4.728829e-02
Vibrio cholerae infection	3.317853e-01
Viral carcinogenesis	1.429658e-03
Viral myocarditis	4.157033e-01
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	1.032858e-01

	Comp1.k
Acute myeloid leukemia	3

Adherens junction	4
Adipocytokine signaling pathway	3
African trypanosomiasis	1
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
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
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
Endometrial cancer	4
Epstein-Barr virus infection	2
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	2
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	1
Gastric acid secretion	3
Glucagon signaling pathway	5
Glutathione metabolism	NA
Glycerolipid metabolism	2
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	1
Glycolysis / Gluconeogenesis	2
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	1
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	1
GnRH signaling pathway	4
Graft-versus-host disease	1
Hedgehog signaling pathway	6
Hepatitis C	2
Herpes simplex infection	2
Histidine metabolism	NA
Huntington's disease	2
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	3
Inflammatory mediator regulation of TRP channels	4
Influenza A	3
Inositol phosphate metabolism	NA
Insulin resistance	2
Insulin secretion	5
Insulin signaling pathway	4
Intestinal immune network for IgA production	1
Legionellosis	2
Leishmaniasis	2
Linoleic acid metabolism	NA

Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	1
Maturity onset diabetes of the young	1
Measles	2
Melanogenesis	3
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	1
mTOR signaling 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
Pertussis	2
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
Progesterone-mediated oocyte maturation	2
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	1
Pyruvate metabolism	1
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
RIG-I-like receptor signaling pathway	2
Salivary secretion	2
Salmonella infection	3
Selenocompound metabolism	NA
Shigellosis	1
Sphingolipid metabolism	NA
Staphylococcus aureus infection	3
Starch and sucrose metabolism	1
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
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

	Comp2.p
Acute myeloid leukemia	NA
Adherens junction	1.481186e-03
Adipocytokine signaling pathway	1.374063e-02

African trypanosomiasis	3.743224e-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
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
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	NA
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

Endometrial cancer	9.869721e-02
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	1.767816e-01
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	3.651105e-05
Glycolysis / Gluconeogenesis	2.017917e-03
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	2.126348e-03
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	2.697094e-02
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	8.092130e-03
Hepatitis C	4.408723e-02
Herpes simplex infection	7.392980e-03
Histidine metabolism	NA
Huntington's disease	2.559033e-02
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	1.461611e-02
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	1.667720e-01
Intestinal immune network for IgA production	NA
Legionellosis	7.113984e-01
Leishmaniasis	3.887577e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA

Lysine degradation	NA
Malaria	8.607069e-01
Maturity onset diabetes of the young	NA
Measles	1.772913e-01
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling pathway	1.572668e-03
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
Pertussis	2.016979e-01
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	1.063318e-01
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	2.175494e-05
Progesterone-mediated oocyte maturation	5.785675e-03
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	3.362306e-02
Selenocompound metabolism	NA
Shigellosis	2.896892e-02
Sphingolipid metabolism	NA
Staphylococcus aureus infection	5.462572e-02
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	7.337280e-01
Taste transduction	3.383983e-02
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
Alanine, aspartate and glutamate metabolism	NA

Aldosterone-regulated sodium reabsorption	1.750243e-01
Aldosterone synthesis and secretion	2.105152e-01
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
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
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	NA
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
Endometrial cancer	2.335354e-04
Epstein-Barr virus infection	3.696621e-03

Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	4.361522e-01
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	1.629596e-01
Glucagon signaling pathway	5.354515e-02
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	2.772092e-06
Glycolysis / Gluconeogenesis	2.488998e-02
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	7.575652e-02
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	1.894697e-02
GnRH signaling pathway	1.808112e-03
Graft-versus-host disease	NA
Hedgehog signaling pathway	2.067583e-01
Hepatitis C	1.098787e-02
Herpes simplex infection	1.198945e-02
Histidine metabolism	NA
Huntington's disease	6.140781e-01
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	3.089862e-01
Inflammatory mediator regulation of TRP channels	6.205323e-03
Influenza A	8.594545e-04
Inositol phosphate metabolism	NA
Insulin resistance	3.896294e-03
Insulin secretion	8.556072e-02
Insulin signaling pathway	3.383035e-02
Intestinal immune network for IgA production	NA
Legionellosis	1.287291e-01
Leishmaniasis	6.191867e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	6.785390e-01

Maturity onset diabetes of the young	NA
Measles	8.070942e-02
Melanogenesis	1.788867e-01
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling pathway	4.267400e-04
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
Pertussis	1.333941e-03
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	1.146469e-01
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	1.648858e-05
Progesterone-mediated oocyte maturation	1.192789e-01
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of lipolysis in adipocytes	7.061067e-03
Renal cell carcinoma	2.205904e-03
Renin-angiotensin system	NA
Renin secretion	1.276149e-04
Retinol metabolism	NA
Rheumatoid arthritis	NA
Riboflavin metabolism	NA

RIG-I-like receptor signaling pathway	1.639718e-02
Salivary secretion	1.966754e-01
Salmonella infection	3.407628e-02
Selenocompound metabolism	NA
Shigellosis	5.104709e-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
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	8.546771e-01
Taste transduction	7.791481e-01
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	1.763080e-01
TNF signaling pathway	2.793647e-01
Toxoplasmosis	4.107125e-02
Transcriptional misregulation in cancer	9.587589e-01
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	NA
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vasopressin-regulated water reabsorption	5.772512e-01
VEGF signaling pathway	3.494582e-03
Vibrio cholerae infection	9.807019e-01
Viral carcinogenesis	4.027179e-02
Viral myocarditis	2.894027e-01
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA

	Comp2.k
Acute myeloid leukemia	2
Adherens junction	1
Adipocytokine signaling pathway	1
African trypanosomiasis	1
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
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
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	NA
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
Endometrial cancer	2
Epstein-Barr virus infection	2
Ether lipid metabolism	NA
Fat digestion and absorption	NA

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

Melanogenesis	2
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	1
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	2
Salivary secretion	2

Salmonella infection	1
Selenocompound metabolism	NA
Shigellosis	1
Sphingolipid metabolism	NA
Staphylococcus aureus infection	1
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
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
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
Biotin metabolism	NA
Bladder cancer	7.564743e-05
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	6.501366e-02
Chagas disease (American trypanosomiasis)	1.040329e-02
Chemical carcinogenesis	NA
Choline metabolism in cancer	8.665990e-02
Chronic myeloid leukemia	5.859868e-04
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	6.827015e-02
Colorectal cancer	1.642179e-05
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	1.156150e-02
Endometrial cancer	1.100060e-01
Epstein-Barr virus infection	5.587546e-02
Ether lipid metabolism	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	6.307811e-02
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1.772990e-01
Herpes simplex infection	5.089027e-02
Histidine metabolism	NA
Huntington's disease	4.221786e-04
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	1.499595e-02
Inflammatory mediator regulation of TRP channels	NA
Influenza A	5.904718e-02
Inositol phosphate metabolism	NA
Insulin resistance	1.446356e-01
Insulin secretion	NA
Insulin signaling pathway	7.626221e-03
Intestinal immune network for IgA production	NA
Legionellosis	2.003296e-04
Leishmaniasis	3.502073e-02
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	5.045211e-02
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA

Mineral absorption	NA
mTOR signaling pathway	1.736289e-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
Pertussis	2.850790e-01
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
Progesterone-mediated oocyte maturation	4.892182e-02
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	1.139148e-02
Salivary secretion	5.409121e-01
Salmonella infection	7.113984e-01
Selenocompound metabolism	NA

Shigellosis	1.596866e-01
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
Biotin metabolism	NA
Bladder cancer	4.356788e-01
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	NA
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	5.519550e-02
Chagas disease (American trypanosomiasis)	9.491520e-01
Chemical carcinogenesis	NA
Choline metabolism in cancer	5.595241e-01
Chronic myeloid leukemia	1.186274e-03
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	4.391963e-01
Colorectal cancer	3.759383e-02
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	2.780326e-02
Endometrial cancer	3.626109e-01
Epstein-Barr virus infection	4.253858e-02
Ether lipid metabolism	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	6.968137e-01
Glucagon signaling pathway	8.931956e-01
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	1.571789e-01
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	3.200578e-01
Herpes simplex infection	5.412498e-03
Histidine metabolism	NA
Huntington's disease	7.621257e-03
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	3.691518e-03
Inflammatory mediator regulation of TRP channels	2.375714e-01
Influenza A	1.308912e-02
Inositol phosphate metabolism	NA
Insulin resistance	2.938004e-02
Insulin secretion	2.881541e-01
Insulin signaling pathway	1.046551e-02
Intestinal immune network for IgA production	NA
Legionellosis	3.731617e-03
Leishmaniasis	5.826237e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	4.911423e-01
Melanogenesis	4.848867e-02
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling pathway	5.362409e-02

Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	5.023725e-02
Neurotrophin signaling pathway	1.571789e-01
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	7.073635e-02
Osteoclast differentiation	3.058004e-02
Ovarian steroidogenesis	NA
Oxidative phosphorylation	NA
Pancreatic cancer	8.096576e-02
Pancreatic secretion	NA
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	NA
Pathogenic Escherichia coli infection	9.778295e-02
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Pertussis	7.128266e-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
Progesterone-mediated oocyte maturation	1.039989e-02
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	8.002334e-04
Salivary secretion	8.479994e-01
Salmonella infection	1.287291e-01
Selenocompound metabolism	NA
Shigellosis	2.107395e-01
Sphingolipid metabolism	NA

Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
Chagas disease (American trypanosomiasis)	2
Chemical carcinogenesis	NA
Choline metabolism in cancer	1
Chronic myeloid leukemia	2
Circadian rhythm	NA
Citrate cycle (TCA cycle)	NA
Cocaine addiction	1
Colorectal cancer	1
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	NA
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	NA
Dorso-ventral axis formation	NA
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	1
Endometrial cancer	1
Epstein-Barr virus infection	1
Ether lipid metabolism	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	2
Glucagon signaling pathway	2
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	2
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	1
Histidine metabolism	NA
Huntington's disease	1
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	1
Inflammatory mediator regulation of TRP channels	2
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	2
Insulin secretion	2
Insulin signaling pathway	1
Intestinal immune network for IgA production	NA
Legionellosis	1
Leishmaniasis	1
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1
Melanogenesis	2
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	1
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	1
Salivary secretion	1
Salmonella infection	1
Selenocompound metabolism	NA
Shigellosis	1
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA

Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	0.0042520141
Ether lipid metabolism	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	0.0054101722

Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	0.0289689238
Herpes simplex infection	0.0028533350
Histidine metabolism	NA
Huntington's disease	0.0006918987
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	0.2182500129
Inositol phosphate metabolism	NA
Insulin resistance	0.0731754117
Insulin secretion	NA
Insulin signaling pathway	0.0042489869
Intestinal immune network for IgA production	NA
Legionellosis	0.0653135251
Leishmaniasis	0.0609946529
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	0.1772989782
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling pathway	0.0936906504
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	0.0782474607
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
Pertussis	0.2209078568
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
Progesterone-mediated oocyte maturation	0.0043324978
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	0.0035455987
Salivary secretion	NA
Salmonella infection	0.0653135251
Selenocompound metabolism	NA
Shigellosis	0.0126620392
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA

Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	3.619171e-01
Ether lipid metabolism	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	2.562359e-03
Glutathione metabolism	NA
Glycerolipid metabolism	NA

Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	5.104709e-02
Herpes simplex infection	1.151402e-02
Histidine metabolism	NA
Huntington's disease	4.334308e-02
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	7.786257e-02
Influenza A	1.263807e-01
Inositol phosphate metabolism	NA
Insulin resistance	1.079104e-02
Insulin secretion	NA
Insulin signaling pathway	2.094260e-01
Intestinal immune network for IgA production	NA
Legionellosis	3.088718e-01
Leishmaniasis	1.664549e-01
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	3.200578e-01
Melanogenesis	1.571789e-01
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling pathway	3.644533e-02
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	9.149224e-01
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
Pertussis	1.640716e-01
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
Progesterone-mediated oocyte maturation	5.441836e-01
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	4.765610e-02
Salivary secretion	NA
Salmonella infection	3.088718e-01
Selenocompound metabolism	NA
Shigellosis	2.373188e-03
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	1
Ether lipid metabolism	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	1
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA

Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	1
Histidine metabolism	NA
Huntington's disease	1
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	2
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	1
Intestinal immune network for IgA production	NA
Legionellosis	1
Leishmaniasis	1
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1
Melanogenesis	2
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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	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
Pertussis	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
Progesterone-mediated oocyte maturation	1
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	1
Salivary secretion	NA
Salmonella infection	1
Selenocompound metabolism	NA
Shigellosis	1
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	1.946053e-04
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA

Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1.397149e-03
Herpes simplex infection	2.609499e-03
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	3.114562e-01
Inositol phosphate metabolism	NA
Insulin resistance	3.078118e-03
Insulin secretion	NA
Insulin signaling pathway	6.813498e-02
Intestinal immune network for IgA production	NA
Legionellosis	2.227131e-02
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	7.392980e-03
Melanogenesis	4.655827e-02
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	1.521317e-01
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	8.023023e-05
Salivary secretion	NA
Salmonella infection	6.099465e-02
Selenocompound metabolism	NA
Shigellosis	1.387118e-02
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	5.583817e-01
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA

Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1.537225e-01
Herpes simplex infection	4.620056e-01
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1.571789e-01
Influenza A	2.451161e-01
Inositol phosphate metabolism	NA
Insulin resistance	1.720397e-03
Insulin secretion	NA
Insulin signaling pathway	7.800867e-01
Intestinal immune network for IgA production	NA
Legionellosis	8.164932e-01
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1.198945e-02
Melanogenesis	9.602093e-03
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	7.138747e-01
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	2.369698e-01
Salivary secretion	NA
Salmonella infection	1.664549e-01
Selenocompound metabolism	NA
Shigellosis	5.209966e-03
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	1
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA

Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	1
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	2
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	1
Intestinal immune network for IgA production	NA
Legionellosis	1
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1
Melanogenesis	1
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	1
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	1
Salivary secretion	NA
Salmonella infection	1
Selenocompound metabolism	NA
Shigellosis	1
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	1.755161e-01
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA

Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	7.712749e-03
Herpes simplex infection	9.670449e-01
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	2.270304e-02
Influenza A	1.105806e-02
Inositol phosphate metabolism	NA
Insulin resistance	1.854994e-03
Insulin secretion	NA
Insulin signaling pathway	1.572668e-03
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	2.609499e-03
Melanogenesis	1.971067e-03
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	1.721992e-04
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	8.144986e-02
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA

Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	6.073678e-01
Herpes simplex infection	7.953202e-01
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1.641130e-04
Influenza A	6.218025e-01
Inositol phosphate metabolism	NA
Insulin resistance	1.704876e-01
Insulin secretion	NA
Insulin signaling pathway	4.267400e-04
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	4.620056e-01
Melanogenesis	1.861212e-04
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	2.239921e-03
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	1
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA

Hepatitis C	1
Herpes simplex infection	1
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	1
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	1
Melanogenesis	1
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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

Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	1
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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

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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	3.519424e-05
Herpes simplex infection	NA

Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1.027267e-01
Influenza A	4.592931e-01
Inositol phosphate metabolism	NA
Insulin resistance	5.954206e-03
Insulin secretion	NA
Insulin signaling pathway	5.271242e-02
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	7.702696e-03
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	2.385081e-02
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA

Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	6.835374e-02
Influenza A	1.951185e-01
Inositol phosphate metabolism	NA
Insulin resistance	2.184496e-02
Insulin secretion	NA
Insulin signaling pathway	6.234188e-02
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	2.002900e-03
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA

Inflammatory mediator regulation of TRP channels	1
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	1
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	1
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	0.005007935
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	0.061724757
Influenza A	0.002921922

Inositol phosphate metabolism	NA
Insulin resistance	0.108534881
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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

Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	0.006826353
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	0.098468241
Influenza A	0.801657547
Inositol phosphate metabolism	NA
Insulin resistance	0.397665252

Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA

Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	1
Influenza A	1
Inositol phosphate metabolism	NA
Insulin resistance	1
Insulin secretion	NA
Insulin signaling pathway	NA

Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA

Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	2.609499e-03
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	2.383015e-05
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA

Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	0.4620055564
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	0.0009004874
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA

Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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

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

Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA

Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	0.0004686003
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA

Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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

RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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.pFourier
Acute myeloid leukemia	NA
Adherens junction	NA
Adipocytokine signaling pathway	NA
African trypanosomiasis	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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA

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

Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA

Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA

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

Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA

Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA

Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	4.767311e-06
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA

Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA

Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	9.057618e-05
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA

Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA

Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA

Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA

Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1.653004e-05
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA

Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	0.01509456
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
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
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
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
Endometrial cancer	NA
Epstein-Barr virus infection	NA
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	NA
Galactose metabolism	NA
Gastric acid secretion	NA
Glucagon signaling pathway	NA
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA

Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	NA
Graft-versus-host disease	NA
Hedgehog signaling pathway	NA
Hepatitis C	1
Herpes simplex infection	NA
Histidine metabolism	NA
Huntington's disease	NA
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	NA
Inflammatory mediator regulation of TRP channels	NA
Influenza A	NA
Inositol phosphate metabolism	NA
Insulin resistance	NA
Insulin secretion	NA
Insulin signaling pathway	NA
Intestinal immune network for IgA production	NA
Legionellosis	NA
Leishmaniasis	NA
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	NA
Maturity onset diabetes of the young	NA
Measles	NA
Melanogenesis	NA
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	NA
mTOR signaling 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
Pertussis	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
Progesterone-mediated oocyte maturation	NA
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	NA
Salivary secretion	NA
Salmonella infection	NA
Selenocompound metabolism	NA
Shigellosis	NA
Sphingolipid metabolism	NA
Staphylococcus aureus infection	NA
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	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
```

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 subsituted 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 follwed 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 rownames 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 pertubation factor. The authors assume that a differentially expressed gene at the begining 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 pertubation 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)

13438 node labels mapped to the expression data
Average coverage 84.29152 %
0 (out of 250) pathways without a mapped node

> res(spi)

$results
                                                                pSize
Acute myeloid leukemia                                             50
Adherens junction                                                  65
Adipocytokine signaling pathway                                    57
Adrenergic signaling in cardiomyocytes                            124
African trypanosomiasis                                            20
Alanine, aspartate and glutamate metabolism                        30
Aldosterone-regulated sodium reabsorption                          25
Aldosterone synthesis and secretion                                54
Allograft rejection                                                 6
alpha-Linolenic acid metabolism                                    15
Alzheimer's disease                                                44
Aminoacyl-tRNA biosynthesis                                        13
Amino sugar and nucleotide sugar metabolism                        40
Amoebiasis                                                         34
Amphetamine addiction                                              51
AMPK signaling pathway                                             87
Amyotrophic lateral sclerosis (ALS)                                34
Antigen processing and presentation                                33
Apoptosis                                                          74
Arachidonic acid metabolism                                        39
Arginine and proline metabolism                                    45
```

Arginine biosynthesis	18
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	9
Ascorbate and aldarate metabolism	7
Asthma	2
Autoimmune thyroid disease	6
Axon guidance	99
Bacterial invasion of epithelial cells	51
Basal cell carcinoma	41
B cell receptor signaling pathway	64
beta-Alanine metabolism	28
Bile secretion	20
Biotin metabolism	2
Bladder cancer	29
Butanoate metabolism	19
Caffeine metabolism	3
Carbohydrate digestion and absorption	14
Cardiac muscle contraction	10
Cell adhesion molecules (CAMs)	66
Cell cycle	123
Chagas disease (American trypanosomiasis)	77
Chemical carcinogenesis	37
Choline metabolism in cancer	72
Cholinergic synapse	78
Chronic myeloid leukemia	69
Circadian entrainment	75
Circadian rhythm	29
Citrate cycle (TCA cycle)	29
Cocaine addiction	35
Colorectal cancer	45
Complement and coagulation cascades	46
Cysteine and methionine metabolism	31
Cytosolic DNA-sensing pathway	18
D-Glutamine and D-glutamate metabolism	4
Dilated cardiomyopathy	61
Dopaminergic synapse	105
Dorso-ventral axis formation	12
Drug metabolism - cytochrome P450	38
Drug metabolism - other enzymes	27
ECM-receptor interaction	74
Endocrine and other factor-regulated calcium reabsorption	32
Endometrial cancer	42
Epithelial cell signaling in Helicobacter pylori infection	32
Epstein-Barr virus infection	76
ErbB signaling pathway	77
Estrogen signaling pathway	77
Ether lipid metabolism	33

Fat digestion and absorption	8
Fatty acid biosynthesis	12
Fatty acid degradation	34
Fatty acid elongation	24
Fc epsilon RI signaling pathway	54
Fc gamma R-mediated phagocytosis	81
Folate biosynthesis	13
FoxO signaling pathway	115
Fructose and mannose metabolism	30
GABAergic synapse	45
Galactose metabolism	20
Gap junction	74
Gastric acid secretion	47
Glioma	59
Glucagon signaling pathway	76
Glutamatergic synapse	70
Glutathione metabolism	39
Glycerolipid metabolism	45
Glycerophospholipid metabolism	79
Glycine, serine and threonine metabolism	31
Glycolysis / Gluconeogenesis	56
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	9
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	5
Glycosaminoglycan degradation	18
Glycosphingolipid biosynthesis - ganglio series	12
Glycosphingolipid biosynthesis - globo series	11
Glycosphingolipid biosynthesis - lacto and neolacto series	20
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	23
Glyoxylate and dicarboxylate metabolism	23
GnRH signaling pathway	76
Graft-versus-host disease	11
Hedgehog signaling pathway	43
Hepatitis B	116
Hepatitis C	80
Herpes simplex infection	86
HIF-1 signaling pathway	91
Histidine metabolism	20
Huntington's disease	26
Hypertrophic cardiomyopathy (HCM)	22
Inflammatory bowel disease (IBD)	33
Inflammatory mediator regulation of TRP channels	72
Influenza A	96
Inositol phosphate metabolism	64
Insulin resistance	87
Insulin secretion	43
Insulin signaling pathway	123

Intestinal immune network for IgA production	20
Legionellosis	37
Leishmaniasis	43
Leukocyte transendothelial migration	73
Linoleic acid metabolism	16
Lipoic acid metabolism	3
Long-term depression	47
Long-term potentiation	55
Lysine biosynthesis	2
Lysine degradation	47
Malaria	10
Maturity onset diabetes of the young	11
Measles	74
Melanogenesis	87
Melanoma	56
Metabolism of xenobiotics by cytochrome P450	43
Mineral absorption	4
Morphine addiction	43
mTOR signaling pathway	50
Mucin type O-Glycan biosynthesis	24
Natural killer cell mediated cytotoxicity	88
Neuroactive ligand-receptor interaction	14
Neurotrophin signaling pathway	105
NF-kappa B signaling pathway	68
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	97
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
Pertussis	45
Phenylalanine metabolism	12

Phenylalanine, tyrosine and tryptophan biosynthesis	3
Phosphatidylinositol signaling system	78
Phototransduction	22
Platelet activation	102
Porphyrin and chlorophyll metabolism	24
Primary bile acid biosynthesis	14
Prion diseases	20
Progesterone-mediated oocyte maturation	69
Prolactin signaling pathway	61
Propanoate metabolism	21
Prostate cancer	79
Proximal tubule bicarbonate reclamation	7
Pyrimidine metabolism	98
Pyruvate metabolism	37
Regulation of lipolysis in adipocytes	42
Renal cell carcinoma	52
Renin-angiotensin system	2
Renin secretion	39
Retinol metabolism	39
Retrograde endocannabinoid signaling	49
Rheumatoid arthritis	13
Riboflavin metabolism	3
RIG-I-like receptor signaling pathway	48
Salivary secretion	36
Salmonella infection	69
Selenocompound metabolism	14
Serotonergic synapse	61
Shigellosis	48
Signaling pathways regulating pluripotency of stem cells	103
Small cell lung cancer	79
Sphingolipid metabolism	44
Sphingolipid signaling pathway	91
Staphylococcus aureus infection	22
Starch and sucrose metabolism	28
Steroid biosynthesis	20
Steroid hormone biosynthesis	34
Sulfur metabolism	9
Synaptic vesicle cycle	18
Synthesis and degradation of ketone bodies	9
Systemic lupus erythematosus	11
Taste transduction	28
Taurine and hypotaurine metabolism	8
T cell receptor signaling pathway	79
Terpenoid backbone biosynthesis	21
TGF-beta signaling pathway	74
Thiamine metabolism	3

Thyroid cancer	26
Thyroid hormone signaling pathway	102
Thyroid hormone synthesis	39
Tight junction	101
TNF signaling pathway	68
Toll-like receptor signaling pathway	76
Toxoplasmosis	85
Transcriptional misregulation in cancer	17
Tryptophan metabolism	36
Type I diabetes mellitus	4
Type II diabetes mellitus	39
Tyrosine metabolism	24
Ubiquinone and other terpenoid-quinone biosynthesis	9
Valine, leucine and isoleucine degradation	45
Vascular smooth muscle contraction	87
Vasopressin-regulated water reabsorption	20
VEGF signaling pathway	53
Vibrio cholerae infection	17
Viral carcinogenesis	6
Viral myocarditis	26
Vitamin B6 metabolism	5
Vitamin digestion and absorption	2
Wnt signaling pathway	120
	NDE
Acute myeloid leukemia	20
Adherens junction	32
Adipocytokine signaling pathway	20
Adrenergic signaling in cardiomyocytes	42
African trypanosomiasis	3
Alanine, aspartate and glutamate metabolism	11
Aldosterone-regulated sodium reabsorption	9
Aldosterone synthesis and secretion	19
Allograft rejection	0
alpha-Linolenic acid metabolism	6
Alzheimer's disease	20
Aminoacyl-tRNA biosynthesis	6
Amino sugar and nucleotide sugar metabolism	20
Amoebiasis	10
Amphetamine addiction	20
AMPK signaling pathway	42
Amyotrophic lateral sclerosis (ALS)	18
Antigen processing and presentation	16
Apoptosis	24
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
Axon guidance	43
Bacterial invasion of epithelial cells	15
Basal cell carcinoma	20
B cell receptor signaling pathway	23
beta-Alanine metabolism	12
Bile secretion	5
Biotin metabolism	0
Bladder cancer	15
Butanoate metabolism	6
Caffeine metabolism	1
Carbohydrate digestion and absorption	6
Cardiac muscle contraction	4
Cell adhesion molecules (CAMs)	19
Cell cycle	61
Chagas disease (American trypanosomiasis)	29
Chemical carcinogenesis	11
Choline metabolism in cancer	32
Cholinergic synapse	22
Chronic myeloid leukemia	28
Circadian entrainment	22
Circadian rhythm	10
Citrate cycle (TCA cycle)	15
Cocaine addiction	12
Colorectal cancer	23
Complement and coagulation cascades	20
Cysteine and methionine metabolism	13
Cytosolic DNA-sensing pathway	7
D-Glutamine and D-glutamate metabolism	2
Dilated cardiomyopathy	15
Dopaminergic synapse	33
Dorso-ventral axis formation	6
Drug metabolism - cytochrome P450	10
Drug metabolism - other enzymes	13
ECM-receptor interaction	31
Endocrine and other factor-regulated calcium reabsorption	7
Endometrial cancer	19
Epithelial cell signaling in Helicobacter pylori infection	15
Epstein-Barr virus infection	28
ErbB signaling pathway	30
Estrogen signaling pathway	29
Ether lipid metabolism	11
Fat digestion and absorption	5

Fatty acid biosynthesis	4
Fatty acid degradation	15
Fatty acid elongation	7
Fc epsilon RI signaling pathway	21
Fc gamma R-mediated phagocytosis	30
Folate biosynthesis	9
FoxO signaling pathway	49
Fructose and mannose metabolism	21
GABAergic synapse	9
Galactose metabolism	13
Gap junction	24
Gastric acid secretion	13
Glioma	23
Glucagon signaling pathway	23
Glutamatergic synapse	20
Glutathione metabolism	17
Glycerolipid metabolism	25
Glycerophospholipid metabolism	41
Glycine, serine and threonine metabolism	15
Glycolysis / Gluconeogenesis	24
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	7
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	2
Glycosaminoglycan degradation	11
Glycosphingolipid biosynthesis - ganglio series	6
Glycosphingolipid biosynthesis - globo series	4
Glycosphingolipid biosynthesis - lacto and neolacto series	4
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	10
Glyoxylate and dicarboxylate metabolism	12
GnRH signaling pathway	29
Graft-versus-host disease	5
Hedgehog signaling pathway	15
Hepatitis B	48
Hepatitis C	39
Herpes simplex infection	37
HIF-1 signaling pathway	35
Histidine metabolism	8
Huntington's disease	13
Hypertrophic cardiomyopathy (HCM)	7
Inflammatory bowel disease (IBD)	6
Inflammatory mediator regulation of TRP channels	24
Influenza A	32
Inositol phosphate metabolism	22
Insulin resistance	29
Insulin secretion	12
Insulin signaling pathway	47
Intestinal immune network for IgA production	5

Legionellosis	10
Leishmaniasis	15
Leukocyte transendothelial migration	26
Linoleic acid metabolism	4
Lipoic acid metabolism	1
Long-term depression	16
Long-term potentiation	22
Lysine biosynthesis	1
Lysine degradation	14
Malaria	1
Maturity onset diabetes of the young	4
Measles	24
Melanogenesis	31
Melanoma	21
Metabolism of xenobiotics by cytochrome P450	15
Mineral absorption	1
Morphine addiction	6
mTOR signaling pathway	22
Mucin type O-Glycan biosynthesis	8
Natural killer cell mediated cytotoxicity	34
Neuroactive ligand-receptor interaction	5
Neurotrophin signaling pathway	38
NF-kappa B signaling pathway	18
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	43
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
Pertussis	17
Phenylalanine metabolism	6
Phenylalanine, tyrosine and tryptophan biosynthesis	1

Phosphatidylinositol signaling system	27
Phototransduction	4
Platelet activation	33
Porphyrin and chlorophyll metabolism	6
Primary bile acid biosynthesis	5
Prion diseases	8
Progesterone-mediated oocyte maturation	29
Prolactin signaling pathway	25
Propanoate metabolism	10
Prostate cancer	39
Proximal tubule bicarbonate reclamation	3
Pyrimidine metabolism	37
Pyruvate metabolism	17
Regulation of lipolysis in adipocytes	12
Renal cell carcinoma	26
Renin-angiotensin system	0
Renin secretion	12
Retinol metabolism	12
Retrograde endocannabinoid signaling	11
Rheumatoid arthritis	2
Riboflavin metabolism	1
RIG-I-like receptor signaling pathway	26
Salivary secretion	9
Salmonella infection	22
Selenocompound metabolism	5
Serotonergic synapse	15
Shigellosis	14
Signaling pathways regulating pluripotency of stem cells	41
Small cell lung cancer	36
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
Synaptic vesicle cycle	10
Synthesis and degradation of ketone bodies	3
Systemic lupus erythematosus	4
Taste transduction	6
Taurine and hypotaurine metabolism	3
T cell receptor signaling pathway	31
Terpenoid backbone biosynthesis	8
TGF-beta signaling pathway	30
Thiamine metabolism	1
Thyroid cancer	13

Thyroid hormone signaling pathway	39
Thyroid hormone synthesis	12
Tight junction	29
TNF signaling pathway	27
Toll-like receptor signaling pathway	25
Toxoplasmosis	31
Transcriptional misregulation in cancer	5
Tryptophan metabolism	14
Type I diabetes mellitus	0
Type II diabetes mellitus	13
Tyrosine metabolism	8
Ubiquinone and other terpenoid-quinone biosynthesis	3
Valine, leucine and isoleucine degradation	16
Vascular smooth muscle contraction	30
Vasopressin-regulated water reabsorption	7
VEGF signaling pathway	19
Vibrio cholerae infection	2
Viral carcinogenesis	2
Viral myocarditis	9
Vitamin B6 metabolism	3
Vitamin digestion and absorption	0
Wnt signaling pathway	42

	pNDE
Acute myeloid leukemia	0.381
Adherens junction	0.029
Adipocytokine signaling pathway	0.666
Adrenergic signaling in cardiomyocytes	0.793
African trypanosomiasis	0.992
Alanine, aspartate and glutamate metabolism	0.584
Aldosterone-regulated sodium reabsorption	0.616
Aldosterone synthesis and secretion	0.659
Allograft rejection	1.000
alpha-Linolenic acid metabolism	0.501
Alzheimer's disease	0.157
Aminoacyl-tRNA biosynthesis	0.339
Amino sugar and nucleotide sugar metabolism	0.064
Amoebiasis	0.864
Amphetamine addiction	0.423
AMPK signaling pathway	0.020
Amyotrophic lateral sclerosis (ALS)	0.042
Antigen processing and presentation	0.119
Apoptosis	0.826
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
Axon guidance	0.111
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
Biotin metabolism	1.000
Bladder cancer	0.075
Butanoate metabolism	0.763
Caffeine metabolism	0.750
Carbohydrate digestion and absorption	0.421
Cardiac muscle contraction	0.540
Cell adhesion molecules (CAMs)	0.937
Cell cycle	0.003
Chagas disease (American trypanosomiasis)	0.496
Chemical carcinogenesis	0.863
Choline metabolism in cancer	0.118
Cholinergic synapse	0.961
Chronic myeloid leukemia	0.309
Circadian entrainment	0.935
Circadian rhythm	0.677
Citrate cycle (TCA cycle)	0.075
Cocaine addiction	0.690
Colorectal cancer	0.037
Complement and coagulation cascades	0.223
Cysteine and methionine metabolism	0.346
Cytosolic DNA-sensing pathway	0.523
D-Glutamine and D-glutamate metabolism	0.473
Dilated cardiomyopathy	0.986
Dopaminergic synapse	0.903
Dorso-ventral axis formation	0.259
Drug metabolism - cytochrome P450	0.941
Drug metabolism - other enzymes	0.159
ECM-receptor interaction	0.225
Endocrine and other factor-regulated calcium reabsorption	0.979
Endometrial cancer	0.172
Epithelial cell signaling in Helicobacter pylori infection	0.165
Epstein-Barr virus infection	0.555
ErbB signaling pathway	0.403
Estrogen signaling pathway	0.496
Ether lipid metabolism	0.728
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	0.438
Fc gamma R-mediated phagocytosis	0.540
Folate biosynthesis	0.019
FoxO signaling pathway	0.125
Fructose and mannose metabolism	0.000
GABAergic synapse	0.996
Galactose metabolism	0.010
Gap junction	0.826
Gastric acid secretion	0.933
Glioma	0.425
Glucagon signaling pathway	0.912
Glutamatergic synapse	0.946
Glutathione metabolism	0.244
Glycerolipid metabolism	0.009
Glycerophospholipid metabolism	0.005
Glycine, serine and threonine metabolism	0.131
Glycolysis / Gluconeogenesis	0.220
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.016
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.610
Glycosaminoglycan degradation	0.033
Glycosphingolipid biosynthesis - ganglio series	0.259
Glycosphingolipid biosynthesis - globo series	0.629
Glycosphingolipid biosynthesis - lacto and neolacto series	0.970
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.330
Glyoxylate and dicarboxylate metabolism	0.100
GnRH signaling pathway	0.461
Graft-versus-host disease	0.385
Hedgehog signaling pathway	0.668
Hepatitis B	0.189
Hepatitis C	0.021
Herpes simplex infection	0.148
HIF-1 signaling pathway	0.426
Histidine metabolism	0.474
Huntington's disease	0.122
Hypertrophic cardiomyopathy (HCM)	0.763
Inflammatory bowel disease (IBD)	0.995
Inflammatory mediator regulation of TRP channels	0.778
Influenza A	0.803
Inositol phosphate metabolism	0.712
Insulin resistance	0.794
Insulin secretion	0.921
Insulin signaling pathway	0.424
Intestinal immune network for IgA production	0.914
Legionellosis	0.926

Leishmaniasis	0.668
Leukocyte transendothelial migration	0.640
Linoleic acid metabolism	0.899
Lipoic acid metabolism	0.750
Long-term depression	0.714
Long-term potentiation	0.371
Lysine biosynthesis	0.603
Lysine degradation	0.882
Malaria	0.990
Maturity onset diabetes of the young	0.629
Measles	0.826
Melanogenesis	0.644
Melanoma	0.520
Metabolism of xenobiotics by cytochrome P450	0.668
Mineral absorption	0.843
Morphine addiction	1.000
mTOR signaling pathway	0.189
Mucin type O-Glycan biosynthesis	0.716
Natural killer cell mediated cytotoxicity	0.415
Neuroactive ligand-receptor interaction	0.638
Neurotrophin signaling pathway	0.606
NF-kappa B signaling pathway	0.976
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	0.083
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
Pertussis	0.514
Phenylalanine metabolism	0.259
Phenylalanine, tyrosine and tryptophan biosynthesis	0.750
Phosphatidylinositol signaling system	0.709

Phototransduction	0.984
Platelet activation	0.860
Porphyrin and chlorophyll metabolism	0.928
Primary bile acid biosynthesis	0.638
Prion diseases	0.474
Progesterone-mediated oocyte maturation	0.228
Prolactin signaling pathway	0.302
Propanoate metabolism	0.215
Prostate cancer	0.016
Proximal tubule bicarbonate reclamation	0.514
Pyrimidine metabolism	0.477
Pyruvate metabolism	0.169
Regulation of lipolysis in adipocytes	0.904
Renal cell carcinoma	0.038
Renin-angiotensin system	1.000
Renin secretion	0.835
Retinol metabolism	0.835
Retrograde endocannabinoid signaling	0.990
Rheumatoid arthritis	0.979
Riboflavin metabolism	0.750
RIG-I-like receptor signaling pathway	0.011
Salivary secretion	0.956
Salmonella infection	0.844
Selenocompound metabolism	0.638
Serotonergic synapse	0.986
Shigellosis	0.901
Signaling pathways regulating pluripotency of stem cells	0.311
Small cell lung cancer	0.073
Sphingolipid metabolism	0.157
Sphingolipid signaling pathway	0.426
Staphylococcus aureus infection	0.271
Starch and sucrose metabolism	0.472
Steroid biosynthesis	0.914
Steroid hormone biosynthesis	0.864
Sulfur metabolism	0.902
Synaptic vesicle cycle	0.085
Synthesis and degradation of ketone bodies	0.708
Systemic lupus erythematosus	0.629
Taste transduction	0.976
Taurine and hypotaurine metabolism	0.619
T cell receptor signaling pathway	0.381
Terpenoid backbone biosynthesis	0.541
TGF-beta signaling pathway	0.303
Thiamine metabolism	0.750
Thyroid cancer	0.122
Thyroid hormone signaling pathway	0.435

Thyroid hormone synthesis	0.835
Tight junction	0.969
TNF signaling pathway	0.365
Toll-like receptor signaling pathway	0.805
Toxoplasmosis	0.582
Transcriptional misregulation in cancer	0.815
Tryptophan metabolism	0.470
Type I diabetes mellitus	1.000
Type II diabetes mellitus	0.737
Tyrosine metabolism	0.716
Ubiquinone and other terpenoid-quinone biosynthesis	0.708
Valine, leucine and isoleucine degradation	0.635
Vascular smooth muscle contraction	0.724
Vasopressin-regulated water reabsorption	0.655
VEGF signaling pathway	0.620
Vibrio cholerae infection	0.996
Viral carcinogenesis	0.717
Viral myocarditis	0.670
Vitamin B6 metabolism	0.267
Vitamin digestion and absorption	1.000
Wnt signaling pathway	0.708

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Acute myeloid leukemia	-9621.098
Adherens junction	-23871.708
Adipocytokine signaling pathway	-16385.089
Adrenergic signaling in cardiomyocytes	-12370.936
African trypanosomiasis	-585.250
Alanine, aspartate and glutamate metabolism	0.000
Aldosterone-regulated sodium reabsorption	471.350
Aldosterone synthesis and secretion	8543.943
Allograft rejection	NA
alpha-Linolenic acid metabolism	0.000
Alzheimer's disease	-23484.875
Aminoacyl-tRNA biosynthesis	0.000
Amino sugar and nucleotide sugar metabolism	0.000
Amoebiasis	-149.125
Amphetamine addiction	-740.348
AMPK signaling pathway	8742.273
Amyotrophic lateral sclerosis (ALS)	-37729.250
Antigen processing and presentation	-14926.125
Apoptosis	-22706.170
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
Axon guidance	-31404.645
Bacterial invasion of epithelial cells	-6331.500
Basal cell carcinoma	-10565.346
B cell receptor signaling pathway	4763.000
beta-Alanine metabolism	0.000
Bile secretion	-23.000
Biotin metabolism	NA
Bladder cancer	-5891.875
Butanoate metabolism	0.000
Caffeine metabolism	0.000
Carbohydrate digestion and absorption	251.625
Cardiac muscle contraction	0.000
Cell adhesion molecules (CAMs)	-10170.438
Cell cycle	-23517.386
Chagas disease (American trypanosomiasis)	-33178.847
Chemical carcinogenesis	0.000
Choline metabolism in cancer	-4578.106
Cholinergic synapse	1665.519
Chronic myeloid leukemia	-12920.500
Circadian entrainment	8463.482
Circadian rhythm	-1347.669
Citrate cycle (TCA cycle)	0.000
Cocaine addiction	-1016.000
Colorectal cancer	27553.625
Complement and coagulation cascades	-41123.708
Cysteine and methionine metabolism	0.000
Cytosolic DNA-sensing pathway	-1633.125
D-Glutamine and D-glutamate metabolism	0.000
Dilated cardiomyopathy	0.000
Dopaminergic synapse	-3318.782
Dorso-ventral axis formation	3685.250
Drug metabolism - cytochrome P450	0.000
Drug metabolism - other enzymes	0.000
ECM-receptor interaction	-171728.375
Endocrine and other factor-regulated calcium reabsorption	8846.375
Endometrial cancer	20800.375
Epithelial cell signaling in Helicobacter pylori infection	7182.458
Epstein-Barr virus infection	8654.765
ErbB signaling pathway	-13080.152
Estrogen signaling pathway	-15615.497
Ether lipid metabolism	0.000
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	-6622.459
Fc gamma R-mediated phagocytosis	4277.348
Folate biosynthesis	0.000
FoxO signaling pathway	-6168.182
Fructose and mannose metabolism	0.000
GABAergic synapse	292.297
Galactose metabolism	0.000
Gap junction	760.375
Gastric acid secretion	2728.375
Glioma	2080.131
Glucagon signaling pathway	872.375
Glutamatergic synapse	2295.957
Glutathione metabolism	0.000
Glycerolipid metabolism	0.000
Glycerophospholipid metabolism	0.000
Glycine, serine and threonine metabolism	0.000
Glycolysis / Gluconeogenesis	0.000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.000
Glycosaminoglycan degradation	0.000
Glycosphingolipid biosynthesis - ganglio series	0.000
Glycosphingolipid biosynthesis - globo series	0.000
Glycosphingolipid biosynthesis - lacto and neolacto series	0.000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.000
Glyoxylate and dicarboxylate metabolism	0.000
GnRH signaling pathway	27233.625
Graft-versus-host disease	0.000
Hedgehog signaling pathway	255.000
Hepatitis B	-40360.987
Hepatitis C	-212.431
Herpes simplex infection	-30638.352
HIF-1 signaling pathway	-833.296
Histidine metabolism	0.000
Huntington's disease	2525.625
Hypertrophic cardiomyopathy (HCM)	0.000
Inflammatory bowel disease (IBD)	1153.079
Inflammatory mediator regulation of TRP channels	-5227.396
Influenza A	1409.547
Inositol phosphate metabolism	0.000
Insulin resistance	59184.095
Insulin secretion	-1741.316
Insulin signaling pathway	45570.636
Intestinal immune network for IgA production	309.000
Legionellosis	2428.500
Leishmaniasis	10358.433

Leukocyte transendothelial migration	-18323.881
Linoleic acid metabolism	0.000
Lipoic acid metabolism	0.000
Long-term depression	NA
Long-term potentiation	-8661.471
Lysine biosynthesis	0.000
Lysine degradation	0.000
Malaria	0.000
Maturity onset diabetes of the young	500.250
Measles	9084.450
Melanogenesis	-15297.888
Melanoma	2993.625
Metabolism of xenobiotics by cytochrome P450	0.000
Mineral absorption	-408.500
Morphine addiction	-19.729
mTOR signaling pathway	591.000
Mucin type O-Glycan biosynthesis	0.000
Natural killer cell mediated cytotoxicity	15109.466
Neuroactive ligand-receptor interaction	164.500
Neurotrophin signaling pathway	16284.743
NF-kappa B signaling pathway	-22676.305
N-Glycan biosynthesis	0.000
Nicotinate and nicotinamide metabolism	0.000
Nitrogen metabolism	0.000
NOD-like receptor signaling pathway	458.854
Non-alcoholic fatty liver disease (NAFLD)	1560.952
Non-small cell lung cancer	-13126.469
Notch signaling pathway	25960.196
One carbon pool by folate	0.000
Oocyte meiosis	9257.232
Osteoclast differentiation	-33220.394
Ovarian steroidogenesis	222.750
Oxidative phosphorylation	0.000
p53 signaling pathway	3623.706
Pancreatic cancer	-1483.000
Pancreatic secretion	-23.000
Pantothenate and CoA biosynthesis	0.000
Parkinson's disease	-42555.750
Pathogenic Escherichia coli infection	99026.000
Pentose and glucuronate interconversions	0.000
Pentose phosphate pathway	0.000
Pertussis	-3301.403
Phenylalanine metabolism	0.000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.000
Phosphatidylinositol signaling system	0.000
Phototransduction	-2573.750

Platelet activation	-29736.204
Porphyrin and chlorophyll metabolism	0.000
Primary bile acid biosynthesis	0.000
Prion diseases	-11476.125
Progesterone-mediated oocyte maturation	141151.688
Prolactin signaling pathway	-15737.844
Propanoate metabolism	0.000
Prostate cancer	76106.450
Proximal tubule bicarbonate reclamation	0.000
Pyrimidine metabolism	0.000
Pyruvate metabolism	0.000
Regulation of lipolysis in adipocytes	-8383.750
Renal cell carcinoma	-6133.724
Renin-angiotensin system	NA
Renin secretion	3009.000
Retinol metabolism	0.000
Retrograde endocannabinoid signaling	0.729
Rheumatoid arthritis	0.000
Riboflavin metabolism	0.000
RIG-I-like receptor signaling pathway	8949.708
Salivary secretion	2711.500
Salmonella infection	-100118.196
Selenocompound metabolism	0.000
Serotonergic synapse	1521.723
Shigellosis	2444.750
Signaling pathways regulating pluripotency of stem cells	NA
Small cell lung cancer	-217410.067
Sphingolipid metabolism	0.000
Sphingolipid signaling pathway	-53400.619
Staphylococcus aureus infection	-15657.938
Starch and sucrose metabolism	0.000
Steroid biosynthesis	0.000
Steroid hormone biosynthesis	0.000
Sulfur metabolism	0.000
Synaptic vesicle cycle	0.000
Synthesis and degradation of ketone bodies	0.000
Systemic lupus erythematosus	-4165.375
Taste transduction	739.750
Taurine and hypotaurine metabolism	0.000
T cell receptor signaling pathway	163.056
Terpenoid backbone biosynthesis	0.000
TGF-beta signaling pathway	-18906.164
Thiamine metabolism	0.000
Thyroid cancer	20931.875
Thyroid hormone signaling pathway	-922.979
Thyroid hormone synthesis	-398.000

Tight junction	-4280.625
TNF signaling pathway	-37182.333
Toll-like receptor signaling pathway	-11378.475
Toxoplasmosis	-10143.562
Transcriptional misregulation in cancer	-388.000
Tryptophan metabolism	0.000
Type I diabetes mellitus	NA
Type II diabetes mellitus	2466.156
Tyrosine metabolism	0.000
Ubiquinone and other terpenoid-quinone biosynthesis	0.000
Valine, leucine and isoleucine degradation	0.000
Vascular smooth muscle contraction	-4215.202
Vasopressin-regulated water reabsorption	-2939.125
VEGF signaling pathway	868.125
Vibrio cholerae infection	-232.317
Viral carcinogenesis	2216.750
Viral myocarditis	6648.125
Vitamin B6 metabolism	0.000
Vitamin digestion and absorption	NA
Wnt signaling pathway	14130.530

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Acute myeloid leukemia	0.25000
Adherens junction	0.12800
Adipocytokine signaling pathway	0.07800
Adrenergic signaling in cardiomyocytes	0.33800
African trypanosomiasis	0.46000
Alanine, aspartate and glutamate metabolism	NA
Aldosterone-regulated sodium reabsorption	0.56000
Aldosterone synthesis and secretion	0.27000
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.11400
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	NA
Amoebiasis	0.95200
Amphetamine addiction	0.91200
AMPK signaling pathway	0.27000
Amyotrophic lateral sclerosis (ALS)	0.05000
Antigen processing and presentation	0.05800
Apoptosis	0.17600
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arginine biosynthesis	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.05800
Ascorbate and aldarate metabolism	NA
Asthma	NA

Autoimmune thyroid disease	NA
Axon guidance	0.14800
Bacterial invasion of epithelial cells	0.61600
Basal cell carcinoma	0.55200
B cell receptor signaling pathway	0.52200
beta-Alanine metabolism	NA
Bile secretion	0.83400
Biotin metabolism	NA
Bladder cancer	0.49200
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	0.79000
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.43200
Cell cycle	0.13800
Chagas disease (American trypanosomiasis)	0.11200
Chemical carcinogenesis	NA
Choline metabolism in cancer	0.67600
Cholinergic synapse	0.82200
Chronic myeloid leukemia	0.33000
Circadian entrainment	0.28200
Circadian rhythm	0.47400
Citrate cycle (TCA cycle)	NA
Cocaine addiction	0.75400
Colorectal cancer	0.00400
Complement and coagulation cascades	0.09600
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	0.43400
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	1.00000
Dopaminergic synapse	0.55000
Dorso-ventral axis formation	0.08000
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
ECM-receptor interaction	0.00400
Endocrine and other factor-regulated calcium reabsorption	0.05200
Endometrial cancer	0.13600
Epithelial cell signaling in Helicobacter pylori infection	0.28400
Epstein-Barr virus infection	0.30000
ErbB signaling pathway	0.52200
Estrogen signaling pathway	0.49800
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	NA
Fatty acid elongation	NA

Fc epsilon RI signaling pathway	0.65000
Fc gamma R-mediated phagocytosis	0.71600
Folate biosynthesis	NA
FoxO signaling pathway	0.70600
Fructose and mannose metabolism	NA
GABAergic synapse	0.82400
Galactose metabolism	NA
Gap junction	0.91600
Gastric acid secretion	0.26600
Glioma	0.89800
Glucagon signaling pathway	0.89600
Glutamatergic synapse	0.55200
Glutathione metabolism	NA
Glycerolipid metabolism	NA
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	NA
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	NA
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	NA
Glycosaminoglycan degradation	NA
Glycosphingolipid biosynthesis - ganglio series	NA
Glycosphingolipid biosynthesis - globo series	NA
Glycosphingolipid biosynthesis - lacto and neolacto series	NA
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	NA
Glyoxylate and dicarboxylate metabolism	NA
GnRH signaling pathway	0.17000
Graft-versus-host disease	1.00000
Hedgehog signaling pathway	0.94000
Hepatitis B	0.29800
Hepatitis C	0.98800
Herpes simplex infection	0.16000
HIF-1 signaling pathway	0.97200
Histidine metabolism	NA
Huntington's disease	0.23400
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	0.87400
Inflammatory mediator regulation of TRP channels	0.63400
Influenza A	0.86800
Inositol phosphate metabolism	NA
Insulin resistance	0.05200
Insulin secretion	0.63800
Insulin signaling pathway	0.18400
Intestinal immune network for IgA production	0.56400
Legionellosis	0.37000
Leishmaniasis	0.13400
Leukocyte transendothelial migration	0.32200

Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Long-term depression	NA
Long-term potentiation	0.62400
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	1.00000
Maturity onset diabetes of the young	0.57200
Measles	0.25400
Melanogenesis	0.60800
Melanoma	0.87800
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	0.12400
Morphine addiction	0.97800
mTOR signaling pathway	0.83600
Mucin type O-Glycan biosynthesis	NA
Natural killer cell mediated cytotoxicity	0.61200
Neuroactive ligand-receptor interaction	0.78400
Neurotrophin signaling pathway	0.24800
NF-kappa B signaling pathway	0.14600
N-Glycan biosynthesis	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	0.93400
Non-alcoholic fatty liver disease (NAFLD)	0.90800
Non-small cell lung cancer	0.52200
Notch signaling pathway	0.09600
One carbon pool by folate	NA
Oocyte meiosis	0.50400
Osteoclast differentiation	0.13800
Ovarian steroidogenesis	0.70600
Oxidative phosphorylation	NA
p53 signaling pathway	0.34200
Pancreatic cancer	0.84800
Pancreatic secretion	0.75200
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	0.02400
Pathogenic Escherichia coli infection	0.00001
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Pertussis	0.70000
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	NA
Phototransduction	0.27000
Platelet activation	0.37400

Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	0.11600
Progesterone-mediated oocyte maturation	0.00200
Prolactin signaling pathway	0.50400
Propanoate metabolism	NA
Prostate cancer	0.01000
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Regulation of lipolysis in adipocytes	0.32000
Renal cell carcinoma	0.52400
Renin-angiotensin system	NA
Renin secretion	0.37000
Retinol metabolism	NA
Retrograde endocannabinoid signaling	0.99800
Rheumatoid arthritis	1.00000
Riboflavin metabolism	NA
RIG-I-like receptor signaling pathway	0.31600
Salivary secretion	0.23800
Salmonella infection	0.00400
Selenocompound metabolism	NA
Serotonergic synapse	0.63200
Shigellosis	0.59600
Signaling pathways regulating pluripotency of stem cells	NA
Small cell lung cancer	0.00400
Sphingolipid metabolism	NA
Sphingolipid signaling pathway	0.12800
Staphylococcus aureus infection	0.13000
Starch and sucrose metabolism	NA
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	0.19800
Taste transduction	0.82400
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	0.98800
Terpenoid backbone biosynthesis	NA
TGF-beta signaling pathway	0.19200
Thiamine metabolism	NA
Thyroid cancer	0.02800
Thyroid hormone signaling pathway	0.91800
Thyroid hormone synthesis	0.93200
Tight junction	0.40000

TNF signaling pathway	0.05400
Toll-like receptor signaling pathway	0.53400
Toxoplasmosis	0.36600
Transcriptional misregulation in cancer	0.28400
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	0.59800
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vascular smooth muscle contraction	0.76800
Vasopressin-regulated water reabsorption	0.37000
VEGF signaling pathway	0.91600
Vibrio cholerae infection	0.61400
Viral carcinogenesis	0.14800
Viral myocarditis	0.11400
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Wnt signaling pathway	0.19000
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Acute myeloid leukemia	0.319
Adherens junction	0.024
Adipocytokine signaling pathway	0.206
Adrenergic signaling in cardiomyocytes	0.621
African trypanosomiasis	0.814
Alanine, aspartate and glutamate metabolism	0.584
Aldosterone-regulated sodium reabsorption	0.712
Aldosterone synthesis and secretion	0.485
Allograft rejection	1.000
alpha-Linolenic acid metabolism	0.501
Alzheimer's disease	0.090
Aminoacyl-tRNA biosynthesis	0.339
Amino sugar and nucleotide sugar metabolism	0.064
Amoebiasis	0.983
Amphetamine addiction	0.753
AMPK signaling pathway	0.034
Amyotrophic lateral sclerosis (ALS)	0.015
Antigen processing and presentation	0.041
Apoptosis	0.426
Arachidonic acid metabolism	0.486
Arginine and proline metabolism	0.745
Arginine biosynthesis	0.709
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.065
Ascorbate and aldarate metabolism	1.000
Asthma	1.000
Autoimmune thyroid disease	1.000

Axon guidance	0.084
Bacterial invasion of epithelial cells	0.881
Basal cell carcinoma	0.185
B cell receptor signaling pathway	0.687
beta-Alanine metabolism	0.323
Bile secretion	0.969
Biotin metabolism	1.000
Bladder cancer	0.159
Butanoate metabolism	0.763
Caffeine metabolism	0.750
Carbohydrate digestion and absorption	0.699
Cardiac muscle contraction	0.540
Cell adhesion molecules (CAMs)	0.771
Cell cycle	0.004
Chagas disease (American trypanosomiasis)	0.216
Chemical carcinogenesis	0.863
Choline metabolism in cancer	0.281
Cholinergic synapse	0.976
Chronic myeloid leukemia	0.335
Circadian entrainment	0.615
Circadian rhythm	0.686
Citrate cycle (TCA cycle)	0.075
Cocaine addiction	0.860
Colorectal cancer	0.001
Complement and coagulation cascades	0.104
Cysteine and methionine metabolism	0.346
Cytosolic DNA-sensing pathway	0.564
D-Glutamine and D-glutamate metabolism	0.473
Dilated cardiomyopathy	1.000
Dopaminergic synapse	0.844
Dorso-ventral axis formation	0.101
Drug metabolism - cytochrome P450	0.941
Drug metabolism - other enzymes	0.159
ECM-receptor interaction	0.007
Endocrine and other factor-regulated calcium reabsorption	0.202
Endometrial cancer	0.111
Epithelial cell signaling in Helicobacter pylori infection	0.190
Epstein-Barr virus infection	0.465
ErbB signaling pathway	0.538
Estrogen signaling pathway	0.592
Ether lipid metabolism	0.728
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	0.642

Fc gamma R-mediated phagocytosis	0.754
Folate biosynthesis	0.019
FoxO signaling pathway	0.302
Fructose and mannose metabolism	0.000
GABAergic synapse	0.983
Galactose metabolism	0.010
Gap junction	0.968
Gastric acid secretion	0.594
Glioma	0.749
Glucagon signaling pathway	0.982
Glutamatergic synapse	0.861
Glutathione metabolism	0.244
Glycerolipid metabolism	0.009
Glycerophospholipid metabolism	0.005
Glycine, serine and threonine metabolism	0.131
Glycolysis / Gluconeogenesis	0.220
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.016
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.610
Glycosaminoglycan degradation	0.033
Glycosphingolipid biosynthesis - ganglio series	0.259
Glycosphingolipid biosynthesis - globo series	0.629
Glycosphingolipid biosynthesis - lacto and neolacto series	0.970
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.330
Glyoxylate and dicarboxylate metabolism	0.100
GnRH signaling pathway	0.278
Graft-versus-host disease	0.752
Hedgehog signaling pathway	0.920
Hepatitis B	0.218
Hepatitis C	0.101
Herpes simplex infection	0.112
HIF-1 signaling pathway	0.779
Histidine metabolism	0.474
Huntington's disease	0.130
Hypertrophic cardiomyopathy (HCM)	0.763
Inflammatory bowel disease (IBD)	0.991
Inflammatory mediator regulation of TRP channels	0.842
Influenza A	0.949
Inositol phosphate metabolism	0.712
Insulin resistance	0.173
Insulin secretion	0.900
Insulin signaling pathway	0.277
Intestinal immune network for IgA production	0.857
Legionellosis	0.710
Leishmaniasis	0.306
Leukocyte transendothelial migration	0.532
Linoleic acid metabolism	0.899

Lipoic acid metabolism	0.750
Long-term depression	0.714
Long-term potentiation	0.570
Lysine biosynthesis	0.603
Lysine degradation	0.882
Malaria	1.000
Maturity onset diabetes of the young	0.728
Measles	0.537
Melanogenesis	0.759
Melanoma	0.815
Metabolism of xenobiotics by cytochrome P450	0.668
Mineral absorption	0.341
Morphine addiction	1.000
mTOR signaling pathway	0.450
Mucin type O-Glycan biosynthesis	0.716
Natural killer cell mediated cytotoxicity	0.602
Neuroactive ligand-receptor interaction	0.847
Neurotrophin signaling pathway	0.435
NF-kappa B signaling pathway	0.420
N-Glycan biosynthesis	0.322
Nicotinate and nicotinamide metabolism	0.045
Nitrogen metabolism	0.473
NOD-like receptor signaling pathway	0.881
Non-alcoholic fatty liver disease (NAFLD)	0.597
Non-small cell lung cancer	0.520
Notch signaling pathway	0.211
One carbon pool by folate	0.184
Oocyte meiosis	0.175
Osteoclast differentiation	0.319
Ovarian steroidogenesis	0.889
Oxidative phosphorylation	0.015
p53 signaling pathway	0.488
Pancreatic cancer	0.234
Pancreatic secretion	0.949
Pantothenate and CoA biosynthesis	0.385
Parkinson's disease	0.104
Pathogenic Escherichia coli infection	0.000
Pentose and glucuronate interconversions	0.709
Pentose phosphate pathway	0.009
Pertussis	0.728
Phenylalanine metabolism	0.259
Phenylalanine, tyrosine and tryptophan biosynthesis	0.750
Phosphatidylinositol signaling system	0.709
Phototransduction	0.618
Platelet activation	0.686
Porphyrin and chlorophyll metabolism	0.928

Primary bile acid biosynthesis	0.638
Prion diseases	0.214
Progesterone-mediated oocyte maturation	0.004
Prolactin signaling pathway	0.439
Propanoate metabolism	0.215
Prostate cancer	0.002
Proximal tubule bicarbonate reclamation	0.514
Pyrimidine metabolism	0.477
Pyruvate metabolism	0.169
Regulation of lipolysis in adipocytes	0.648
Renal cell carcinoma	0.098
Renin-angiotensin system	1.000
Renin secretion	0.672
Retinol metabolism	0.835
Retrograde endocannabinoid signaling	1.000
Rheumatoid arthritis	1.000
Riboflavin metabolism	0.750
RIG-I-like receptor signaling pathway	0.023
Salivary secretion	0.564
Salmonella infection	0.023
Selenocompound metabolism	0.638
Serotonergic synapse	0.918
Shigellosis	0.871
Signaling pathways regulating pluripotency of stem cells	0.311
Small cell lung cancer	0.003
Sphingolipid metabolism	0.157
Sphingolipid signaling pathway	0.213
Staphylococcus aureus infection	0.153
Starch and sucrose metabolism	0.472
Steroid biosynthesis	0.914
Steroid hormone biosynthesis	0.864
Sulfur metabolism	0.902
Synaptic vesicle cycle	0.085
Synthesis and degradation of ketone bodies	0.708
Systemic lupus erythematosus	0.384
Taste transduction	0.979
Taurine and hypotaurine metabolism	0.619
T cell receptor signaling pathway	0.744
Terpenoid backbone biosynthesis	0.541
TGF-beta signaling pathway	0.224
Thiamine metabolism	0.750
Thyroid cancer	0.023
Thyroid hormone signaling pathway	0.766
Thyroid hormone synthesis	0.973
Tight junction	0.755
TNF signaling pathway	0.097

Toll-like receptor signaling pathway	0.793
Toxoplasmosis	0.542
Transcriptional misregulation in cancer	0.570
Tryptophan metabolism	0.470
Type I diabetes mellitus	1.000
Type II diabetes mellitus	0.802
Tyrosine metabolism	0.716
Ubiquinone and other terpenoid-quinone biosynthesis	0.708
Valine, leucine and isoleucine degradation	0.635
Vascular smooth muscle contraction	0.882
Vasopressin-regulated water reabsorption	0.586
VEGF signaling pathway	0.889
Vibrio cholerae infection	0.912
Viral carcinogenesis	0.344
Viral myocarditis	0.273
Vitamin B6 metabolism	0.267
Vitamin digestion and absorption	1.000
Wnt signaling pathway	0.404

	pGFdr
Acute myeloid leukemia	0.9280941
Adherens junction	0.2736000
Adipocytokine signaling pathway	0.8222951
Adrenergic signaling in cardiomyocytes	1.0000000
African trypanosomiasis	1.0000000
Alanine, aspartate and glutamate metabolism	1.0000000
Aldosterone-regulated sodium reabsorption	1.0000000
Aldosterone synthesis and secretion	1.0000000
Allograft rejection	1.0000000
alpha-Linolenic acid metabolism	1.0000000
Alzheimer's disease	0.6408649
Aminoacyl-tRNA biosynthesis	0.9280941
Amino sugar and nucleotide sugar metabolism	0.5700000
Amoebiasis	1.0000000
Amphetamine addiction	1.0000000
AMPK signaling pathway	0.3523636
Amyotrophic lateral sclerosis (ALS)	0.2432000
Antigen processing and presentation	0.4064348
Apoptosis	1.0000000
Arachidonic acid metabolism	1.0000000
Arginine and proline metabolism	1.0000000
Arginine biosynthesis	1.0000000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.5700000
Ascorbate and aldarate metabolism	1.0000000
Asthma	1.0000000
Autoimmune thyroid disease	1.0000000
Axon guidance	0.6408649

Bacterial invasion of epithelial cells	1.0000000
Basal cell carcinoma	0.8222951
B cell receptor signaling pathway	1.0000000
beta-Alanine metabolism	0.9280941
Bile secretion	1.0000000
Biotin metabolism	1.0000000
Bladder cancer	0.7880870
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	0.1302857
Chagas disease (American trypanosomiasis)	0.8222951
Chemical carcinogenesis	1.0000000
Choline metabolism in cancer	0.8898333
Cholinergic synapse	1.0000000
Chronic myeloid leukemia	0.9280941
Circadian entrainment	1.0000000
Circadian rhythm	1.0000000
Citrate cycle (TCA cycle)	0.6333333
Cocaine addiction	1.0000000
Colorectal cancer	0.0760000
Complement and coagulation cascades	0.6408649
Cysteine and methionine metabolism	0.9280941
Cytosolic DNA-sensing pathway	1.0000000
D-Glutamine and D-glutamate metabolism	1.0000000
Dilated cardiomyopathy	1.0000000
Dopaminergic synapse	1.0000000
Dorso-ventral axis formation	0.6408649
Drug metabolism - cytochrome P450	1.0000000
Drug metabolism - other enzymes	0.7880870
ECM-receptor interaction	0.1773333
Endocrine and other factor-regulated calcium reabsorption	0.8222951
Endometrial cancer	0.6547692
Epithelial cell signaling in Helicobacter pylori infection	0.8222951
Epstein-Barr virus infection	1.0000000
ErbB signaling pathway	1.0000000
Estrogen signaling pathway	1.0000000
Ether lipid metabolism	1.0000000
Fat digestion and absorption	0.7111429
Fatty acid biosynthesis	1.0000000
Fatty acid degradation	0.8593846
Fatty acid elongation	1.0000000
Fc epsilon RI signaling pathway	1.0000000
Fc gamma R-mediated phagocytosis	1.0000000

Folate biosynthesis	0.2707500
FoxO signaling pathway	0.9280941
Fructose and mannose metabolism	0.0000000
GABAergic synapse	1.0000000
Galactose metabolism	0.1900000
Gap junction	1.0000000
Gastric acid secretion	1.0000000
Glioma	1.0000000
Glucagon signaling pathway	1.0000000
Glutamatergic synapse	1.0000000
Glutathione metabolism	0.8593846
Glycerolipid metabolism	0.1865455
Glycerophospholipid metabolism	0.1425000
Glycine, serine and threonine metabolism	0.7111429
Glycolysis / Gluconeogenesis	0.8222951
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.2432000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	1.0000000
Glycosaminoglycan degradation	0.3523636
Glycosphingolipid biosynthesis - ganglio series	0.8813731
Glycosphingolipid biosynthesis - globo series	1.0000000
Glycosphingolipid biosynthesis - lacto and neolacto series	1.0000000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.9280941
Glyoxylate and dicarboxylate metabolism	0.6408649
GnRH signaling pathway	0.8898333
Graft-versus-host disease	1.0000000
Hedgehog signaling pathway	1.0000000
Hepatitis B	0.8222951
Hepatitis C	0.6408649
Herpes simplex infection	0.6547692
HIF-1 signaling pathway	1.0000000
Histidine metabolism	1.0000000
Huntington's disease	0.7111429
Hypertrophic cardiomyopathy (HCM)	1.0000000
Inflammatory bowel disease (IBD)	1.0000000
Inflammatory mediator regulation of TRP channels	1.0000000
Influenza A	1.0000000
Inositol phosphate metabolism	1.0000000
Insulin resistance	0.8142857
Insulin secretion	1.0000000
Insulin signaling pathway	0.8898333
Intestinal immune network for IgA production	1.0000000
Legionellosis	1.0000000
Leishmaniasis	0.9280941
Leukocyte transendothelial migration	1.0000000
Linoleic acid metabolism	1.0000000
Lipoic acid metabolism	1.0000000

Long-term depression	1.0000000
Long-term potentiation	1.0000000
Lysine biosynthesis	1.0000000
Lysine degradation	1.0000000
Malaria	1.0000000
Maturity onset diabetes of the young	1.0000000
Measles	1.0000000
Melanogenesis	1.0000000
Melanoma	1.0000000
Metabolism of xenobiotics by cytochrome P450	1.0000000
Mineral absorption	0.9280941
Morphine addiction	1.0000000
mTOR signaling pathway	1.0000000
Mucin type O-Glycan biosynthesis	1.0000000
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	0.9280941
Nicotinate and nicotinamide metabolism	0.4275000
Nitrogen metabolism	1.0000000
NOD-like receptor signaling pathway	1.0000000
Non-alcoholic fatty liver disease (NAFLD)	1.0000000
Non-small cell lung cancer	1.0000000
Notch signaling pathway	0.8222951
One carbon pool by folate	0.8222951
Oocyte meiosis	0.8142857
Osteoclast differentiation	0.9280941
Ovarian steroidogenesis	1.0000000
Oxidative phosphorylation	0.2432000
p53 signaling pathway	1.0000000
Pancreatic cancer	0.8468571
Pancreatic secretion	1.0000000
Pantothenate and CoA biosynthesis	1.0000000
Parkinson's disease	0.6408649
Pathogenic Escherichia coli infection	0.0000000
Pentose and glucuronate interconversions	1.0000000
Pentose phosphate pathway	0.1865455
Pertussis	1.0000000
Phenylalanine metabolism	0.8813731
Phenylalanine, tyrosine and tryptophan biosynthesis	1.0000000
Phosphatidylinositol signaling system	1.0000000
Phototransduction	1.0000000
Platelet activation	1.0000000
Porphyrin and chlorophyll metabolism	1.0000000
Primary bile acid biosynthesis	1.0000000

Prion diseases	0.8222951
Progesterone-mediated oocyte maturation	0.1302857
Prolactin signaling pathway	1.0000000
Propanoate metabolism	0.8222951
Prostate cancer	0.1140000
Proximal tubule bicarbonate reclamation	1.0000000
Pyrimidine metabolism	1.0000000
Pyruvate metabolism	0.8142857
Regulation of lipolysis in adipocytes	1.0000000
Renal cell carcinoma	0.6408649
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
RIG-I-like receptor signaling pathway	0.2736000
Salivary secretion	1.0000000
Salmonella infection	0.2736000
Selenocompound metabolism	1.0000000
Serotonergic synapse	1.0000000
Shigellosis	1.0000000
Signaling pathways regulating pluripotency of stem cells	0.9280941
Small cell lung cancer	0.1302857
Sphingolipid metabolism	0.7880870
Sphingolipid signaling pathway	0.8222951
Staphylococcus aureus infection	0.7880870
Starch and sucrose metabolism	1.0000000
Steroid biosynthesis	1.0000000
Steroid hormone biosynthesis	1.0000000
Sulfur metabolism	1.0000000
Synaptic vesicle cycle	0.6408649
Synthesis and degradation of ketone bodies	1.0000000
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	1.0000000
TGF-beta signaling pathway	0.8237419
Thiamine metabolism	1.0000000
Thyroid cancer	0.2736000
Thyroid hormone signaling pathway	1.0000000
Thyroid hormone synthesis	1.0000000
Tight junction	1.0000000
TNF signaling pathway	0.6408649
Toll-like receptor signaling pathway	1.0000000

Toxoplasmosis	1.0000000
Transcriptional misregulation in cancer	1.0000000
Tryptophan metabolism	1.0000000
Type I diabetes mellitus	1.0000000
Type II diabetes mellitus	1.0000000
Tyrosine metabolism	1.0000000
Ubiquinone and other terpenoid-quinone biosynthesis	1.0000000
Valine, leucine and isoleucine degradation	1.0000000
Vascular smooth muscle contraction	1.0000000
Vasopressin-regulated water reabsorption	1.0000000
VEGF signaling pathway	1.0000000
Vibrio cholerae infection	1.0000000
Viral carcinogenesis	0.9280941
Viral myocarditis	0.8898333
Vitamin B6 metabolism	0.8898333
Vitamin digestion and absorption	1.0000000
Wnt signaling pathway	1.0000000
	pGFWER
Acute myeloid leukemia	1.000
Adherens junction	1.000
Adipocytokine signaling pathway	1.000
Adrenergic signaling in cardiomyocytes	1.000
African trypanosomiasis	1.000
Alanine, aspartate and glutamate metabolism	1.000
Aldosterone-regulated sodium reabsorption	1.000
Aldosterone synthesis and secretion	1.000
Allograft rejection	1.000
alpha-Linolenic acid metabolism	1.000
Alzheimer's disease	1.000
Aminoacyl-tRNA biosynthesis	1.000
Amino sugar and nucleotide sugar metabolism	1.000
Amoebiasis	1.000
Amphetamine addiction	1.000
AMPK signaling pathway	1.000
Amyotrophic lateral sclerosis (ALS)	1.000
Antigen processing and presentation	1.000
Apoptosis	1.000
Arachidonic acid metabolism	1.000
Arginine and proline metabolism	1.000
Arginine biosynthesis	1.000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	1.000
Ascorbate and aldarate metabolism	1.000
Asthma	1.000
Autoimmune thyroid disease	1.000
Axon guidance	1.000
Bacterial invasion of epithelial cells	1.000

Basal cell carcinoma	1.000
B cell receptor signaling pathway	1.000
beta-Alanine metabolism	1.000
Bile secretion	1.000
Biotin metabolism	1.000
Bladder cancer	1.000
Butanoate metabolism	1.000
Caffeine metabolism	1.000
Carbohydrate digestion and absorption	1.000
Cardiac muscle contraction	1.000
Cell adhesion molecules (CAMs)	1.000
Cell cycle	0.912
Chagas disease (American trypanosomiasis)	1.000
Chemical carcinogenesis	1.000
Choline metabolism in cancer	1.000
Cholinergic synapse	1.000
Chronic myeloid leukemia	1.000
Circadian entrainment	1.000
Circadian rhythm	1.000
Citrate cycle (TCA cycle)	1.000
Cocaine addiction	1.000
Colorectal cancer	0.228
Complement and coagulation cascades	1.000
Cysteine and methionine metabolism	1.000
Cytosolic DNA-sensing pathway	1.000
D-Glutamine and D-glutamate metabolism	1.000
Dilated cardiomyopathy	1.000
Dopaminergic synapse	1.000
Dorso-ventral axis formation	1.000
Drug metabolism - cytochrome P450	1.000
Drug metabolism - other enzymes	1.000
ECM-receptor interaction	1.000
Endocrine and other factor-regulated calcium reabsorption	1.000
Endometrial cancer	1.000
Epithelial cell signaling in Helicobacter pylori infection	1.000
Epstein-Barr virus infection	1.000
ErbB signaling pathway	1.000
Estrogen signaling pathway	1.000
Ether lipid metabolism	1.000
Fat digestion and absorption	1.000
Fatty acid biosynthesis	1.000
Fatty acid degradation	1.000
Fatty acid elongation	1.000
Fc epsilon RI signaling pathway	1.000
Fc gamma R-mediated phagocytosis	1.000
Folate biosynthesis	1.000

FoxO signaling pathway	1.000
Fructose and mannose metabolism	0.000
GABAergic synapse	1.000
Galactose metabolism	1.000
Gap junction	1.000
Gastric acid secretion	1.000
Glioma	1.000
Glucagon signaling pathway	1.000
Glutamatergic synapse	1.000
Glutathione metabolism	1.000
Glycerolipid metabolism	1.000
Glycerophospholipid metabolism	1.000
Glycine, serine and threonine metabolism	1.000
Glycolysis / Gluconeogenesis	1.000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	1.000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	1.000
Glycosaminoglycan degradation	1.000
Glycosphingolipid biosynthesis - ganglio series	1.000
Glycosphingolipid biosynthesis - globo series	1.000
Glycosphingolipid biosynthesis - lacto and neolacto series	1.000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	1.000
Glyoxylate and dicarboxylate metabolism	1.000
GnRH signaling pathway	1.000
Graft-versus-host disease	1.000
Hedgehog signaling pathway	1.000
Hepatitis B	1.000
Hepatitis C	1.000
Herpes simplex infection	1.000
HIF-1 signaling pathway	1.000
Histidine metabolism	1.000
Huntington's disease	1.000
Hypertrophic cardiomyopathy (HCM)	1.000
Inflammatory bowel disease (IBD)	1.000
Inflammatory mediator regulation of TRP channels	1.000
Influenza A	1.000
Inositol phosphate metabolism	1.000
Insulin resistance	1.000
Insulin secretion	1.000
Insulin signaling pathway	1.000
Intestinal immune network for IgA production	1.000
Legionellosis	1.000
Leishmaniasis	1.000
Leukocyte transendothelial migration	1.000
Linoleic acid metabolism	1.000
Lipoic acid metabolism	1.000
Long-term depression	1.000

Long-term potentiation	1.000
Lysine biosynthesis	1.000
Lysine degradation	1.000
Malaria	1.000
Maturity onset diabetes of the young	1.000
Measles	1.000
Melanogenesis	1.000
Melanoma	1.000
Metabolism of xenobiotics by cytochrome P450	1.000
Mineral absorption	1.000
Morphine addiction	1.000
mTOR signaling pathway	1.000
Mucin type O-Glycan biosynthesis	1.000
Natural killer cell mediated cytotoxicity	1.000
Neuroactive ligand-receptor interaction	1.000
Neurotrophin signaling pathway	1.000
NF-kappa B signaling pathway	1.000
N-Glycan biosynthesis	1.000
Nicotinate and nicotinamide metabolism	1.000
Nitrogen metabolism	1.000
NOD-like receptor signaling pathway	1.000
Non-alcoholic fatty liver disease (NAFLD)	1.000
Non-small cell lung cancer	1.000
Notch signaling pathway	1.000
One carbon pool by folate	1.000
Oocyte meiosis	1.000
Osteoclast differentiation	1.000
Ovarian steroidogenesis	1.000
Oxidative phosphorylation	1.000
p53 signaling pathway	1.000
Pancreatic cancer	1.000
Pancreatic secretion	1.000
Pantothenate and CoA biosynthesis	1.000
Parkinson's disease	1.000
Pathogenic Escherichia coli infection	0.000
Pentose and glucuronate interconversions	1.000
Pentose phosphate pathway	1.000
Pertussis	1.000
Phenylalanine metabolism	1.000
Phenylalanine, tyrosine and tryptophan biosynthesis	1.000
Phosphatidylinositol signaling system	1.000
Phototransduction	1.000
Platelet activation	1.000
Porphyrin and chlorophyll metabolism	1.000
Primary bile acid biosynthesis	1.000
Prion diseases	1.000

Progesterone-mediated oocyte maturation	0.912
Prolactin signaling pathway	1.000
Propanoate metabolism	1.000
Prostate cancer	0.456
Proximal tubule bicarbonate reclamation	1.000
Pyrimidine metabolism	1.000
Pyruvate metabolism	1.000
Regulation of lipolysis in adipocytes	1.000
Renal cell carcinoma	1.000
Renin-angiotensin system	1.000
Renin secretion	1.000
Retinol metabolism	1.000
Retrograde endocannabinoid signaling	1.000
Rheumatoid arthritis	1.000
Riboflavin metabolism	1.000
RIG-I-like receptor signaling pathway	1.000
Salivary secretion	1.000
Salmonella infection	1.000
Selenocompound metabolism	1.000
Serotonergic synapse	1.000
Shigellosis	1.000
Signaling pathways regulating pluripotency of stem cells	1.000
Small cell lung cancer	0.684
Sphingolipid metabolism	1.000
Sphingolipid signaling pathway	1.000
Staphylococcus aureus infection	1.000
Starch and sucrose metabolism	1.000
Steroid biosynthesis	1.000
Steroid hormone biosynthesis	1.000
Sulfur metabolism	1.000
Synaptic vesicle cycle	1.000
Synthesis and degradation of ketone bodies	1.000
Systemic lupus erythematosus	1.000
Taste transduction	1.000
Taurine and hypotaurine metabolism	1.000
T cell receptor signaling pathway	1.000
Terpenoid backbone biosynthesis	1.000
TGF-beta signaling pathway	1.000
Thiamine metabolism	1.000
Thyroid cancer	1.000
Thyroid hormone signaling pathway	1.000
Thyroid hormone synthesis	1.000
Tight junction	1.000
TNF signaling pathway	1.000
Toll-like receptor signaling pathway	1.000
Toxoplasmosis	1.000

Transcriptional misregulation in cancer	1.000
Tryptophan metabolism	1.000
Type I diabetes mellitus	1.000
Type II diabetes mellitus	1.000
Tyrosine metabolism	1.000
Ubiquinone and other terpenoid-quinone biosynthesis	1.000
Valine, leucine and isoleucine degradation	1.000
Vascular smooth muscle contraction	1.000
Vasopressin-regulated water reabsorption	1.000
VEGF signaling pathway	1.000
Vibrio cholerae infection	1.000
Viral carcinogenesis	1.000
Viral myocarditis	1.000
Vitamin B6 metabolism	1.000
Vitamin digestion and absorption	1.000
Wnt signaling pathway	1.000

	Status
Acute myeloid leukemia	Inhibited
Adherens junction	Inhibited
Adipocytokine signaling pathway	Inhibited
Adrenergic signaling in cardiomyocytes	Inhibited
African trypanosomiasis	Inhibited
Alanine, aspartate and glutamate metabolism	Inhibited
Aldosterone-regulated sodium reabsorption	Activated
Aldosterone synthesis and secretion	Activated
Allograft rejection	<NA>
alpha-Linolenic acid metabolism	Inhibited
Alzheimer's disease	Inhibited
Aminoacyl-tRNA biosynthesis	Inhibited
Amino sugar and nucleotide sugar metabolism	Inhibited
Amoebiasis	Inhibited
Amphetamine addiction	Inhibited
AMPK signaling pathway	Activated
Amyotrophic lateral sclerosis (ALS)	Inhibited
Antigen processing and presentation	Inhibited
Apoptosis	Inhibited
Arachidonic acid metabolism	Inhibited
Arginine and proline metabolism	Inhibited
Arginine biosynthesis	Inhibited
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	Activated
Ascorbate and aldarate metabolism	<NA>
Asthma	<NA>
Autoimmune thyroid disease	<NA>
Axon guidance	Inhibited
Bacterial invasion of epithelial cells	Inhibited
Basal cell carcinoma	Inhibited

B cell receptor signaling pathway	Activated
beta-Alanine metabolism	Inhibited
Bile secretion	Inhibited
Biotin metabolism	<NA>
Bladder cancer	Inhibited
Butanoate metabolism	Inhibited
Caffeine metabolism	Inhibited
Carbohydrate digestion and absorption	Activated
Cardiac muscle contraction	Inhibited
Cell adhesion molecules (CAMs)	Inhibited
Cell cycle	Inhibited
Chagas disease (American trypanosomiasis)	Inhibited
Chemical carcinogenesis	Inhibited
Choline metabolism in cancer	Inhibited
Cholinergic synapse	Activated
Chronic myeloid leukemia	Inhibited
Circadian entrainment	Activated
Circadian rhythm	Inhibited
Citrate cycle (TCA cycle)	Inhibited
Cocaine addiction	Inhibited
Colorectal cancer	Activated
Complement and coagulation cascades	Inhibited
Cysteine and methionine metabolism	Inhibited
Cytosolic DNA-sensing pathway	Inhibited
D-Glutamine and D-glutamate metabolism	Inhibited
Dilated cardiomyopathy	Inhibited
Dopaminergic synapse	Inhibited
Dorso-ventral axis formation	Activated
Drug metabolism - cytochrome P450	Inhibited
Drug metabolism - other enzymes	Inhibited
ECM-receptor interaction	Inhibited
Endocrine and other factor-regulated calcium reabsorption	Activated
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
Fat digestion and absorption	Inhibited
Fatty acid biosynthesis	Inhibited
Fatty acid degradation	Inhibited
Fatty acid elongation	Inhibited
Fc epsilon RI signaling pathway	Inhibited
Fc gamma R-mediated phagocytosis	Activated
Folate biosynthesis	Inhibited
FoxO signaling pathway	Inhibited

Fructose and mannose metabolism	Inhibited
GABAergic synapse	Activated
Galactose metabolism	Inhibited
Gap junction	Activated
Gastric acid secretion	Activated
Glioma	Activated
Glucagon signaling pathway	Activated
Glutamatergic synapse	Activated
Glutathione metabolism	Inhibited
Glycerolipid metabolism	Inhibited
Glycerophospholipid metabolism	Inhibited
Glycine, serine and threonine metabolism	Inhibited
Glycolysis / Gluconeogenesis	Inhibited
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	Inhibited
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	Inhibited
Glycosaminoglycan degradation	Inhibited
Glycosphingolipid biosynthesis - ganglio series	Inhibited
Glycosphingolipid biosynthesis - globo series	Inhibited
Glycosphingolipid biosynthesis - lacto and neolacto series	Inhibited
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	Inhibited
Glyoxylate and dicarboxylate metabolism	Inhibited
GnRH signaling pathway	Activated
Graft-versus-host disease	Inhibited
Hedgehog signaling pathway	Activated
Hepatitis B	Inhibited
Hepatitis C	Inhibited
Herpes simplex infection	Inhibited
HIF-1 signaling pathway	Inhibited
Histidine metabolism	Inhibited
Huntington's disease	Activated
Hypertrophic cardiomyopathy (HCM)	Inhibited
Inflammatory bowel disease (IBD)	Activated
Inflammatory mediator regulation of TRP channels	Inhibited
Influenza A	Activated
Inositol phosphate metabolism	Inhibited
Insulin resistance	Activated
Insulin secretion	Inhibited
Insulin signaling pathway	Activated
Intestinal immune network for IgA production	Activated
Legionellosis	Activated
Leishmaniasis	Activated
Leukocyte transendothelial migration	Inhibited
Linoleic acid metabolism	Inhibited
Lipoic acid metabolism	Inhibited
Long-term depression	<NA>
Long-term potentiation	Inhibited

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	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
Pertussis	Inhibited
Phenylalanine metabolism	Inhibited
Phenylalanine, tyrosine and tryptophan biosynthesis	Inhibited
Phosphatidylinositol signaling system	Inhibited
Phototransduction	Inhibited
Platelet activation	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
Proximal tubule bicarbonate reclamation	Inhibited
Pyrimidine metabolism	Inhibited
Pyruvate metabolism	Inhibited
Regulation of lipolysis in adipocytes	Inhibited
Renal cell carcinoma	Inhibited
Renin-angiotensin system	<NA>
Renin secretion	Activated
Retinol metabolism	Inhibited
Retrograde endocannabinoid signaling	Activated
Rheumatoid arthritis	Inhibited
Riboflavin metabolism	Inhibited
RIG-I-like receptor signaling pathway	Activated
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
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
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 agrument 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 chemointformatics 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(hnrnp.cnts, group, pathways, type="RNASeq")

13438 node labels mapped to the expression data
Average coverage 84.29152 %
0 (out of 250) 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
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
```

Axon guidance	4
Bacterial invasion of epithelial cells	4
Basal cell carcinoma	4
B cell receptor signaling pathway	4
beta-Alanine metabolism	4
Bile secretion	4
Biotin metabolism	4
Bladder cancer	4
Butanoate metabolism	4
Caffeine metabolism	4
Carbohydrate digestion and absorption	4
Cardiac muscle contraction	4
Cell adhesion molecules (CAMs)	4
Cell cycle	4
Chagas disease (American trypanosomiasis)	4
Chemical carcinogenesis	4
Choline metabolism in cancer	4
Cholinergic synapse	4
Chronic myeloid leukemia	4
Circadian entrainment	4
Circadian rhythm	4
Citrate cycle (TCA cycle)	4
Cocaine addiction	4
Colorectal cancer	4
Complement and coagulation cascades	4
Cysteine and methionine metabolism	4
Cytosolic DNA-sensing pathway	4
D-Glutamine and D-glutamate metabolism	4
Dilated cardiomyopathy	4
Dopaminergic synapse	4
Dorso-ventral axis formation	4
Drug metabolism - cytochrome P450	4
Drug metabolism - other enzymes	4
ECM-receptor interaction	4
Endocrine and other factor-regulated calcium reabsorption	4
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
Fat digestion and absorption	4
Fatty acid biosynthesis	4
Fatty acid degradation	4
Fatty acid elongation	4
Fc epsilon RI signaling pathway	4

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

Lipoic acid metabolism	4
Long-term depression	4
Long-term potentiation	4
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
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
Pertussis	4
Phenylalanine metabolism	4
Phenylalanine, tyrosine and tryptophan biosynthesis	4
Phosphatidylinositol signaling system	4
Phototransduction	4
Platelet activation	4
Porphyrin and chlorophyll metabolism	4

Primary bile acid biosynthesis	4
Prion diseases	4
Progesterone-mediated oocyte maturation	4
Prolactin signaling pathway	4
Propanoate metabolism	4
Prostate cancer	4
Proximal tubule bicarbonate reclamation	4
Pyrimidine metabolism	4
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	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
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
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	0.54460
Adipocytokine signaling pathway	0.23880
Adrenergic signaling in cardiomyocytes	-0.29770
African trypanosomiasis	-0.25060
Alanine, aspartate and glutamate metabolism	0.53230
Aldosterone-regulated sodium reabsorption	0.14740
Aldosterone synthesis and secretion	0.01368
Allograft rejection	-0.43950
alpha-Linolenic acid metabolism	0.02627
Alzheimer's disease	0.27330
Aminoacyl-tRNA biosynthesis	0.26360
Amino sugar and nucleotide sugar metabolism	0.45880
Amoebiasis	-0.11830
Amphetamine addiction	-0.15150
AMPK signaling pathway	0.47140
Amyotrophic lateral sclerosis (ALS)	0.17200
Antigen processing and presentation	-0.09176
Apoptosis	0.20350
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	-0.48920
Autoimmune thyroid disease	-0.43950
Axon guidance	0.29200

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
Biotin metabolism	0.26100
Bladder cancer	0.45500
Butanoate metabolism	0.16870
Caffeine metabolism	-0.50050
Carbohydrate digestion and absorption	0.11980
Cardiac muscle contraction	-0.19480
Cell adhesion molecules (CAMs)	-0.22770
Cell cycle	0.80780
Chagas disease (American trypanosomiasis)	0.28440
Chemical carcinogenesis	-0.88200
Choline metabolism in cancer	0.33170
Cholinergic synapse	0.10970
Chronic myeloid leukemia	0.56810
Circadian entrainment	-0.12730
Circadian rhythm	0.44840
Citrate cycle (TCA cycle)	0.91840
Cocaine addiction	-0.02875
Colorectal cancer	0.38700
Complement and coagulation cascades	-0.16360
Cysteine and methionine metabolism	0.49560
Cytosolic DNA-sensing pathway	0.23200
D-Glutamine and D-glutamate metabolism	0.31340
Dilated cardiomyopathy	0.21600
Dopaminergic synapse	-0.04728
Dorso-ventral axis formation	0.26560
Drug metabolism - cytochrome P450	-0.47200
Drug metabolism - other enzymes	0.04654
ECM-receptor interaction	0.34710
Endocrine and other factor-regulated calcium reabsorption	-0.14700
Endometrial cancer	0.48940
Epithelial cell signaling in Helicobacter pylori infection	0.13030
Epstein-Barr virus infection	0.33780
ErbB signaling pathway	0.35490
Estrogen signaling pathway	0.19060
Ether lipid metabolism	0.03850
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	0.22040
Fc gamma R-mediated phagocytosis	0.33750

Folate biosynthesis	0.27450
FoxO signaling pathway	0.30950
Fructose and mannose metabolism	0.33980
GABAergic synapse	-0.46700
Galactose metabolism	0.41000
Gap junction	0.07133
Gastric acid secretion	0.09423
Glioma	0.42320
Glucagon signaling pathway	0.37340
Glutamatergic synapse	-0.18610
Glutathione metabolism	0.32150
Glycerolipid metabolism	0.68560
Glycerophospholipid metabolism	0.71220
Glycine, serine and threonine metabolism	-0.02037
Glycolysis / Gluconeogenesis	0.50390
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.42870
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.40150
Glycosaminoglycan degradation	0.37370
Glycosphingolipid biosynthesis - ganglio series	0.24680
Glycosphingolipid biosynthesis - globo series	-0.08908
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.28460
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.41310
Glyoxylate and dicarboxylate metabolism	0.26270
GnRH signaling pathway	0.22290
Graft-versus-host disease	-0.30010
Hedgehog signaling pathway	0.07915
Hepatitis B	0.29450
Hepatitis C	0.40530
Herpes simplex infection	0.28360
HIF-1 signaling pathway	0.50090
Histidine metabolism	-0.34570
Huntington's disease	0.76240
Hypertrophic cardiomyopathy (HCM)	0.23640
Inflammatory bowel disease (IBD)	-0.19630
Inflammatory mediator regulation of TRP channels	0.09881
Influenza A	0.25720
Inositol phosphate metabolism	0.99850
Insulin resistance	0.36410
Insulin secretion	-0.16120
Insulin signaling pathway	0.47100
Intestinal immune network for IgA production	-0.19980
Legionellosis	-0.10140
Leishmaniasis	-0.03977
Leukocyte transendothelial migration	0.05000
Linoleic acid metabolism	-1.32900
Lipoic acid metabolism	-0.19870

Long-term depression	0.15910
Long-term potentiation	0.09908
Lysine biosynthesis	-0.15300
Lysine degradation	0.60710
Malaria	-0.26520
Maturity onset diabetes of the young	-0.18110
Measles	0.16990
Melanogenesis	0.11890
Melanoma	0.16840
Metabolism of xenobiotics by cytochrome P450	-1.14500
Mineral absorption	-0.03678
Morphine addiction	-0.34300
mTOR signaling pathway	0.29450
Mucin type O-Glycan biosynthesis	-0.41130
Natural killer cell mediated cytotoxicity	0.05655
Neuroactive ligand-receptor interaction	-0.43350
Neurotrophin signaling pathway	0.32100
NF-kappa B signaling pathway	0.16000
N-Glycan biosynthesis	0.61800
Nicotinate and nicotinamide metabolism	-0.17950
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	0.59830
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
Pertussis	0.08010
Phenylalanine metabolism	-0.13950
Phenylalanine, tyrosine and tryptophan biosynthesis	0.30820
Phosphatidylinositol signaling system	1.24500
Phototransduction	-0.42910
Platelet activation	0.19500
Porphyrin and chlorophyll metabolism	-0.05215
Primary bile acid biosynthesis	-0.30840

Prion diseases	0.31550
Progesterone-mediated oocyte maturation	0.22050
Prolactin signaling pathway	0.31730
Propanoate metabolism	0.36440
Prostate cancer	0.46960
Proximal tubule bicarbonate reclamation	0.16240
Pyrimidine metabolism	1.77900
Pyruvate metabolism	0.47000
Regulation of lipolysis in adipocytes	0.17750
Renal cell carcinoma	0.42280
Renin-angiotensin system	-0.13250
Renin secretion	0.19160
Retinol metabolism	-1.76000
Retrograde endocannabinoid signaling	-0.07501
Rheumatoid arthritis	-0.20130
Riboflavin metabolism	0.37590
RIG-I-like receptor signaling pathway	0.25990
Salivary secretion	0.01503
Salmonella infection	0.37530
Selenocompound metabolism	0.35340
Serotonergic synapse	-0.17050
Shigellosis	0.32500
Signaling pathways regulating pluripotency of stem cells	0.36140
Small cell lung cancer	0.59260
Sphingolipid metabolism	0.67400
Sphingolipid signaling pathway	0.41640
Staphylococcus aureus infection	-0.14070
Starch and sucrose metabolism	0.19670
Steroid biosynthesis	0.37480
Steroid hormone biosynthesis	-0.96350
Sulfur metabolism	0.50160
Synaptic vesicle cycle	0.58440
Synthesis and degradation of ketone bodies	0.10350
Systemic lupus erythematosus	-0.28480
Taste transduction	-0.11340
Taurine and hypotaurine metabolism	-0.28520
T cell receptor signaling pathway	0.17720
Terpenoid backbone biosynthesis	0.35260
TGF-beta signaling pathway	0.31060
Thiamine metabolism	0.15000
Thyroid cancer	0.34550
Thyroid hormone signaling pathway	0.59810
Thyroid hormone synthesis	-0.08284
Tight junction	0.30710
TNF signaling pathway	0.28980
Toll-like receptor signaling pathway	0.07903

Toxoplasmosis	0.29220
Transcriptional misregulation in cancer	0.08348
Tryptophan metabolism	-0.29260
Type I diabetes mellitus	-0.43100
Type II diabetes mellitus	0.16630
Tyrosine metabolism	-0.40810
Ubiquinone and other terpenoid-quinone biosynthesis	0.28200
Valine, leucine and isoleucine degradation	0.50680
Vascular smooth muscle contraction	0.16990
Vasopressin-regulated water reabsorption	-0.02112
VEGF signaling pathway	0.29660
Vibrio cholerae infection	0.38520
Viral carcinogenesis	0.32470
Viral myocarditis	0.11220
Vitamin B6 metabolism	0.11830
Vitamin digestion and absorption	-0.51070
Wnt signaling pathway	0.17390

	control.1st.Qu.
Acute myeloid leukemia	0.436600
Adherens junction	0.545300
Adipocytokine signaling pathway	0.252200
Adrenergic signaling in cardiomyocytes	-0.293300
African trypanosomiasis	-0.237600
Alanine, aspartate and glutamate metabolism	0.537800
Aldosterone-regulated sodium reabsorption	0.152300
Aldosterone synthesis and secretion	0.047200
Allograft rejection	-0.438100
alpha-Linolenic acid metabolism	0.054380
Alzheimer's disease	0.297200
Aminoacyl-tRNA biosynthesis	0.264600
Amino sugar and nucleotide sugar metabolism	0.465700
Amoebiasis	-0.108500
Amphetamine addiction	-0.143000
AMPK signaling pathway	0.473400
Amyotrophic lateral sclerosis (ALS)	0.174300
Antigen processing and presentation	-0.071850
Apoptosis	0.218100
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	-0.470000
Autoimmune thyroid disease	-0.438100
Axon guidance	0.292900
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
Biotin metabolism	0.262200
Bladder cancer	0.457800
Butanoate metabolism	0.225200
Caffeine metabolism	-0.460900
Carbohydrate digestion and absorption	0.132500
Cardiac muscle contraction	-0.194600
Cell adhesion molecules (CAMs)	-0.224500
Cell cycle	0.810800
Chagas disease (American trypanosomiasis)	0.295200
Chemical carcinogenesis	-0.835700
Choline metabolism in cancer	0.332700
Cholinergic synapse	0.147600
Chronic myeloid leukemia	0.568900
Circadian entrainment	-0.066160
Circadian rhythm	0.451100
Citrate cycle (TCA cycle)	0.919400
Cocaine addiction	0.001475
Colorectal cancer	0.394000
Complement and coagulation cascades	-0.159800
Cysteine and methionine metabolism	0.503000
Cytosolic DNA-sensing pathway	0.232900
D-Glutamine and D-glutamate metabolism	0.313700
Dilated cardiomyopathy	0.216700
Dopaminergic synapse	-0.003590
Dorso-ventral axis formation	0.266000
Drug metabolism - cytochrome P450	-0.466900
Drug metabolism - other enzymes	0.082450
ECM-receptor interaction	0.348300
Endocrine and other factor-regulated calcium reabsorption	-0.134300
Endometrial cancer	0.495500
Epithelial cell signaling in Helicobacter pylori infection	0.136500
Epstein-Barr virus infection	0.349700
ErbB signaling pathway	0.357500
Estrogen signaling pathway	0.208200
Ether lipid metabolism	0.044530
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	0.222900
Fc gamma R-mediated phagocytosis	0.365400
Folate biosynthesis	0.275200

FoxO signaling pathway	0.309800
Fructose and mannose metabolism	0.434200
GABAergic synapse	-0.461800
Galactose metabolism	0.418100
Gap junction	0.098390
Gastric acid secretion	0.135500
Glioma	0.438300
Glucagon signaling pathway	0.385400
Glutamatergic synapse	-0.173700
Glutathione metabolism	0.347900
Glycerolipid metabolism	0.714300
Glycerophospholipid metabolism	0.747700
Glycine, serine and threonine metabolism	-0.016280
Glycolysis / Gluconeogenesis	0.512700
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.429200
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.401800
Glycosaminoglycan degradation	0.378500
Glycosphingolipid biosynthesis - ganglio series	0.251600
Glycosphingolipid biosynthesis - globo series	-0.086650
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.271700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.424700
Glyoxylate and dicarboxylate metabolism	0.264300
GnRH signaling pathway	0.235000
Graft-versus-host disease	-0.296400
Hedgehog signaling pathway	0.082570
Hepatitis B	0.298700
Hepatitis C	0.407600
Herpes simplex infection	0.288600
HIF-1 signaling pathway	0.516500
Histidine metabolism	-0.344600
Huntington's disease	0.779700
Hypertrophic cardiomyopathy (HCM)	0.237800
Inflammatory bowel disease (IBD)	-0.192800
Inflammatory mediator regulation of TRP channels	0.112800
Influenza A	0.276400
Inositol phosphate metabolism	1.006000
Insulin resistance	0.376500
Insulin secretion	-0.138600
Insulin signaling pathway	0.471900
Intestinal immune network for IgA production	-0.196100
Legionellosis	-0.099270
Leishmaniasis	-0.036290
Leukocyte transendothelial migration	0.057320
Linoleic acid metabolism	-1.325000
Lipoic acid metabolism	-0.180100
Long-term depression	0.193400

Long-term potentiation	0.145000
Lysine biosynthesis	-0.137100
Lysine degradation	0.607700
Malaria	-0.257600
Maturity onset diabetes of the young	-0.170000
Measles	0.178400
Melanogenesis	0.162100
Melanoma	0.253800
Metabolism of xenobiotics by cytochrome P450	-1.116000
Mineral absorption	-0.029660
Morphine addiction	-0.311900
mTOR signaling pathway	0.312300
Mucin type O-Glycan biosynthesis	-0.409800
Natural killer cell mediated cytotoxicity	0.076680
Neuroactive ligand-receptor interaction	-0.429600
Neurotrophin signaling pathway	0.327200
NF-kappa B signaling pathway	0.162000
N-Glycan biosynthesis	0.621100
Nicotinate and nicotinamide metabolism	-0.101500
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	0.599900
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
Pertussis	0.094210
Phenylalanine metabolism	-0.133200
Phenylalanine, tyrosine and tryptophan biosynthesis	0.312100
Phosphatidylinositol signaling system	1.261000
Phototransduction	-0.382900
Platelet activation	0.204100
Porphyrin and chlorophyll metabolism	-0.030440
Primary bile acid biosynthesis	-0.293800
Prion diseases	0.318800

Progesterone-mediated oocyte maturation	0.230100
Prolactin signaling pathway	0.326200
Propanoate metabolism	0.367900
Prostate cancer	0.470000
Proximal tubule bicarbonate reclamation	0.162500
Pyrimidine metabolism	1.816000
Pyruvate metabolism	0.490300
Regulation of lipolysis in adipocytes	0.197200
Renal cell carcinoma	0.432100
Renin-angiotensin system	-0.129700
Renin secretion	0.203100
Retinol metabolism	-1.736000
Retrograde endocannabinoid signaling	-0.042410
Rheumatoid arthritis	-0.199200
Riboflavin metabolism	0.378300
RIG-I-like receptor signaling pathway	0.268600
Salivary secretion	0.040560
Salmonella infection	0.382200
Selenocompound metabolism	0.355000
Serotonergic synapse	-0.132100
Shigellosis	0.331400
Signaling pathways regulating pluripotency of stem cells	0.366700
Small cell lung cancer	0.595100
Sphingolipid metabolism	0.703600
Sphingolipid signaling pathway	0.435000
Staphylococcus aureus infection	-0.138900
Starch and sucrose metabolism	0.232300
Steroid biosynthesis	0.396600
Steroid hormone biosynthesis	-0.948700
Sulfur metabolism	0.505100
Synaptic vesicle cycle	0.587000
Synthesis and degradation of ketone bodies	0.162800
Systemic lupus erythematosus	-0.282700
Taste transduction	-0.100200
Taurine and hypotaurine metabolism	-0.285200
T cell receptor signaling pathway	0.180000
Terpenoid backbone biosynthesis	0.353700
TGF-beta signaling pathway	0.325600
Thiamine metabolism	0.151800
Thyroid cancer	0.364100
Thyroid hormone signaling pathway	0.603900
Thyroid hormone synthesis	-0.037400
Tight junction	0.342400
TNF signaling pathway	0.301300
Toll-like receptor signaling pathway	0.084100
Toxoplasmosis	0.293100

Transcriptional misregulation in cancer	0.086670
Tryptophan metabolism	-0.287100
Type I diabetes mellitus	-0.428300
Type II diabetes mellitus	0.172600
Tyrosine metabolism	-0.390100
Ubiquinone and other terpenoid-quinone biosynthesis	0.284000
Valine, leucine and isoleucine degradation	0.547200
Vascular smooth muscle contraction	0.176700
Vasopressin-regulated water reabsorption	0.027050
VEGF signaling pathway	0.303800
Vibrio cholerae infection	0.385700
Viral carcinogenesis	0.328700
Viral myocarditis	0.134300
Vitamin B6 metabolism	0.134500
Vitamin digestion and absorption	-0.499100
Wnt signaling pathway	0.182800

	control.Median
Acute myeloid leukemia	0.4399000
Adherens junction	0.5510000
Adipocytokine signaling pathway	0.2637000
Adrenergic signaling in cardiomyocytes	-0.2834000
African trypanosomiasis	-0.2299000
Alanine, aspartate and glutamate metabolism	0.5444000
Aldosterone-regulated sodium reabsorption	0.1641000
Aldosterone synthesis and secretion	0.1026000
Allograft rejection	-0.4318000
alpha-Linolenic acid metabolism	0.0641200
Alzheimer's disease	0.3064000
Aminoacyl-tRNA biosynthesis	0.2770000
Amino sugar and nucleotide sugar metabolism	0.4703000
Amoebiasis	-0.0805500
Amphetamine addiction	-0.1326000
AMPK signaling pathway	0.4772000
Amyotrophic lateral sclerosis (ALS)	0.1777000
Antigen processing and presentation	-0.0551200
Apoptosis	0.2285000
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	-0.4572000
Autoimmune thyroid disease	-0.4318000
Axon guidance	0.2952000
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
Biotin metabolism	0.2629000
Bladder cancer	0.4681000
Butanoate metabolism	0.2456000
Caffeine metabolism	-0.4444000
Carbohydrate digestion and absorption	0.1503000
Cardiac muscle contraction	-0.1902000
Cell adhesion molecules (CAMs)	-0.2174000
Cell cycle	0.8318000
Chagas disease (American trypanosomiasis)	0.3088000
Chemical carcinogenesis	-0.8122000
Choline metabolism in cancer	0.3345000
Cholinergic synapse	0.1629000
Chronic myeloid leukemia	0.5717000
Circadian entrainment	-0.0231600
Circadian rhythm	0.4546000
Citrate cycle (TCA cycle)	0.9218000
Cocaine addiction	0.0135000
Colorectal cancer	0.4009000
Complement and coagulation cascades	-0.1566000
Cysteine and methionine metabolism	0.5071000
Cytosolic DNA-sensing pathway	0.2345000
D-Glutamine and D-glutamate metabolism	0.3140000
Dilated cardiomyopathy	0.2262000
Dopaminergic synapse	0.0263500
Dorso-ventral axis formation	0.2663000
Drug metabolism - cytochrome P450	-0.4635000
Drug metabolism - other enzymes	0.0946300
ECM-receptor interaction	0.3634000
Endocrine and other factor-regulated calcium reabsorption	-0.1277000
Endometrial cancer	0.5097000
Epithelial cell signaling in Helicobacter pylori infection	0.1394000
Epstein-Barr virus infection	0.3545000
ErbB signaling pathway	0.3667000
Estrogen signaling pathway	0.2256000
Ether lipid metabolism	0.0519700
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	0.2291000
Fc gamma R-mediated phagocytosis	0.3788000
Folate biosynthesis	0.2839000
FoxO signaling pathway	0.3138000

Fructose and mannose metabolism	0.4707000
GABAergic synapse	-0.4524000
Galactose metabolism	0.4215000
Gap junction	0.1119000
Gastric acid secretion	0.1578000
Glioma	0.4437000
Glucagon signaling pathway	0.4168000
Glutamatergic synapse	-0.1439000
Glutathione metabolism	0.3654000
Glycerolipid metabolism	0.7392000
Glycerophospholipid metabolism	0.7929000
Glycine, serine and threonine metabolism	-0.0128100
Glycolysis / Gluconeogenesis	0.5276000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.4300000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.4026000
Glycosaminoglycan degradation	0.4015000
Glycosphingolipid biosynthesis - ganglio series	0.2583000
Glycosphingolipid biosynthesis - globo series	-0.0856000
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.2647000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.4371000
Glyoxylate and dicarboxylate metabolism	0.2864000
GnRH signaling pathway	0.2512000
Graft-versus-host disease	-0.2912000
Hedgehog signaling pathway	0.0908400
Hepatitis B	0.3107000
Hepatitis C	0.4129000
Herpes simplex infection	0.2915000
HIF-1 signaling pathway	0.5354000
Histidine metabolism	-0.3354000
Huntington's disease	0.7866000
Hypertrophic cardiomyopathy (HCM)	0.2384000
Inflammatory bowel disease (IBD)	-0.1901000
Inflammatory mediator regulation of TRP channels	0.1258000
Influenza A	0.2893000
Inositol phosphate metabolism	1.0320000
Insulin resistance	0.3841000
Insulin secretion	-0.1234000
Insulin signaling pathway	0.4754000
Intestinal immune network for IgA production	-0.1935000
Legionellosis	-0.0985200
Leishmaniasis	-0.0338200
Leukocyte transendothelial migration	0.0693600
Linoleic acid metabolism	-1.3140000
Lipoic acid metabolism	-0.1734000
Long-term depression	0.2355000
Long-term potentiation	0.1790000

Lysine biosynthesis	-0.1246000
Lysine degradation	0.6082000
Malaria	-0.2542000
Maturity onset diabetes of the young	-0.1635000
Measles	0.1890000
Melanogenesis	0.1795000
Melanoma	0.2872000
Metabolism of xenobiotics by cytochrome P450	-1.1050000
Mineral absorption	-0.0202200
Morphine addiction	-0.2829000
mTOR signaling pathway	0.3221000
Mucin type O-Glycan biosynthesis	-0.3286000
Natural killer cell mediated cytotoxicity	0.0910200
Neuroactive ligand-receptor interaction	-0.4221000
Neurotrophin signaling pathway	0.3389000
NF-kappa B signaling pathway	0.1640000
N-Glycan biosynthesis	0.6238000
Nicotinate and nicotinamide metabolism	-0.0662100
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	0.6030000
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
Pertussis	0.1016000
Phenylalanine metabolism	-0.1297000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.3136000
Phosphatidylinositol signaling system	1.2740000
Phototransduction	-0.3634000
Platelet activation	0.2156000
Porphyrin and chlorophyll metabolism	-0.0163000
Primary bile acid biosynthesis	-0.2888000
Prion diseases	0.3208000
Progesterone-mediated oocyte maturation	0.2349000

Prolactin signaling pathway	0.3414000
Propanoate metabolism	0.3703000
Prostate cancer	0.4738000
Proximal tubule bicarbonate reclamation	0.1627000
Pyrimidine metabolism	1.8470000
Pyruvate metabolism	0.5065000
Regulation of lipolysis in adipocytes	0.2080000
Renal cell carcinoma	0.4360000
Renin-angiotensin system	0.0005793
Renin secretion	0.2150000
Retinol metabolism	-1.7240000
Retrograde endocannabinoid signaling	-0.0269400
Rheumatoid arthritis	-0.1968000
Riboflavin metabolism	0.3818000
RIG-I-like receptor signaling pathway	0.2748000
Salivary secretion	0.0567400
Salmonella infection	0.3875000
Selenocompound metabolism	0.3578000
Serotonergic synapse	-0.0762200
Shigellosis	0.3455000
Signaling pathways regulating pluripotency of stem cells	0.3754000
Small cell lung cancer	0.5976000
Sphingolipid metabolism	0.7296000
Sphingolipid signaling pathway	0.4447000
Staphylococcus aureus infection	-0.1328000
Starch and sucrose metabolism	0.2445000
Steroid biosynthesis	0.4066000
Steroid hormone biosynthesis	-0.9048000
Sulfur metabolism	0.5077000
Synaptic vesicle cycle	0.5894000
Synthesis and degradation of ketone bodies	0.1865000
Systemic lupus erythematosus	-0.2628000
Taste transduction	-0.0942800
Taurine and hypotaurine metabolism	-0.2734000
T cell receptor signaling pathway	0.1817000
Terpenoid backbone biosynthesis	0.3613000
TGF-beta signaling pathway	0.3335000
Thiamine metabolism	0.1550000
Thyroid cancer	0.3736000
Thyroid hormone signaling pathway	0.6185000
Thyroid hormone synthesis	-0.0145500
Tight junction	0.3544000
TNF signaling pathway	0.3061000
Toll-like receptor signaling pathway	0.0864900
Toxoplasmosis	0.2953000
Transcriptional misregulation in cancer	0.0904200

Tryptophan metabolism	-0.2737000
Type I diabetes mellitus	-0.4157000
Type II diabetes mellitus	0.1799000
Tyrosine metabolism	-0.3835000
Ubiquinone and other terpenoid-quinone biosynthesis	0.2858000
Valine, leucine and isoleucine degradation	0.5630000
Vascular smooth muscle contraction	0.1913000
Vasopressin-regulated water reabsorption	0.0436700
VEGF signaling pathway	0.3138000
Vibrio cholerae infection	0.3869000
Viral carcinogenesis	0.3304000
Viral myocarditis	0.1488000
Vitamin B6 metabolism	0.1492000
Vitamin digestion and absorption	-0.4696000
Wnt signaling pathway	0.2058000
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Acute myeloid leukemia	0.438100
Adherens junction	0.551400
Adipocytokine signaling pathway	0.264200
Adrenergic signaling in cardiomyocytes	-0.279400
African trypanosomiasis	-0.229100
Alanine, aspartate and glutamate metabolism	0.546300
Aldosterone-regulated sodium reabsorption	0.163200
Aldosterone synthesis and secretion	0.095020
Allograft rejection	-0.427800
alpha-Linolenic acid metabolism	0.068670
Alzheimer's disease	0.298600
Aminoacyl-tRNA biosynthesis	0.278400
Amino sugar and nucleotide sugar metabolism	0.468300
Amoebiasis	-0.077170
Amphetamine addiction	-0.133700
AMPK signaling pathway	0.479600
Amyotrophic lateral sclerosis (ALS)	0.177200
Antigen processing and presentation	-0.054660
Apoptosis	0.224500
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	-0.454900
Autoimmune thyroid disease	-0.427800
Axon guidance	0.295300
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
Biotin metabolism	0.262700
Bladder cancer	0.467700
Butanoate metabolism	0.228100
Caffeine metabolism	-0.451400
Carbohydrate digestion and absorption	0.148400
Cardiac muscle contraction	-0.189100
Cell adhesion molecules (CAMs)	-0.216900
Cell cycle	0.831700
Chagas disease (American trypanosomiasis)	0.307200
Chemical carcinogenesis	-0.827500
Choline metabolism in cancer	0.335700
Cholinergic synapse	0.159200
Chronic myeloid leukemia	0.574800
Circadian entrainment	-0.040230
Circadian rhythm	0.455000
Citrate cycle (TCA cycle)	0.949300
Cocaine addiction	0.004420
Colorectal cancer	0.402100
Complement and coagulation cascades	-0.152100
Cysteine and methionine metabolism	0.505400
Cytosolic DNA-sensing pathway	0.237200
D-Glutamine and D-glutamate metabolism	0.314300
Dilated cardiomyopathy	0.229800
Dopaminergic synapse	0.026380
Dorso-ventral axis formation	0.266900
Drug metabolism - cytochrome P450	-0.455600
Drug metabolism - other enzymes	0.082990
ECM-receptor interaction	0.397500
Endocrine and other factor-regulated calcium reabsorption	-0.123300
Endometrial cancer	0.511100
Epithelial cell signaling in Helicobacter pylori infection	0.137600
Epstein-Barr virus infection	0.352100
ErbB signaling pathway	0.368200
Estrogen signaling pathway	0.223400
Ether lipid metabolism	0.087480
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	0.232700
Fc gamma R-mediated phagocytosis	0.369900
Folate biosynthesis	0.283800
FoxO signaling pathway	0.315100
Fructose and mannose metabolism	0.439200

GABAergic synapse	-0.454000
Galactose metabolism	0.420100
Gap junction	0.103400
Gastric acid secretion	0.149300
Glioma	0.439300
Glucagon signaling pathway	0.429200
Glutamatergic synapse	-0.144400
Glutathione metabolism	0.365400
Glycerolipid metabolism	0.736000
Glycerophospholipid metabolism	0.797600
Glycine, serine and threonine metabolism	0.014660
Glycolysis / Gluconeogenesis	0.531300
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.430400
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.403400
Glycosaminoglycan degradation	0.400900
Glycosphingolipid biosynthesis - ganglio series	0.260300
Glycosphingolipid biosynthesis - globo series	-0.080300
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.266700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.433300
Glyoxylate and dicarboxylate metabolism	0.288700
GnRH signaling pathway	0.249700
Graft-versus-host disease	-0.275500
Hedgehog signaling pathway	0.092170
Hepatitis B	0.312400
Hepatitis C	0.414300
Herpes simplex infection	0.292100
HIF-1 signaling pathway	0.532300
Histidine metabolism	-0.335700
Huntington's disease	0.781700
Hypertrophic cardiomyopathy (HCM)	0.238500
Inflammatory bowel disease (IBD)	-0.190400
Inflammatory mediator regulation of TRP channels	0.121400
Influenza A	0.285900
Inositol phosphate metabolism	1.045000
Insulin resistance	0.380000
Insulin secretion	-0.127200
Insulin signaling pathway	0.477300
Intestinal immune network for IgA production	-0.193600
Legionellosis	-0.089410
Leishmaniasis	-0.032410
Leukocyte transendothelial migration	0.068220
Linoleic acid metabolism	-1.297000
Lipoic acid metabolism	-0.178700
Long-term depression	0.235000
Long-term potentiation	0.172700
Lysine biosynthesis	-0.126400

Lysine degradation	0.613400
Malaria	-0.223800
Maturity onset diabetes of the young	-0.166900
Measles	0.186800
Melanogenesis	0.167800
Melanoma	0.272900
Metabolism of xenobiotics by cytochrome P450	-1.099000
Mineral absorption	-0.020440
Morphine addiction	-0.291100
mTOR signaling pathway	0.316900
Mucin type O-Glycan biosynthesis	-0.324000
Natural killer cell mediated cytotoxicity	0.087400
Neuroactive ligand-receptor interaction	-0.421700
Neurotrophin signaling pathway	0.337900
NF-kappa B signaling pathway	0.168300
N-Glycan biosynthesis	0.623100
Nicotinate and nicotinamide metabolism	-0.085170
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	0.606400
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
Pertussis	0.107200
Phenylalanine metabolism	-0.120300
Phenylalanine, tyrosine and tryptophan biosynthesis	0.313500
Phosphatidylinositol signaling system	1.305000
Phototransduction	-0.364900
Platelet activation	0.221900
Porphyrin and chlorophyll metabolism	-0.018500
Primary bile acid biosynthesis	-0.288400
Prion diseases	0.320200
Progesterone-mediated oocyte maturation	0.235200
Prolactin signaling pathway	0.339500

Propanoate metabolism	0.376000
Prostate cancer	0.483500
Proximal tubule bicarbonate reclamation	0.186600
Pyrimidine metabolism	1.852000
Pyruvate metabolism	0.517300
Regulation of lipolysis in adipocytes	0.214400
Renal cell carcinoma	0.433200
Renin-angiotensin system	0.001284
Renin secretion	0.216700
Retinol metabolism	-1.732000
Retrograde endocannabinoid signaling	-0.018580
Rheumatoid arthritis	-0.184900
Riboflavin metabolism	0.381300
RIG-I-like receptor signaling pathway	0.272600
Salivary secretion	0.052540
Salmonella infection	0.392100
Selenocompound metabolism	0.372700
Serotonergic synapse	-0.079570
Shigellosis	0.345800
Signaling pathways regulating pluripotency of stem cells	0.375200
Small cell lung cancer	0.597200
Sphingolipid metabolism	0.755700
Sphingolipid signaling pathway	0.442400
Staphylococcus aureus infection	-0.121700
Starch and sucrose metabolism	0.235400
Steroid biosynthesis	0.401200
Steroid hormone biosynthesis	-0.905900
Sulfur metabolism	0.506800
Synaptic vesicle cycle	0.589100
Synthesis and degradation of ketone bodies	0.168200
Systemic lupus erythematosus	-0.258700
Taste transduction	-0.095870
Taurine and hypotaurine metabolism	-0.272100
T cell receptor signaling pathway	0.183200
Terpenoid backbone biosynthesis	0.363200
TGF-beta signaling pathway	0.330700
Thiamine metabolism	0.156600
Thyroid cancer	0.368100
Thyroid hormone signaling pathway	0.620100
Thyroid hormone synthesis	-0.023980
Tight junction	0.344200
TNF signaling pathway	0.302400
Toll-like receptor signaling pathway	0.086110
Toxoplasmosis	0.295300
Transcriptional misregulation in cancer	0.089800
Tryptophan metabolism	-0.275400

Type I diabetes mellitus	-0.414200
Type II diabetes mellitus	0.185200
Tyrosine metabolism	-0.370900
Ubiquinone and other terpenoid-quinone biosynthesis	0.285900
Valine, leucine and isoleucine degradation	0.550700
Vascular smooth muscle contraction	0.190000
Vasopressin-regulated water reabsorption	0.029110
VEGF signaling pathway	0.311600
Vibrio cholerae infection	0.387300
Viral carcinogenesis	0.329400
Viral myocarditis	0.143000
Vitamin B6 metabolism	0.145700
Vitamin digestion and absorption	-0.473300
Wnt signaling pathway	0.214300
	control.3rd.Qu.
Acute myeloid leukemia	0.441400
Adherens junction	0.557200
Adipocytokine signaling pathway	0.275700
Adrenergic signaling in cardiomyocytes	-0.269500
African trypanosomiasis	-0.221400
Alanine, aspartate and glutamate metabolism	0.552900
Aldosterone-regulated sodium reabsorption	0.174900
Aldosterone synthesis and secretion	0.150400
Allograft rejection	-0.421500
alpha-Linolenic acid metabolism	0.078400
Alzheimer's disease	0.307900
Aminoacyl-tRNA biosynthesis	0.290800
Amino sugar and nucleotide sugar metabolism	0.472900
Amoebiasis	-0.049270
Amphetamine addiction	-0.123300
AMPK signaling pathway	0.483400
Amyotrophic lateral sclerosis (ALS)	0.180600
Antigen processing and presentation	-0.037930
Apoptosis	0.234900
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	-0.442100
Autoimmune thyroid disease	-0.421500
Axon guidance	0.297600
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
Biotin metabolism	0.263400
Bladder cancer	0.478000
Butanoate metabolism	0.248500
Caffeine metabolism	-0.435000
Carbohydrate digestion and absorption	0.166200
Cardiac muscle contraction	-0.184600
Cell adhesion molecules (CAMs)	-0.209800
Cell cycle	0.852600
Chagas disease (American trypanosomiasis)	0.320800
Chemical carcinogenesis	-0.804000
Choline metabolism in cancer	0.337600
Cholinergic synapse	0.174500
Chronic myeloid leukemia	0.577700
Circadian entrainment	0.002766
Circadian rhythm	0.458600
Citrate cycle (TCA cycle)	0.951700
Cocaine addiction	0.016440
Colorectal cancer	0.409000
Complement and coagulation cascades	-0.149000
Cysteine and methionine metabolism	0.509500
Cytosolic DNA-sensing pathway	0.238900
D-Glutamine and D-glutamate metabolism	0.314600
Dilated cardiomyopathy	0.239300
Dopaminergic synapse	0.056320
Dorso-ventral axis formation	0.267100
Drug metabolism - cytochrome P450	-0.452200
Drug metabolism - other enzymes	0.095170
ECM-receptor interaction	0.412600
Endocrine and other factor-regulated calcium reabsorption	-0.116600
Endometrial cancer	0.525200
Epithelial cell signaling in Helicobacter pylori infection	0.140600
Epstein-Barr virus infection	0.356900
ErbB signaling pathway	0.377400
Estrogen signaling pathway	0.240800
Ether lipid metabolism	0.094920
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	0.238900
Fc gamma R-mediated phagocytosis	0.383300
Folate biosynthesis	0.292400
FoxO signaling pathway	0.319200
Fructose and mannose metabolism	0.475700
GABAergic synapse	-0.444700

Galactose metabolism	0.423500
Gap junction	0.116900
Gastric acid secretion	0.171600
Glioma	0.444700
Glucagon signaling pathway	0.460700
Glutamatergic synapse	-0.114500
Glutathione metabolism	0.382900
Glycerolipid metabolism	0.760900
Glycerophospholipid metabolism	0.842800
Glycine, serine and threonine metabolism	0.018130
Glycolysis / Gluconeogenesis	0.546200
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.431200
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.404100
Glycosaminoglycan degradation	0.424000
Glycosphingolipid biosynthesis - ganglio series	0.267000
Glycosphingolipid biosynthesis - globo series	-0.079240
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.259700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.445800
Glyoxylate and dicarboxylate metabolism	0.310800
GnRH signaling pathway	0.265900
Graft-versus-host disease	-0.270200
Hedgehog signaling pathway	0.100400
Hepatitis B	0.324300
Hepatitis C	0.419600
Herpes simplex infection	0.295100
HIF-1 signaling pathway	0.551100
Histidine metabolism	-0.326500
Huntington's disease	0.788600
Hypertrophic cardiomyopathy (HCM)	0.239100
Inflammatory bowel disease (IBD)	-0.187800
Inflammatory mediator regulation of TRP channels	0.134400
Influenza A	0.298700
Inositol phosphate metabolism	1.071000
Insulin resistance	0.387600
Insulin secretion	-0.112000
Insulin signaling pathway	0.480900
Intestinal immune network for IgA production	-0.190900
Legionellosis	-0.088660
Leishmaniasis	-0.029940
Leukocyte transendothelial migration	0.080250
Linoleic acid metabolism	-1.287000
Lipoic acid metabolism	-0.172000
Long-term depression	0.277100
Long-term potentiation	0.206600
Lysine biosynthesis	-0.113900
Lysine degradation	0.613900

Malaria	-0.220400
Maturity onset diabetes of the young	-0.160500
Measles	0.197400
Melanogenesis	0.185200
Melanoma	0.306300
Metabolism of xenobiotics by cytochrome P450	-1.089000
Mineral absorption	-0.011000
Morphine addiction	-0.262000
mTOR signaling pathway	0.326700
Mucin type O-Glycan biosynthesis	-0.242800
Natural killer cell mediated cytotoxicity	0.101700
Neuroactive ligand-receptor interaction	-0.414300
Neurotrophin signaling pathway	0.349700
NF-kappa B signaling pathway	0.170400
N-Glycan biosynthesis	0.625800
Nicotinate and nicotinamide metabolism	-0.049840
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	0.609500
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
Pertussis	0.114600
Phenylalanine metabolism	-0.116800
Phenylalanine, tyrosine and tryptophan biosynthesis	0.315100
Phosphatidylinositol signaling system	1.317000
Phototransduction	-0.345500
Platelet activation	0.233500
Porphyrin and chlorophyll metabolism	-0.004352
Primary bile acid biosynthesis	-0.283500
Prion diseases	0.322100
Progesterone-mediated oocyte maturation	0.240000
Prolactin signaling pathway	0.354700
Propanoate metabolism	0.378500

Prostate cancer	0.487300
Proximal tubule bicarbonate reclamation	0.186900
Pyrimidine metabolism	1.882000
Pyruvate metabolism	0.533400
Regulation of lipolysis in adipocytes	0.225200
Renal cell carcinoma	0.437100
Renin-angiotensin system	0.131500
Renin secretion	0.228600
Retinol metabolism	-1.720000
Retrograde endocannabinoid signaling	-0.003103
Rheumatoid arthritis	-0.182500
Riboflavin metabolism	0.384700
RIG-I-like receptor signaling pathway	0.278900
Salivary secretion	0.068720
Salmonella infection	0.397400
Selenocompound metabolism	0.375400
Serotonergic synapse	-0.023680
Shigellosis	0.359900
Signaling pathways regulating pluripotency of stem cells	0.384000
Small cell lung cancer	0.599600
Sphingolipid metabolism	0.781700
Sphingolipid signaling pathway	0.452000
Staphylococcus aureus infection	-0.115600
Starch and sucrose metabolism	0.247600
Steroid biosynthesis	0.411300
Steroid hormone biosynthesis	-0.862000
Sulfur metabolism	0.509300
Synaptic vesicle cycle	0.591600
Synthesis and degradation of ketone bodies	0.192000
Systemic lupus erythematosus	-0.238700
Taste transduction	-0.089970
Taurine and hypotaurine metabolism	-0.260300
T cell receptor signaling pathway	0.184800
Terpenoid backbone biosynthesis	0.370800
TGF-beta signaling pathway	0.338700
Thiamine metabolism	0.159900
Thyroid cancer	0.377600
Thyroid hormone signaling pathway	0.634700
Thyroid hormone synthesis	-0.001132
Tight junction	0.356200
TNF signaling pathway	0.307200
Toll-like receptor signaling pathway	0.088490
Toxoplasmosis	0.297500
Transcriptional misregulation in cancer	0.093550
Tryptophan metabolism	-0.262100
Type I diabetes mellitus	-0.401600

Type II diabetes mellitus	0.192500
Tyrosine metabolism	-0.364400
Ubiquinone and other terpenoid-quinone biosynthesis	0.287700
Valine, leucine and isoleucine degradation	0.566500
Vascular smooth muscle contraction	0.204600
Vasopressin-regulated water reabsorption	0.045730
VEGF signaling pathway	0.321500
Vibrio cholerae infection	0.388500
Viral carcinogenesis	0.331100
Viral myocarditis	0.157500
Vitamin B6 metabolism	0.160500
Vitamin digestion and absorption	-0.443900
Wnt signaling pathway	0.237300

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Acute myeloid leukemia	0.442500
Adherens junction	0.559200
Adipocytokine signaling pathway	0.290600
Adrenergic signaling in cardiomyocytes	-0.253100
African trypanosomiasis	-0.205800
Alanine, aspartate and glutamate metabolism	0.563900
Aldosterone-regulated sodium reabsorption	0.177300
Aldosterone synthesis and secretion	0.161200
Allograft rejection	-0.408000
alpha-Linolenic acid metabolism	0.120200
Alzheimer's disease	0.308400
Aminoacyl-tRNA biosynthesis	0.295900
Amino sugar and nucleotide sugar metabolism	0.473600
Amoebiasis	-0.029320
Amphetamine addiction	-0.118000
AMPK signaling pathway	0.492500
Amyotrophic lateral sclerosis (ALS)	0.181400
Antigen processing and presentation	-0.016660
Apoptosis	0.237300
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	-0.416200
Autoimmune thyroid disease	-0.408000
Axon guidance	0.298900
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

Biotin metabolism	0.264100
Bladder cancer	0.479600
Butanoate metabolism	0.252500
Caffeine metabolism	-0.416500
Carbohydrate digestion and absorption	0.173200
Cardiac muscle contraction	-0.181100
Cell adhesion molecules (CAMs)	-0.205000
Cell cycle	0.855300
Chagas disease (American trypanosomiasis)	0.326600
Chemical carcinogenesis	-0.803700
Choline metabolism in cancer	0.342000
Cholinergic synapse	0.201200
Chronic myeloid leukemia	0.587700
Circadian entrainment	0.012730
Circadian rhythm	0.462400
Citrate cycle (TCA cycle)	1.035000
Cocaine addiction	0.019430
Colorectal cancer	0.419400
Complement and coagulation cascades	-0.131700
Cysteine and methionine metabolism	0.512100
Cytosolic DNA-sensing pathway	0.247900
D-Glutamine and D-glutamate metabolism	0.315700
Dilated cardiomyopathy	0.250900
Dopaminergic synapse	0.100100
Dorso-ventral axis formation	0.269200
Drug metabolism - cytochrome P450	-0.423400
Drug metabolism - other enzymes	0.096180
ECM-receptor interaction	0.516300
Endocrine and other factor-regulated calcium reabsorption	-0.090800
Endometrial cancer	0.535500
Epithelial cell signaling in Helicobacter pylori infection	0.141300
Epstein-Barr virus infection	0.361700
ErbB signaling pathway	0.384700
Estrogen signaling pathway	0.251900
Ether lipid metabolism	0.207500
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	0.252100
Fc gamma R-mediated phagocytosis	0.384400
Folate biosynthesis	0.292800
FoxO signaling pathway	0.323300
Fructose and mannose metabolism	0.475900
GABAergic synapse	-0.444400
Galactose metabolism	0.427200

Gap junction	0.118600
Gastric acid secretion	0.187200
Glioma	0.446500
Glucagon signaling pathway	0.509900
Glutamatergic synapse	-0.103600
Glutathione metabolism	0.409200
Glycerolipid metabolism	0.780000
Glycerophospholipid metabolism	0.892300
Glycine, serine and threonine metabolism	0.104600
Glycolysis / Gluconeogenesis	0.566200
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.433000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.406800
Glycosaminoglycan degradation	0.426800
Glycosphingolipid biosynthesis - ganglio series	0.277900
Glycosphingolipid biosynthesis - globo series	-0.060910
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.252700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.445900
Glyoxylate and dicarboxylate metabolism	0.319200
GnRH signaling pathway	0.273600
Graft-versus-host disease	-0.219400
Hedgehog signaling pathway	0.107800
Hepatitis B	0.333600
Hepatitis C	0.426300
Herpes simplex infection	0.301600
HIF-1 signaling pathway	0.557400
Histidine metabolism	-0.326200
Huntington's disease	0.791100
Hypertrophic cardiomyopathy (HCM)	0.240800
Inflammatory bowel disease (IBD)	-0.185100
Inflammatory mediator regulation of TRP channels	0.135300
Influenza A	0.307800
Inositol phosphate metabolism	1.118000
Insulin resistance	0.387700
Insulin secretion	-0.100600
Insulin signaling pathway	0.487500
Intestinal immune network for IgA production	-0.187600
Legionellosis	-0.059190
Leishmaniasis	-0.022220
Leukocyte transendothelial migration	0.084170
Linoleic acid metabolism	-1.230000
Lipoic acid metabolism	-0.169300
Long-term depression	0.309800
Long-term potentiation	0.233500
Lysine biosynthesis	-0.103500
Lysine degradation	0.630400
Malaria	-0.121500

Maturity onset diabetes of the young	-0.159500
Measles	0.199300
Melanogenesis	0.193300
Melanoma	0.348900
Metabolism of xenobiotics by cytochrome P450	-1.041000
Mineral absorption	-0.004526
Morphine addiction	-0.255400
mTOR signaling pathway	0.328900
Mucin type O-Glycan biosynthesis	-0.227200
Natural killer cell mediated cytotoxicity	0.111000
Neuroactive ligand-receptor interaction	-0.409300
Neurotrophin signaling pathway	0.352900
NF-kappa B signaling pathway	0.185200
N-Glycan biosynthesis	0.626700
Nicotinate and nicotinamide metabolism	-0.028810
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	0.621300
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
Pertussis	0.145700
Phenylalanine metabolism	-0.082140
Phenylalanine, tyrosine and tryptophan biosynthesis	0.318700
Phosphatidylinositol signaling system	1.428000
Phototransduction	-0.303900
Platelet activation	0.261400
Porphyrin and chlorophyll metabolism	0.010770
Primary bile acid biosynthesis	-0.267600
Prion diseases	0.323600
Progesterone-mediated oocyte maturation	0.250500
Prolactin signaling pathway	0.358000
Propanoate metabolism	0.399200
Prostate cancer	0.516700

Proximal tubule bicarbonate reclamation	0.258700
Pyrimidine metabolism	1.933000
Pyruvate metabolism	0.586400
Regulation of lipolysis in adipocytes	0.264100
Renal cell carcinoma	0.437900
Renin-angiotensin system	0.136500
Renin secretion	0.245100
Retinol metabolism	-1.720000
Retrograde endocannabinoid signaling	0.054580
Rheumatoid arthritis	-0.144400
Riboflavin metabolism	0.385500
RIG-I-like receptor signaling pathway	0.281000
Salivary secretion	0.081660
Salmonella infection	0.418300
Selenocompound metabolism	0.421800
Serotonergic synapse	0.004668
Shigellosis	0.367200
Signaling pathways regulating pluripotency of stem cells	0.388700
Small cell lung cancer	0.601000
Sphingolipid metabolism	0.889400
Sphingolipid signaling pathway	0.463700
Staphylococcus aureus infection	-0.080540
Starch and sucrose metabolism	0.255900
Steroid biosynthesis	0.416900
Steroid hormone biosynthesis	-0.850300
Sulfur metabolism	0.510300
Synaptic vesicle cycle	0.593300
Synthesis and degradation of ketone bodies	0.196400
Systemic lupus erythematosus	-0.224400
Taste transduction	-0.081570
Taurine and hypotaurine metabolism	-0.256300
T cell receptor signaling pathway	0.192200
Terpenoid backbone biosynthesis	0.377600
TGF-beta signaling pathway	0.345100
Thiamine metabolism	0.166500
Thyroid cancer	0.379700
Thyroid hormone signaling pathway	0.645000
Thyroid hormone synthesis	0.016000
Tight junction	0.361000
TNF signaling pathway	0.307700
Toll-like receptor signaling pathway	0.092430
Toxoplasmosis	0.298200
Transcriptional misregulation in cancer	0.094880
Tryptophan metabolism	-0.261600
Type I diabetes mellitus	-0.394400
Type II diabetes mellitus	0.214700

Tyrosine metabolism	-0.308600
Ubiquinone and other terpenoid-quinone biosynthesis	0.290200
Valine, leucine and isoleucine degradation	0.570100
Vascular smooth muscle contraction	0.207600
Vasopressin-regulated water reabsorption	0.050240
VEGF signaling pathway	0.322100
Vibrio cholerae infection	0.390000
Viral carcinogenesis	0.332200
Viral myocarditis	0.162200
Vitamin B6 metabolism	0.166100
Vitamin digestion and absorption	-0.443300
Wnt signaling pathway	0.271700
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Acute myeloid leukemia	4
Adherens junction	4
Adipocytokine signaling pathway	4
Adrenergic signaling in cardiomyocytes	4
African trypanosomiasis	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
Axon guidance	4
Bacterial invasion of epithelial cells	4
Basal cell carcinoma	4
B cell receptor signaling pathway	4
beta-Alanine metabolism	4
Bile secretion	4
Biotin metabolism	4

Bladder cancer	4
Butanoate metabolism	4
Caffeine metabolism	4
Carbohydrate digestion and absorption	4
Cardiac muscle contraction	4
Cell adhesion molecules (CAMs)	4
Cell cycle	4
Chagas disease (American trypanosomiasis)	4
Chemical carcinogenesis	4
Choline metabolism in cancer	4
Cholinergic synapse	4
Chronic myeloid leukemia	4
Circadian entrainment	4
Circadian rhythm	4
Citrate cycle (TCA cycle)	4
Cocaine addiction	4
Colorectal cancer	4
Complement and coagulation cascades	4
Cysteine and methionine metabolism	4
Cytosolic DNA-sensing pathway	4
D-Glutamine and D-glutamate metabolism	4
Dilated cardiomyopathy	4
Dopaminergic synapse	4
Dorso-ventral axis formation	4
Drug metabolism - cytochrome P450	4
Drug metabolism - other enzymes	4
ECM-receptor interaction	4
Endocrine and other factor-regulated calcium reabsorption	4
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
Fat digestion and absorption	4
Fatty acid biosynthesis	4
Fatty acid degradation	4
Fatty acid elongation	4
Fc epsilon RI signaling pathway	4
Fc gamma R-mediated phagocytosis	4
Folate biosynthesis	4
FoxO signaling pathway	4
Fructose and mannose metabolism	4
GABAergic synapse	4
Galactose metabolism	4
Gap junction	4

Gastric acid secretion	4
Glioma	4
Glucagon signaling pathway	4
Glutamatergic synapse	4
Glutathione metabolism	4
Glycerolipid metabolism	4
Glycerophospholipid metabolism	4
Glycine, serine and threonine metabolism	4
Glycolysis / Gluconeogenesis	4
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	4
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	4
Glycosaminoglycan degradation	4
Glycosphingolipid biosynthesis - ganglio series	4
Glycosphingolipid biosynthesis - globo series	4
Glycosphingolipid biosynthesis - lacto and neolacto series	4
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	4
Glyoxylate and dicarboxylate metabolism	4
GnRH signaling pathway	4
Graft-versus-host disease	4
Hedgehog signaling pathway	4
Hepatitis B	4
Hepatitis C	4
Herpes simplex infection	4
HIF-1 signaling pathway	4
Histidine metabolism	4
Huntington's disease	4
Hypertrophic cardiomyopathy (HCM)	4
Inflammatory bowel disease (IBD)	4
Inflammatory mediator regulation of TRP channels	4
Influenza A	4
Inositol phosphate metabolism	4
Insulin resistance	4
Insulin secretion	4
Insulin signaling pathway	4
Intestinal immune network for IgA production	4
Legionellosis	4
Leishmaniasis	4
Leukocyte transendothelial migration	4
Linoleic acid metabolism	4
Lipoic acid metabolism	4
Long-term depression	4
Long-term potentiation	4
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
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
Pertussis	4
Phenylalanine metabolism	4
Phenylalanine, tyrosine and tryptophan biosynthesis	4
Phosphatidylinositol signaling system	4
Phototransduction	4
Platelet activation	4
Porphyrin and chlorophyll metabolism	4
Primary bile acid biosynthesis	4
Prion diseases	4
Progesterone-mediated oocyte maturation	4
Prolactin signaling pathway	4
Propanoate metabolism	4
Prostate cancer	4
Proximal tubule bicarbonate reclamation	4

Pyrimidine metabolism	4
Pyruvate metabolism	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
RIG-I-like receptor signaling pathway	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
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
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	0.543900
Adipocytokine signaling pathway	0.225300
Adrenergic signaling in cardiomyocytes	-0.382400
African trypanosomiasis	-0.254100
Alanine, aspartate and glutamate metabolism	0.546200
Aldosterone-regulated sodium reabsorption	0.120100
Aldosterone synthesis and secretion	0.148300
Allograft rejection	-0.420500
alpha-Linolenic acid metabolism	0.011020
Alzheimer's disease	0.300100
Aminoacyl-tRNA biosynthesis	0.226800
Amino sugar and nucleotide sugar metabolism	0.373800
Amoebiasis	-0.078140
Amphetamine addiction	-0.081780
AMPK signaling pathway	0.468000
Amyotrophic lateral sclerosis (ALS)	0.172700
Antigen processing and presentation	-0.166600
Apoptosis	0.179600
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	-0.441000
Autoimmune thyroid disease	-0.420500
Axon guidance	0.211000
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
Biotin metabolism	0.246400
Bladder cancer	0.423000

Butanoate metabolism	0.173800
Caffeine metabolism	-0.420200
Carbohydrate digestion and absorption	0.011090
Cardiac muscle contraction	-0.222000
Cell adhesion molecules (CAMs)	-0.240600
Cell cycle	0.916300
Chagas disease (American trypanosomiasis)	0.288900
Chemical carcinogenesis	-0.829100
Choline metabolism in cancer	0.309000
Cholinergic synapse	0.113800
Chronic myeloid leukemia	0.550000
Circadian entrainment	-0.057760
Circadian rhythm	0.512700
Citrate cycle (TCA cycle)	0.913600
Cocaine addiction	-0.051550
Colorectal cancer	0.383600
Complement and coagulation cascades	-0.240200
Cysteine and methionine metabolism	0.464400
Cytosolic DNA-sensing pathway	0.208800
D-Glutamine and D-glutamate metabolism	0.326200
Dilated cardiomyopathy	0.067050
Dopaminergic synapse	-0.003907
Dorso-ventral axis formation	0.268900
Drug metabolism - cytochrome P450	-0.440100
Drug metabolism - other enzymes	0.030640
ECM-receptor interaction	0.142100
Endocrine and other factor-regulated calcium reabsorption	-0.175200
Endometrial cancer	0.484000
Epithelial cell signaling in Helicobacter pylori infection	0.163400
Epstein-Barr virus infection	0.357500
ErbB signaling pathway	0.323700
Estrogen signaling pathway	0.127600
Ether lipid metabolism	0.039850
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	0.195100
Fc gamma R-mediated phagocytosis	0.341800
Folate biosynthesis	0.265500
FoxO signaling pathway	0.308700
Fructose and mannose metabolism	0.374300
GABAergic synapse	-0.539200
Galactose metabolism	0.361900
Gap junction	0.118500
Gastric acid secretion	0.155400

Glioma	0.378300
Glucagon signaling pathway	0.326400
Glutamatergic synapse	-0.233600
Glutathione metabolism	0.364400
Glycerolipid metabolism	0.559500
Glycerophospholipid metabolism	0.659600
Glycine, serine and threonine metabolism	-0.149900
Glycolysis / Gluconeogenesis	0.472400
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.397500
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.301900
Glycosaminoglycan degradation	0.344100
Glycosphingolipid biosynthesis - ganglio series	0.243000
Glycosphingolipid biosynthesis - globo series	-0.094750
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.382000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.404600
Glyoxylate and dicarboxylate metabolism	0.201900
GnRH signaling pathway	0.266300
Graft-versus-host disease	-0.327500
Hedgehog signaling pathway	0.034570
Hepatitis B	0.304000
Hepatitis C	0.397800
Herpes simplex infection	0.296600
HIF-1 signaling pathway	0.505800
Histidine metabolism	-0.367200
Huntington's disease	0.779900
Hypertrophic cardiomyopathy (HCM)	0.194100
Inflammatory bowel disease (IBD)	-0.182600
Inflammatory mediator regulation of TRP channels	0.097080
Influenza A	0.290000
Inositol phosphate metabolism	0.949800
Insulin resistance	0.328200
Insulin secretion	-0.153300
Insulin signaling pathway	0.431000
Intestinal immune network for IgA production	-0.215700
Legionellosis	-0.090740
Leishmaniasis	-0.070420
Leukocyte transendothelial migration	0.099990
Linoleic acid metabolism	-1.231000
Lipoic acid metabolism	-0.202000
Long-term depression	0.146400
Long-term potentiation	0.176700
Lysine biosynthesis	-0.103400
Lysine degradation	0.622100
Malaria	-0.285600
Maturity onset diabetes of the young	-0.206800
Measles	0.178700

Melanogenesis	0.104500
Melanoma	0.243300
Metabolism of xenobiotics by cytochrome P450	-1.242000
Mineral absorption	-0.057190
Morphine addiction	-0.442100
mTOR signaling pathway	0.272300
Mucin type O-Glycan biosynthesis	-0.530900
Natural killer cell mediated cytotoxicity	0.013510
Neuroactive ligand-receptor interaction	-0.447500
Neurotrophin signaling pathway	0.296000
NF-kappa B signaling pathway	0.154500
N-Glycan biosynthesis	0.570700
Nicotinate and nicotinamide metabolism	-0.147700
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	0.687000
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
Pertussis	0.047410
Phenylalanine metabolism	-0.120500
Phenylalanine, tyrosine and tryptophan biosynthesis	0.331800
Phosphatidylinositol signaling system	1.082000
Phototransduction	-0.471800
Platelet activation	0.229900
Porphyrin and chlorophyll metabolism	-0.038650
Primary bile acid biosynthesis	-0.318600
Prion diseases	0.301700
Progesterone-mediated oocyte maturation	0.207800
Prolactin signaling pathway	0.325700
Propanoate metabolism	0.377900
Prostate cancer	0.434400
Proximal tubule bicarbonate reclamation	0.166500
Pyrimidine metabolism	1.864000

Pyruvate metabolism	0.421600
Regulation of lipolysis in adipocytes	0.196200
Renal cell carcinoma	0.372200
Renin-angiotensin system	-0.205500
Renin secretion	0.168700
Retinol metabolism	-1.871000
Retrograde endocannabinoid signaling	-0.130200
Rheumatoid arthritis	-0.207000
Riboflavin metabolism	0.326500
RIG-I-like receptor signaling pathway	0.252100
Salivary secretion	0.034640
Salmonella infection	0.387500
Selenocompound metabolism	0.325900
Serotonergic synapse	-0.147400
Shigellosis	0.338400
Signaling pathways regulating pluripotency of stem cells	0.276600
Small cell lung cancer	0.549100
Sphingolipid metabolism	0.634100
Sphingolipid signaling pathway	0.363700
Staphylococcus aureus infection	-0.231200
Starch and sucrose metabolism	0.086230
Steroid biosynthesis	0.351000
Steroid hormone biosynthesis	-1.139000
Sulfur metabolism	0.506400
Synaptic vesicle cycle	0.558000
Synthesis and degradation of ketone bodies	0.062040
Systemic lupus erythematosus	-0.329800
Taste transduction	-0.058900
Taurine and hypotaurine metabolism	-0.358000
T cell receptor signaling pathway	0.163000
Terpenoid backbone biosynthesis	0.353500
TGF-beta signaling pathway	0.302100
Thiamine metabolism	0.078490
Thyroid cancer	0.319900
Thyroid hormone signaling pathway	0.575200
Thyroid hormone synthesis	-0.067000
Tight junction	0.316800
TNF signaling pathway	0.286300
Toll-like receptor signaling pathway	0.087530
Toxoplasmosis	0.284300
Transcriptional misregulation in cancer	0.086470
Tryptophan metabolism	-0.298700
Type I diabetes mellitus	-0.421500
Type II diabetes mellitus	0.142100
Tyrosine metabolism	-0.386100
Ubiquinone and other terpenoid-quinone biosynthesis	0.271800

Valine, leucine and isoleucine degradation	0.466300
Vascular smooth muscle contraction	0.129600
Vasopressin-regulated water reabsorption	-0.064550
VEGF signaling pathway	0.246100
Vibrio cholerae infection	0.321900
Viral carcinogenesis	0.337500
Viral myocarditis	0.132000
Vitamin B6 metabolism	0.002633
Vitamin digestion and absorption	-0.449500
Wnt signaling pathway	0.116200
	sample.1st.Qu.
Acute myeloid leukemia	0.43100
Adherens junction	0.56480
Adipocytokine signaling pathway	0.23600
Adrenergic signaling in cardiomyocytes	-0.30470
African trypanosomiasis	-0.24640
Alanine, aspartate and glutamate metabolism	0.56160
Aldosterone-regulated sodium reabsorption	0.12540
Aldosterone synthesis and secretion	0.16900
Allograft rejection	-0.41360
alpha-Linolenic acid metabolism	0.01279
Alzheimer's disease	0.30210
Aminoacyl-tRNA biosynthesis	0.26900
Amino sugar and nucleotide sugar metabolism	0.41310
Amoebiasis	-0.07763
Amphetamine addiction	-0.07970
AMPK signaling pathway	0.46830
Amyotrophic lateral sclerosis (ALS)	0.18190
Antigen processing and presentation	-0.14900
Apoptosis	0.19860
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	-0.42420
Autoimmune thyroid disease	-0.41360
Axon guidance	0.24250
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
Biotin metabolism	0.25070
Bladder cancer	0.43560
Butanoate metabolism	0.19850

Caffeine metabolism	-0.40070
Carbohydrate digestion and absorption	0.03826
Cardiac muscle contraction	-0.20160
Cell adhesion molecules (CAMs)	-0.24060
Cell cycle	0.92890
Chagas disease (American trypanosomiasis)	0.29020
Chemical carcinogenesis	-0.82280
Choline metabolism in cancer	0.31070
Cholinergic synapse	0.13870
Chronic myeloid leukemia	0.55100
Circadian entrainment	-0.04835
Circadian rhythm	0.51530
Citrate cycle (TCA cycle)	0.91690
Cocaine addiction	-0.00367
Colorectal cancer	0.39540
Complement and coagulation cascades	-0.22370
Cysteine and methionine metabolism	0.50850
Cytosolic DNA-sensing pathway	0.22010
D-Glutamine and D-glutamate metabolism	0.33290
Dilated cardiomyopathy	0.08611
Dopaminergic synapse	0.03035
Dorso-ventral axis formation	0.27560
Drug metabolism - cytochrome P450	-0.43730
Drug metabolism - other enzymes	0.06798
ECM-receptor interaction	0.15530
Endocrine and other factor-regulated calcium reabsorption	-0.11960
Endometrial cancer	0.49440
Epithelial cell signaling in Helicobacter pylori infection	0.16560
Epstein-Barr virus infection	0.36610
ErbB signaling pathway	0.32790
Estrogen signaling pathway	0.16380
Ether lipid metabolism	0.05559
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	0.21200
Fc gamma R-mediated phagocytosis	0.34870
Folate biosynthesis	0.26590
FoxO signaling pathway	0.30950
Fructose and mannose metabolism	0.42270
GABAergic synapse	-0.48340
Galactose metabolism	0.36290
Gap junction	0.12260
Gastric acid secretion	0.17020
Glioma	0.38280

Glucagon signaling pathway	0.36500
Glutamatergic synapse	-0.17640
Glutathione metabolism	0.36770
Glycerolipid metabolism	0.59440
Glycerophospholipid metabolism	0.69860
Glycine, serine and threonine metabolism	-0.08987
Glycolysis / Gluconeogenesis	0.50870
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.40830
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.35750
Glycosaminoglycan degradation	0.34870
Glycosphingolipid biosynthesis - ganglio series	0.25230
Glycosphingolipid biosynthesis - globo series	-0.08943
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.30970
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.40940
Glyoxylate and dicarboxylate metabolism	0.23160
GnRH signaling pathway	0.28360
Graft-versus-host disease	-0.32370
Hedgehog signaling pathway	0.04221
Hepatitis B	0.31000
Hepatitis C	0.40270
Herpes simplex infection	0.29670
HIF-1 signaling pathway	0.51050
Histidine metabolism	-0.35810
Huntington's disease	0.78770
Hypertrophic cardiomyopathy (HCM)	0.20120
Inflammatory bowel disease (IBD)	-0.17620
Inflammatory mediator regulation of TRP channels	0.12410
Influenza A	0.29370
Inositol phosphate metabolism	1.01100
Insulin resistance	0.33870
Insulin secretion	-0.12750
Insulin signaling pathway	0.43800
Intestinal immune network for IgA production	-0.20220
Legionellosis	-0.08680
Leishmaniasis	-0.06280
Leukocyte transendothelial migration	0.11320
Linoleic acid metabolism	-1.23000
Lipoic acid metabolism	-0.15080
Long-term depression	0.16540
Long-term potentiation	0.21370
Lysine biosynthesis	-0.10250
Lysine degradation	0.63120
Malaria	-0.19790
Maturity onset diabetes of the young	-0.19560
Measles	0.18060
Melanogenesis	0.11340

Melanoma	0.28380
Metabolism of xenobiotics by cytochrome P450	-1.17700
Mineral absorption	-0.04913
Morphine addiction	-0.34110
mTOR signaling pathway	0.27980
Mucin type O-Glycan biosynthesis	-0.50470
Natural killer cell mediated cytotoxicity	0.01817
Neuroactive ligand-receptor interaction	-0.44540
Neurotrophin signaling pathway	0.30600
NF-kappa B signaling pathway	0.16430
N-Glycan biosynthesis	0.57790
Nicotinate and nicotinamide metabolism	-0.09579
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	0.68910
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
Pertussis	0.07829
Phenylalanine metabolism	-0.11860
Phenylalanine, tyrosine and tryptophan biosynthesis	0.33790
Phosphatidylinositol signaling system	1.25900
Phototransduction	-0.41650
Platelet activation	0.23620
Porphyrin and chlorophyll metabolism	-0.01967
Primary bile acid biosynthesis	-0.28820
Prion diseases	0.30240
Progesterone-mediated oocyte maturation	0.23890
Prolactin signaling pathway	0.33360
Propanoate metabolism	0.39460
Prostate cancer	0.46610
Proximal tubule bicarbonate reclamation	0.16930
Pyrimidine metabolism	1.90500
Pyruvate metabolism	0.43480

Regulation of lipolysis in adipocytes	0.20310
Renal cell carcinoma	0.39370
Renin-angiotensin system	-0.16310
Renin secretion	0.20630
Retinol metabolism	-1.83400
Retrograde endocannabinoid signaling	-0.08789
Rheumatoid arthritis	-0.17130
Riboflavin metabolism	0.33030
RIG-I-like receptor signaling pathway	0.26140
Salivary secretion	0.05459
Salmonella infection	0.39200
Selenocompound metabolism	0.32840
Serotonergic synapse	-0.13090
Shigellosis	0.34220
Signaling pathways regulating pluripotency of stem cells	0.29210
Small cell lung cancer	0.57190
Sphingolipid metabolism	0.64570
Sphingolipid signaling pathway	0.39090
Staphylococcus aureus infection	-0.17620
Starch and sucrose metabolism	0.14050
Steroid biosynthesis	0.35630
Steroid hormone biosynthesis	-1.12500
Sulfur metabolism	0.50690
Synaptic vesicle cycle	0.56580
Synthesis and degradation of ketone bodies	0.09597
Systemic lupus erythematosus	-0.32040
Taste transduction	-0.05362
Taurine and hypotaurine metabolism	-0.33640
T cell receptor signaling pathway	0.16530
Terpenoid backbone biosynthesis	0.37180
TGF-beta signaling pathway	0.31010
Thiamine metabolism	0.10780
Thyroid cancer	0.32530
Thyroid hormone signaling pathway	0.58610
Thyroid hormone synthesis	-0.01800
Tight junction	0.32290
TNF signaling pathway	0.29430
Toll-like receptor signaling pathway	0.09749
Toxoplasmosis	0.28780
Transcriptional misregulation in cancer	0.10220
Tryptophan metabolism	-0.28520
Type I diabetes mellitus	-0.41840
Type II diabetes mellitus	0.16230
Tyrosine metabolism	-0.37910
Ubiquinone and other terpenoid-quinone biosynthesis	0.27830
Valine, leucine and isoleucine degradation	0.52010

Vascular smooth muscle contraction	0.14900
Vasopressin-regulated water reabsorption	-0.06379
VEGF signaling pathway	0.25030
Vibrio cholerae infection	0.34400
Viral carcinogenesis	0.34490
Viral myocarditis	0.13200
Vitamin B6 metabolism	0.03600
Vitamin digestion and absorption	-0.43710
Wnt signaling pathway	0.12690
	sample.Median
Acute myeloid leukemia	0.437200
Adherens junction	0.573500
Adipocytokine signaling pathway	0.247100
Adrenergic signaling in cardiomyocytes	-0.248900
African trypanosomiasis	-0.211100
Alanine, aspartate and glutamate metabolism	0.584800
Aldosterone-regulated sodium reabsorption	0.152700
Aldosterone synthesis and secretion	0.176400
Allograft rejection	-0.410200
alpha-Linolenic acid metabolism	0.023350
Alzheimer's disease	0.304500
Aminoacyl-tRNA biosynthesis	0.294200
Amino sugar and nucleotide sugar metabolism	0.431700
Amoebiasis	-0.069690
Amphetamine addiction	-0.056590
AMPK signaling pathway	0.474300
Amyotrophic lateral sclerosis (ALS)	0.185800
Antigen processing and presentation	-0.127200
Apoptosis	0.207000
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	-0.408800
Autoimmune thyroid disease	-0.410200
Axon guidance	0.264500
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
Biotin metabolism	0.257300
Bladder cancer	0.443900
Butanoate metabolism	0.207300
Caffeine metabolism	-0.393800

Carbohydrate digestion and absorption	0.065030
Cardiac muscle contraction	-0.185600
Cell adhesion molecules (CAMs)	-0.224800
Cell cycle	0.949900
Chagas disease (American trypanosomiasis)	0.297400
Chemical carcinogenesis	-0.801400
Choline metabolism in cancer	0.316400
Cholinergic synapse	0.179300
Chronic myeloid leukemia	0.563000
Circadian entrainment	-0.040960
Circadian rhythm	0.517300
Citrate cycle (TCA cycle)	0.920700
Cocaine addiction	0.020780
Colorectal cancer	0.404800
Complement and coagulation cascades	-0.198600
Cysteine and methionine metabolism	0.531600
Cytosolic DNA-sensing pathway	0.236200
D-Glutamine and D-glutamate metabolism	0.343500
Dilated cardiomyopathy	0.111000
Dopaminergic synapse	0.046550
Dorso-ventral axis formation	0.292400
Drug metabolism - cytochrome P450	-0.434400
Drug metabolism - other enzymes	0.081360
ECM-receptor interaction	0.191500
Endocrine and other factor-regulated calcium reabsorption	-0.098620
Endometrial cancer	0.511700
Epithelial cell signaling in Helicobacter pylori infection	0.173500
Epstein-Barr virus infection	0.369700
ErbB signaling pathway	0.354000
Estrogen signaling pathway	0.187100
Ether lipid metabolism	0.094050
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	0.224900
Fc gamma R-mediated phagocytosis	0.351800
Folate biosynthesis	0.275700
FoxO signaling pathway	0.310300
Fructose and mannose metabolism	0.462500
GABAergic synapse	-0.418000
Galactose metabolism	0.367000
Gap junction	0.129700
Gastric acid secretion	0.191300
Glioma	0.409100
Glucagon signaling pathway	0.392000

Glutamatergic synapse	-0.132700
Glutathione metabolism	0.372000
Glycerolipid metabolism	0.608500
Glycerophospholipid metabolism	0.734000
Glycine, serine and threonine metabolism	-0.039600
Glycolysis / Gluconeogenesis	0.533000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.421600
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.402500
Glycosaminoglycan degradation	0.370700
Glycosphingolipid biosynthesis - ganglio series	0.256700
Glycosphingolipid biosynthesis - globo series	-0.085470
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.262900
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.433100
Glyoxylate and dicarboxylate metabolism	0.246500
GnRH signaling pathway	0.291700
Graft-versus-host disease	-0.311200
Hedgehog signaling pathway	0.046970
Hepatitis B	0.318300
Hepatitis C	0.404500
Herpes simplex infection	0.308500
HIF-1 signaling pathway	0.517200
Histidine metabolism	-0.354100
Huntington's disease	0.800600
Hypertrophic cardiomyopathy (HCM)	0.204400
Inflammatory bowel disease (IBD)	-0.169500
Inflammatory mediator regulation of TRP channels	0.136800
Influenza A	0.309900
Inositol phosphate metabolism	1.048000
Insulin resistance	0.344100
Insulin secretion	-0.112200
Insulin signaling pathway	0.450600
Intestinal immune network for IgA production	-0.197100
Legionellosis	-0.083030
Leishmaniasis	-0.051560
Leukocyte transendothelial migration	0.120400
Linoleic acid metabolism	-1.229000
Lipoic acid metabolism	-0.110600
Long-term depression	0.200000
Long-term potentiation	0.242300
Lysine biosynthesis	-0.093210
Lysine degradation	0.635600
Malaria	-0.163800
Maturity onset diabetes of the young	-0.172400
Measles	0.184000
Melanogenesis	0.126000
Melanoma	0.302300

Metabolism of xenobiotics by cytochrome P450	-1.113000
Mineral absorption	-0.032990
Morphine addiction	-0.277000
mTOR signaling pathway	0.288900
Mucin type O-Glycan biosynthesis	-0.455400
Natural killer cell mediated cytotoxicity	0.024950
Neuroactive ligand-receptor interaction	-0.406900
Neurotrophin signaling pathway	0.321200
NF-kappa B signaling pathway	0.173700
N-Glycan biosynthesis	0.644500
Nicotinate and nicotinamide metabolism	-0.066480
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	0.704300
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
Pertussis	0.089160
Phenylalanine metabolism	-0.106300
Phenylalanine, tyrosine and tryptophan biosynthesis	0.341600
Phosphatidylinositol signaling system	1.326000
Phototransduction	-0.362100
Platelet activation	0.247600
Porphyrin and chlorophyll metabolism	-0.009479
Primary bile acid biosynthesis	-0.272200
Prion diseases	0.310700
Progesterone-mediated oocyte maturation	0.251600
Prolactin signaling pathway	0.336700
Propanoate metabolism	0.401700
Prostate cancer	0.477600
Proximal tubule bicarbonate reclamation	0.176800
Pyrimidine metabolism	1.920000
Pyruvate metabolism	0.473500
Regulation of lipolysis in adipocytes	0.208400

Renal cell carcinoma	0.414600
Renin-angiotensin system	-0.136600
Renin secretion	0.219500
Retinol metabolism	-1.814000
Retrograde endocannabinoid signaling	-0.042330
Rheumatoid arthritis	-0.151100
Riboflavin metabolism	0.355800
RIG-I-like receptor signaling pathway	0.275000
Salivary secretion	0.061390
Salmonella infection	0.416100
Selenocompound metabolism	0.344100
Serotonergic synapse	-0.117300
Shigellosis	0.372500
Signaling pathways regulating pluripotency of stem cells	0.322400
Small cell lung cancer	0.604100
Sphingolipid metabolism	0.750000
Sphingolipid signaling pathway	0.407900
Staphylococcus aureus infection	-0.155500
Starch and sucrose metabolism	0.167000
Steroid biosynthesis	0.382500
Steroid hormone biosynthesis	-1.044000
Sulfur metabolism	0.523300
Synaptic vesicle cycle	0.580600
Synthesis and degradation of ketone bodies	0.111800
Systemic lupus erythematosus	-0.303400
Taste transduction	-0.051610
Taurine and hypotaurine metabolism	-0.314800
T cell receptor signaling pathway	0.172500
Terpenoid backbone biosynthesis	0.385800
TGF-beta signaling pathway	0.316600
Thiamine metabolism	0.125000
Thyroid cancer	0.338300
Thyroid hormone signaling pathway	0.606700
Thyroid hormone synthesis	0.003465
Tight junction	0.333700
TNF signaling pathway	0.298700
Toll-like receptor signaling pathway	0.103400
Toxoplasmosis	0.292400
Transcriptional misregulation in cancer	0.113200
Tryptophan metabolism	-0.278900
Type I diabetes mellitus	-0.405300
Type II diabetes mellitus	0.173300
Tyrosine metabolism	-0.352400
Ubiquinone and other terpenoid-quinone biosynthesis	0.292800
Valine, leucine and isoleucine degradation	0.547200
Vascular smooth muscle contraction	0.166900

Vasopressin-regulated water reabsorption	-0.043810
VEGF signaling pathway	0.267600
Vibrio cholerae infection	0.364600
Viral carcinogenesis	0.349000
Viral myocarditis	0.147400
Vitamin B6 metabolism	0.053650
Vitamin digestion and absorption	-0.425600
Wnt signaling pathway	0.140100
	sample.Mean
Acute myeloid leukemia	0.433400
Adherens junction	0.567800
Adipocytokine signaling pathway	0.244500
Adrenergic signaling in cardiomyocytes	-0.267400
African trypanosomiasis	-0.208600
Alanine, aspartate and glutamate metabolism	0.580500
Aldosterone-regulated sodium reabsorption	0.152200
Aldosterone synthesis and secretion	0.170600
Allograft rejection	-0.398600
alpha-Linolenic acid metabolism	0.030850
Alzheimer's disease	0.306100
Aminoacyl-tRNA biosynthesis	0.283200
Amino sugar and nucleotide sugar metabolism	0.424300
Amoebiasis	-0.067970
Amphetamine addiction	-0.057190
AMPK signaling pathway	0.476900
Amyotrophic lateral sclerosis (ALS)	0.188000
Antigen processing and presentation	-0.131700
Apoptosis	0.201300
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	-0.407000
Autoimmune thyroid disease	-0.398600
Axon guidance	0.254800
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
Biotin metabolism	0.259000
Bladder cancer	0.447200
Butanoate metabolism	0.201800
Caffeine metabolism	-0.390400
Carbohydrate digestion and absorption	0.070840

Cardiac muscle contraction	-0.192300
Cell adhesion molecules (CAMs)	-0.222600
Cell cycle	0.952600
Chagas disease (American trypanosomiasis)	0.297900
Chemical carcinogenesis	-0.798200
Choline metabolism in cancer	0.316500
Cholinergic synapse	0.173600
Chronic myeloid leukemia	0.565400
Circadian entrainment	-0.032680
Circadian rhythm	0.519500
Citrate cycle (TCA cycle)	0.921000
Cocaine addiction	0.007941
Colorectal cancer	0.403100
Complement and coagulation cascades	-0.200500
Cysteine and methionine metabolism	0.522700
Cytosolic DNA-sensing pathway	0.234300
D-Glutamine and D-glutamate metabolism	0.343600
Dilated cardiomyopathy	0.120000
Dopaminergic synapse	0.040610
Dorso-ventral axis formation	0.290400
Drug metabolism - cytochrome P450	-0.433400
Drug metabolism - other enzymes	0.069820
ECM-receptor interaction	0.222200
Endocrine and other factor-regulated calcium reabsorption	-0.112500
Endometrial cancer	0.512100
Epithelial cell signaling in Helicobacter pylori infection	0.175500
Epstein-Barr virus infection	0.368400
ErbB signaling pathway	0.354500
Estrogen signaling pathway	0.178300
Ether lipid metabolism	0.128800
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	0.222700
Fc gamma R-mediated phagocytosis	0.353900
Folate biosynthesis	0.277000
FoxO signaling pathway	0.312300
Fructose and mannose metabolism	0.458200
GABAergic synapse	-0.429500
Galactose metabolism	0.405400
Gap junction	0.129100
Gastric acid secretion	0.190500
Glioma	0.408800
Glucagon signaling pathway	0.385800
Glutamatergic synapse	-0.150700

Glutathione metabolism	0.383200
Glycerolipid metabolism	0.620200
Glycerophospholipid metabolism	0.761900
Glycine, serine and threonine metabolism	-0.047450
Glycolysis / Gluconeogenesis	0.535000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.423200
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.385700
Glycosaminoglycan degradation	0.370500
Glycosphingolipid biosynthesis - ganglio series	0.255100
Glycosphingolipid biosynthesis - globo series	-0.085650
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.258400
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.437100
Glyoxylate and dicarboxylate metabolism	0.236700
GnRH signaling pathway	0.286200
Graft-versus-host disease	-0.309500
Hedgehog signaling pathway	0.052110
Hepatitis B	0.319300
Hepatitis C	0.407600
Herpes simplex infection	0.312000
HIF-1 signaling pathway	0.523800
Histidine metabolism	-0.353400
Huntington's disease	0.802800
Hypertrophic cardiomyopathy (HCM)	0.205600
Inflammatory bowel disease (IBD)	-0.170700
Inflammatory mediator regulation of TRP channels	0.131100
Influenza A	0.310800
Inositol phosphate metabolism	1.031000
Insulin resistance	0.344400
Insulin secretion	-0.112800
Insulin signaling pathway	0.448300
Intestinal immune network for IgA production	-0.200200
Legionellosis	-0.082330
Leishmaniasis	-0.052330
Leukocyte transendothelial migration	0.125100
Linoleic acid metabolism	-1.218000
Lipoic acid metabolism	-0.123900
Long-term depression	0.195000
Long-term potentiation	0.230700
Lysine biosynthesis	-0.053640
Lysine degradation	0.635000
Malaria	-0.177200
Maturity onset diabetes of the young	-0.175900
Measles	0.185300
Melanogenesis	0.129200
Melanoma	0.334300
Metabolism of xenobiotics by cytochrome P450	-1.132000

Mineral absorption	-0.034030
Morphine addiction	-0.288000
mTOR signaling pathway	0.288400
Mucin type O-Glycan biosynthesis	-0.440200
Natural killer cell mediated cytotoxicity	0.029310
Neuroactive ligand-receptor interaction	-0.407300
Neurotrophin signaling pathway	0.320900
NF-kappa B signaling pathway	0.175300
N-Glycan biosynthesis	0.645400
Nicotinate and nicotinamide metabolism	-0.079760
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	0.711000
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
Pertussis	0.086340
Phenylalanine metabolism	-0.104500
Phenylalanine, tyrosine and tryptophan biosynthesis	0.340300
Phosphatidylinositol signaling system	1.276000
Phototransduction	-0.374500
Platelet activation	0.250100
Porphyrin and chlorophyll metabolism	-0.010990
Primary bile acid biosynthesis	-0.275700
Prion diseases	0.319500
Progesterone-mediated oocyte maturation	0.242500
Prolactin signaling pathway	0.336700
Propanoate metabolism	0.399300
Prostate cancer	0.467100
Proximal tubule bicarbonate reclamation	0.176100
Pyrimidine metabolism	1.949000
Pyruvate metabolism	0.474900
Regulation of lipolysis in adipocytes	0.212400
Renal cell carcinoma	0.413900

Renin-angiotensin system	-0.083320
Renin secretion	0.209900
Retinol metabolism	-1.799000
Retrograde endocannabinoid signaling	-0.034470
Rheumatoid arthritis	-0.159200
Riboflavin metabolism	0.355400
RIG-I-like receptor signaling pathway	0.274600
Salivary secretion	0.057850
Salmonella infection	0.418400
Selenocompound metabolism	0.349800
Serotonergic synapse	-0.110300
Shigellosis	0.379600
Signaling pathways regulating pluripotency of stem cells	0.320600
Small cell lung cancer	0.600600
Sphingolipid metabolism	0.771700
Sphingolipid signaling pathway	0.404600
Staphylococcus aureus infection	-0.162100
Starch and sucrose metabolism	0.150600
Steroid biosynthesis	0.392800
Steroid hormone biosynthesis	-1.034000
Sulfur metabolism	0.524300
Synaptic vesicle cycle	0.580600
Synthesis and degradation of ketone bodies	0.109400
Systemic lupus erythematosus	-0.293800
Taste transduction	-0.050110
Taurine and hypotaurine metabolism	-0.320000
T cell receptor signaling pathway	0.174100
Terpenoid backbone biosynthesis	0.381200
TGF-beta signaling pathway	0.321000
Thiamine metabolism	0.119500
Thyroid cancer	0.339200
Thyroid hormone signaling pathway	0.605300
Thyroid hormone synthesis	-0.011980
Tight junction	0.332100
TNF signaling pathway	0.297400
Toll-like receptor signaling pathway	0.103100
Toxoplasmosis	0.293300
Transcriptional misregulation in cancer	0.108300
Tryptophan metabolism	-0.277500
Type I diabetes mellitus	-0.394300
Type II diabetes mellitus	0.169200
Tyrosine metabolism	-0.344000
Ubiquinone and other terpenoid-quinone biosynthesis	0.293500
Valine, leucine and isoleucine degradation	0.533000
Vascular smooth muscle contraction	0.161200
Vasopressin-regulated water reabsorption	-0.017300

VEGF signaling pathway	0.267000
Vibrio cholerae infection	0.373300
Viral carcinogenesis	0.350200
Viral myocarditis	0.149900
Vitamin B6 metabolism	0.062810
Vitamin digestion and absorption	-0.426900
Wnt signaling pathway	0.143300
	sample.3rd.Qu.
Acute myeloid leukemia	0.4397000
Adherens junction	0.5765000
Adipocytokine signaling pathway	0.2555000
Adrenergic signaling in cardiomyocytes	-0.2115000
African trypanosomiasis	-0.1732000
Alanine, aspartate and glutamate metabolism	0.6036000
Aldosterone-regulated sodium reabsorption	0.1796000
Aldosterone synthesis and secretion	0.1780000
Allograft rejection	-0.3952000
alpha-Linolenic acid metabolism	0.0414100
Alzheimer's disease	0.3086000
Aminoacyl-tRNA biosynthesis	0.3084000
Amino sugar and nucleotide sugar metabolism	0.4429000
Amoebiasis	-0.0600300
Amphetamine addiction	-0.0340700
AMPK signaling pathway	0.4828000
Amyotrophic lateral sclerosis (ALS)	0.1919000
Antigen processing and presentation	-0.1099000
Apoptosis	0.2097000
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	-0.3916000
Autoimmune thyroid disease	-0.3952000
Axon guidance	0.2768000
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
Biotin metabolism	0.2656000
Bladder cancer	0.4555000
Butanoate metabolism	0.2106000
Caffeine metabolism	-0.3834000
Carbohydrate digestion and absorption	0.0976200
Cardiac muscle contraction	-0.1764000

Cell adhesion molecules (CAMs)	-0.2068000
Cell cycle	0.9737000
Chagas disease (American trypanosomiasis)	0.3052000
Chemical carcinogenesis	-0.7768000
Choline metabolism in cancer	0.3223000
Cholinergic synapse	0.2141000
Chronic myeloid leukemia	0.5773000
Circadian entrainment	-0.0252900
Circadian rhythm	0.5216000
Citrate cycle (TCA cycle)	0.9248000
Cocaine addiction	0.0323900
Colorectal cancer	0.4126000
Complement and coagulation cascades	-0.1754000
Cysteine and methionine metabolism	0.5458000
Cytosolic DNA-sensing pathway	0.2504000
D-Glutamine and D-glutamate metabolism	0.3542000
Dilated cardiomyopathy	0.1449000
Dopaminergic synapse	0.0568000
Dorso-ventral axis formation	0.3072000
Drug metabolism - cytochrome P450	-0.4305000
Drug metabolism - other enzymes	0.0832000
ECM-receptor interaction	0.2583000
Endocrine and other factor-regulated calcium reabsorption	-0.0915500
Endometrial cancer	0.5294000
Epithelial cell signaling in Helicobacter pylori infection	0.1835000
Epstein-Barr virus infection	0.3721000
ErbB signaling pathway	0.3806000
Estrogen signaling pathway	0.2016000
Ether lipid metabolism	0.1673000
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	0.2356000
Fc gamma R-mediated phagocytosis	0.3570000
Folate biosynthesis	0.2868000
FoxO signaling pathway	0.3132000
Fructose and mannose metabolism	0.4980000
GABAergic synapse	-0.3642000
Galactose metabolism	0.4094000
Gap junction	0.1363000
Gastric acid secretion	0.2116000
Glioma	0.4351000
Glucagon signaling pathway	0.4129000
Glutamatergic synapse	-0.1070000
Glutathione metabolism	0.3875000

Glycerolipid metabolism	0.6344000
Glycerophospholipid metabolism	0.7973000
Glycine, serine and threonine metabolism	0.0028230
Glycolysis / Gluconeogenesis	0.5593000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.4365000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.4307000
Glycosaminoglycan degradation	0.3925000
Glycosphingolipid biosynthesis - ganglio series	0.2595000
Glycosphingolipid biosynthesis - globo series	-0.0817000
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.2116000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.4608000
Glyoxylate and dicarboxylate metabolism	0.2517000
GnRH signaling pathway	0.2943000
Graft-versus-host disease	-0.2969000
Hedgehog signaling pathway	0.0568800
Hepatitis B	0.3277000
Hepatitis C	0.4095000
Herpes simplex infection	0.3238000
HIF-1 signaling pathway	0.5305000
Histidine metabolism	-0.3494000
Huntington's disease	0.8157000
Hypertrophic cardiomyopathy (HCM)	0.2088000
Inflammatory bowel disease (IBD)	-0.1640000
Inflammatory mediator regulation of TRP channels	0.1437000
Influenza A	0.3270000
Inositol phosphate metabolism	1.0670000
Insulin resistance	0.3499000
Insulin secretion	-0.0975500
Insulin signaling pathway	0.4609000
Intestinal immune network for IgA production	-0.1951000
Legionellosis	-0.0785600
Leishmaniasis	-0.0410900
Leukocyte transendothelial migration	0.1323000
Linoleic acid metabolism	-1.2170000
Lipoic acid metabolism	-0.0836300
Long-term depression	0.2296000
Long-term potentiation	0.2592000
Lysine biosynthesis	-0.0443700
Lysine degradation	0.6393000
Malaria	-0.1431000
Maturity onset diabetes of the young	-0.1527000
Measles	0.1887000
Melanogenesis	0.1418000
Melanoma	0.3528000
Metabolism of xenobiotics by cytochrome P450	-1.0680000
Mineral absorption	-0.0178900

Morphine addiction	-0.2239000
mTOR signaling pathway	0.2976000
Mucin type O-Glycan biosynthesis	-0.3909000
Natural killer cell mediated cytotoxicity	0.0361000
Neuroactive ligand-receptor interaction	-0.3689000
Neurotrophin signaling pathway	0.3362000
NF-kappa B signaling pathway	0.1847000
N-Glycan biosynthesis	0.7120000
Nicotinate and nicotinamide metabolism	-0.0504500
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	0.7261000
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
Pertussis	0.0972000
Phenylalanine metabolism	-0.0923000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.3440000
Phosphatidylinositol signaling system	1.3430000
Phototransduction	-0.3201000
Platelet activation	0.2616000
Porphyrin and chlorophyll metabolism	-0.0007985
Primary bile acid biosynthesis	-0.2598000
Prion diseases	0.3279000
Progesterone-mediated oocyte maturation	0.2552000
Prolactin signaling pathway	0.3397000
Propanoate metabolism	0.4063000
Prostate cancer	0.4786000
Proximal tubule bicarbonate reclamation	0.1836000
Pyrimidine metabolism	1.9640000
Pyruvate metabolism	0.5136000
Regulation of lipolysis in adipocytes	0.2177000
Renal cell carcinoma	0.4347000
Renin-angiotensin system	-0.0568100

Renin secretion	0.2231000
Retinol metabolism	-1.7800000
Retrograde endocannabinoid signaling	0.0110800
Rheumatoid arthritis	-0.1390000
Riboflavin metabolism	0.3809000
RIG-I-like receptor signaling pathway	0.2882000
Salivary secretion	0.0646600
Salmonella infection	0.4425000
Selenocompound metabolism	0.3655000
Serotonergic synapse	-0.0967100
Shigellosis	0.4099000
Signaling pathways regulating pluripotency of stem cells	0.3509000
Small cell lung cancer	0.6328000
Sphingolipid metabolism	0.8760000
Sphingolipid signaling pathway	0.4216000
Staphylococcus aureus infection	-0.1415000
Starch and sucrose metabolism	0.1771000
Steroid biosynthesis	0.4189000
Steroid hormone biosynthesis	-0.9524000
Sulfur metabolism	0.5407000
Synaptic vesicle cycle	0.5954000
Synthesis and degradation of ketone bodies	0.1253000
Systemic lupus erythematosus	-0.2767000
Taste transduction	-0.0481000
Taurine and hypotaurine metabolism	-0.2984000
T cell receptor signaling pathway	0.1812000
Terpenoid backbone biosynthesis	0.3952000
TGF-beta signaling pathway	0.3275000
Thiamine metabolism	0.1367000
Thyroid cancer	0.3523000
Thyroid hormone signaling pathway	0.6260000
Thyroid hormone synthesis	0.0094840
Tight junction	0.3429000
TNF signaling pathway	0.3018000
Toll-like receptor signaling pathway	0.1090000
Toxoplasmosis	0.2979000
Transcriptional misregulation in cancer	0.1193000
Tryptophan metabolism	-0.2712000
Type I diabetes mellitus	-0.3812000
Type II diabetes mellitus	0.1802000
Tyrosine metabolism	-0.3173000
Ubiquinone and other terpenoid-quinone biosynthesis	0.3080000
Valine, leucine and isoleucine degradation	0.5601000
Vascular smooth muscle contraction	0.1791000
Vasopressin-regulated water reabsorption	0.0026760
VEGF signaling pathway	0.2843000

Vibrio cholerae infection	0.3939000
Viral carcinogenesis	0.3543000
Viral myocarditis	0.1653000
Vitamin B6 metabolism	0.0804600
Vitamin digestion and absorption	-0.4154000
Wnt signaling pathway	0.1564000
	sample.Max.
Acute myeloid leukemia	0.441000
Adherens junction	0.580400
Adipocytokine signaling pathway	0.258400
Adrenergic signaling in cardiomyocytes	-0.189300
African trypanosomiasis	-0.157900
Alanine, aspartate and glutamate metabolism	0.606000
Aldosterone-regulated sodium reabsorption	0.183400
Aldosterone synthesis and secretion	0.181400
Allograft rejection	-0.353300
alpha-Linolenic acid metabolism	0.065700
Alzheimer's disease	0.315300
Aminoacyl-tRNA biosynthesis	0.317800
Amino sugar and nucleotide sugar metabolism	0.459900
Amoebiasis	-0.054380
Amphetamine addiction	-0.033780
AMPK signaling pathway	0.490900
Amyotrophic lateral sclerosis (ALS)	0.207500
Antigen processing and presentation	-0.106000
Apoptosis	0.211800
Arachidonic acid metabolism	-0.802100
Arginine and proline metabolism	-0.014370
Arginine biosynthesis	0.314500
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.343900
Ascorbate and aldarate metabolism	-0.529500
Asthma	-0.369400
Autoimmune thyroid disease	-0.353300
Axon guidance	0.279200
Bacterial invasion of epithelial cells	0.497100
Basal cell carcinoma	0.108000
B cell receptor signaling pathway	0.154800
beta-Alanine metabolism	-0.130200
Bile secretion	0.016630
Biotin metabolism	0.274800
Bladder cancer	0.478000
Butanoate metabolism	0.218700
Caffeine metabolism	-0.353800
Carbohydrate digestion and absorption	0.142200
Cardiac muscle contraction	-0.176300
Cell adhesion molecules (CAMs)	-0.200100

Cell cycle	0.994400
Chagas disease (American trypanosomiasis)	0.307900
Chemical carcinogenesis	-0.760800
Choline metabolism in cancer	0.324100
Cholinergic synapse	0.222100
Chronic myeloid leukemia	0.585500
Circadian entrainment	0.008948
Circadian rhythm	0.530800
Citrate cycle (TCA cycle)	0.928800
Cocaine addiction	0.041760
Colorectal cancer	0.419300
Complement and coagulation cascades	-0.164800
Cysteine and methionine metabolism	0.563400
Cytosolic DNA-sensing pathway	0.256100
D-Glutamine and D-glutamate metabolism	0.361400
Dilated cardiomyopathy	0.190800
Dopaminergic synapse	0.073230
Dorso-ventral axis formation	0.307900
Drug metabolism - cytochrome P450	-0.424700
Drug metabolism - other enzymes	0.085890
ECM-receptor interaction	0.363600
Endocrine and other factor-regulated calcium reabsorption	-0.077590
Endometrial cancer	0.540900
Epithelial cell signaling in Helicobacter pylori infection	0.191500
Epstein-Barr virus infection	0.376800
ErbB signaling pathway	0.386200
Estrogen signaling pathway	0.211400
Ether lipid metabolism	0.287200
Fat digestion and absorption	0.337500
Fatty acid biosynthesis	0.380200
Fatty acid degradation	0.594500
Fatty acid elongation	0.318800
Fc epsilon RI signaling pathway	0.246000
Fc gamma R-mediated phagocytosis	0.370200
Folate biosynthesis	0.290900
FoxO signaling pathway	0.320000
Fructose and mannose metabolism	0.533300
GABAergic synapse	-0.342800
Galactose metabolism	0.525700
Gap junction	0.138400
Gastric acid secretion	0.223900
Glioma	0.438900
Glucagon signaling pathway	0.432900
Glutamatergic synapse	-0.103900
Glutathione metabolism	0.424600
Glycerolipid metabolism	0.704300

Glycerophospholipid metabolism	0.920000
Glycine, serine and threonine metabolism	0.039310
Glycolysis / Gluconeogenesis	0.601500
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.451900
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.435900
Glycosaminoglycan degradation	0.396600
Glycosphingolipid biosynthesis - ganglio series	0.264000
Glycosphingolipid biosynthesis - globo series	-0.076920
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.125500
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.477700
Glyoxylate and dicarboxylate metabolism	0.252000
GnRH signaling pathway	0.295000
Graft-versus-host disease	-0.287900
Hedgehog signaling pathway	0.079940
Hepatitis B	0.336500
Hepatitis C	0.423700
Herpes simplex infection	0.334300
HIF-1 signaling pathway	0.555100
Histidine metabolism	-0.338000
Huntington's disease	0.830300
Hypertrophic cardiomyopathy (HCM)	0.219500
Inflammatory bowel disease (IBD)	-0.161100
Inflammatory mediator regulation of TRP channels	0.153600
Influenza A	0.333400
Inositol phosphate metabolism	1.079000
Insulin resistance	0.361300
Insulin secretion	-0.073550
Insulin signaling pathway	0.461000
Intestinal immune network for IgA production	-0.191100
Legionellosis	-0.072510
Leishmaniasis	-0.035780
Leukocyte transendothelial migration	0.159700
Linoleic acid metabolism	-1.183000
Lipoic acid metabolism	-0.072570
Long-term depression	0.233900
Long-term potentiation	0.261400
Lysine biosynthesis	0.075300
Lysine degradation	0.646700
Malaria	-0.095390
Maturity onset diabetes of the young	-0.152000
Measles	0.194400
Melanogenesis	0.160300
Melanoma	0.489200
Metabolism of xenobiotics by cytochrome P450	-1.060000
Mineral absorption	-0.012960
Morphine addiction	-0.156100

mTOR signaling pathway	0.303600
Mucin type O-Glycan biosynthesis	-0.319200
Natural killer cell mediated cytotoxicity	0.053840
Neuroactive ligand-receptor interaction	-0.368000
Neurotrophin signaling pathway	0.345200
NF-kappa B signaling pathway	0.199500
N-Glycan biosynthesis	0.722000
Nicotinate and nicotinamide metabolism	-0.038370
Nitrogen metabolism	0.619700
NOD-like receptor signaling pathway	0.248800
Non-alcoholic fatty liver disease (NAFLD)	0.246800
Non-small cell lung cancer	0.513500
Notch signaling pathway	0.455800
One carbon pool by folate	1.027000
Oocyte meiosis	0.748300
Osteoclast differentiation	0.132300
Ovarian steroidogenesis	0.089870
Oxidative phosphorylation	0.488200
p53 signaling pathway	0.353400
Pancreatic cancer	0.499000
Pancreatic secretion	0.152500
Pantothenate and CoA biosynthesis	0.119500
Parkinson's disease	0.235400
Pathogenic Escherichia coli infection	0.330400
Pentose and glucuronate interconversions	-0.244800
Pentose phosphate pathway	0.447700
Pertussis	0.119600
Phenylalanine metabolism	-0.084930
Phenylalanine, tyrosine and tryptophan biosynthesis	0.346000
Phosphatidylinositol signaling system	1.369000
Phototransduction	-0.302200
Platelet activation	0.275300
Porphyrin and chlorophyll metabolism	0.013640
Primary bile acid biosynthesis	-0.239900
Prion diseases	0.355200
Progesterone-mediated oocyte maturation	0.259000
Prolactin signaling pathway	0.347500
Propanoate metabolism	0.416000
Prostate cancer	0.478900
Proximal tubule bicarbonate reclamation	0.184400
Pyrimidine metabolism	2.091000
Pyruvate metabolism	0.531200
Regulation of lipolysis in adipocytes	0.236600
Renal cell carcinoma	0.454200
Renin-angiotensin system	0.145400
Renin secretion	0.231700

Retinol metabolism	-1.696000
Retrograde endocannabinoid signaling	0.076980
Rheumatoid arthritis	-0.127500
Riboflavin metabolism	0.383500
RIG-I-like receptor signaling pathway	0.296300
Salivary secretion	0.073990
Salmonella infection	0.454100
Selenocompound metabolism	0.385000
Serotonergic synapse	-0.058990
Shigellosis	0.435000
Signaling pathways regulating pluripotency of stem cells	0.360700
Small cell lung cancer	0.645300
Sphingolipid metabolism	0.952600
Sphingolipid signaling pathway	0.438900
Staphylococcus aureus infection	-0.106200
Starch and sucrose metabolism	0.182400
Steroid biosynthesis	0.455100
Steroid hormone biosynthesis	-0.907600
Sulfur metabolism	0.544400
Synaptic vesicle cycle	0.603200
Synthesis and degradation of ketone bodies	0.152000
Systemic lupus erythematosus	-0.238500
Taste transduction	-0.038300
Taurine and hypotaurine metabolism	-0.292500
T cell receptor signaling pathway	0.188300
Terpenoid backbone biosynthesis	0.399900
TGF-beta signaling pathway	0.348700
Thiamine metabolism	0.149300
Thyroid cancer	0.360300
Thyroid hormone signaling pathway	0.632800
Thyroid hormone synthesis	0.012130
Tight junction	0.344200
TNF signaling pathway	0.306200
Toll-like receptor signaling pathway	0.118200
Toxoplasmosis	0.304200
Transcriptional misregulation in cancer	0.120200
Tryptophan metabolism	-0.253200
Type I diabetes mellitus	-0.345200
Type II diabetes mellitus	0.187900
Tyrosine metabolism	-0.285300
Ubiquinone and other terpenoid-quinone biosynthesis	0.316700
Valine, leucine and isoleucine degradation	0.571300
Vascular smooth muscle contraction	0.181400
Vasopressin-regulated water reabsorption	0.082960
VEGF signaling pathway	0.286600
Vibrio cholerae infection	0.442000

Viral carcinogenesis	0.365200
Viral myocarditis	0.172700
Vitamin B6 metabolism	0.141300
Vitamin digestion and absorption	-0.407000
Wnt signaling pathway	0.176700
	p.value
Acute myeloid leukemia	4.679187e-01
Adherens junction	1.384856e-01
Adipocytokine signaling pathway	1.952346e-01
Adrenergic signaling in cardiomyocytes	7.996300e-01
African trypanosomiasis	4.682416e-01
Alanine, aspartate and glutamate metabolism	9.493295e-02
Aldosterone-regulated sodium reabsorption	5.774420e-01
Aldosterone synthesis and secretion	1.202823e-01
Allograft rejection	1.543954e-01
alpha-Linolenic acid metabolism	1.608778e-01
Alzheimer's disease	4.586410e-01
Aminoacyl-tRNA biosynthesis	8.342750e-01
Amino sugar and nucleotide sugar metabolism	9.246784e-02
Amoebiasis	6.960623e-01
Amphetamine addiction	4.914580e-03
AMPK signaling pathway	7.178370e-01
Amyotrophic lateral sclerosis (ALS)	2.354015e-01
Antigen processing and presentation	1.139761e-02
Apoptosis	7.298173e-02
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	6.722878e-02
Autoimmune thyroid disease	1.543954e-01
Axon guidance	8.104930e-02
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
Biotin metabolism	5.909040e-01
Bladder cancer	1.837957e-01
Butanoate metabolism	2.951368e-01
Caffeine metabolism	3.638314e-02
Carbohydrate digestion and absorption	6.212188e-02
Cardiac muscle contraction	7.878523e-01
Cell adhesion molecules (CAMs)	6.529462e-01
Cell cycle	1.846657e-03

Chagas disease (American trypanosomiasis)	4.339063e-01
Chemical carcinogenesis	2.782784e-01
Choline metabolism in cancer	7.379284e-03
Cholinergic synapse	6.706821e-01
Chronic myeloid leukemia	3.874615e-01
Circadian entrainment	8.383082e-01
Circadian rhythm	2.025562e-05
Citrate cycle (TCA cycle)	3.967858e-01
Cocaine addiction	8.874662e-01
Colorectal cancer	9.205659e-01
Complement and coagulation cascades	6.211332e-02
Cysteine and methionine metabolism	4.755313e-01
Cytosolic DNA-sensing pathway	8.123825e-01
D-Glutamine and D-glutamate metabolism	3.422198e-02
Dilated cardiomyopathy	2.163240e-02
Dopaminergic synapse	7.009532e-01
Dorso-ventral axis formation	9.939906e-02
Drug metabolism - cytochrome P450	1.330599e-01
Drug metabolism - other enzymes	4.890267e-01
ECM-receptor interaction	3.614386e-02
Endocrine and other factor-regulated calcium reabsorption	6.800278e-01
Endometrial cancer	9.539643e-01
Epithelial cell signaling in Helicobacter pylori infection	6.307648e-03
Epstein-Barr virus infection	4.731113e-02
ErbB signaling pathway	4.800363e-01
Estrogen signaling pathway	9.952757e-02
Ether lipid metabolism	5.729844e-01
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	4.787622e-01
Fc gamma R-mediated phagocytosis	2.615663e-01
Folate biosynthesis	4.454349e-01
FoxO signaling pathway	5.366351e-01
Fructose and mannose metabolism	7.041975e-01
GABAergic synapse	6.242181e-01
Galactose metabolism	7.394396e-01
Gap junction	9.655488e-02
Gastric acid secretion	1.564822e-01
Glioma	1.511666e-01
Glucagon signaling pathway	3.046274e-01
Glutamatergic synapse	8.664972e-01
Glutathione metabolism	4.693660e-01
Glycerolipid metabolism	2.321556e-02
Glycerophospholipid metabolism	6.242891e-01

Glycine, serine and threonine metabolism	2.701033e-01
Glycolysis / Gluconeogenesis	9.089287e-01
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	5.834182e-01
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	6.083384e-01
Glycosaminoglycan degradation	1.698663e-01
Glycosphingolipid biosynthesis - ganglio series	5.480292e-01
Glycosphingolipid biosynthesis - globo series	5.091735e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	8.861219e-01
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	8.525705e-01
Glyoxylate and dicarboxylate metabolism	3.411235e-02
GnRH signaling pathway	4.250220e-02
Graft-versus-host disease	1.754120e-01
Hedgehog signaling pathway	1.776299e-02
Hepatitis B	5.722936e-01
Hepatitis C	3.957628e-01
Herpes simplex infection	1.180784e-01
HIF-1 signaling pathway	6.362035e-01
Histidine metabolism	7.065009e-02
Huntington's disease	1.654663e-01
Hypertrophic cardiomyopathy (HCM)	7.195646e-03
Inflammatory bowel disease (IBD)	1.827232e-02
Inflammatory mediator regulation of TRP channels	5.418516e-01
Influenza A	1.549479e-01
Inositol phosphate metabolism	7.361464e-01
Insulin resistance	7.270486e-03
Insulin secretion	5.217811e-01
Insulin signaling pathway	2.261515e-02
Intestinal immune network for IgA production	3.193241e-01
Legionellosis	5.494098e-01
Leishmaniasis	8.114609e-02
Leukocyte transendothelial migration	1.189518e-02
Linoleic acid metabolism	3.211003e-02
Lipoic acid metabolism	1.551629e-01
Long-term depression	3.576669e-01
Long-term potentiation	1.530562e-01
Lysine biosynthesis	1.904448e-01
Lysine degradation	3.002316e-02
Malaria	4.080270e-01
Maturity onset diabetes of the young	5.769450e-01
Measles	8.548674e-01
Melanogenesis	1.154453e-01
Melanoma	3.889056e-01
Metabolism of xenobiotics by cytochrome P450	5.284675e-01
Mineral absorption	3.341493e-01
Morphine addiction	9.645343e-01
mTOR signaling pathway	3.479779e-02

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	2.617666e-01
NF-kappa B signaling pathway	5.579694e-01
N-Glycan biosynthesis	6.200608e-01
Nicotinate and nicotinamide metabolism	8.990315e-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	2.942430e-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
Pertussis	3.423775e-01
Phenylalanine metabolism	3.569737e-01
Phenylalanine, tyrosine and tryptophan biosynthesis	6.245936e-04
Phosphatidylinositol signaling system	7.232668e-01
Phototransduction	8.429404e-01
Platelet activation	1.669319e-01
Porphyrin and chlorophyll metabolism	6.763440e-01
Primary bile acid biosynthesis	5.245803e-01
Prion diseases	9.646282e-01
Progesterone-mediated oocyte maturation	6.078750e-01
Prolactin signaling pathway	8.024226e-01
Propanoate metabolism	8.200740e-02
Prostate cancer	3.351046e-01
Proximal tubule bicarbonate reclamation	6.942137e-01
Pyrimidine metabolism	1.590097e-01
Pyruvate metabolism	2.865093e-01
Regulation of lipolysis in adipocytes	9.251571e-01
Renal cell carcinoma	3.570001e-01
Renin-angiotensin system	4.675981e-01
Renin secretion	7.198162e-01
Retinol metabolism	1.682504e-01

Retrograde endocannabinoid signaling	7.722285e-01
Rheumatoid arthritis	2.880170e-01
Riboflavin metabolism	1.889055e-01
RIG-I-like receptor signaling pathway	8.665204e-01
Salivary secretion	7.598067e-01
Salmonella infection	2.262457e-01
Selenocompound metabolism	3.287668e-01
Serotonergic synapse	5.225172e-01
Shigellosis	2.532261e-01
Signaling pathways regulating pluripotency of stem cells	6.684990e-02
Small cell lung cancer	8.860703e-01
Sphingolipid metabolism	8.673091e-01
Sphingolipid signaling pathway	9.823105e-02
Staphylococcus aureus infection	2.318215e-01
Starch and sucrose metabolism	2.209481e-02
Steroid biosynthesis	7.601862e-01
Steroid hormone biosynthesis	1.083607e-01
Sulfur metabolism	1.841501e-01
Synaptic vesicle cycle	4.780804e-01
Synthesis and degradation of ketone bodies	8.645675e-02
Systemic lupus erythematosus	2.161239e-01
Taste transduction	1.898864e-03
Taurine and hypotaurine metabolism	4.036299e-02
T cell receptor signaling pathway	2.344028e-01
Terpenoid backbone biosynthesis	1.941051e-01
TGF-beta signaling pathway	4.660747e-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	4.357471e-01
TNF signaling pathway	4.362596e-01
Toll-like receptor signaling pathway	6.850776e-02
Toxoplasmosis	6.927603e-01
Transcriptional misregulation in cancer	9.484421e-02
Tryptophan metabolism	8.721772e-01
Type I diabetes mellitus	3.637074e-01
Type II diabetes mellitus	3.081460e-01
Tyrosine metabolism	4.305364e-01
Ubiquinone and other terpenoid-quinone biosynthesis	5.242640e-01
Valine, leucine and isoleucine degradation	5.477987e-01
Vascular smooth muscle contraction	1.088051e-01
Vasopressin-regulated water reabsorption	2.905184e-01
VEGF signaling pathway	1.547803e-02
Vibrio cholerae infection	6.229735e-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	4.077512e-02
	q.value
Acute myeloid leukemia	0.729655224
Adherens junction	0.425599127
Adipocytokine signaling pathway	0.454219204
Adrenergic signaling in cardiomyocytes	0.898177554
African trypanosomiasis	0.729655224
Alanine, aspartate and glutamate metabolism	0.360195015
Aldosterone-regulated sodium reabsorption	0.769922683
Aldosterone synthesis and secretion	0.397454436
Allograft rejection	0.425599127
alpha-Linolenic acid metabolism	0.425599127
Alzheimer's disease	0.729655224
Aminoacyl-tRNA biosynthesis	0.923353957
Amino sugar and nucleotide sugar metabolism	0.360195015
Amoebiasis	0.835274717
Amphetamine addiction	0.152952431
AMPK signaling pathway	0.845665811
Amyotrophic lateral sclerosis (ALS)	0.521083028
Antigen processing and presentation	0.170772589
Apoptosis	0.336123663
Arachidonic acid metabolism	0.232272731
Arginine and proline metabolism	0.355733813
Arginine biosynthesis	0.833582476
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.729655224
Ascorbate and aldarate metabolism	0.425599127
Asthma	0.335587908
Autoimmune thyroid disease	0.425599127
Axon guidance	0.352786570
Bacterial invasion of epithelial cells	0.610637269
Basal cell carcinoma	0.095828421
B cell receptor signaling pathway	0.591412478
beta-Alanine metabolism	0.946869066
Bile secretion	0.941677743
Biotin metabolism	0.778763617
Bladder cancer	0.446662052
Butanoate metabolism	0.595497234
Caffeine metabolism	0.243981078
Carbohydrate digestion and absorption	0.329390443
Cardiac muscle contraction	0.893683211
Cell adhesion molecules (CAMs)	0.822495732
Cell cycle	0.095828421
Chagas disease (American trypanosomiasis)	0.729655224

Chemical carcinogenesis	0.587476595
Choline metabolism in cancer	0.152952431
Cholinergic synapse	0.833582476
Chronic myeloid leukemia	0.692738087
Circadian entrainment	0.923353957
Circadian rhythm	0.004618282
Citrate cycle (TCA cycle)	0.695901324
Cocaine addiction	0.928175670
Colorectal cancer	0.941677743
Complement and coagulation cascades	0.329390443
Cysteine and methionine metabolism	0.729655224
Cytosolic DNA-sensing pathway	0.903527859
D-Glutamine and D-glutamate metabolism	0.243981078
Dilated cardiomyopathy	0.223157028
Dopaminergic synapse	0.836234502
Dorso-ventral axis formation	0.360195015
Drug metabolism - cytochrome P450	0.421356403
Drug metabolism - other enzymes	0.736563603
ECM-receptor interaction	0.243981078
Endocrine and other factor-regulated calcium reabsorption	0.833582476
Endometrial cancer	0.962406430
Epithelial cell signaling in Helicobacter pylori infection	0.152952431
Epstein-Barr virus infection	0.283866785
ErbB signaling pathway	0.729655224
Estrogen signaling pathway	0.360195015
Ether lipid metabolism	0.769922683
Fat digestion and absorption	0.170772589
Fatty acid biosynthesis	0.421356403
Fatty acid degradation	0.425599127
Fatty acid elongation	0.322364758
Fc epsilon RI signaling pathway	0.729655224
Fc gamma R-mediated phagocytosis	0.563045240
Folate biosynthesis	0.729655224
FoxO signaling pathway	0.759184426
Fructose and mannose metabolism	0.836234502
GABAergic synapse	0.795183927
Galactose metabolism	0.855798090
Gap junction	0.360195015
Gastric acid secretion	0.425599127
Glioma	0.425599127
Glucagon signaling pathway	0.603956847
Glutamatergic synapse	0.924048990
Glutathione metabolism	0.729655224
Glycerolipid metabolism	0.223157028
Glycerophospholipid metabolism	0.795183927
Glycine, serine and threonine metabolism	0.575547243

Glycolysis / Gluconeogenesis	0.937718338
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.773368329
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.792577978
Glycosaminoglycan degradation	0.425599127
Glycosphingolipid biosynthesis - ganglio series	0.759184426
Glycosphingolipid biosynthesis - globo series	0.757802392
Glycosphingolipid biosynthesis - lacto and neolacto series	0.928175670
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.924048990
Glyoxylate and dicarboxylate metabolism	0.243981078
GnRH signaling pathway	0.261905427
Graft-versus-host disease	0.434716797
Hedgehog signaling pathway	0.219267852
Hepatitis B	0.769922683
Hepatitis C	0.695901324
Herpes simplex infection	0.395909877
HIF-1 signaling pathway	0.805857785
Histidine metabolism	0.335587908
Huntington's disease	0.425599127
Hypertrophic cardiomyopathy (HCM)	0.152952431
Inflammatory bowel disease (IBD)	0.219267852
Inflammatory mediator regulation of TRP channels	0.759184426
Influenza A	0.425599127
Inositol phosphate metabolism	0.855798090
Insulin resistance	0.152952431
Insulin secretion	0.757802392
Insulin signaling pathway	0.223157028
Intestinal immune network for IgA production	0.616999109
Legionellosis	0.759184426
Leishmaniasis	0.352786570
Leukocyte transendothelial migration	0.170772589
Linoleic acid metabolism	0.243981078
Lipoic acid metabolism	0.425599127
Long-term depression	0.652384478
Long-term potentiation	0.425599127
Lysine biosynthesis	0.452306337
Lysine degradation	0.243981078
Malaria	0.710153887
Maturity onset diabetes of the young	0.769922683
Measles	0.924048990
Melanogenesis	0.392858573
Melanoma	0.692738087
Metabolism of xenobiotics by cytochrome P450	0.757802392
Mineral absorption	0.631436802
Morphine addiction	0.964628189
mTOR signaling pathway	0.243981078
Mucin type O-Glycan biosynthesis	0.425599127

Natural killer cell mediated cytotoxicity	0.165374979
Neuroactive ligand-receptor interaction	0.769922683
Neurotrophin signaling pathway	0.563045240
NF-kappa B signaling pathway	0.766367624
N-Glycan biosynthesis	0.795183927
Nicotinate and nicotinamide metabolism	0.933472205
Nitrogen metabolism	0.170772589
NOD-like receptor signaling pathway	0.736563603
Non-alcoholic fatty liver disease (NAFLD)	0.933472205
Non-small cell lung cancer	0.924048990
Notch signaling pathway	0.729655224
One carbon pool by folate	0.223157028
Oocyte meiosis	0.111812335
Osteoclast differentiation	0.601674946
Ovarian steroidogenesis	0.898177554
Oxidative phosphorylation	0.375872205
p53 signaling pathway	0.336123663
Pancreatic cancer	0.425599127
Pancreatic secretion	0.757802392
Pantothenate and CoA biosynthesis	0.240004965
Parkinson's disease	0.425599127
Pathogenic Escherichia coli infection	0.729655224
Pentose and glucuronate interconversions	0.418060278
Pentose phosphate pathway	0.759184426
Pertussis	0.639853116
Phenylalanine metabolism	0.652384478
Phenylalanine, tyrosine and tryptophan biosynthesis	0.071203673
Phosphatidylinositol signaling system	0.845665811
Phototransduction	0.923992403
Platelet activation	0.425599127
Porphyrin and chlorophyll metabolism	0.833582476
Primary bile acid biosynthesis	0.757802392
Prion diseases	0.964628189
Progesterone-mediated oocyte maturation	0.792577978
Prolactin signaling pathway	0.898177554
Propanoate metabolism	0.352786570
Prostate cancer	0.631436802
Proximal tubule bicarbonate reclamation	0.835274717
Pyrimidine metabolism	0.425599127
Pyruvate metabolism	0.591412478
Regulation of lipolysis in adipocytes	0.941677743
Renal cell carcinoma	0.652384478
Renin-angiotensin system	0.729655224
Renin secretion	0.845665811
Retinol metabolism	0.425599127
Retrograde endocannabinoid signaling	0.880340497

Rheumatoid arthritis	0.591412478
Riboflavin metabolism	0.452306337
RIG-I-like receptor signaling pathway	0.924048990
Salivary secretion	0.870967069
Salmonella infection	0.515840214
Selenocompound metabolism	0.629906100
Serotonergic synapse	0.757802392
Shigellosis	0.555149615
Signaling pathways regulating pluripotency of stem cells	0.335587908
Small cell lung cancer	0.928175670
Sphingolipid metabolism	0.924048990
Sphingolipid signaling pathway	0.360195015
Staphylococcus aureus infection	0.521083028
Starch and sucrose metabolism	0.223157028
Steroid biosynthesis	0.870967069
Steroid hormone biosynthesis	0.375872205
Sulfur metabolism	0.446662052
Synaptic vesicle cycle	0.729655224
Synthesis and degradation of ketone bodies	0.357645684
Systemic lupus erythematosus	0.497739857
Taste transduction	0.095828421
Taurine and hypotaurine metabolism	0.258242430
T cell receptor signaling pathway	0.521083028
Terpenoid backbone biosynthesis	0.454219204
TGF-beta signaling pathway	0.729655224
Thiamine metabolism	0.357645684
Thyroid cancer	0.322364758
Thyroid hormone signaling pathway	0.729655224
Thyroid hormone synthesis	0.834999151
Tight junction	0.729655224
TNF signaling pathway	0.729655224
Toll-like receptor signaling pathway	0.335587908
Toxoplasmosis	0.835274717
Transcriptional misregulation in cancer	0.360195015
Tryptophan metabolism	0.924913525
Type I diabetes mellitus	0.658137258
Type II diabetes mellitus	0.605666337
Tyrosine metabolism	0.729655224
Ubiquinone and other terpenoid-quinone biosynthesis	0.757802392
Valine, leucine and isoleucine degradation	0.759184426
Vascular smooth muscle contraction	0.375872205
Vasopressin-regulated water reabsorption	0.591412478
VEGF signaling pathway	0.207587679
Vibrio cholerae infection	0.795183927
Viral carcinogenesis	0.243981078
Viral myocarditis	0.833582476

```
Vitamin B6 metabolism                                          0.322364758
Vitamin digestion and absorption                               0.335587908
Wnt signaling pathway                                          0.258242430

$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 perfomed (`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 expresed genes. The pathway topology is incorporated as the number of downstream differentially expressed genes. The gene-level log fold-changes are weigted by this numeber and sumed 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)

13438 node labels mapped to the expression data
Average coverage 84.29152 %
0 (out of 250) pathways without a mapped node

> res(Prs)

$results
                                                                nPRS
Acute myeloid leukemia                                -8.757058e-01
Adherens junction                                     -1.871544e-01
Adipocytokine signaling pathway                        2.365902e-01
Adrenergic signaling in cardiomyocytes                 5.545192e-01
African trypanosomiasis                                2.075031e-01
Alanine, aspartate and glutamate metabolism            2.911747e-01
Aldosterone-regulated sodium reabsorption              1.828989e+00
```

Aldosterone synthesis and secretion	1.653284e-01
Allograft rejection	1.975963e-01
alpha-Linolenic acid metabolism	-2.521153e-01
Alzheimer's disease	-5.403140e+00
Aminoacyl-tRNA biosynthesis	4.631720e-01
Amino sugar and nucleotide sugar metabolism	-1.280115e-01
Amoebiasis	-1.083550e-01
Amphetamine addiction	1.079770e+00
AMPK signaling pathway	-3.591934e+00
Amyotrophic lateral sclerosis (ALS)	9.034839e-01
Antigen processing and presentation	-3.330690e+00
Apoptosis	-1.428874e-01
Arachidonic acid metabolism	-7.306281e-02
Arginine and proline metabolism	2.324162e-01
Arginine biosynthesis	3.289903e-01
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	5.074864e+00
Ascorbate and aldarate metabolism	8.766778e-02
Asthma	2.169260e-01
Autoimmune thyroid disease	1.975963e-01
Axon guidance	-4.010740e+00
Bacterial invasion of epithelial cells	4.573273e-01
Basal cell carcinoma	-1.280164e-01
B cell receptor signaling pathway	-1.216442e-01
beta-Alanine metabolism	-6.980439e-01
Bile secretion	-2.453442e-02
Biotin metabolism	-2.890960e-02
Bladder cancer	-6.832513e-01
Butanoate metabolism	1.664397e-01
Caffeine metabolism	1.081820e-02
Carbohydrate digestion and absorption	-3.753598e-01
Cardiac muscle contraction	1.449673e-01
Cell adhesion molecules (CAMs)	-1.835738e+00
Cell cycle	4.225918e+00
Chagas disease (American trypanosomiasis)	-3.684096e-01
Chemical carcinogenesis	-1.541101e-01
Choline metabolism in cancer	-2.862509e-01
Cholinergic synapse	1.792469e-01
Chronic myeloid leukemia	-1.006035e-01
Circadian entrainment	1.390882e-01
Circadian rhythm	3.492448e-01
Citrate cycle (TCA cycle)	-4.474410e+00
Cocaine addiction	1.457267e-01
Colorectal cancer	3.093973e+00
Complement and coagulation cascades	-1.776114e-01
Cysteine and methionine metabolism	9.225282e-01
Cytosolic DNA-sensing pathway	-5.102432e-02

D-Glutamine and D-glutamate metabolism	8.055334e-01
Dilated cardiomyopathy	-1.267963e-01
Dopaminergic synapse	5.361469e-01
Dorso-ventral axis formation	1.253208e+00
Drug metabolism - cytochrome P450	-7.845828e-02
Drug metabolism - other enzymes	1.075684e+00
ECM-receptor interaction	-6.352777e+00
Endocrine and other factor-regulated calcium reabsorption	3.981345e-01
Endometrial cancer	2.857968e+00
Epithelial cell signaling in Helicobacter pylori infection	8.075071e-01
Epstein-Barr virus infection	8.070150e-01
ErbB signaling pathway	-2.225907e-01
Estrogen signaling pathway	-2.370791e-02
Ether lipid metabolism	-2.096543e-02
Fat digestion and absorption	-1.893146e+00
Fatty acid biosynthesis	-1.128466e+01
Fatty acid degradation	-1.235901e-01
Fatty acid elongation	3.670566e-01
Fc epsilon RI signaling pathway	-4.578475e-02
Fc gamma R-mediated phagocytosis	1.650835e-01
Folate biosynthesis	-5.646665e+00
FoxO signaling pathway	1.160173e+00
Fructose and mannose metabolism	-2.381785e+00
GABAergic synapse	2.388236e-01
Galactose metabolism	-2.842526e+00
Gap junction	1.551822e-01
Gastric acid secretion	8.958406e-02
Glioma	9.633307e-01
Glucagon signaling pathway	1.116289e-01
Glutamatergic synapse	1.247564e-01
Glutathione metabolism	-2.547699e+00
Glycerolipid metabolism	-1.495871e+00
Glycerophospholipid metabolism	-8.218747e-02
Glycine, serine and threonine metabolism	7.398260e-01
Glycolysis / Gluconeogenesis	-2.879914e+00
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	-4.616467e+00
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	8.645417e-02
Glycosaminoglycan degradation	-1.536259e+00
Glycosphingolipid biosynthesis - ganglio series	-2.781742e-01
Glycosphingolipid biosynthesis - globo series	3.561009e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	8.270278e-02
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	-2.253696e+00
Glyoxylate and dicarboxylate metabolism	2.062831e+00
GnRH signaling pathway	-1.765306e-01
Graft-versus-host disease	-1.857427e+00
Hedgehog signaling pathway	2.313621e-01

Hepatitis B	-1.334786e-01
Hepatitis C	8.955777e-01
Herpes simplex infection	7.432926e-01
HIF-1 signaling pathway	-2.142346e-01
Histidine metabolism	1.959294e-03
Huntington's disease	1.681885e+00
Hypertrophic cardiomyopathy (HCM)	8.491159e-01
Inflammatory bowel disease (IBD)	5.144805e-02
Inflammatory mediator regulation of TRP channels	-1.085036e-01
Influenza A	1.036728e+00
Inositol phosphate metabolism	1.557321e-01
Insulin resistance	-7.854521e-01
Insulin secretion	-2.563431e-01
Insulin signaling pathway	-6.857403e+00
Intestinal immune network for IgA production	2.185160e-01
Legionellosis	5.228206e-01
Leishmaniasis	-2.267709e-02
Leukocyte transendothelial migration	1.851726e-01
Linoleic acid metabolism	1.167018e-01
Lipoic acid metabolism	1.809009e-01
Long-term depression	4.033525e-01
Long-term potentiation	4.643614e-01
Lysine biosynthesis	-1.400604e-01
Lysine degradation	2.167617e-01
Malaria	2.841410e-01
Maturity onset diabetes of the young	1.393814e-01
Measles	-5.702947e-01
Melanogenesis	1.229798e-01
Melanoma	5.822366e-01
Metabolism of xenobiotics by cytochrome P450	-1.745206e-01
Mineral absorption	1.719307e-02
Morphine addiction	2.357541e-01
mTOR signaling pathway	-9.360460e-01
Mucin type O-Glycan biosynthesis	3.288883e-01
Natural killer cell mediated cytotoxicity	-3.970820e-01
Neuroactive ligand-receptor interaction	1.856085e-01
Neurotrophin signaling pathway	-5.020088e-02
NF-kappa B signaling pathway	-2.129930e-01
N-Glycan biosynthesis	-1.638571e-03
Nicotinate and nicotinamide metabolism	-8.646952e-01
Nitrogen metabolism	4.083317e-01
NOD-like receptor signaling pathway	7.708604e-01
Non-alcoholic fatty liver disease (NAFLD)	4.171127e-01
Non-small cell lung cancer	-9.475349e-02
Notch signaling pathway	3.457017e-01
One carbon pool by folate	1.351085e-01

Oocyte meiosis	3.820396e-02
Osteoclast differentiation	6.856608e-04
Ovarian steroidogenesis	1.762236e-02
Oxidative phosphorylation	1.567362e+00
p53 signaling pathway	7.921370e-02
Pancreatic cancer	-4.939072e-01
Pancreatic secretion	-6.081665e-01
Pantothenate and CoA biosynthesis	-1.280028e+00
Parkinson's disease	-9.329904e-01
Pathogenic Escherichia coli infection	1.144012e+00
Pentose and glucuronate interconversions	-5.521490e-01
Pentose phosphate pathway	-5.329018e+00
Pertussis	1.314848e-01
Phenylalanine metabolism	1.971739e-01
Phenylalanine, tyrosine and tryptophan biosynthesis	1.062658e-01
Phosphatidylinositol signaling system	-1.610870e-01
Phototransduction	4.144839e-01
Platelet activation	8.574245e-02
Porphyrin and chlorophyll metabolism	1.363315e-01
Primary bile acid biosynthesis	4.686044e-02
Prion diseases	-5.870368e-01
Progesterone-mediated oocyte maturation	6.154580e-01
Prolactin signaling pathway	-1.035240e+00
Propanoate metabolism	1.852099e+00
Prostate cancer	2.231073e+00
Proximal tubule bicarbonate reclamation	1.176763e-01
Pyrimidine metabolism	6.536715e-01
Pyruvate metabolism	2.980607e-01
Regulation of lipolysis in adipocytes	6.018218e-02
Renal cell carcinoma	-1.552942e+00
Renin-angiotensin system	1.109350e-01
Renin secretion	1.060612e-01
Retinol metabolism	1.588561e-01
Retrograde endocannabinoid signaling	1.762671e-01
Rheumatoid arthritis	1.955131e-01
Riboflavin metabolism	-3.206972e-01
RIG-I-like receptor signaling pathway	4.981838e-01
Salivary secretion	-1.918809e-01
Salmonella infection	-2.954309e+00
Selenocompound metabolism	-6.781847e-02
Serotonergic synapse	1.938262e-01
Shigellosis	1.829584e-01
Signaling pathways regulating pluripotency of stem cells	9.289859e-02
Small cell lung cancer	-7.329536e+00
Sphingolipid metabolism	-5.607138e-02
Sphingolipid signaling pathway	-1.289683e-01

Staphylococcus aureus infection	-1.833592e+00
Starch and sucrose metabolism	-1.410056e+00
Steroid biosynthesis	1.101469e-01
Steroid hormone biosynthesis	1.879819e-01
Sulfur metabolism	3.450028e-01
Synaptic vesicle cycle	2.100343e+00
Synthesis and degradation of ketone bodies	2.370092e-01
Systemic lupus erythematosus	-1.233601e+00
Taste transduction	-2.795396e-01
Taurine and hypotaurine metabolism	-2.281569e-01
T cell receptor signaling pathway	1.122377e-01
Terpenoid backbone biosynthesis	2.285792e-01
TGF-beta signaling pathway	-1.841945e+00
Thiamine metabolism	1.662534e-02
Thyroid cancer	4.459216e+00
Thyroid hormone signaling pathway	3.450046e-01
Thyroid hormone synthesis	-7.808438e-02
Tight junction	4.437347e-01
TNF signaling pathway	8.968805e-03
Toll-like receptor signaling pathway	1.320297e-01
Toxoplasmosis	-2.650337e+00
Transcriptional misregulation in cancer	1.527839e-01
Tryptophan metabolism	-8.449505e-02
Type I diabetes mellitus	1.365579e-01
Type II diabetes mellitus	-2.722620e-01
Tyrosine metabolism	1.726699e-01
Ubiquinone and other terpenoid-quinone biosynthesis	7.713386e-01
Valine, leucine and isoleucine degradation	2.749065e-01
Vascular smooth muscle contraction	3.722516e-02
Vasopressin-regulated water reabsorption	-7.462135e-01
VEGF signaling pathway	-2.542236e-03
Vibrio cholerae infection	1.504471e-01
Viral carcinogenesis	-4.335635e-01
Viral myocarditis	1.294218e+00
Vitamin B6 metabolism	-2.671455e-01
Vitamin digestion and absorption	1.524247e-02
Wnt signaling pathway	1.324357e-01

	p.value
Acute myeloid leukemia	0.92
Adherens junction	0.75
Adipocytokine signaling pathway	0.56
Adrenergic signaling in cardiomyocytes	0.15
African trypanosomiasis	0.41
Alanine, aspartate and glutamate metabolism	0.22
Aldosterone-regulated sodium reabsorption	0.02
Aldosterone synthesis and secretion	0.53

Allograft rejection	0.40
alpha-Linolenic acid metabolism	0.72
Alzheimer's disease	1.00
Aminoacyl-tRNA biosynthesis	0.10
Amino sugar and nucleotide sugar metabolism	0.86
Amoebiasis	0.71
Amphetamine addiction	0.04
AMPK signaling pathway	0.99
Amyotrophic lateral sclerosis (ALS)	0.05
Antigen processing and presentation	0.99
Apoptosis	0.72
Arachidonic acid metabolism	0.71
Arginine and proline metabolism	0.30
Arginine biosynthesis	0.15
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.00
Ascorbate and aldarate metabolism	0.48
Asthma	0.60
Autoimmune thyroid disease	0.40
Axon guidance	1.00
Bacterial invasion of epithelial cells	0.14
Basal cell carcinoma	0.84
B cell receptor signaling pathway	0.69
beta-Alanine metabolism	0.83
Bile secretion	0.69
Biotin metabolism	0.75
Bladder cancer	0.89
Butanoate metabolism	0.37
Caffeine metabolism	0.39
Carbohydrate digestion and absorption	0.83
Cardiac muscle contraction	0.63
Cell adhesion molecules (CAMs)	0.94
Cell cycle	0.00
Chagas disease (American trypanosomiasis)	0.86
Chemical carcinogenesis	0.89
Choline metabolism in cancer	0.76
Cholinergic synapse	0.45
Chronic myeloid leukemia	0.75
Circadian entrainment	0.51
Circadian rhythm	0.22
Citrate cycle (TCA cycle)	1.00
Cocaine addiction	0.48
Colorectal cancer	0.00
Complement and coagulation cascades	0.75
Cysteine and methionine metabolism	0.05
Cytosolic DNA-sensing pathway	0.84
D-Glutamine and D-glutamate metabolism	0.06

Dilated cardiomyopathy	0.71
Dopaminergic synapse	0.14
Dorso-ventral axis formation	0.05
Drug metabolism - cytochrome P450	0.81
Drug metabolism - other enzymes	0.05
ECM-receptor interaction	0.99
Endocrine and other factor-regulated calcium reabsorption	0.31
Endometrial cancer	0.01
Epithelial cell signaling in Helicobacter pylori infection	0.09
Epstein-Barr virus infection	0.15
ErbB signaling pathway	0.76
Estrogen signaling pathway	0.65
Ether lipid metabolism	0.67
Fat digestion and absorption	0.98
Fatty acid biosynthesis	1.00
Fatty acid degradation	0.73
Fatty acid elongation	0.13
Fc epsilon RI signaling pathway	0.76
Fc gamma R-mediated phagocytosis	0.55
Folate biosynthesis	1.00
FoxO signaling pathway	0.05
Fructose and mannose metabolism	0.96
GABAergic synapse	0.32
Galactose metabolism	0.98
Gap junction	0.23
Gastric acid secretion	0.59
Glioma	0.06
Glucagon signaling pathway	0.57
Glutamatergic synapse	0.54
Glutathione metabolism	0.98
Glycerolipid metabolism	0.95
Glycerophospholipid metabolism	0.79
Glycine, serine and threonine metabolism	0.04
Glycolysis / Gluconeogenesis	0.98
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.98
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.70
Glycosaminoglycan degradation	0.97
Glycosphingolipid biosynthesis - ganglio series	0.82
Glycosphingolipid biosynthesis - globo series	0.30
Glycosphingolipid biosynthesis - lacto and neolacto series	0.66
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.95
Glyoxylate and dicarboxylate metabolism	0.01
GnRH signaling pathway	0.77
Graft-versus-host disease	0.97
Hedgehog signaling pathway	0.53
Hepatitis B	0.74

Hepatitis C	0.03
Herpes simplex infection	0.02
HIF-1 signaling pathway	0.94
Histidine metabolism	0.65
Huntington's disease	0.02
Hypertrophic cardiomyopathy (HCM)	0.09
Inflammatory bowel disease (IBD)	0.53
Inflammatory mediator regulation of TRP channels	0.73
Influenza A	0.06
Inositol phosphate metabolism	0.56
Insulin resistance	0.88
Insulin secretion	0.76
Insulin signaling pathway	1.00
Intestinal immune network for IgA production	0.48
Legionellosis	0.10
Leishmaniasis	0.71
Leukocyte transendothelial migration	0.57
Linoleic acid metabolism	0.46
Lipoic acid metabolism	0.34
Long-term depression	0.29
Long-term potentiation	0.26
Lysine biosynthesis	0.79
Lysine degradation	0.50
Malaria	0.40
Maturity onset diabetes of the young	0.49
Measles	0.77
Melanogenesis	0.68
Melanoma	0.13
Metabolism of xenobiotics by cytochrome P450	0.81
Mineral absorption	0.70
Morphine addiction	0.36
mTOR signaling pathway	0.91
Mucin type O-Glycan biosynthesis	0.17
Natural killer cell mediated cytotoxicity	0.85
Neuroactive ligand-receptor interaction	0.25
Neurotrophin signaling pathway	0.72
NF-kappa B signaling pathway	0.80
N-Glycan biosynthesis	0.71
Nicotinate and nicotinamide metabolism	0.87
Nitrogen metabolism	0.11
NOD-like receptor signaling pathway	0.09
Non-alcoholic fatty liver disease (NAFLD)	0.36
Non-small cell lung cancer	0.78
Notch signaling pathway	0.36
One carbon pool by folate	0.42
Oocyte meiosis	0.62

Osteoclast differentiation	0.68
Ovarian steroidogenesis	0.68
Oxidative phosphorylation	0.00
p53 signaling pathway	0.42
Pancreatic cancer	0.86
Pancreatic secretion	0.88
Pantothenate and CoA biosynthesis	0.91
Parkinson's disease	0.96
Pathogenic Escherichia coli infection	0.00
Pentose and glucuronate interconversions	0.84
Pentose phosphate pathway	0.99
Pertussis	0.62
Phenylalanine metabolism	0.40
Phenylalanine, tyrosine and tryptophan biosynthesis	0.25
Phosphatidylinositol signaling system	0.80
Phototransduction	0.24
Platelet activation	0.62
Porphyrin and chlorophyll metabolism	0.55
Primary bile acid biosynthesis	0.66
Prion diseases	0.92
Progesterone-mediated oocyte maturation	0.03
Prolactin signaling pathway	0.89
Propanoate metabolism	0.00
Prostate cancer	0.03
Proximal tubule bicarbonate reclamation	0.55
Pyrimidine metabolism	0.03
Pyruvate metabolism	0.30
Regulation of lipolysis in adipocytes	0.72
Renal cell carcinoma	0.93
Renin-angiotensin system	0.62
Renin secretion	0.61
Retinol metabolism	0.70
Retrograde endocannabinoid signaling	0.48
Rheumatoid arthritis	0.54
Riboflavin metabolism	0.85
RIG-I-like receptor signaling pathway	0.18
Salivary secretion	0.72
Salmonella infection	0.97
Selenocompound metabolism	0.87
Serotonergic synapse	0.46
Shigellosis	0.45
Signaling pathways regulating pluripotency of stem cells	0.61
Small cell lung cancer	1.00
Sphingolipid metabolism	0.65
Sphingolipid signaling pathway	0.84
Staphylococcus aureus infection	0.96

Starch and sucrose metabolism	0.96
Steroid biosynthesis	0.52
Steroid hormone biosynthesis	0.47
Sulfur metabolism	0.18
Synaptic vesicle cycle	0.00
Synthesis and degradation of ketone bodies	0.19
Systemic lupus erythematosus	0.92
Taste transduction	0.82
Taurine and hypotaurine metabolism	0.76
T cell receptor signaling pathway	0.57
Terpenoid backbone biosynthesis	0.15
TGF-beta signaling pathway	0.92
Thiamine metabolism	0.72
Thyroid cancer	0.00
Thyroid hormone signaling pathway	0.40
Thyroid hormone synthesis	0.70
Tight junction	0.26
TNF signaling pathway	0.67
Toll-like receptor signaling pathway	0.61
Toxoplasmosis	0.99
Transcriptional misregulation in cancer	0.24
Tryptophan metabolism	0.78
Type I diabetes mellitus	0.53
Type II diabetes mellitus	0.80
Tyrosine metabolism	0.51
Ubiquinone and other terpenoid-quinone biosynthesis	0.03
Valine, leucine and isoleucine degradation	0.41
Vascular smooth muscle contraction	0.59
Vasopressin-regulated water reabsorption	0.84
VEGF signaling pathway	0.70
Vibrio cholerae infection	0.54
Viral carcinogenesis	0.86
Viral myocarditis	0.02
Vitamin B6 metabolism	0.86
Vitamin digestion and absorption	0.61
Wnt signaling pathway	0.57

	q.value
Acute myeloid leukemia	1.0000000
Adherens junction	1.0000000
Adipocytokine signaling pathway	1.0000000
Adrenergic signaling in cardiomyocytes	0.7953488
African trypanosomiasis	1.0000000
Alanine, aspartate and glutamate metabolism	1.0000000
Aldosterone-regulated sodium reabsorption	0.3257143
Aldosterone synthesis and secretion	1.0000000
Allograft rejection	1.0000000

alpha-Linolenic acid metabolism	1.0000000
Alzheimer's disease	1.0000000
Aminoacyl-tRNA biosynthesis	0.6705882
Amino sugar and nucleotide sugar metabolism	1.0000000
Amoebiasis	1.0000000
Amphetamine addiction	0.4342857
AMPK signaling pathway	1.0000000
Amyotrophic lateral sclerosis (ALS)	0.4384615
Antigen processing and presentation	1.0000000
Apoptosis	1.0000000
Arachidonic acid metabolism	1.0000000
Arginine and proline metabolism	1.0000000
Arginine biosynthesis	0.7953488
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.0000000
Ascorbate and aldarate metabolism	1.0000000
Asthma	1.0000000
Autoimmune thyroid disease	1.0000000
Axon guidance	1.0000000
Bacterial invasion of epithelial cells	0.7953488
Basal cell carcinoma	1.0000000
B cell receptor signaling pathway	1.0000000
beta-Alanine metabolism	1.0000000
Bile secretion	1.0000000
Biotin metabolism	1.0000000
Bladder cancer	1.0000000
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
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	1.0000000
Citrate cycle (TCA cycle)	1.0000000
Cocaine addiction	1.0000000
Colorectal cancer	0.0000000
Complement and coagulation cascades	1.0000000
Cysteine and methionine metabolism	0.4384615
Cytosolic DNA-sensing pathway	1.0000000
D-Glutamine and D-glutamate metabolism	0.4717241
Dilated cardiomyopathy	1.0000000

Dopaminergic synapse	0.7953488
Dorso-ventral axis formation	0.4384615
Drug metabolism - cytochrome P450	1.0000000
Drug metabolism - other enzymes	0.4384615
ECM-receptor interaction	1.0000000
Endocrine and other factor-regulated calcium reabsorption	1.0000000
Endometrial cancer	0.2280000
Epithelial cell signaling in Helicobacter pylori infection	0.6412500
Epstein-Barr virus infection	0.7953488
ErbB signaling pathway	1.0000000
Estrogen signaling pathway	1.0000000
Ether lipid metabolism	1.0000000
Fat digestion and absorption	1.0000000
Fatty acid biosynthesis	1.0000000
Fatty acid degradation	1.0000000
Fatty acid elongation	0.7953488
Fc epsilon RI signaling pathway	1.0000000
Fc gamma R-mediated phagocytosis	1.0000000
Folate biosynthesis	1.0000000
FoxO signaling pathway	0.4384615
Fructose and mannose metabolism	1.0000000
GABAergic synapse	1.0000000
Galactose metabolism	1.0000000
Gap junction	1.0000000
Gastric acid secretion	1.0000000
Glioma	0.4717241
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	0.4342857
Glycolysis / Gluconeogenesis	1.0000000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	1.0000000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	1.0000000
Glycosaminoglycan degradation	1.0000000
Glycosphingolipid biosynthesis - ganglio series	1.0000000
Glycosphingolipid biosynthesis - globo series	1.0000000
Glycosphingolipid biosynthesis - lacto and neolacto series	1.0000000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	1.0000000
Glyoxylate and dicarboxylate metabolism	0.2280000
GnRH signaling pathway	1.0000000
Graft-versus-host disease	1.0000000
Hedgehog signaling pathway	1.0000000
Hepatitis B	1.0000000
Hepatitis C	0.3600000

Herpes simplex infection	0.3257143
HIF-1 signaling pathway	1.0000000
Histidine metabolism	1.0000000
Huntington's disease	0.3257143
Hypertrophic cardiomyopathy (HCM)	0.6412500
Inflammatory bowel disease (IBD)	1.0000000
Inflammatory mediator regulation of TRP channels	1.0000000
Influenza A	0.4717241
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	0.6705882
Leishmaniasis	1.0000000
Leukocyte transendothelial migration	1.0000000
Linoleic acid metabolism	1.0000000
Lipoic acid metabolism	1.0000000
Long-term depression	1.0000000
Long-term potentiation	1.0000000
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	0.7953488
Metabolism of xenobiotics by cytochrome P450	1.0000000
Mineral absorption	1.0000000
Morphine addiction	1.0000000
mTOR signaling pathway	1.0000000
Mucin type O-Glycan biosynthesis	0.8809091
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	0.7165714
NOD-like receptor signaling pathway	0.6412500
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	1.0000000
Oocyte meiosis	1.0000000
Osteoclast differentiation	1.0000000

Ovarian steroidogenesis	1.0000000
Oxidative phosphorylation	0.0000000
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	0.0000000
Pentose and glucuronate interconversions	1.0000000
Pentose phosphate pathway	1.0000000
Pertussis	1.0000000
Phenylalanine metabolism	1.0000000
Phenylalanine, tyrosine and tryptophan biosynthesis	1.0000000
Phosphatidylinositol signaling system	1.0000000
Phototransduction	1.0000000
Platelet activation	1.0000000
Porphyrin and chlorophyll metabolism	1.0000000
Primary bile acid biosynthesis	1.0000000
Prion diseases	1.0000000
Progesterone-mediated oocyte maturation	0.3600000
Prolactin signaling pathway	1.0000000
Propanoate metabolism	0.0000000
Prostate cancer	0.3600000
Proximal tubule bicarbonate reclamation	1.0000000
Pyrimidine metabolism	0.3600000
Pyruvate metabolism	1.0000000
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
RIG-I-like receptor signaling pathway	0.8921739
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
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                                                   0.8921739
Synaptic vesicle cycle                                              0.0000000
Synthesis and degradation of ketone bodies                          0.9217021
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                                     0.7953488
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                                                      1.0000000
TNF signaling pathway                                               1.0000000
Toll-like receptor signaling pathway                                1.0000000
Toxoplasmosis                                                       1.0000000
Transcriptional misregulation in cancer                             1.0000000
Tryptophan metabolism                                               1.0000000
Type I diabetes mellitus                                            1.0000000
Type II diabetes mellitus                                           1.0000000
Tyrosine metabolism                                                 1.0000000
Ubiquinone and other terpenoid-quinone biosynthesis                 0.3600000
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                                                   0.3257143
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 agrument 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 weigthed form of common Gene Set Enrichment Analysis (GSEA). The weights are called Topological Influence Factor (TIF) and are defined as a geometic 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-Simirnov-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 possiblity that a weight of a gene that is tighly 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 topologial 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 necessarry 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 pallette) and the color of nodes (default value is `cli.node.color="white"`. The `alpha` controls the significance threshold for the cliques. If `add.legend=TRUE` then a legend is drawn containing the colors of edges of individual cliques, their genes and p-value. The `intersp` can be used to adjust the space between items of legened.

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

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

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

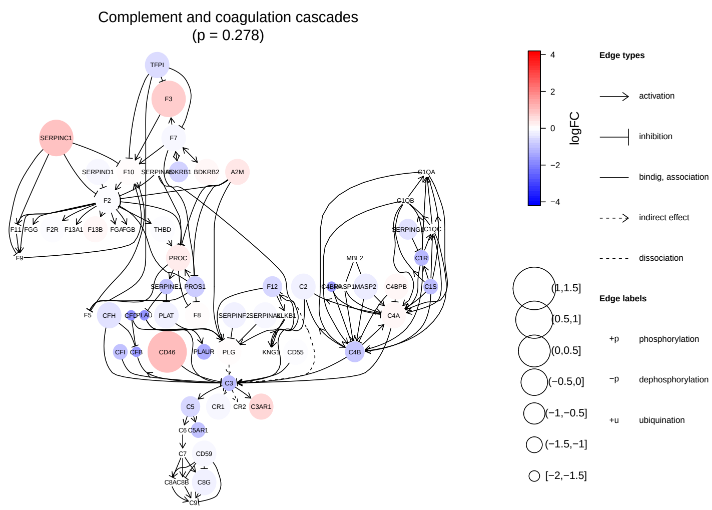
Complement and coagulation cascades
(p = 0.278)
TFPI
F3
F7
SERPINC1
SERPIND1
F10
BDKRB2
A2M
F2
F11
FGG
F2R
F13A1
F13B
THBD
F9
PROC
PROS1
F5
CFH
PLAT
F8
F12
C2
MBL2
MASP2
C4BPB
C1QA
C1QB
C1R
C1S
C4A
CFI
CFB
CD46
PLAUR
PLG
KNG1
CD55
C4B
C3
C5
CR1
CR2
C3AR1
C5AR1
C7
CD59
C8G
C9
logFC
4
2
0
−2
−4
Edge types
activation
inhibition
bindig, association
indirect effect
dissociation
Edge labels
+p
phosphorylation
−p
dephosphorylation
+u
ubiquination
(1,1.5]
(0.5,1]
(0,0.5]
(−0.5,0]
(−1,−0.5]
(−1.5,−1]
[−2,−1.5]

Figure 4.1:

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