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.

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 are 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`. 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.

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 can be achieved through `graphNEL` and conversion from and to `pathway`.

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 as objects named according to the database they come from: `kegg`, `biocarta`, `reactome`, `nci` etc.

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 are displayed as comments following the command applying a method with high time requirements.

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]
> pathways<-lapply(pathways, function(p) as(p,"pathway"))
> 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 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(exprLoi2008, classLoi2008, pathways, type="MA", nperm=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)
> #                                      t.value df.mean1 df.mean2 p.value
> #Acute myeloid leukemia                3080.663       30      224   0.000
> #Adherens junction                     1102.830       10      244   0.040
> #Adipocytokine signaling pathway       3196.432       25      229   0.000
> #Adrenergic signaling in cardiomyocytes 2178.476       26      228   0.055
> #African trypanosomiasis               1400.088        8      246   0.000
> #                                      lambda.value df.var  p.value.var
> #Acute myeloid leukemia                   217.92044    165 3.622794e-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                   13.77192     15 5.428926e-01
> #                                      qchisq.value var.equal
> #Acute myeloid leukemia                   195.97336         1
> #Adherens junction                         18.30704         1
> #Adipocytokine signaling pathway          147.67353         1
> #Adrenergic signaling in cardiomyocytes   101.87947         1
> #African trypanosomiasis                   24.99579         0
>
```

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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. The `nperm` 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 `test="var"`. Also the node labels of pathway topologies

are converted into entrezIDs. This is controlled with arguments `convert`, and `IDs`. A converstion into the gene symbols is available too. 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.

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")

99 node labels mapped to the expression data
Average coverage 31.47657 %
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 vec-

tor 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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the node labels of pathway topologies are converted into entrezIDs. This is controlled with arguments `convert`, and `IDs`. A converstion into the gene symbols is available too. 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 and the user can select between log fold-change (`gene.stat="logFC"`) or modified t-statistic from `limma` (`gene.stat="stats"`). 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", test="mean")
> #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(cli)
> #                                    alphaVar alphaMean  maxScore activation
> #Acute myeloid leukemia                0.788     0.008  4.336307  0.1255490
> #Adherens junction                     0.087     0.027        NA         NA
> #Adipocytokine signaling pathway       0.675     0.000 33.209403  0.8012589
> #Adrenergic signaling in cardiomyocytes 0.108    0.042        NA         NA
> #African trypanosomiasis               0.966     0.005        NA         NA
> #                                      impact
> #Acute myeloid leukemia             0.3846154
```

```
> #Adherens junction                              NA
> #Adipocytokine signaling pathway        0.5000000
> #Adrenergic signaling in cardiomyocytes         NA
> #African trypanosomiasis                        NA
> #
> #Acute myeloid leukemia
> #Adherens junction
> #Adipocytokine signaling pathway        32;51422;53632;5562;5563;5564;5565;5571;2538;51422
> #Adrenergic signaling in cardiomyocytes
> #African trypanosomiasis
> #
> #Acute myeloid leukemia
> #Adherens junction
> #Adipocytokine signaling pathway        32;51422;53632;5562;5563;5564;5565;5571,2538;51422
> #Adrenergic signaling in cardiomyocytes
> #African trypanosomiasis
```

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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the node labels of pathway topologies are converted into entrezIDs. This is controlled with arguments `convert`, and `IDs`. A converstion into the gene symbols is available too. 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 `test="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.

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
99 node labels mapped to the expression data
Average coverage 31.47657 %
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 26   4 0.712
African trypanosomiasis                 8   3 0.150
                                        tA pPERT    pG
Acute myeloid leukemia              -0.531 0.288 0.497
Adherens junction                   -0.272 0.570 0.419
Adipocytokine signaling pathway      0.159 0.676 0.146
Adrenergic signaling in cardiomyocytes -0.308 0.546 0.756
African trypanosomiasis              0.000 1.000 0.435
                                      pGFdr pGFWER
Acute myeloid leukemia              0.62125   1.00
Adherens junction                   0.62125   1.00
Adipocytokine signaling pathway     0.62125   0.73
Adrenergic signaling in cardiomyocytes 0.75600   1.00
African trypanosomiasis             0.62125   1.00
                                       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 "RNA-Seq" for RNA-Seq data). The others arguments are optional. By default, the node labels of pathway topologies are converted into entrezIDs. This is controlled with IDs argument. A converstion into the gene symbols is available too. 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 and the user can select between log fold-change (gene.stat="logFC") or modified t-statistic from limma (gene.stat="stats"). 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")

99 node labels mapped to the expression data
Average coverage 31.47657 %
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 -0.1776
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   -0.06505  0.004798
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  -0.006076    0.05157
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   0.1407  187 -0.2228
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   -0.05404
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 -0.0120200 -0.013690
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     0.03850  0.1995
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  0.478634091
African trypanosomiasis                 0.014492732
                                            q.value
Acute myeloid leukemia                  0.008363871
Adherens junction                       0.349563684
Adipocytokine signaling pathway         0.478634091
Adrenergic signaling in cardiomyocytes  0.478634091
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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the node labels of pathway topologies are converted into entrezIDs. This is controlled with `IDs` argument. A converstion into the gene symbols is available too. 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 and the user can select between log fold-change (`gene.stat="logFC"`) or modified t-statistic from `limma` (`gene.stat="stats"`). These statistics are later used in the visualization of a selected pathway.

2.6 TBS

TBS 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.

```
> tbs<-TBS( exprLoi2008, classLoi2008, pathways, type="MA",  logFC.th=-1, nperm=100)
> #99 node labels mapped to the expression data
> #Average coverage 31.47657 %
> #0 (out of 5) pathways without a mapped node
> #0 denoted as 0
> # 1 denoted as 1
> # Contrasts:  0 - 1
> #Found 40 differentially expressed genes
> #Preparing permutation table and downstream list
> #Observed scores..
> #Random scores..
> #100
> #Normalization and p-values...
> res(tbs)
> #                                      TBS.obs.norm    p     p.adj
> #Acute myeloid leukemia                 -0.8012546 0.90 0.9000000
> #Adherens junction                       2.9052652 0.03 0.1250000
> #Adipocytokine signaling pathway         0.8461749 0.10 0.1666667
> #Adrenergic signaling in cardiomyocytes  -0.5548923 0.80 0.9000000
```

```
> #African trypanosomiasis                    1.5028307 0.05 0.1250000
>
```

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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the node labels of pathway topologies are converted into entrezIDs. This is controlled with `IDs` argument. A converstion into the gene symbols is available too. 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 and the user can select between log fold-change (`gene.stat="logFC"`) or modified t-statistic from `limma` (`gene.stat="stats"`). 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)
> #99 node labels mapped to the expression data
> #Average coverage 31.47657 %
> #0 (out of 5) pathways without a mapped node
> #0 denoted as 0
> # 1 denoted as 1
> # Contrasts:  0 - 1
> #Preparing data..
> #100
> #Processing gene set:
> #Acute myeloid leukemia
> #Adherens junction
> #Adipocytokine signaling pathway
```

```
> #Adrenergic signaling in cardiomyocytes
> #African trypanosomiasis
> res(pwe)
> #                                              ES    p p.adj
> #Acute myeloid leukemia                 0.1995347 0.81  0.81
> #Adherens junction                      0.5757274 0.67  0.81
> #Adipocytokine signaling pathway        0.3272288 0.32  0.81
> #Adrenergic signaling in cardiomyocytes 0.3888446 0.68  0.81
> #African trypanosomiasis                0.3544996 0.46  0.81
```

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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the node labels of pathway topologies are converted into entrezIDs. This is controlled with `IDs` argument. A converstion into the gene symbols is available too. 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 and the user can select between log fold-change (`gene.stat="logFC"`) or modified t-statistic from `limma` (`gene.stat="stats"`). 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")
> pathways<-lapply(pathways, function(p) as(p,"pathway"))
```

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
> #Adrenergic signaling in cardiomyocytes
> #African trypanosomiasis
> #Alanine, aspartate and glutamate metabolism
> #Aldosterone-regulated sodium reabsorption
> #Allograft rejection
> #alpha-Linolenic acid metabolism
>
> res(top)
> #data frame with 0 columns and 1 rows
>
>
```

Apart from the expected arguments: a count 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 `RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the `"TMM"` method is used for the normalization. The user can select `DESeq2` by setting argument `norm.method` to `"DESeq2"`. The `nperm` argument sets the number of permutations to be used in the statistical tests. Other default settings are: both mean and variance tests are calculated, this can be changed to only variance test by setting `test="var"`. Also the node labels of pathway topologies are converted into entrezIDs. This is controlled with arguments `convert`, and `IDs`. A converstion into the gene symbols is available too. Please note, that the node labels should be the same as the rownames of count 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.

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")

13231 node labels mapped to the expression data
Average coverage 84.13307 %
0 (out of 244) 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
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	7.709514e-04
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
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)	3.523216e-03
Cocaine addiction	6.426999e-03
Colorectal cancer	8.763833e-02
Cysteine and methionine metabolism	NA
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	5.361170e-03
Galactose metabolism	4.544869e-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	NA
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 secretion	1.136487e-02
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	NA
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	1.839683e-02
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	4.981894e-01
Pyruvate metabolism	9.527474e-01
Renal cell carcinoma	2.426642e-02
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	1.450821e-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
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	1.717263e-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	0.0751350224
Adherens junction	0.2291825606
Adipocytokine signaling pathway	0.1635915418
African trypanosomiasis	0.3023641740
Alanine, aspartate and glutamate metabolism	NA
Aldosterone-regulated sodium reabsorption	0.2631296709
Allograft rejection	0.9054789556
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.0071464332
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	0.0139244642
Amoebiasis	0.1278858559
AMPK signaling pathway	0.0187606650
Amyotrophic lateral sclerosis (ALS)	0.0217665698
Antigen processing and presentation	0.2093626932
Arachidonic acid metabolism	NA
Arginine and proline metabolism	0.2775070513
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.0147129747
Ascorbate and aldarate metabolism	NA
Asthma	0.3753246417
Autoimmune thyroid disease	0.9054789556
B cell receptor signaling pathway	0.2317475457
beta-Alanine metabolism	0.1038487898
Bile secretion	0.0806054954
Biotin metabolism	NA
Bladder cancer	0.0139244642
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	0.0139244642
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.1571479772
Chagas disease (American trypanosomiasis)	0.0139244642
Chemical carcinogenesis	NA
Choline metabolism in cancer	0.3657249529
Chronic myeloid leukemia	0.1179382521
Circadian rhythm	0.1150404060
Citrate cycle (TCA cycle)	0.0217665698
Cocaine addiction	0.0287929572
Colorectal cancer	0.1635915418
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	0.0836245785
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	0.0147129747

Dorso-ventral axis formation	0.0751350224
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
Endocrine and other factor-regulated calcium reabsorption	0.6512514896
Endometrial cancer	0.0836245785
Epstein-Barr virus infection	0.4525233419
Ether lipid metabolism	NA
Fat digestion and absorption	NA
Fatty acid biosynthesis	NA
Fatty acid degradation	0.0519762588
Fatty acid elongation	NA
Folate biosynthesis	NA
Fructose and mannose metabolism	0.0272932279
Galactose metabolism	0.1038487898
Gastric acid secretion	0.0350347551
Glucagon signaling pathway	0.0564513419
Glutathione metabolism	NA
Glycerolipid metabolism	0.0217665698
Glycerophospholipid metabolism	NA
Glycine, serine and threonine metabolism	NA
Glycolysis / Gluconeogenesis	0.0287929572
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	0.0004271659
GnRH signaling pathway	0.4578055012
Graft-versus-host disease	0.9054789556
Hedgehog signaling pathway	0.6952843692
Hepatitis C	0.0562054729
Herpes simplex infection	0.1038487898
Histidine metabolism	NA
Huntington's disease	0.0147129747
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	0.8888612929
Inflammatory mediator regulation of TRP channels	0.2595245843
Influenza A	0.2291825606
Inositol phosphate metabolism	NA
Insulin secretion	0.0438919249
Insulin signaling pathway	0.0931402131
Intestinal immune network for IgA production	0.3272800279
Legionellosis	0.4952257506
Leishmaniasis	0.9648593562

Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	0.8720749352
Maturity onset diabetes of the young	0.9061224930
Measles	0.3498674940
Melanogenesis	0.0836245785
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	0.5027760908
mTOR signaling pathway	0.0217665698
Mucin type O-Glycan biosynthesis	NA
Neuroactive ligand-receptor interaction	0.8469525995
Neurotrophin signaling pathway	0.5245559185
N-Glycan biosynthesis	0.5245559185
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	0.0519762588
Non-alcoholic fatty liver disease (NAFLD)	0.1982710293
One carbon pool by folate	0.0147129747
Oocyte meiosis	0.1443417524
Osteoclast differentiation	0.0407688569
Ovarian steroidogenesis	0.9044166524
Oxidative phosphorylation	NA
Pancreatic cancer	0.3753246417
Pancreatic secretion	0.0806054954
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	0.0217665698
Pathogenic Escherichia coli infection	0.5205629731
Pentose and glucuronate interconversions	0.2595245843
Pentose phosphate pathway	0.9648593562
Pertussis	0.0564513419
Phenylalanine metabolism	0.0565203828
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	0.0572345893
Phototransduction	0.0217665698
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	0.0287929572
Progesterone-mediated oocyte maturation	0.0350347551
Propanoate metabolism	NA
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	0.5999700664
Pyruvate metabolism	0.9648593562
Renal cell carcinoma	0.0715220805
Retinol metabolism	NA

Rheumatoid arthritis	0.9054789556
Riboflavin metabolism	NA
RIG-I-like receptor signaling pathway	0.8787212652
Salivary secretion	0.9054789556
Salmonella infection	0.1244842846
Selenocompound metabolism	NA
Shigellosis	0.2354955972
Sphingolipid metabolism	NA
Staphylococcus aureus infection	0.2485136634
Starch and sucrose metabolism	0.0217665698
Steroid biosynthesis	NA
Steroid hormone biosynthesis	NA
Sulfur metabolism	NA
Synaptic vesicle cycle	NA
Synthesis and degradation of ketone bodies	NA
Systemic lupus erythematosus	0.0627655631
Taste transduction	0.4338977907
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	0.0957923469
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	0.0087186543
Tight junction	0.2291825606
TNF signaling pathway	0.2948056813
Toxoplasmosis	0.9648593562
Transcriptional misregulation in cancer	0.1571479772
Tryptophan metabolism	NA
Type I diabetes mellitus	0.9054789556
Type II diabetes mellitus	0.2508490297
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	0.1896366992
Vasopressin-regulated water reabsorption	0.0147948812
VEGF signaling pathway	0.1038487898
Vibrio cholerae infection	0.4423803748
Viral carcinogenesis	0.0147129747
Viral myocarditis	0.5205629731
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	0.1896366992

	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

Allograft rejection	7.337280e-01
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	NA
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	9.675025e-03
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
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)	NA
Cocaine addiction	NA
Colorectal cancer	NA
Cysteine and methionine metabolism	NA
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	5.743057e-07
Galactose metabolism	1.093951e-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	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	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 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	NA
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	2.397700e-01
Pyruvate metabolism	9.036982e-04
Renal cell carcinoma	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	1.858976e-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
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
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	7.709514e-04
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
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)	3.523216e-03
Cocaine addiction	6.426999e-03
Colorectal cancer	8.763833e-02
Cysteine and methionine metabolism	NA
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	5.361170e-03
Galactose metabolism	4.544869e-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	NA
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 secretion	1.136487e-02
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	NA
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	1.839683e-02
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	4.981894e-01
Pyruvate metabolism	9.527474e-01
Renal cell carcinoma	2.426642e-02
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	1.450821e-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
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	1.717263e-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
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
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)	2
Cocaine addiction	4
Colorectal cancer	5
Cysteine and methionine metabolism	NA
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	1
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	NA
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 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	NA
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	2
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
Renal cell carcinoma	4
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
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
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	2.255340e-03
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
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)	1.217086e-02
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	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	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	NA
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 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	NA
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	1.325214e-03
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
Renal cell carcinoma	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
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
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	8.192660e-03
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
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)	7.590794e-02
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	NA
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	NA
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	NA
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 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	NA
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	8.533479e-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
Renal cell carcinoma	2.205904e-03

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
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
Allograft rejection	1
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	1
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
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)	1
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	NA
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	NA
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	NA
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 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	NA
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
Renal cell carcinoma	3
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
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
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	2.559033e-02
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	4.755887e-02
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
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	2.604876e-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	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 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	1.739716e-03
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
Renal cell carcinoma	1.987117e-02
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
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
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	6.140781e-01
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	9.186695e-03
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
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	6.384925e-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	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 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	2.052252e-04
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
Renal cell carcinoma	1.021018e-03
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
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
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	1
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	1
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
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	1
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 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	1
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
Renal cell carcinoma	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
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
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
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 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

Renal cell carcinoma	NA
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
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
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
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 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
Renal cell carcinoma	NA
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
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
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
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 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
Renal cell carcinoma	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	1
Terpenoid backbone biosynthesis	NA
Thiamine metabolism	NA
Thyroid cancer	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
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	6.219542e-02
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	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 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
Renal cell carcinoma	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
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
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	4.813870e-03
Amyotrophic lateral sclerosis (ALS)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	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 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
Renal cell carcinoma	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
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
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)	NA
Antigen processing and presentation	NA
Arachidonic acid metabolism	NA
Arginine and proline metabolism	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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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

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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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
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
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 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
Renal cell carcinoma	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
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 count 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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the `"TMM"` method is used for the normalization. The user can select `DESeq2` by setting argument `norm.method` to `"DESeq2"`. The node labels of pathway topologies are automatically converted into entrezIDs. This is controlled with arguments `convert`, and `IDs`. A converstion into the gene symbols

is available too. Please note, that the node labels should be the same as the rownames of count 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 and the user can select between log fold-change (`gene.stat="logFC"`) or modified t-statistic from `limma` (`gene.stat="stats"`). 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 count 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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the `"TMM"` method is used for the normalization. The user can select `DESeq2` by setting argument `norm.method` to `"DESeq2"`. The node labels of pathway topologies are automatically converted into entrezIDs. This is controlled with arguments `convert`, and `IDs`. A converstion into the gene symbols is available too. Please note, that the node labels should be the same as the rownames of count 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.

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)

13231 node labels mapped to the expression data
Average coverage 84.13307 %
0 (out of 244) pathways without a mapped node

> res(spi)

$results
                                                                pSize
Acute myeloid leukemia                                             50
Adherens junction                                                  65
Adipocytokine signaling pathway                                    57
Adrenergic signaling in cardiomyocytes                            125
African trypanosomiasis                                            20
```

Alanine, aspartate and glutamate metabolism	30
Aldosterone-regulated sodium reabsorption	25
Allograft rejection	6
alpha-Linolenic acid metabolism	15
Alzheimer's disease	44
Aminoacyl-tRNA biosynthesis	13
Amino sugar and nucleotide sugar metabolism	40
Amoebiasis	35
Amphetamine addiction	52
AMPK signaling pathway	87
Amyotrophic lateral sclerosis (ALS)	34
Antigen processing and presentation	33
Apoptosis	75
Arachidonic acid metabolism	39
Arginine and proline metabolism	55
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	50
Basal cell carcinoma	41
B cell receptor signaling pathway	64
beta-Alanine metabolism	28
Bile secretion	21
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	79
Chronic myeloid leukemia	69
Circadian entrainment	76
Circadian rhythm	29
Citrate cycle (TCA cycle)	29
Cocaine addiction	36
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	62
Dopaminergic synapse	106
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	33
Endometrial cancer	42
Epithelial cell signaling in Helicobacter pylori infection	32
Epstein-Barr virus infection	76
ErbB signaling pathway	77
Estrogen signaling pathway	78
Ether lipid metabolism	33
Fat digestion and absorption	8
Fatty acid biosynthesis	12
Fatty acid degradation	34
Fatty acid elongation	22
Fc epsilon RI signaling pathway	54
Fc gamma R-mediated phagocytosis	80
Folate biosynthesis	13
FoxO signaling pathway	115
Fructose and mannose metabolism	31
GABAergic synapse	46
Galactose metabolism	20
Gap junction	75
Gastric acid secretion	48
Glioma	59
Glucagon signaling pathway	77
Glutamatergic synapse	71
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	20
GnRH signaling pathway	77
Graft-versus-host disease	11
Hedgehog signaling pathway	44

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	73
Influenza A	96
Inositol phosphate metabolism	57
Insulin secretion	44
Insulin signaling pathway	124
Intestinal immune network for IgA production	20
Legionellosis	37
Leishmaniasis	43
Leukocyte transendothelial migration	73
Linoleic acid metabolism	16
Lipoic acid metabolism	3
Long-term potentiation	56
Lysine biosynthesis	2
Lysine degradation	47
Malaria	10
Maturity onset diabetes of the young	11
Measles	74
Melanogenesis	88
Melanoma	56
Metabolism of xenobiotics by cytochrome P450	43
Mineral absorption	4
Morphine addiction	44
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	22
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	98
Osteoclast differentiation	97

Ovarian steroidogenesis	27
Oxidative phosphorylation	40
p53 signaling pathway	67
Pancreatic cancer	62
Pancreatic secretion	24
Pantothenate and CoA biosynthesis	11
Parkinson's disease	27
Pathogenic Escherichia coli infection	39
Pentose and glucuronate interconversions	18
Pentose phosphate pathway	28
Pertussis	45
Phenylalanine metabolism	13
Phenylalanine, tyrosine and tryptophan biosynthesis	3
Phosphatidylinositol signaling system	68
Phototransduction	22
Platelet activation	103
Porphyrin and chlorophyll metabolism	24
Primary bile acid biosynthesis	14
Prion diseases	21
Progesterone-mediated oocyte maturation	70
Prolactin signaling pathway	61
Propanoate metabolism	21
Prostate cancer	79
Proximal tubule bicarbonate reclamation	7
Pyrimidine metabolism	98
Pyruvate metabolism	37
Renal cell carcinoma	52
Retinol metabolism	39
Retrograde endocannabinoid signaling	50
Rheumatoid arthritis	13
Riboflavin metabolism	9
RIG-I-like receptor signaling pathway	48
Salivary secretion	37
Salmonella infection	69
Selenocompound metabolism	14
Serotonergic synapse	62
Shigellosis	47
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	29
Taurine and hypotaurine metabolism	8
T cell receptor signaling pathway	79
Terpenoid backbone biosynthesis	20
TGF-beta signaling pathway	74
Thiamine metabolism	3
Thyroid cancer	26
Thyroid hormone signaling pathway	103
Thyroid hormone synthesis	40
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	8
Valine, leucine and isoleucine degradation	45
Vascular smooth muscle contraction	88
Vasopressin-regulated water reabsorption	21
VEGF signaling pathway	53
Vibrio cholerae infection	18
Viral carcinogenesis	6
Viral myocarditis	26
Vitamin B6 metabolism	5
Vitamin digestion and absorption	2
Wnt signaling pathway	121
	NDE
Acute myeloid leukemia	20
Adherens junction	32
Adipocytokine signaling pathway	20
Adrenergic signaling in cardiomyocytes	43
African trypanosomiasis	3
Alanine, aspartate and glutamate metabolism	11
Aldosterone-regulated sodium reabsorption	9
Allograft rejection	0
alpha-Linolenic acid metabolism	6
Alzheimer's disease	20
Aminoacyl-tRNA biosynthesis	6
Amino sugar and nucleotide sugar metabolism	20
Amoebiasis	11
Amphetamine addiction	21

AMPK signaling pathway	42
Amyotrophic lateral sclerosis (ALS)	18
Antigen processing and presentation	16
Apoptosis	25
Arachidonic acid metabolism	15
Arginine and proline metabolism	19
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	6
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	23
Chronic myeloid leukemia	28
Circadian entrainment	23
Circadian rhythm	10
Citrate cycle (TCA cycle)	15
Cocaine addiction	13
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	16
Dopaminergic synapse	34
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	8
Endometrial cancer	19

Epithelial cell signaling in Helicobacter pylori infection	15
Epstein-Barr virus infection	28
ErbB signaling pathway	30
Estrogen signaling pathway	30
Ether lipid metabolism	11
Fat digestion and absorption	5
Fatty acid biosynthesis	4
Fatty acid degradation	15
Fatty acid elongation	6
Fc epsilon RI signaling pathway	21
Fc gamma R-mediated phagocytosis	29
Folate biosynthesis	9
FoxO signaling pathway	49
Fructose and mannose metabolism	22
GABAergic synapse	10
Galactose metabolism	13
Gap junction	25
Gastric acid secretion	14
Glioma	23
Glucagon signaling pathway	24
Glutamatergic synapse	21
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	11
GnRH signaling pathway	30
Graft-versus-host disease	5
Hedgehog signaling pathway	16
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	25

Influenza A	32
Inositol phosphate metabolism	21
Insulin secretion	13
Insulin signaling pathway	48
Intestinal immune network for IgA production	5
Legionellosis	10
Leishmaniasis	15
Leukocyte transendothelial migration	26
Linoleic acid metabolism	4
Lipoic acid metabolism	1
Long-term potentiation	23
Lysine biosynthesis	1
Lysine degradation	14
Malaria	1
Maturity onset diabetes of the young	4
Measles	24
Melanogenesis	32
Melanoma	21
Metabolism of xenobiotics by cytochrome P450	15
Mineral absorption	1
Morphine addiction	7
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	44
Osteoclast differentiation	34
Ovarian steroidogenesis	9
Oxidative phosphorylation	22
p53 signaling pathway	25
Pancreatic cancer	29
Pancreatic secretion	6
Pantothenate and CoA biosynthesis	5
Parkinson's disease	8
Pathogenic Escherichia coli infection	8
Pentose and glucuronate interconversions	6

Pentose phosphate pathway	17
Pertussis	17
Phenylalanine metabolism	7
Phenylalanine, tyrosine and tryptophan biosynthesis	1
Phosphatidylinositol signaling system	26
Phototransduction	4
Platelet activation	34
Porphyrin and chlorophyll metabolism	6
Primary bile acid biosynthesis	5
Prion diseases	9
Progesterone-mediated oocyte maturation	30
Prolactin signaling pathway	25
Propanoate metabolism	10
Prostate cancer	39
Proximal tubule bicarbonate reclamation	3
Pyrimidine metabolism	37
Pyruvate metabolism	17
Renal cell carcinoma	26
Retinol metabolism	12
Retrograde endocannabinoid signaling	12
Rheumatoid arthritis	2
Riboflavin metabolism	5
RIG-I-like receptor signaling pathway	26
Salivary secretion	10
Salmonella infection	22
Selenocompound metabolism	5
Serotonergic synapse	16
Shigellosis	14
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	7
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	40
Thyroid hormone synthesis	13
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	31
Vasopressin-regulated water reabsorption	8
VEGF signaling pathway	19
Vibrio cholerae infection	3
Viral carcinogenesis	2
Viral myocarditis	9
Vitamin B6 metabolism	3
Vitamin digestion and absorption	0
Wnt signaling pathway	43

	pNDE
Acute myeloid leukemia	0.381
Adherens junction	0.029
Adipocytokine signaling pathway	0.666
Adrenergic signaling in cardiomyocytes	0.757
African trypanosomiasis	0.992
Alanine, aspartate and glutamate metabolism	0.584
Aldosterone-regulated sodium reabsorption	0.616
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	0.804
Amphetamine addiction	0.355
AMPK signaling pathway	0.020
Amyotrophic lateral sclerosis (ALS)	0.042
Antigen processing and presentation	0.119
Apoptosis	0.781
Arachidonic acid metabolism	0.486
Arginine and proline metabolism	0.695
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	0.881
Basal cell carcinoma	0.082
B cell receptor signaling pathway	0.617
beta-Alanine metabolism	0.323
Bile secretion	0.848
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	0.944
Chronic myeloid leukemia	0.309
Circadian entrainment	0.912
Circadian rhythm	0.677
Citrate cycle (TCA cycle)	0.075
Cocaine addiction	0.606
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	0.978
Dopaminergic synapse	0.877
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	0.959
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	0.437
Ether lipid metabolism	0.728
Fat digestion and absorption	0.131
Fatty acid biosynthesis	0.706
Fatty acid degradation	0.245
Fatty acid elongation	0.880

Fc epsilon RI signaling pathway	0.438
Fc gamma R-mediated phagocytosis	0.598
Folate biosynthesis	0.019
FoxO signaling pathway	0.125
Fructose and mannose metabolism	0.000
GABAergic synapse	0.991
Galactose metabolism	0.010
Gap junction	0.781
Gastric acid secretion	0.901
Glioma	0.425
Glucagon signaling pathway	0.882
Glutamatergic synapse	0.925
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	0.078
GnRH signaling pathway	0.403
Graft-versus-host disease	0.385
Hedgehog signaling pathway	0.592
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	0.727
Influenza A	0.803
Inositol phosphate metabolism	0.560
Insulin secretion	0.883
Insulin signaling pathway	0.379
Intestinal immune network for IgA production	0.914
Legionellosis	0.926
Leishmaniasis	0.668
Leukocyte transendothelial migration	0.640
Linoleic acid metabolism	0.899

Lipoic acid metabolism	0.750
Long-term potentiation	0.308
Lysine biosynthesis	0.603
Lysine degradation	0.882
Malaria	0.990
Maturity onset diabetes of the young	0.629
Measles	0.826
Melanogenesis	0.590
Melanoma	0.520
Metabolism of xenobiotics by cytochrome P450	0.668
Mineral absorption	0.843
Morphine addiction	0.999
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	0.029
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	0.066
Osteoclast differentiation	0.691
Ovarian steroidogenesis	0.720
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	0.840
Pathogenic Escherichia coli infection	0.992
Pentose and glucuronate interconversions	0.709
Pentose phosphate pathway	0.009
Pertussis	0.514
Phenylalanine metabolism	0.166
Phenylalanine, tyrosine and tryptophan biosynthesis	0.750
Phosphatidylinositol signaling system	0.462
Phototransduction	0.984
Platelet activation	0.828
Porphyrin and chlorophyll metabolism	0.928
Primary bile acid biosynthesis	0.638

Prion diseases	0.365
Progesterone-mediated oocyte maturation	0.186
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
Renal cell carcinoma	0.038
Retinol metabolism	0.835
Retrograde endocannabinoid signaling	0.983
Rheumatoid arthritis	0.979
Riboflavin metabolism	0.207
RIG-I-like receptor signaling pathway	0.011
Salivary secretion	0.926
Salmonella infection	0.844
Selenocompound metabolism	0.638
Serotonergic synapse	0.978
Shigellosis	0.882
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	0.952
Taurine and hypotaurine metabolism	0.619
T cell receptor signaling pathway	0.381
Terpenoid backbone biosynthesis	0.474
TGF-beta signaling pathway	0.303
Thiamine metabolism	0.750
Thyroid cancer	0.122
Thyroid hormone signaling pathway	0.386
Thyroid hormone synthesis	0.773
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	0.619
Valine, leucine and isoleucine degradation	0.635
Vascular smooth muscle contraction	0.674
Vasopressin-regulated water reabsorption	0.541
VEGF signaling pathway	0.620
Vibrio cholerae infection	0.984
Viral carcinogenesis	0.717
Viral myocarditis	0.670
Vitamin B6 metabolism	0.267
Vitamin digestion and absorption	1.000
Wnt signaling pathway	0.664

	tA
Acute myeloid leukemia	-10277.848
Adherens junction	-23962.953
Adipocytokine signaling pathway	-16209.184
Adrenergic signaling in cardiomyocytes	-11574.744
African trypanosomiasis	-585.250
Alanine, aspartate and glutamate metabolism	0.000
Aldosterone-regulated sodium reabsorption	464.792
Allograft rejection	NA
alpha-Linolenic acid metabolism	0.000
Alzheimer's disease	-23427.000
Aminoacyl-tRNA biosynthesis	0.000
Amino sugar and nucleotide sugar metabolism	0.000
Amoebiasis	-355.625
Amphetamine addiction	360.596
AMPK signaling pathway	9627.352
Amyotrophic lateral sclerosis (ALS)	-37032.500
Antigen processing and presentation	-14836.625
Apoptosis	-22186.511
Arachidonic acid metabolism	0.000
Arginine and proline metabolism	0.000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	3006.750
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
Axon guidance	-30648.622
Bacterial invasion of epithelial cells	-6975.250
Basal cell carcinoma	-11126.049
B cell receptor signaling pathway	4500.898
beta-Alanine metabolism	0.000
Bile secretion	1061.250
Biotin metabolism	NA
Bladder cancer	-6110.500

Butanoate metabolism	0.000
Caffeine metabolism	0.000
Carbohydrate digestion and absorption	213.625
Cardiac muscle contraction	0.000
Cell adhesion molecules (CAMs)	-10002.569
Cell cycle	-23507.296
Chagas disease (American trypanosomiasis)	-33603.172
Chemical carcinogenesis	0.000
Choline metabolism in cancer	-4386.745
Cholinergic synapse	2925.355
Chronic myeloid leukemia	-12765.948
Circadian entrainment	11290.486
Circadian rhythm	-1488.474
Citrate cycle (TCA cycle)	0.000
Cocaine addiction	1237.781
Colorectal cancer	27125.000
Complement and coagulation cascades	-41643.256
Cysteine and methionine metabolism	0.000
Cytosolic DNA-sensing pathway	-1631.125
D-Glutamine and D-glutamate metabolism	0.000
Dilated cardiomyopathy	1041.886
Dopaminergic synapse	-2115.216
Dorso-ventral axis formation	3685.250
Drug metabolism - cytochrome P450	0.000
Drug metabolism - other enzymes	0.000
ECM-receptor interaction	-171901.500
Endocrine and other factor-regulated calcium reabsorption	10358.000
Endometrial cancer	21021.792
Epithelial cell signaling in Helicobacter pylori infection	7393.083
Epstein-Barr virus infection	7945.763
ErbB signaling pathway	-13799.757
Estrogen signaling pathway	-14785.376
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	-6445.584
Fc gamma R-mediated phagocytosis	3281.653
Folate biosynthesis	0.000
FoxO signaling pathway	-6233.770
Fructose and mannose metabolism	0.000
GABAergic synapse	224.266
Galactose metabolism	0.000
Gap junction	643.375
Gastric acid secretion	3866.875

Glioma	1383.222
Glucagon signaling pathway	2130.481
Glutamatergic synapse	2660.063
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	29798.125
Graft-versus-host disease	0.000
Hedgehog signaling pathway	-2352.750
Hepatitis B	-40343.796
Hepatitis C	361.625
Herpes simplex infection	-31325.175
HIF-1 signaling pathway	-1041.495
Histidine metabolism	0.000
Huntington's disease	2551.500
Hypertrophic cardiomyopathy (HCM)	0.000
Inflammatory bowel disease (IBD)	1058.430
Inflammatory mediator regulation of TRP channels	-5293.583
Influenza A	766.471
Inositol phosphate metabolism	0.000
Insulin secretion	-57.360
Insulin signaling pathway	47592.110
Intestinal immune network for IgA production	338.625
Legionellosis	2517.500
Leishmaniasis	9861.783
Leukocyte transendothelial migration	-17681.702
Linoleic acid metabolism	0.000
Lipoic acid metabolism	0.000
Long-term potentiation	-4063.532
Lysine biosynthesis	0.000
Lysine degradation	0.000
Malaria	0.000
Maturity onset diabetes of the young	500.250
Measles	9257.800
Melanogenesis	-16100.107
Melanoma	2626.170

Metabolism of xenobiotics by cytochrome P450	0.000
Mineral absorption	-408.500
Morphine addiction	1238.296
mTOR signaling pathway	225.125
Mucin type O-Glycan biosynthesis	0.000
Natural killer cell mediated cytotoxicity	15889.423
Neuroactive ligand-receptor interaction	121.625
Neurotrophin signaling pathway	15526.349
NF-kappa B signaling pathway	-22455.027
N-Glycan biosynthesis	0.000
Nicotinate and nicotinamide metabolism	0.000
Nitrogen metabolism	0.000
NOD-like receptor signaling pathway	-22.583
Non-alcoholic fatty liver disease (NAFLD)	2412.629
Non-small cell lung cancer	-12626.072
Notch signaling pathway	25901.000
One carbon pool by folate	0.000
Oocyte meiosis	5115.473
Osteoclast differentiation	-33209.135
Ovarian steroidogenesis	1347.000
Oxidative phosphorylation	0.000
p53 signaling pathway	3454.245
Pancreatic cancer	-1923.000
Pancreatic secretion	-23.000
Pantothenate and CoA biosynthesis	0.000
Parkinson's disease	-42763.875
Pathogenic Escherichia coli infection	98434.875
Pentose and glucuronate interconversions	0.000
Pentose phosphate pathway	0.000
Pertussis	-3282.201
Phenylalanine metabolism	0.000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.000
Phosphatidylinositol signaling system	-142.000
Phototransduction	-2553.250
Platelet activation	-18125.341
Porphyrin and chlorophyll metabolism	0.000
Primary bile acid biosynthesis	0.000
Prion diseases	-11354.714
Progesterone-mediated oocyte maturation	141785.625
Prolactin signaling pathway	-15423.019
Propanoate metabolism	0.000
Prostate cancer	75389.247
Proximal tubule bicarbonate reclamation	0.000
Pyrimidine metabolism	0.000
Pyruvate metabolism	0.000
Renal cell carcinoma	-5317.130

Retinol metabolism	0.000
Retrograde endocannabinoid signaling	0.208
Rheumatoid arthritis	0.000
Riboflavin metabolism	0.000
RIG-I-like receptor signaling pathway	9182.292
Salivary secretion	2727.625
Salmonella infection	-99582.295
Selenocompound metabolism	0.000
Serotonergic synapse	1630.625
Shigellosis	2170.500
Small cell lung cancer	-216659.375
Sphingolipid metabolism	0.000
Sphingolipid signaling pathway	-53391.143
Staphylococcus aureus infection	-15322.188
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	-4180.875
Taste transduction	-384.625
Taurine and hypotaurine metabolism	0.000
T cell receptor signaling pathway	269.778
Terpenoid backbone biosynthesis	0.000
TGF-beta signaling pathway	-18462.363
Thiamine metabolism	0.000
Thyroid cancer	21106.750
Thyroid hormone signaling pathway	2083.928
Thyroid hormone synthesis	1879.000
Tight junction	-4130.917
TNF signaling pathway	-37024.750
Toll-like receptor signaling pathway	-10736.654
Toxoplasmosis	-10160.625
Transcriptional misregulation in cancer	-388.000
Tryptophan metabolism	0.000
Type I diabetes mellitus	NA
Type II diabetes mellitus	2361.656
Tyrosine metabolism	0.000
Ubiquinone and other terpenoid-quinone biosynthesis	0.000
Valine, leucine and isoleucine degradation	0.000
Vascular smooth muscle contraction	-3699.346
Vasopressin-regulated water reabsorption	-1025.557
VEGF signaling pathway	354.723
Vibrio cholerae infection	898.304
Viral carcinogenesis	2205.250

Viral myocarditis	6703.875
Vitamin B6 metabolism	0.000
Vitamin digestion and absorption	NA
Wnt signaling pathway	14197.579
	pPERT
Acute myeloid leukemia	0.22000
Adherens junction	0.12000
Adipocytokine signaling pathway	0.08200
Adrenergic signaling in cardiomyocytes	0.37200
African trypanosomiasis	0.46000
Alanine, aspartate and glutamate metabolism	NA
Aldosterone-regulated sodium reabsorption	0.58600
Allograft rejection	NA
alpha-Linolenic acid metabolism	NA
Alzheimer's disease	0.09000
Aminoacyl-tRNA biosynthesis	NA
Amino sugar and nucleotide sugar metabolism	NA
Amoebiasis	0.90600
Amphetamine addiction	0.95200
AMPK signaling pathway	0.22000
Amyotrophic lateral sclerosis (ALS)	0.07000
Antigen processing and presentation	0.07600
Apoptosis	0.18200
Arachidonic acid metabolism	NA
Arginine and proline metabolism	NA
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.04600
Ascorbate and aldarate metabolism	NA
Asthma	NA
Autoimmune thyroid disease	NA
Axon guidance	0.13000
Bacterial invasion of epithelial cells	0.59000
Basal cell carcinoma	0.50600
B cell receptor signaling pathway	0.53800
beta-Alanine metabolism	NA
Bile secretion	0.33200
Biotin metabolism	NA
Bladder cancer	0.45800
Butanoate metabolism	NA
Caffeine metabolism	NA
Carbohydrate digestion and absorption	0.80600
Cardiac muscle contraction	NA
Cell adhesion molecules (CAMs)	0.44800
Cell cycle	0.12800
Chagas disease (American trypanosomiasis)	0.10800
Chemical carcinogenesis	NA
Choline metabolism in cancer	0.70400

Cholinergic synapse	0.75000
Chronic myeloid leukemia	0.32600
Circadian entrainment	0.22000
Circadian rhythm	0.46800
Citrate cycle (TCA cycle)	NA
Cocaine addiction	0.73000
Colorectal cancer	0.00800
Complement and coagulation cascades	0.07000
Cysteine and methionine metabolism	NA
Cytosolic DNA-sensing pathway	0.34200
D-Glutamine and D-glutamate metabolism	NA
Dilated cardiomyopathy	0.23200
Dopaminergic synapse	0.67600
Dorso-ventral axis formation	0.06800
Drug metabolism - cytochrome P450	NA
Drug metabolism - other enzymes	NA
ECM-receptor interaction	0.01000
Endocrine and other factor-regulated calcium reabsorption	0.05200
Endometrial cancer	0.10000
Epithelial cell signaling in Helicobacter pylori infection	0.23600
Epstein-Barr virus infection	0.39000
ErbB signaling pathway	0.48800
Estrogen signaling pathway	0.53000
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	0.64000
Fc gamma R-mediated phagocytosis	0.73600
Folate biosynthesis	NA
FoxO signaling pathway	0.73600
Fructose and mannose metabolism	NA
GABAergic synapse	0.88200
Galactose metabolism	NA
Gap junction	0.94400
Gastric acid secretion	0.16800
Glioma	0.94400
Glucagon signaling pathway	0.77200
Glutamatergic synapse	0.51800
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	0.11400
Graft-versus-host disease	1.00000
Hedgehog signaling pathway	0.66000
Hepatitis B	0.26600
Hepatitis C	0.97400
Herpes simplex infection	0.16000
HIF-1 signaling pathway	0.95800
Histidine metabolism	NA
Huntington's disease	0.23000
Hypertrophic cardiomyopathy (HCM)	NA
Inflammatory bowel disease (IBD)	0.86800
Inflammatory mediator regulation of TRP channels	0.62200
Influenza A	0.93800
Inositol phosphate metabolism	NA
Insulin secretion	0.97800
Insulin signaling pathway	0.18800
Intestinal immune network for IgA production	0.49600
Legionellosis	0.36200
Leishmaniasis	0.12600
Leukocyte transendothelial migration	0.35000
Linoleic acid metabolism	NA
Lipoic acid metabolism	NA
Long-term potentiation	0.81800
Lysine biosynthesis	NA
Lysine degradation	NA
Malaria	1.00000
Maturity onset diabetes of the young	0.59400
Measles	0.24000
Melanogenesis	0.63000
Melanoma	0.91400
Metabolism of xenobiotics by cytochrome P450	NA
Mineral absorption	0.16200
Morphine addiction	0.34800
mTOR signaling pathway	0.92600
Mucin type O-Glycan biosynthesis	NA
Natural killer cell mediated cytotoxicity	0.55200
Neuroactive ligand-receptor interaction	0.81200
Neurotrophin signaling pathway	0.28800
NF-kappa B signaling pathway	0.16200

N-Glycan biosynthesis	NA
Nicotinate and nicotinamide metabolism	NA
Nitrogen metabolism	NA
NOD-like receptor signaling pathway	0.99400
Non-alcoholic fatty liver disease (NAFLD)	0.84800
Non-small cell lung cancer	0.51000
Notch signaling pathway	0.09400
One carbon pool by folate	NA
Oocyte meiosis	0.73400
Osteoclast differentiation	0.13800
Ovarian steroidogenesis	0.39000
Oxidative phosphorylation	NA
p53 signaling pathway	0.38200
Pancreatic cancer	0.85600
Pancreatic secretion	0.74400
Pantothenate and CoA biosynthesis	NA
Parkinson's disease	0.02200
Pathogenic Escherichia coli infection	0.00001
Pentose and glucuronate interconversions	NA
Pentose phosphate pathway	NA
Pertussis	0.70800
Phenylalanine metabolism	NA
Phenylalanine, tyrosine and tryptophan biosynthesis	NA
Phosphatidylinositol signaling system	0.63200
Phototransduction	0.30800
Platelet activation	0.51800
Porphyrin and chlorophyll metabolism	NA
Primary bile acid biosynthesis	NA
Prion diseases	0.16800
Progesterone-mediated oocyte maturation	0.00200
Prolactin signaling pathway	0.52400
Propanoate metabolism	NA
Prostate cancer	0.01200
Proximal tubule bicarbonate reclamation	NA
Pyrimidine metabolism	NA
Pyruvate metabolism	NA
Renal cell carcinoma	0.56800
Retinol metabolism	NA
Retrograde endocannabinoid signaling	0.99800
Rheumatoid arthritis	1.00000
Riboflavin metabolism	NA
RIG-I-like receptor signaling pathway	0.26000
Salivary secretion	0.26200
Salmonella infection	0.00800
Selenocompound metabolism	NA
Serotonergic synapse	0.61000

Shigellosis	0.58600
Small cell lung cancer	0.01000
Sphingolipid metabolism	NA
Sphingolipid signaling pathway	0.09800
Staphylococcus aureus infection	0.13800
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	0.18400
Taste transduction	0.91600
Taurine and hypotaurine metabolism	NA
T cell receptor signaling pathway	0.98400
Terpenoid backbone biosynthesis	NA
TGF-beta signaling pathway	0.19400
Thiamine metabolism	NA
Thyroid cancer	0.03000
Thyroid hormone signaling pathway	0.80600
Thyroid hormone synthesis	0.65800
Tight junction	0.38000
TNF signaling pathway	0.06200
Toll-like receptor signaling pathway	0.52600
Toxoplasmosis	0.38400
Transcriptional misregulation in cancer	0.26200
Tryptophan metabolism	NA
Type I diabetes mellitus	NA
Type II diabetes mellitus	0.65800
Tyrosine metabolism	NA
Ubiquinone and other terpenoid-quinone biosynthesis	NA
Valine, leucine and isoleucine degradation	NA
Vascular smooth muscle contraction	0.78600
Vasopressin-regulated water reabsorption	0.70600
VEGF signaling pathway	0.96800
Vibrio cholerae infection	0.32000
Viral carcinogenesis	0.16800
Viral myocarditis	0.13200
Vitamin B6 metabolism	NA
Vitamin digestion and absorption	NA
Wnt signaling pathway	0.20800
	pG
Acute myeloid leukemia	0.292
Adherens junction	0.023
Adipocytokine signaling pathway	0.213
Adrenergic signaling in cardiomyocytes	0.638

African trypanosomiasis	0.814
Alanine, aspartate and glutamate metabolism	0.584
Aldosterone-regulated sodium reabsorption	0.729
Allograft rejection	1.000
alpha-Linolenic acid metabolism	0.501
Alzheimer's disease	0.074
Aminoacyl-tRNA biosynthesis	0.339
Amino sugar and nucleotide sugar metabolism	0.064
Amoebiasis	0.959
Amphetamine addiction	0.705
AMPK signaling pathway	0.028
Amyotrophic lateral sclerosis (ALS)	0.020
Antigen processing and presentation	0.052
Apoptosis	0.419
Arachidonic acid metabolism	0.486
Arginine and proline metabolism	0.695
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.054
Ascorbate and aldarate metabolism	1.000
Asthma	1.000
Autoimmune thyroid disease	1.000
Axon guidance	0.076
Bacterial invasion of epithelial cells	0.860
Basal cell carcinoma	0.174
B cell receptor signaling pathway	0.698
beta-Alanine metabolism	0.323
Bile secretion	0.638
Biotin metabolism	1.000
Bladder cancer	0.150
Butanoate metabolism	0.763
Caffeine metabolism	0.750
Carbohydrate digestion and absorption	0.706
Cardiac muscle contraction	0.540
Cell adhesion molecules (CAMs)	0.784
Cell cycle	0.003
Chagas disease (American trypanosomiasis)	0.210
Chemical carcinogenesis	0.863
Choline metabolism in cancer	0.290
Cholinergic synapse	0.952
Chronic myeloid leukemia	0.332
Circadian entrainment	0.523
Circadian rhythm	0.681
Citrate cycle (TCA cycle)	0.075
Cocaine addiction	0.803
Colorectal cancer	0.003
Complement and coagulation cascades	0.081
Cysteine and methionine metabolism	0.346

Cytosolic DNA-sensing pathway	0.487
D-Glutamine and D-glutamate metabolism	0.473
Dilated cardiomyopathy	0.563
Dopaminergic synapse	0.903
Dorso-ventral axis formation	0.089
Drug metabolism - cytochrome P450	0.941
Drug metabolism - other enzymes	0.159
ECM-receptor interaction	0.016
Endocrine and other factor-regulated calcium reabsorption	0.199
Endometrial cancer	0.087
Epithelial cell signaling in Helicobacter pylori infection	0.165
Epstein-Barr virus infection	0.548
ErbB signaling pathway	0.516
Estrogen signaling pathway	0.570
Ether lipid metabolism	0.728
Fat digestion and absorption	0.131
Fatty acid biosynthesis	0.706
Fatty acid degradation	0.245
Fatty acid elongation	0.880
Fc epsilon RI signaling pathway	0.637
Fc gamma R-mediated phagocytosis	0.801
Folate biosynthesis	0.019
FoxO signaling pathway	0.312
Fructose and mannose metabolism	0.000
GABAergic synapse	0.992
Galactose metabolism	0.010
Gap junction	0.962
Gastric acid secretion	0.437
Glioma	0.768
Glucagon signaling pathway	0.943
Glutamatergic synapse	0.832
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	0.078
GnRH signaling pathway	0.187
Graft-versus-host disease	0.752

Hedgehog signaling pathway	0.758
Hepatitis B	0.201
Hepatitis C	0.100
Herpes simplex infection	0.112
HIF-1 signaling pathway	0.774
Histidine metabolism	0.474
Huntington's disease	0.128
Hypertrophic cardiomyopathy (HCM)	0.763
Inflammatory bowel disease (IBD)	0.990
Inflammatory mediator regulation of TRP channels	0.811
Influenza A	0.967
Inositol phosphate metabolism	0.560
Insulin secretion	0.990
Insulin signaling pathway	0.259
Intestinal immune network for IgA production	0.812
Legionellosis	0.702
Leishmaniasis	0.292
Leukocyte transendothelial migration	0.559
Linoleic acid metabolism	0.899
Lipoic acid metabolism	0.750
Long-term potentiation	0.599
Lysine biosynthesis	0.603
Lysine degradation	0.882
Malaria	1.000
Maturity onset diabetes of the young	0.741
Measles	0.519
Melanogenesis	0.740
Melanoma	0.829
Metabolism of xenobiotics by cytochrome P450	0.668
Mineral absorption	0.408
Morphine addiction	0.715
mTOR signaling pathway	0.480
Mucin type O-Glycan biosynthesis	0.716
Natural killer cell mediated cytotoxicity	0.567
Neuroactive ligand-receptor interaction	0.859
Neurotrophin signaling pathway	0.479
NF-kappa B signaling pathway	0.450
N-Glycan biosynthesis	0.322
Nicotinate and nicotinamide metabolism	0.029
Nitrogen metabolism	0.473
NOD-like receptor signaling pathway	0.900
Non-alcoholic fatty liver disease (NAFLD)	0.574
Non-small cell lung cancer	0.513
Notch signaling pathway	0.207
One carbon pool by folate	0.184
Oocyte meiosis	0.195

Osteoclast differentiation	0.319
Ovarian steroidogenesis	0.637
Oxidative phosphorylation	0.015
p53 signaling pathway	0.523
Pancreatic cancer	0.236
Pancreatic secretion	0.946
Pantothenate and CoA biosynthesis	0.385
Parkinson's disease	0.092
Pathogenic Escherichia coli infection	0.000
Pentose and glucuronate interconversions	0.709
Pentose phosphate pathway	0.009
Pertussis	0.732
Phenylalanine metabolism	0.166
Phenylalanine, tyrosine and tryptophan biosynthesis	0.750
Phosphatidylinositol signaling system	0.651
Phototransduction	0.665
Platelet activation	0.792
Porphyrin and chlorophyll metabolism	0.928
Primary bile acid biosynthesis	0.638
Prion diseases	0.233
Progesterone-mediated oocyte maturation	0.003
Prolactin signaling pathway	0.450
Propanoate metabolism	0.215
Prostate cancer	0.002
Proximal tubule bicarbonate reclamation	0.514
Pyrimidine metabolism	0.477
Pyruvate metabolism	0.169
Renal cell carcinoma	0.104
Retinol metabolism	0.835
Retrograde endocannabinoid signaling	1.000
Rheumatoid arthritis	1.000
Riboflavin metabolism	0.207
RIG-I-like receptor signaling pathway	0.020
Salivary secretion	0.586
Salmonella infection	0.040
Selenocompound metabolism	0.638
Serotonergic synapse	0.905
Shigellosis	0.858
Small cell lung cancer	0.006
Sphingolipid metabolism	0.157
Sphingolipid signaling pathway	0.174
Staphylococcus aureus infection	0.160
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	0.365
Taste transduction	0.991
Taurine and hypotaurine metabolism	0.619
T cell receptor signaling pathway	0.743
Terpenoid backbone biosynthesis	0.474
TGF-beta signaling pathway	0.225
Thiamine metabolism	0.750
Thyroid cancer	0.024
Thyroid hormone signaling pathway	0.674
Thyroid hormone synthesis	0.852
Tight junction	0.736
TNF signaling pathway	0.108
Toll-like receptor signaling pathway	0.787
Toxoplasmosis	0.558
Transcriptional misregulation in cancer	0.543
Tryptophan metabolism	0.470
Type I diabetes mellitus	1.000
Type II diabetes mellitus	0.836
Tyrosine metabolism	0.716
Ubiquinone and other terpenoid-quinone biosynthesis	0.619
Valine, leucine and isoleucine degradation	0.635
Vascular smooth muscle contraction	0.866
Vasopressin-regulated water reabsorption	0.750
VEGF signaling pathway	0.907
Vibrio cholerae infection	0.679
Viral carcinogenesis	0.375
Viral myocarditis	0.303
Vitamin B6 metabolism	0.267
Vitamin digestion and absorption	1.000
Wnt signaling pathway	0.412

	pGFdr
Acute myeloid leukemia	0.8800000
Adherens junction	0.2778947
Adipocytokine signaling pathway	0.7754098
Adrenergic signaling in cardiomyocytes	1.0000000
African trypanosomiasis	1.0000000
Alanine, aspartate and glutamate metabolism	1.0000000
Aldosterone-regulated sodium reabsorption	1.0000000
Allograft rejection	1.0000000
alpha-Linolenic acid metabolism	1.0000000
Alzheimer's disease	0.5720000
Aminoacyl-tRNA biosynthesis	0.9207407
Amino sugar and nucleotide sugar metabolism	0.5415385
Amoebiasis	1.0000000

Amphetamine addiction	1.0000000
AMPK signaling pathway	0.3038095
Amyotrophic lateral sclerosis (ALS)	0.2588235
Antigen processing and presentation	0.4752000
Apoptosis	1.0000000
Arachidonic acid metabolism	1.0000000
Arginine and proline metabolism	1.0000000
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.4752000
Ascorbate and aldarate metabolism	1.0000000
Asthma	1.0000000
Autoimmune thyroid disease	1.0000000
Axon guidance	0.5720000
Bacterial invasion of epithelial cells	1.0000000
Basal cell carcinoma	0.7505882
B cell receptor signaling pathway	1.0000000
beta-Alanine metabolism	0.9110256
Bile secretion	1.0000000
Biotin metabolism	1.0000000
Bladder cancer	0.7505882
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	0.1100000
Chagas disease (American trypanosomiasis)	0.7754098
Chemical carcinogenesis	1.0000000
Choline metabolism in cancer	0.8800000
Cholinergic synapse	1.0000000
Chronic myeloid leukemia	0.9130000
Circadian entrainment	1.0000000
Circadian rhythm	1.0000000
Citrate cycle (TCA cycle)	0.5720000
Cocaine addiction	1.0000000
Colorectal cancer	0.1100000
Complement and coagulation cascades	0.5748387
Cysteine and methionine metabolism	0.9282927
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	0.5758824
Drug metabolism - cytochrome P450	1.0000000
Drug metabolism - other enzymes	0.7505882
ECM-receptor interaction	0.2514286
Endocrine and other factor-regulated calcium reabsorption	0.7754098

Endometrial cancer	0.5758824
Epithelial cell signaling in Helicobacter pylori infection	0.7505882
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	0.6861905
Fatty acid biosynthesis	1.0000000
Fatty acid degradation	0.8044776
Fatty acid elongation	1.0000000
Fc epsilon RI signaling pathway	1.0000000
Fc gamma R-mediated phagocytosis	1.0000000
Folate biosynthesis	0.2588235
FoxO signaling pathway	0.9110256
Fructose and mannose metabolism	0.0000000
GABAergic synapse	1.0000000
Galactose metabolism	0.2000000
Gap junction	1.0000000
Gastric acid secretion	1.0000000
Glioma	1.0000000
Glucagon signaling pathway	1.0000000
Glutamatergic synapse	1.0000000
Glutathione metabolism	0.8044776
Glycerolipid metabolism	0.1980000
Glycerophospholipid metabolism	0.1571429
Glycine, serine and threonine metabolism	0.6861905
Glycolysis / Gluconeogenesis	0.7806452
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.2514286
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	1.0000000
Glycosaminoglycan degradation	0.3300000
Glycosphingolipid biosynthesis - ganglio series	0.8257971
Glycosphingolipid biosynthesis - globo series	1.0000000
Glycosphingolipid biosynthesis - lacto and neolacto series	1.0000000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.9130000
Glyoxylate and dicarboxylate metabolism	0.5720000
GnRH signaling pathway	0.7754098
Graft-versus-host disease	1.0000000
Hedgehog signaling pathway	1.0000000
Hepatitis B	0.7754098
Hepatitis C	0.6111111
Herpes simplex infection	0.6317949
HIF-1 signaling pathway	1.0000000
Histidine metabolism	1.0000000
Huntington's disease	0.6861905
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 secretion	1.0000000
Insulin signaling pathway	0.8257971
Intestinal immune network for IgA production	1.0000000
Legionellosis	1.0000000
Leishmaniasis	0.8800000
Leukocyte transendothelial migration	1.0000000
Linoleic acid metabolism	1.0000000
Lipoic acid metabolism	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	1.0000000
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	0.9110256
Nicotinate and nicotinamide metabolism	0.3038095
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	0.7754098
One carbon pool by folate	0.7754098
Oocyte meiosis	0.7754098
Osteoclast differentiation	0.9110256
Ovarian steroidogenesis	1.0000000
Oxidative phosphorylation	0.2514286
p53 signaling pathway	1.0000000
Pancreatic cancer	0.7987692
Pancreatic secretion	1.0000000
Pantothenate and CoA biosynthesis	0.9964706
Parkinson's disease	0.5782857
Pathogenic Escherichia coli infection	0.0000000

Pentose and glucuronate interconversions	1.0000000
Pentose phosphate pathway	0.1980000
Pertussis	1.0000000
Phenylalanine metabolism	0.7505882
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	0.7987692
Progesterone-mediated oocyte maturation	0.1100000
Prolactin signaling pathway	1.0000000
Propanoate metabolism	0.7754098
Prostate cancer	0.1100000
Proximal tubule bicarbonate reclamation	1.0000000
Pyrimidine metabolism	1.0000000
Pyruvate metabolism	0.7505882
Renal cell carcinoma	0.6183784
Retinol metabolism	1.0000000
Retrograde endocannabinoid signaling	1.0000000
Rheumatoid arthritis	1.0000000
Riboflavin metabolism	0.7754098
RIG-I-like receptor signaling pathway	0.2588235
Salivary secretion	1.0000000
Salmonella infection	0.3826087
Selenocompound metabolism	1.0000000
Serotonergic synapse	1.0000000
Shigellosis	1.0000000
Small cell lung cancer	0.1650000
Sphingolipid metabolism	0.7505882
Sphingolipid signaling pathway	0.7505882
Staphylococcus aureus infection	0.7505882
Starch and sucrose metabolism	1.0000000
Steroid biosynthesis	1.0000000
Steroid hormone biosynthesis	1.0000000
Sulfur metabolism	1.0000000
Synaptic vesicle cycle	0.5758824
Synthesis and degradation of ketone bodies	1.0000000
Systemic lupus erythematosus	0.9674699
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	0.7857143
Thiamine metabolism	1.0000000

Thyroid cancer	0.2778947
Thyroid hormone signaling pathway	1.0000000
Thyroid hormone synthesis	1.0000000
Tight junction	1.0000000
TNF signaling pathway	0.6252632
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	0.9821429
Viral myocarditis	0.9008108
Vitamin B6 metabolism	0.8391429
Vitamin digestion and absorption	1.0000000
Wnt signaling pathway	1.0000000

	pGFWER
Acute myeloid leukemia	1.00
Adherens junction	1.00
Adipocytokine signaling pathway	1.00
Adrenergic signaling in cardiomyocytes	1.00
African trypanosomiasis	1.00
Alanine, aspartate and glutamate metabolism	1.00
Aldosterone-regulated sodium reabsorption	1.00
Allograft rejection	1.00
alpha-Linolenic acid metabolism	1.00
Alzheimer's disease	1.00
Aminoacyl-tRNA biosynthesis	1.00
Amino sugar and nucleotide sugar metabolism	1.00
Amoebiasis	1.00
Amphetamine addiction	1.00
AMPK signaling pathway	1.00
Amyotrophic lateral sclerosis (ALS)	1.00
Antigen processing and presentation	1.00
Apoptosis	1.00
Arachidonic acid metabolism	1.00
Arginine and proline metabolism	1.00
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	1.00
Ascorbate and aldarate metabolism	1.00

Asthma	1.00
Autoimmune thyroid disease	1.00
Axon guidance	1.00
Bacterial invasion of epithelial cells	1.00
Basal cell carcinoma	1.00
B cell receptor signaling pathway	1.00
beta-Alanine metabolism	1.00
Bile secretion	1.00
Biotin metabolism	1.00
Bladder cancer	1.00
Butanoate metabolism	1.00
Caffeine metabolism	1.00
Carbohydrate digestion and absorption	1.00
Cardiac muscle contraction	1.00
Cell adhesion molecules (CAMs)	1.00
Cell cycle	0.66
Chagas disease (American trypanosomiasis)	1.00
Chemical carcinogenesis	1.00
Choline metabolism in cancer	1.00
Cholinergic synapse	1.00
Chronic myeloid leukemia	1.00
Circadian entrainment	1.00
Circadian rhythm	1.00
Citrate cycle (TCA cycle)	1.00
Cocaine addiction	1.00
Colorectal cancer	0.66
Complement and coagulation cascades	1.00
Cysteine and methionine metabolism	1.00
Cytosolic DNA-sensing pathway	1.00
D-Glutamine and D-glutamate metabolism	1.00
Dilated cardiomyopathy	1.00
Dopaminergic synapse	1.00
Dorso-ventral axis formation	1.00
Drug metabolism - cytochrome P450	1.00
Drug metabolism - other enzymes	1.00
ECM-receptor interaction	1.00
Endocrine and other factor-regulated calcium reabsorption	1.00
Endometrial cancer	1.00
Epithelial cell signaling in Helicobacter pylori infection	1.00
Epstein-Barr virus infection	1.00
ErbB signaling pathway	1.00
Estrogen signaling pathway	1.00
Ether lipid metabolism	1.00
Fat digestion and absorption	1.00
Fatty acid biosynthesis	1.00
Fatty acid degradation	1.00

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

Linoleic acid metabolism	1.00
Lipoic acid metabolism	1.00
Long-term potentiation	1.00
Lysine biosynthesis	1.00
Lysine degradation	1.00
Malaria	1.00
Maturity onset diabetes of the young	1.00
Measles	1.00
Melanogenesis	1.00
Melanoma	1.00
Metabolism of xenobiotics by cytochrome P450	1.00
Mineral absorption	1.00
Morphine addiction	1.00
mTOR signaling pathway	1.00
Mucin type O-Glycan biosynthesis	1.00
Natural killer cell mediated cytotoxicity	1.00
Neuroactive ligand-receptor interaction	1.00
Neurotrophin signaling pathway	1.00
NF-kappa B signaling pathway	1.00
N-Glycan biosynthesis	1.00
Nicotinate and nicotinamide metabolism	1.00
Nitrogen metabolism	1.00
NOD-like receptor signaling pathway	1.00
Non-alcoholic fatty liver disease (NAFLD)	1.00
Non-small cell lung cancer	1.00
Notch signaling pathway	1.00
One carbon pool by folate	1.00
Oocyte meiosis	1.00
Osteoclast differentiation	1.00
Ovarian steroidogenesis	1.00
Oxidative phosphorylation	1.00
p53 signaling pathway	1.00
Pancreatic cancer	1.00
Pancreatic secretion	1.00
Pantothenate and CoA biosynthesis	1.00
Parkinson's disease	1.00
Pathogenic Escherichia coli infection	0.00
Pentose and glucuronate interconversions	1.00
Pentose phosphate pathway	1.00
Pertussis	1.00
Phenylalanine metabolism	1.00
Phenylalanine, tyrosine and tryptophan biosynthesis	1.00
Phosphatidylinositol signaling system	1.00
Phototransduction	1.00
Platelet activation	1.00
Porphyrin and chlorophyll metabolism	1.00

Primary bile acid biosynthesis	1.00
Prion diseases	1.00
Progesterone-mediated oocyte maturation	0.66
Prolactin signaling pathway	1.00
Propanoate metabolism	1.00
Prostate cancer	0.44
Proximal tubule bicarbonate reclamation	1.00
Pyrimidine metabolism	1.00
Pyruvate metabolism	1.00
Renal cell carcinoma	1.00
Retinol metabolism	1.00
Retrograde endocannabinoid signaling	1.00
Rheumatoid arthritis	1.00
Riboflavin metabolism	1.00
RIG-I-like receptor signaling pathway	1.00
Salivary secretion	1.00
Salmonella infection	1.00
Selenocompound metabolism	1.00
Serotonergic synapse	1.00
Shigellosis	1.00
Small cell lung cancer	1.00
Sphingolipid metabolism	1.00
Sphingolipid signaling pathway	1.00
Staphylococcus aureus infection	1.00
Starch and sucrose metabolism	1.00
Steroid biosynthesis	1.00
Steroid hormone biosynthesis	1.00
Sulfur metabolism	1.00
Synaptic vesicle cycle	1.00
Synthesis and degradation of ketone bodies	1.00
Systemic lupus erythematosus	1.00
Taste transduction	1.00
Taurine and hypotaurine metabolism	1.00
T cell receptor signaling pathway	1.00
Terpenoid backbone biosynthesis	1.00
TGF-beta signaling pathway	1.00
Thiamine metabolism	1.00
Thyroid cancer	1.00
Thyroid hormone signaling pathway	1.00
Thyroid hormone synthesis	1.00
Tight junction	1.00
TNF signaling pathway	1.00
Toll-like receptor signaling pathway	1.00
Toxoplasmosis	1.00
Transcriptional misregulation in cancer	1.00
Tryptophan metabolism	1.00

Type I diabetes mellitus	1.00
Type II diabetes mellitus	1.00
Tyrosine metabolism	1.00
Ubiquinone and other terpenoid-quinone biosynthesis	1.00
Valine, leucine and isoleucine degradation	1.00
Vascular smooth muscle contraction	1.00
Vasopressin-regulated water reabsorption	1.00
VEGF signaling pathway	1.00
Vibrio cholerae infection	1.00
Viral carcinogenesis	1.00
Viral myocarditis	1.00
Vitamin B6 metabolism	1.00
Vitamin digestion and absorption	1.00
Wnt signaling pathway	1.00

	Status
Acute myeloid leukemia	Inhibited
Adherens junction	Inhibited
Adipocytokine signaling pathway	Inhibited
Adrenergic signaling in cardiomyocytes	Inhibited
African trypanosomiasis	Inhibited
Alanine, aspartate and glutamate metabolism	Inhibited
Aldosterone-regulated sodium reabsorption	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	Activated
AMPK signaling pathway	Activated
Amyotrophic lateral sclerosis (ALS)	Inhibited
Antigen processing and presentation	Inhibited
Apoptosis	Inhibited
Arachidonic acid metabolism	Inhibited
Arginine and proline metabolism	Inhibited
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	Activated
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	Activated
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	Activated
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	Inhibited
Hepatitis B	Inhibited
Hepatitis C	Activated
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 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 potentiation	Inhibited
Lysine biosynthesis	Inhibited
Lysine degradation	Inhibited
Malaria	Inhibited
Maturity onset diabetes of the young	Activated
Measles	Activated
Melanogenesis	Inhibited

Melanoma	Activated
Metabolism of xenobiotics by cytochrome P450	Inhibited
Mineral absorption	Inhibited
Morphine addiction	Activated
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	Inhibited
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

Renal cell carcinoma	Inhibited
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
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	Inhibited
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	Activated
Thyroid hormone synthesis	Activated
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	Activated

```
Viral carcinogenesis                                                    Activated
Viral myocarditis                                                       Activated
Vitamin B6 metabolism                                                   Inhibited
Vitamin digestion and absorption                                             <NA>
Wnt signaling pathway                                                   Activated

$errors

"Error in solve.default(M, -X): system is computationally singular: reciprocal condition num
                                                        Signaling pathways regulating pluripo
                "Error in solve.default(M, -X): Lapack routine dgesv: system is exactly singu
```

Apart from the expected arguments: a count 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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the `"limma"` method is used for the differential expression analysis on gene-level. The user can select `DESeq2` by setting argument `test` to `"DESeq2"`. The node labels of pathway topologies are automaticaly converted into entrezIDs. This is controlled with `IDs` argument. A converstion into the gene symbols is available too. Please note, that the node labels should be the same as the rownames of count data matrix. The default thresholds for the differential expression analysis of genes 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 and the user can select between log fold-change (`gene.stat="logFC"`) or test statistic (`gene.stat="stats"`). 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")

13231 node labels mapped to the expression data
Average coverage 84.13307 %
0 (out of 244) 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
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
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 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
Renal cell carcinoma	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
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Acute myeloid leukemia	0.43010
Adherens junction	0.54460
Adipocytokine signaling pathway	0.23880

Adrenergic signaling in cardiomyocytes	-0.29190
African trypanosomiasis	-0.25060
Alanine, aspartate and glutamate metabolism	0.53230
Aldosterone-regulated sodium reabsorption	0.14740
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	0.47410
Amoebiasis	-0.11720
Amphetamine addiction	-0.16720
AMPK signaling pathway	0.47410
Amyotrophic lateral sclerosis (ALS)	0.17200
Antigen processing and presentation	-0.09176
Apoptosis	0.20440
Arachidonic acid metabolism	-0.98530
Arginine and proline metabolism	0.09460
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	0.44570
Basal cell carcinoma	0.14110
B cell receptor signaling pathway	0.10910
beta-Alanine metabolism	-0.29470
Bile secretion	-0.02768
Biotin metabolism	0.26100
Bladder cancer	0.45500
Butanoate metabolism	0.16270
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	0.11820
Chronic myeloid leukemia	0.56810
Circadian entrainment	-0.11980
Circadian rhythm	0.44840
Citrate cycle (TCA cycle)	0.91840
Cocaine addiction	-0.01031
Colorectal cancer	0.38700
Complement and coagulation cascades	-0.16360

Cysteine and methionine metabolism	0.50470
Cytosolic DNA-sensing pathway	0.23200
D-Glutamine and D-glutamate metabolism	0.26550
Dilated cardiomyopathy	0.19900
Dopaminergic synapse	-0.04278
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	-0.13140
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	0.20330
Ether lipid metabolism	0.03248
Fat digestion and absorption	0.35050
Fatty acid biosynthesis	0.34810
Fatty acid degradation	0.48630
Fatty acid elongation	0.28120
Fc epsilon RI signaling pathway	0.22040
Fc gamma R-mediated phagocytosis	0.32580
Folate biosynthesis	0.27450
FoxO signaling pathway	0.30950
Fructose and mannose metabolism	0.35590
GABAergic synapse	-0.44480
Galactose metabolism	0.40090
Gap junction	0.07479
Gastric acid secretion	0.10890
Glioma	0.42320
Glucagon signaling pathway	0.42620
Glutamatergic synapse	-0.17570
Glutathione metabolism	0.32150
Glycerolipid metabolism	0.68560
Glycerophospholipid metabolism	0.71220
Glycine, serine and threonine metabolism	-0.01805
Glycolysis / Gluconeogenesis	0.46510
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.42870
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.40150
Glycosaminoglycan degradation	0.34970
Glycosphingolipid biosynthesis - ganglio series	0.24680
Glycosphingolipid biosynthesis - globo series	-0.08134
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.28460
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.41310
Glyoxylate and dicarboxylate metabolism	0.33910
GnRH signaling pathway	0.23020

Graft-versus-host disease	-0.30010
Hedgehog signaling pathway	0.08887
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	0.10710
Influenza A	0.25720
Inositol phosphate metabolism	0.93550
Insulin secretion	-0.14590
Insulin signaling pathway	0.47110
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	0.10750
Lysine biosynthesis	-0.15300
Lysine degradation	0.59190
Malaria	-0.26520
Maturity onset diabetes of the young	-0.18110
Measles	0.16990
Melanogenesis	0.12760
Melanoma	0.16840
Metabolism of xenobiotics by cytochrome P450	-1.07000
Mineral absorption	-0.03678
Morphine addiction	-0.29000
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	-0.18370
Nitrogen metabolism	0.63490
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	0.74460
Oocyte meiosis	0.59900
Osteoclast differentiation	0.09978
Ovarian steroidogenesis	-0.01149
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	0.11470
Pathogenic Escherichia coli infection	0.25100
Pentose and glucuronate interconversions	-0.30310
Pentose phosphate pathway	0.15090
Pertussis	0.08010
Phenylalanine metabolism	-0.12060
Phenylalanine, tyrosine and tryptophan biosynthesis	0.30820
Phosphatidylinositol signaling system	1.29100
Phototransduction	-0.42910
Platelet activation	0.20000
Porphyrin and chlorophyll metabolism	-0.05215
Primary bile acid biosynthesis	-0.30840
Prion diseases	0.31840
Progesterone-mediated oocyte maturation	0.22500
Prolactin signaling pathway	0.31730
Propanoate metabolism	0.37560
Prostate cancer	0.46960
Proximal tubule bicarbonate reclamation	0.16240
Pyrimidine metabolism	1.69000
Pyruvate metabolism	0.48040
Renal cell carcinoma	0.42280
Retinol metabolism	-1.76100
Retrograde endocannabinoid signaling	-0.06248
Rheumatoid arthritis	-0.20130
Riboflavin metabolism	0.02880
RIG-I-like receptor signaling pathway	0.25990
Salivary secretion	0.03422
Salmonella infection	0.37530
Selenocompound metabolism	0.35340
Serotonergic synapse	-0.16460
Shigellosis	0.32780
Signaling pathways regulating pluripotency of stem cells	0.36140
Small cell lung cancer	0.59260
Sphingolipid metabolism	0.67030
Sphingolipid signaling pathway	0.41640
Staphylococcus aureus infection	-0.14070
Starch and sucrose metabolism	0.19670

Steroid biosynthesis	0.38980
Steroid hormone biosynthesis	-0.96350
Sulfur metabolism	0.50160
Synaptic vesicle cycle	0.58440
Synthesis and degradation of ketone bodies	0.09079
Systemic lupus erythematosus	-0.28480
Taste transduction	-0.09615
Taurine and hypotaurine metabolism	-0.28520
T cell receptor signaling pathway	0.17720
Terpenoid backbone biosynthesis	0.32340
TGF-beta signaling pathway	0.31060
Thiamine metabolism	0.15000
Thyroid cancer	0.34550
Thyroid hormone signaling pathway	0.59730
Thyroid hormone synthesis	-0.03568
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	0.25320
Valine, leucine and isoleucine degradation	0.48760
Vascular smooth muscle contraction	0.18160
Vasopressin-regulated water reabsorption	0.04064
VEGF signaling pathway	0.29660
Vibrio cholerae infection	0.41130
Viral carcinogenesis	0.32470
Viral myocarditis	0.11220
Vitamin B6 metabolism	0.11830
Vitamin digestion and absorption	-0.51070
Wnt signaling pathway	0.17880

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Acute myeloid leukemia	0.436600
Adherens junction	0.545300
Adipocytokine signaling pathway	0.252200
Adrenergic signaling in cardiomyocytes	-0.291600
African trypanosomiasis	-0.237600
Alanine, aspartate and glutamate metabolism	0.537800
Aldosterone-regulated sodium reabsorption	0.152300
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	0.481100
Amoebiasis	-0.107700
Amphetamine addiction	-0.157700
AMPK signaling pathway	0.476200
Amyotrophic lateral sclerosis (ALS)	0.174300
Antigen processing and presentation	-0.071850
Apoptosis	0.218800
Arachidonic acid metabolism	-0.951100
Arginine and proline metabolism	0.097850
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	0.457000
Basal cell carcinoma	0.162900
B cell receptor signaling pathway	0.120100
beta-Alanine metabolism	-0.224600
Bile secretion	-0.015340
Biotin metabolism	0.262200
Bladder cancer	0.457800
Butanoate metabolism	0.220800
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	0.155300
Chronic myeloid leukemia	0.568900
Circadian entrainment	-0.059670
Circadian rhythm	0.451100
Citrate cycle (TCA cycle)	0.919400
Cocaine addiction	0.018440
Colorectal cancer	0.394000
Complement and coagulation cascades	-0.159800
Cysteine and methionine metabolism	0.512200
Cytosolic DNA-sensing pathway	0.232900
D-Glutamine and D-glutamate metabolism	0.265800
Dilated cardiomyopathy	0.199100
Dopaminergic synapse	-0.001417
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	-0.119300
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	0.220900
Ether lipid metabolism	0.038760
Fat digestion and absorption	0.358400
Fatty acid biosynthesis	0.348900
Fatty acid degradation	0.563500
Fatty acid elongation	0.284800
Fc epsilon RI signaling pathway	0.222900
Fc gamma R-mediated phagocytosis	0.349400
Folate biosynthesis	0.275200
FoxO signaling pathway	0.309800
Fructose and mannose metabolism	0.448100
GABAergic synapse	-0.439400
Galactose metabolism	0.407800
Gap junction	0.101100
Gastric acid secretion	0.148600
Glioma	0.438300
Glucagon signaling pathway	0.437000
Glutamatergic synapse	-0.163300
Glutathione metabolism	0.347900
Glycerolipid metabolism	0.714300
Glycerophospholipid metabolism	0.747700
Glycine, serine and threonine metabolism	-0.014090
Glycolysis / Gluconeogenesis	0.510400
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.429200
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.401800
Glycosaminoglycan degradation	0.354700
Glycosphingolipid biosynthesis - ganglio series	0.251600
Glycosphingolipid biosynthesis - globo series	-0.079380
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.271700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.424700
Glyoxylate and dicarboxylate metabolism	0.339400
GnRH signaling pathway	0.242200
Graft-versus-host disease	-0.296400
Hedgehog signaling pathway	0.092660
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	0.120500
Influenza A	0.276400
Inositol phosphate metabolism	0.951300
Insulin secretion	-0.122900
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	0.152900
Lysine biosynthesis	-0.137100
Lysine degradation	0.591900
Malaria	-0.257600
Maturity onset diabetes of the young	-0.170000
Measles	0.178400
Melanogenesis	0.170200
Melanoma	0.253800
Metabolism of xenobiotics by cytochrome P450	-1.041000
Mineral absorption	-0.029660
Morphine addiction	-0.266400
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	-0.104600
Nitrogen metabolism	0.636100
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	0.802500
Oocyte meiosis	0.600400
Osteoclast differentiation	0.101600
Ovarian steroidogenesis	-0.001618
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	0.139500
Pathogenic Escherichia coli infection	0.257900
Pentose and glucuronate interconversions	-0.232000
Pentose phosphate pathway	0.286800
Pertussis	0.094210
Phenylalanine metabolism	-0.113800
Phenylalanine, tyrosine and tryptophan biosynthesis	0.312100
Phosphatidylinositol signaling system	1.309000
Phototransduction	-0.382900
Platelet activation	0.209200
Porphyrin and chlorophyll metabolism	-0.030440
Primary bile acid biosynthesis	-0.293800
Prion diseases	0.321100
Progesterone-mediated oocyte maturation	0.234900
Prolactin signaling pathway	0.326200
Propanoate metabolism	0.378400
Prostate cancer	0.470000
Proximal tubule bicarbonate reclamation	0.162500
Pyrimidine metabolism	1.725000
Pyruvate metabolism	0.483100
Renal cell carcinoma	0.432100
Retinol metabolism	-1.736000
Retrograde endocannabinoid signaling	-0.029970
Rheumatoid arthritis	-0.199200
Riboflavin metabolism	0.061770
RIG-I-like receptor signaling pathway	0.268600
Salivary secretion	0.058600
Salmonella infection	0.382200
Selenocompound metabolism	0.355000
Serotonergic synapse	-0.126500
Shigellosis	0.334100
Signaling pathways regulating pluripotency of stem cells	0.366700
Small cell lung cancer	0.595100
Sphingolipid metabolism	0.700000
Sphingolipid signaling pathway	0.435000
Staphylococcus aureus infection	-0.138900
Starch and sucrose metabolism	0.232300
Steroid biosynthesis	0.410300
Steroid hormone biosynthesis	-0.948700
Sulfur metabolism	0.505100
Synaptic vesicle cycle	0.587000
Synthesis and degradation of ketone bodies	0.153500
Systemic lupus erythematosus	-0.282700
Taste transduction	-0.083410

Taurine and hypotaurine metabolism	-0.285200
T cell receptor signaling pathway	0.180000
Terpenoid backbone biosynthesis	0.325400
TGF-beta signaling pathway	0.325600
Thiamine metabolism	0.151800
Thyroid cancer	0.364100
Thyroid hormone signaling pathway	0.603200
Thyroid hormone synthesis	0.007763
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	0.256700
Valine, leucine and isoleucine degradation	0.525200
Vascular smooth muscle contraction	0.185300
Vasopressin-regulated water reabsorption	0.078530
VEGF signaling pathway	0.303800
Vibrio cholerae infection	0.411600
Viral carcinogenesis	0.328700
Viral myocarditis	0.134300
Vitamin B6 metabolism	0.134500
Vitamin digestion and absorption	-0.499100
Wnt signaling pathway	0.187600

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Acute myeloid leukemia	0.4399000
Adherens junction	0.5510000
Adipocytokine signaling pathway	0.2637000
Adrenergic signaling in cardiomyocytes	-0.2832000
African trypanosomiasis	-0.2299000
Alanine, aspartate and glutamate metabolism	0.5444000
Aldosterone-regulated sodium reabsorption	0.1641000
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	0.4858000
Amoebiasis	-0.0806000
Amphetamine addiction	-0.1505000
AMPK signaling pathway	0.4800000
Amyotrophic lateral sclerosis (ALS)	0.1777000
Antigen processing and presentation	-0.0551200

Apoptosis	0.2292000
Arachidonic acid metabolism	-0.9223000
Arginine and proline metabolism	0.1014000
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	0.4702000
Basal cell carcinoma	0.1815000
B cell receptor signaling pathway	0.1282000
beta-Alanine metabolism	-0.1935000
Bile secretion	-0.0006349
Biotin metabolism	0.2629000
Bladder cancer	0.4681000
Butanoate metabolism	0.2435000
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	0.1705000
Chronic myeloid leukemia	0.5717000
Circadian entrainment	-0.0174900
Circadian rhythm	0.4546000
Citrate cycle (TCA cycle)	0.9218000
Cocaine addiction	0.0310800
Colorectal cancer	0.4009000
Complement and coagulation cascades	-0.1566000
Cysteine and methionine metabolism	0.5162000
Cytosolic DNA-sensing pathway	0.2345000
D-Glutamine and D-glutamate metabolism	0.2661000
Dilated cardiomyopathy	0.2108000
Dopaminergic synapse	0.0288500
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	-0.1128000
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	0.2386000
Ether lipid metabolism	0.0463100
Fat digestion and absorption	0.3645000
Fatty acid biosynthesis	0.3498000
Fatty acid degradation	0.5901000
Fatty acid elongation	0.2861000
Fc epsilon RI signaling pathway	0.2291000
Fc gamma R-mediated phagocytosis	0.3617000
Folate biosynthesis	0.2839000
FoxO signaling pathway	0.3138000
Fructose and mannose metabolism	0.4833000
GABAergic synapse	-0.4303000
Galactose metabolism	0.4112000
Gap junction	0.1147000
Gastric acid secretion	0.1708000
Glioma	0.4437000
Glucagon signaling pathway	0.4687000
Glutamatergic synapse	-0.1336000
Glutathione metabolism	0.3654000
Glycerolipid metabolism	0.7392000
Glycerophospholipid metabolism	0.7929000
Glycine, serine and threonine metabolism	-0.0107800
Glycolysis / Gluconeogenesis	0.5261000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.4300000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.4026000
Glycosaminoglycan degradation	0.3612000
Glycosphingolipid biosynthesis - ganglio series	0.2583000
Glycosphingolipid biosynthesis - globo series	-0.0787200
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.2647000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.4371000
Glyoxylate and dicarboxylate metabolism	0.3403000
GnRH signaling pathway	0.2579000
Graft-versus-host disease	-0.2912000
Hedgehog signaling pathway	0.1007000
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	0.1335000
Influenza A	0.2893000
Inositol phosphate metabolism	0.9851000
Insulin secretion	-0.1077000

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	0.1860000
Lysine biosynthesis	-0.1246000
Lysine degradation	0.5920000
Malaria	-0.2542000
Maturity onset diabetes of the young	-0.1635000
Measles	0.1890000
Melanogenesis	0.1876000
Melanoma	0.2872000
Metabolism of xenobiotics by cytochrome P450	-1.0280000
Mineral absorption	-0.0202200
Morphine addiction	-0.2402000
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	-0.0693400
Nitrogen metabolism	0.6368000
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	0.8604000
Oocyte meiosis	0.6030000
Osteoclast differentiation	0.1077000
Ovarian steroidogenesis	0.0434300
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	0.1603000
Pathogenic Escherichia coli infection	0.2793000
Pentose and glucuronate interconversions	-0.2067000
Pentose phosphate pathway	0.3570000
Pertussis	0.1016000

Phenylalanine metabolism	-0.1088000
Phenylalanine, tyrosine and tryptophan biosynthesis	0.3136000
Phosphatidylinositol signaling system	1.3200000
Phototransduction	-0.3634000
Platelet activation	0.2208000
Porphyrin and chlorophyll metabolism	-0.0163000
Primary bile acid biosynthesis	-0.2888000
Prion diseases	0.3231000
Progesterone-mediated oocyte maturation	0.2396000
Prolactin signaling pathway	0.3414000
Propanoate metabolism	0.3810000
Prostate cancer	0.4738000
Proximal tubule bicarbonate reclamation	0.1627000
Pyrimidine metabolism	1.7550000
Pyruvate metabolism	0.5106000
Renal cell carcinoma	0.4360000
Retinol metabolism	-1.7240000
Retrograde endocannabinoid signaling	-0.0147500
Rheumatoid arthritis	-0.1968000
Riboflavin metabolism	0.0765900
RIG-I-like receptor signaling pathway	0.2748000
Salivary secretion	0.0747200
Salmonella infection	0.3875000
Selenocompound metabolism	0.3578000
Serotonergic synapse	-0.0715000
Shigellosis	0.3485000
Signaling pathways regulating pluripotency of stem cells	0.3754000
Small cell lung cancer	0.5976000
Sphingolipid metabolism	0.7261000
Sphingolipid signaling pathway	0.4447000
Staphylococcus aureus infection	-0.1328000
Starch and sucrose metabolism	0.2445000
Steroid biosynthesis	0.4196000
Steroid hormone biosynthesis	-0.9048000
Sulfur metabolism	0.5077000
Synaptic vesicle cycle	0.5894000
Synthesis and degradation of ketone bodies	0.1779000
Systemic lupus erythematosus	-0.2628000
Taste transduction	-0.0778700
Taurine and hypotaurine metabolism	-0.2734000
T cell receptor signaling pathway	0.1817000
Terpenoid backbone biosynthesis	0.3354000
TGF-beta signaling pathway	0.3335000
Thiamine metabolism	0.1550000
Thyroid cancer	0.3736000
Thyroid hormone signaling pathway	0.6177000

Thyroid hormone synthesis	0.0308900
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	0.2590000
Valine, leucine and isoleucine degradation	0.5406000
Vascular smooth muscle contraction	0.1985000
Vasopressin-regulated water reabsorption	0.0912900
VEGF signaling pathway	0.3138000
Vibrio cholerae infection	0.4129000
Viral carcinogenesis	0.3304000
Viral myocarditis	0.1488000
Vitamin B6 metabolism	0.1492000
Vitamin digestion and absorption	-0.4696000
Wnt signaling pathway	0.2104000

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Acute myeloid leukemia	0.438100
Adherens junction	0.551400
Adipocytokine signaling pathway	0.264200
Adrenergic signaling in cardiomyocytes	-0.277700
African trypanosomiasis	-0.229100
Alanine, aspartate and glutamate metabolism	0.546300
Aldosterone-regulated sodium reabsorption	0.163200
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	0.483700
Amoebiasis	-0.077310
Amphetamine addiction	-0.150700
AMPK signaling pathway	0.482300
Amyotrophic lateral sclerosis (ALS)	0.177200
Antigen processing and presentation	-0.054660
Apoptosis	0.225200
Arachidonic acid metabolism	-0.931600
Arginine and proline metabolism	0.104000
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	0.468800
Basal cell carcinoma	0.181300
B cell receptor signaling pathway	0.127500
beta-Alanine metabolism	-0.213400
Bile secretion	-0.002149
Biotin metabolism	0.262700
Bladder cancer	0.467700
Butanoate metabolism	0.224500
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	0.166900
Chronic myeloid leukemia	0.574800
Circadian entrainment	-0.034390
Circadian rhythm	0.455000
Citrate cycle (TCA cycle)	0.949300
Cocaine addiction	0.022270
Colorectal cancer	0.402100
Complement and coagulation cascades	-0.152100
Cysteine and methionine metabolism	0.514600
Cytosolic DNA-sensing pathway	0.237200
D-Glutamine and D-glutamate metabolism	0.266400
Dilated cardiomyopathy	0.213500
Dopaminergic synapse	0.029730
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	-0.108600
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	0.236200
Ether lipid metabolism	0.081620
Fat digestion and absorption	0.362200
Fatty acid biosynthesis	0.349500
Fatty acid degradation	0.573700
Fatty acid elongation	0.286500
Fc epsilon RI signaling pathway	0.232700

Fc gamma R-mediated phagocytosis	0.355600
Folate biosynthesis	0.283800
FoxO signaling pathway	0.315100
Fructose and mannose metabolism	0.452700
GABAergic synapse	-0.431900
Galactose metabolism	0.409700
Gap junction	0.106300
Gastric acid secretion	0.162500
Glioma	0.439300
Glucagon signaling pathway	0.481000
Glutamatergic synapse	-0.134400
Glutathione metabolism	0.365400
Glycerolipid metabolism	0.736000
Glycerophospholipid metabolism	0.797600
Glycine, serine and threonine metabolism	0.016760
Glycolysis / Gluconeogenesis	0.511600
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.430400
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.403400
Glycosaminoglycan degradation	0.360500
Glycosphingolipid biosynthesis - ganglio series	0.260300
Glycosphingolipid biosynthesis - globo series	-0.073280
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.266700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.433300
Glyoxylate and dicarboxylate metabolism	0.342100
GnRH signaling pathway	0.256500
Graft-versus-host disease	-0.275500
Hedgehog signaling pathway	0.101900
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	0.129100
Influenza A	0.285900
Inositol phosphate metabolism	0.987100
Insulin secretion	-0.111900
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	0.179700
Lysine biosynthesis	-0.126400
Lysine degradation	0.598500
Malaria	-0.223800
Maturity onset diabetes of the young	-0.166900
Measles	0.186800
Melanogenesis	0.176000
Melanoma	0.272900
Metabolism of xenobiotics by cytochrome P450	-1.023000
Mineral absorption	-0.020440
Morphine addiction	-0.245300
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	-0.088660
Nitrogen metabolism	0.636600
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	0.845900
Oocyte meiosis	0.606500
Osteoclast differentiation	0.107800
Ovarian steroidogenesis	0.056720
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	0.153500
Pathogenic Escherichia coli infection	0.278100
Pentose and glucuronate interconversions	-0.220900
Pentose phosphate pathway	0.314100
Pertussis	0.107200
Phenylalanine metabolism	-0.101900
Phenylalanine, tyrosine and tryptophan biosynthesis	0.313500
Phosphatidylinositol signaling system	1.337000
Phototransduction	-0.364900
Platelet activation	0.227000
Porphyrin and chlorophyll metabolism	-0.018500
Primary bile acid biosynthesis	-0.288400

Prion diseases	0.322500
Progesterone-mediated oocyte maturation	0.239900
Prolactin signaling pathway	0.339500
Propanoate metabolism	0.387300
Prostate cancer	0.483500
Proximal tubule bicarbonate reclamation	0.186600
Pyrimidine metabolism	1.761000
Pyruvate metabolism	0.541500
Renal cell carcinoma	0.433200
Retinol metabolism	-1.732000
Retrograde endocannabinoid signaling	-0.006956
Rheumatoid arthritis	-0.184900
Riboflavin metabolism	0.078060
RIG-I-like receptor signaling pathway	0.272600
Salivary secretion	0.070410
Salmonella infection	0.392100
Selenocompound metabolism	0.372700
Serotonergic synapse	-0.074880
Shigellosis	0.348900
Signaling pathways regulating pluripotency of stem cells	0.375200
Small cell lung cancer	0.597200
Sphingolipid metabolism	0.752000
Sphingolipid signaling pathway	0.442400
Staphylococcus aureus infection	-0.121700
Starch and sucrose metabolism	0.235400
Steroid biosynthesis	0.414700
Steroid hormone biosynthesis	-0.905900
Sulfur metabolism	0.506800
Synaptic vesicle cycle	0.589100
Synthesis and degradation of ketone bodies	0.160600
Systemic lupus erythematosus	-0.258700
Taste transduction	-0.079440
Taurine and hypotaurine metabolism	-0.272100
T cell receptor signaling pathway	0.183200
Terpenoid backbone biosynthesis	0.336300
TGF-beta signaling pathway	0.330700
Thiamine metabolism	0.156600
Thyroid cancer	0.368100
Thyroid hormone signaling pathway	0.619100
Thyroid hormone synthesis	0.021510
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	0.258300
Valine, leucine and isoleucine degradation	0.529100
Vascular smooth muscle contraction	0.198400
Vasopressin-regulated water reabsorption	0.083670
VEGF signaling pathway	0.311600
Vibrio cholerae infection	0.413000
Viral carcinogenesis	0.329400
Viral myocarditis	0.143000
Vitamin B6 metabolism	0.145700
Vitamin digestion and absorption	-0.473300
Wnt signaling pathway	0.218900

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Acute myeloid leukemia	0.441400
Adherens junction	0.557200
Adipocytokine signaling pathway	0.275700
Adrenergic signaling in cardiomyocytes	-0.269300
African trypanosomiasis	-0.221400
Alanine, aspartate and glutamate metabolism	0.552900
Aldosterone-regulated sodium reabsorption	0.174900
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	0.488300
Amoebiasis	-0.050190
Amphetamine addiction	-0.143500
AMPK signaling pathway	0.486100
Amyotrophic lateral sclerosis (ALS)	0.180600
Antigen processing and presentation	-0.037930
Apoptosis	0.235500
Arachidonic acid metabolism	-0.902800
Arginine and proline metabolism	0.107500
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	0.482000
Basal cell carcinoma	0.199900
B cell receptor signaling pathway	0.135700
beta-Alanine metabolism	-0.182300
Bile secretion	0.012560
Biotin metabolism	0.263400

Bladder cancer	0.478000
Butanoate metabolism	0.247100
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	0.182100
Chronic myeloid leukemia	0.577700
Circadian entrainment	0.007784
Circadian rhythm	0.458600
Citrate cycle (TCA cycle)	0.951700
Cocaine addiction	0.034910
Colorectal cancer	0.409000
Complement and coagulation cascades	-0.149000
Cysteine and methionine metabolism	0.518600
Cytosolic DNA-sensing pathway	0.238900
D-Glutamine and D-glutamate metabolism	0.266700
Dilated cardiomyopathy	0.225200
Dopaminergic synapse	0.060000
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	-0.102100
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	0.254000
Ether lipid metabolism	0.089170
Fat digestion and absorption	0.368300
Fatty acid biosynthesis	0.350400
Fatty acid degradation	0.600200
Fatty acid elongation	0.287800
Fc epsilon RI signaling pathway	0.238900
Fc gamma R-mediated phagocytosis	0.367800
Folate biosynthesis	0.292400
FoxO signaling pathway	0.319200
Fructose and mannose metabolism	0.487900
GABAergic synapse	-0.422900
Galactose metabolism	0.413000
Gap junction	0.119900

Gastric acid secretion	0.184700
Glioma	0.444700
Glucagon signaling pathway	0.512700
Glutamatergic synapse	-0.104800
Glutathione metabolism	0.382900
Glycerolipid metabolism	0.760900
Glycerophospholipid metabolism	0.842800
Glycine, serine and threonine metabolism	0.020070
Glycolysis / Gluconeogenesis	0.527300
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.431200
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.404100
Glycosaminoglycan degradation	0.367100
Glycosphingolipid biosynthesis - ganglio series	0.267000
Glycosphingolipid biosynthesis - globo series	-0.072620
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.259700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.445800
Glyoxylate and dicarboxylate metabolism	0.343000
GnRH signaling pathway	0.272100
Graft-versus-host disease	-0.270200
Hedgehog signaling pathway	0.109900
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	0.142000
Influenza A	0.298700
Inositol phosphate metabolism	1.021000
Insulin secretion	-0.096810
Insulin signaling pathway	0.480800
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	0.212900
Lysine biosynthesis	-0.113900
Lysine degradation	0.598500
Malaria	-0.220400
Maturity onset diabetes of the young	-0.160500
Measles	0.197400

Melanogenesis	0.193400
Melanoma	0.306300
Metabolism of xenobiotics by cytochrome P450	-1.009000
Mineral absorption	-0.011000
Morphine addiction	-0.219100
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	-0.053370
Nitrogen metabolism	0.637300
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	0.903800
Oocyte meiosis	0.609200
Osteoclast differentiation	0.113900
Ovarian steroidogenesis	0.101800
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	0.174300
Pathogenic Escherichia coli infection	0.299500
Pentose and glucuronate interconversions	-0.195600
Pentose phosphate pathway	0.384300
Pertussis	0.114600
Phenylalanine metabolism	-0.096850
Phenylalanine, tyrosine and tryptophan biosynthesis	0.315100
Phosphatidylinositol signaling system	1.348000
Phototransduction	-0.345500
Platelet activation	0.238600
Porphyrin and chlorophyll metabolism	-0.004352
Primary bile acid biosynthesis	-0.283500
Prion diseases	0.324500
Progesterone-mediated oocyte maturation	0.244600
Prolactin signaling pathway	0.354700
Propanoate metabolism	0.389900
Prostate cancer	0.487300
Proximal tubule bicarbonate reclamation	0.186900
Pyrimidine metabolism	1.791000

Pyruvate metabolism	0.569000
Renal cell carcinoma	0.437100
Retinol metabolism	-1.720000
Retrograde endocannabinoid signaling	0.008258
Rheumatoid arthritis	-0.182500
Riboflavin metabolism	0.092880
RIG-I-like receptor signaling pathway	0.278900
Salivary secretion	0.086530
Salmonella infection	0.397400
Selenocompound metabolism	0.375400
Serotonergic synapse	-0.019850
Shigellosis	0.363300
Signaling pathways regulating pluripotency of stem cells	0.384000
Small cell lung cancer	0.599600
Sphingolipid metabolism	0.778100
Sphingolipid signaling pathway	0.452000
Staphylococcus aureus infection	-0.115600
Starch and sucrose metabolism	0.247600
Steroid biosynthesis	0.424100
Steroid hormone biosynthesis	-0.862000
Sulfur metabolism	0.509300
Synaptic vesicle cycle	0.591600
Synthesis and degradation of ketone bodies	0.185000
Systemic lupus erythematosus	-0.238700
Taste transduction	-0.073900
Taurine and hypotaurine metabolism	-0.260300
T cell receptor signaling pathway	0.184800
Terpenoid backbone biosynthesis	0.346200
TGF-beta signaling pathway	0.338700
Thiamine metabolism	0.159900
Thyroid cancer	0.377600
Thyroid hormone signaling pathway	0.633700
Thyroid hormone synthesis	0.044630
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	0.260700
Valine, leucine and isoleucine degradation	0.544600
Vascular smooth muscle contraction	0.211600
Vasopressin-regulated water reabsorption	0.096430

VEGF signaling pathway	0.321500
Vibrio cholerae infection	0.414400
Viral carcinogenesis	0.331100
Viral myocarditis	0.157500
Vitamin B6 metabolism	0.160500
Vitamin digestion and absorption	-0.443900
Wnt signaling pathway	0.241800
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Acute myeloid leukemia	0.442500
Adherens junction	0.559200
Adipocytokine signaling pathway	0.290600
Adrenergic signaling in cardiomyocytes	-0.252600
African trypanosomiasis	-0.205800
Alanine, aspartate and glutamate metabolism	0.563900
Aldosterone-regulated sodium reabsorption	0.177300
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	0.489000
Amoebiasis	-0.030830
Amphetamine addiction	-0.134400
AMPK signaling pathway	0.495300
Amyotrophic lateral sclerosis (ALS)	0.181400
Antigen processing and presentation	-0.016660
Apoptosis	0.237900
Arachidonic acid metabolism	-0.896300
Arginine and proline metabolism	0.118500
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	0.489000
Basal cell carcinoma	0.221000
B cell receptor signaling pathway	0.144600
beta-Alanine metabolism	-0.172000
Bile secretion	0.020350
Biotin metabolism	0.264100
Bladder cancer	0.479600
Butanoate metabolism	0.248200
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	0.208700
Chronic myeloid leukemia	0.587700
Circadian entrainment	0.017210
Circadian rhythm	0.462400
Citrate cycle (TCA cycle)	1.035000
Cocaine addiction	0.037220
Colorectal cancer	0.419400
Complement and coagulation cascades	-0.131700
Cysteine and methionine metabolism	0.521200
Cytosolic DNA-sensing pathway	0.247900
D-Glutamine and D-glutamate metabolism	0.267700
Dilated cardiomyopathy	0.233500
Dopaminergic synapse	0.104000
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	-0.077220
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	0.264400
Ether lipid metabolism	0.201400
Fat digestion and absorption	0.369200
Fatty acid biosynthesis	0.350500
Fatty acid degradation	0.628100
Fatty acid elongation	0.292600
Fc epsilon RI signaling pathway	0.252100
Fc gamma R-mediated phagocytosis	0.373200
Folate biosynthesis	0.292800
FoxO signaling pathway	0.323300
Fructose and mannose metabolism	0.488500
GABAergic synapse	-0.422300
Galactose metabolism	0.415400
Gap junction	0.121200
Gastric acid secretion	0.199400
Glioma	0.446500
Glucagon signaling pathway	0.560600
Glutamatergic synapse	-0.094640
Glutathione metabolism	0.409200
Glycerolipid metabolism	0.780000
Glycerophospholipid metabolism	0.892300

Glycine, serine and threonine metabolism	0.106600
Glycolysis / Gluconeogenesis	0.528900
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.433000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.406800
Glycosaminoglycan degradation	0.370000
Glycosphingolipid biosynthesis - ganglio series	0.277900
Glycosphingolipid biosynthesis - globo series	-0.054330
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.252700
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.445900
Glyoxylate and dicarboxylate metabolism	0.348800
GnRH signaling pathway	0.279800
Graft-versus-host disease	-0.219400
Hedgehog signaling pathway	0.117400
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	0.142200
Influenza A	0.307800
Inositol phosphate metabolism	1.043000
Insulin secretion	-0.086320
Insulin signaling pathway	0.487400
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	0.239400
Lysine biosynthesis	-0.103500
Lysine degradation	0.617800
Malaria	-0.121500
Maturity onset diabetes of the young	-0.159500
Measles	0.199300
Melanogenesis	0.201100
Melanoma	0.348900
Metabolism of xenobiotics by cytochrome P450	-0.966600
Mineral absorption	-0.004526
Morphine addiction	-0.210800
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	-0.032250
Nitrogen metabolism	0.638100
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	0.918300
Oocyte meiosis	0.621100
Osteoclast differentiation	0.116200
Ovarian steroidogenesis	0.151500
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	0.178900
Pathogenic Escherichia coli infection	0.303000
Pentose and glucuronate interconversions	-0.167200
Pentose phosphate pathway	0.391400
Pertussis	0.145700
Phenylalanine metabolism	-0.069510
Phenylalanine, tyrosine and tryptophan biosynthesis	0.318700
Phosphatidylinositol signaling system	1.417000
Phototransduction	-0.303900
Platelet activation	0.266400
Porphyrin and chlorophyll metabolism	0.010770
Primary bile acid biosynthesis	-0.267600
Prion diseases	0.325500
Progesterone-mediated oocyte maturation	0.255300
Prolactin signaling pathway	0.358000
Propanoate metabolism	0.411400
Prostate cancer	0.516700
Proximal tubule bicarbonate reclamation	0.258700
Pyrimidine metabolism	1.842000
Pyruvate metabolism	0.664300
Renal cell carcinoma	0.437900
Retinol metabolism	-1.720000
Retrograde endocannabinoid signaling	0.064170
Rheumatoid arthritis	-0.144400
Riboflavin metabolism	0.130200
RIG-I-like receptor signaling pathway	0.281000

Salivary secretion	0.097980
Salmonella infection	0.418300
Selenocompound metabolism	0.421800
Serotonergic synapse	0.008114
Shigellosis	0.370800
Signaling pathways regulating pluripotency of stem cells	0.388700
Small cell lung cancer	0.601000
Sphingolipid metabolism	0.885700
Sphingolipid signaling pathway	0.463700
Staphylococcus aureus infection	-0.080540
Starch and sucrose metabolism	0.255900
Steroid biosynthesis	0.429900
Steroid hormone biosynthesis	-0.850300
Sulfur metabolism	0.510300
Synaptic vesicle cycle	0.593300
Synthesis and degradation of ketone bodies	0.195700
Systemic lupus erythematosus	-0.224400
Taste transduction	-0.065880
Taurine and hypotaurine metabolism	-0.256300
T cell receptor signaling pathway	0.192200
Terpenoid backbone biosynthesis	0.351000
TGF-beta signaling pathway	0.345100
Thiamine metabolism	0.166500
Thyroid cancer	0.379700
Thyroid hormone signaling pathway	0.643800
Thyroid hormone synthesis	0.059920
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	0.262100
Valine, leucine and isoleucine degradation	0.547500
Vascular smooth muscle contraction	0.215100
Vasopressin-regulated water reabsorption	0.111400
VEGF signaling pathway	0.322100
Vibrio cholerae infection	0.414900
Viral carcinogenesis	0.332200
Viral myocarditis	0.162200
Vitamin B6 metabolism	0.166100
Vitamin digestion and absorption	-0.443300
Wnt signaling pathway	0.275700

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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
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
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 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
Renal cell carcinoma	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
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Acute myeloid leukemia	0.4182000
Adherens junction	0.5439000
Adipocytokine signaling pathway	0.2253000
Adrenergic signaling in cardiomyocytes	-0.3808000
African trypanosomiasis	-0.2541000
Alanine, aspartate and glutamate metabolism	0.5462000

Aldosterone-regulated sodium reabsorption	0.1201000
Allograft rejection	-0.4205000
alpha-Linolenic acid metabolism	0.0110200
Alzheimer's disease	0.3001000
Aminoacyl-tRNA biosynthesis	0.2268000
Amino sugar and nucleotide sugar metabolism	0.3871000
Amoebiasis	-0.0777300
Amphetamine addiction	-0.0905900
AMPK signaling pathway	0.4706000
Amyotrophic lateral sclerosis (ALS)	0.1727000
Antigen processing and presentation	-0.1666000
Apoptosis	0.1817000
Arachidonic acid metabolism	-1.0700000
Arginine and proline metabolism	-0.0009136
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.2487000
Ascorbate and aldarate metabolism	-0.6161000
Asthma	-0.4410000
Autoimmune thyroid disease	-0.4205000
Axon guidance	0.2110000
Bacterial invasion of epithelial cells	0.4650000
Basal cell carcinoma	0.0352400
B cell receptor signaling pathway	0.1167000
beta-Alanine metabolism	-0.2621000
Bile secretion	-0.0212700
Biotin metabolism	0.2464000
Bladder cancer	0.4230000
Butanoate metabolism	0.1685000
Caffeine metabolism	-0.4202000
Carbohydrate digestion and absorption	0.0110900
Cardiac muscle contraction	-0.2220000
Cell adhesion molecules (CAMs)	-0.2406000
Cell cycle	0.9163000
Chagas disease (American trypanosomiasis)	0.2889000
Chemical carcinogenesis	-0.8291000
Choline metabolism in cancer	0.3090000
Cholinergic synapse	0.1292000
Chronic myeloid leukemia	0.5500000
Circadian entrainment	-0.0390500
Circadian rhythm	0.5127000
Citrate cycle (TCA cycle)	0.9136000
Cocaine addiction	-0.0316600
Colorectal cancer	0.3836000
Complement and coagulation cascades	-0.2402000
Cysteine and methionine metabolism	0.4731000
Cytosolic DNA-sensing pathway	0.2088000
D-Glutamine and D-glutamate metabolism	0.2749000

Dilated cardiomyopathy	0.0492900
Dopaminergic synapse	0.0050680
Dorso-ventral axis formation	0.2689000
Drug metabolism - cytochrome P450	-0.4401000
Drug metabolism - other enzymes	0.0306400
ECM-receptor interaction	0.1421000
Endocrine and other factor-regulated calcium reabsorption	-0.1566000
Endometrial cancer	0.4840000
Epithelial cell signaling in Helicobacter pylori infection	0.1634000
Epstein-Barr virus infection	0.3575000
ErbB signaling pathway	0.3237000
Estrogen signaling pathway	0.1475000
Ether lipid metabolism	0.0337400
Fat digestion and absorption	0.2924000
Fatty acid biosynthesis	0.3507000
Fatty acid degradation	0.4606000
Fatty acid elongation	0.2723000
Fc epsilon RI signaling pathway	0.1951000
Fc gamma R-mediated phagocytosis	0.3310000
Folate biosynthesis	0.2655000
FoxO signaling pathway	0.3087000
Fructose and mannose metabolism	0.3809000
GABAergic synapse	-0.5038000
Galactose metabolism	0.3472000
Gap junction	0.1220000
Gastric acid secretion	0.1802000
Glioma	0.3783000
Glucagon signaling pathway	0.3868000
Glutamatergic synapse	-0.2211000
Glutathione metabolism	0.3644000
Glycerolipid metabolism	0.5595000
Glycerophospholipid metabolism	0.6596000
Glycine, serine and threonine metabolism	-0.1427000
Glycolysis / Gluconeogenesis	0.4338000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.3975000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.3019000
Glycosaminoglycan degradation	0.3193000
Glycosphingolipid biosynthesis - ganglio series	0.2430000
Glycosphingolipid biosynthesis - globo series	-0.0902700
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.3820000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.4046000
Glyoxylate and dicarboxylate metabolism	0.2885000
GnRH signaling pathway	0.2802000
Graft-versus-host disease	-0.3275000
Hedgehog signaling pathway	0.0444500
Hepatitis B	0.3040000

Hepatitis C	0.3978000
Herpes simplex infection	0.2966000
HIF-1 signaling pathway	0.5058000
Histidine metabolism	-0.3672000
Huntington's disease	0.7799000
Hypertrophic cardiomyopathy (HCM)	0.1941000
Inflammatory bowel disease (IBD)	-0.1826000
Inflammatory mediator regulation of TRP channels	0.1128000
Influenza A	0.2900000
Inositol phosphate metabolism	0.9304000
Insulin secretion	-0.1182000
Insulin signaling pathway	0.4321000
Intestinal immune network for IgA production	-0.2157000
Legionellosis	-0.0907400
Leishmaniasis	-0.0704200
Leukocyte transendothelial migration	0.0999900
Linoleic acid metabolism	-1.2310000
Lipoic acid metabolism	-0.2020000
Long-term depression	0.1464000
Long-term potentiation	0.1863000
Lysine biosynthesis	-0.1034000
Lysine degradation	0.6062000
Malaria	-0.2856000
Maturity onset diabetes of the young	-0.2068000
Measles	0.1787000
Melanogenesis	0.1149000
Melanoma	0.2433000
Metabolism of xenobiotics by cytochrome P450	-1.1590000
Mineral absorption	-0.0571900
Morphine addiction	-0.3439000
mTOR signaling pathway	0.2723000
Mucin type O-Glycan biosynthesis	-0.5309000
Natural killer cell mediated cytotoxicity	0.0135100
Neuroactive ligand-receptor interaction	-0.4475000
Neurotrophin signaling pathway	0.2960000
NF-kappa B signaling pathway	0.1545000
N-Glycan biosynthesis	0.5707000
Nicotinate and nicotinamide metabolism	-0.1510000
Nitrogen metabolism	0.6531000
NOD-like receptor signaling pathway	0.2014000
Non-alcoholic fatty liver disease (NAFLD)	0.1848000
Non-small cell lung cancer	0.4657000
Notch signaling pathway	0.2039000
One carbon pool by folate	0.9061000
Oocyte meiosis	0.6870000
Osteoclast differentiation	0.1047000

Ovarian steroidogenesis	0.0106200
Oxidative phosphorylation	0.4656000
p53 signaling pathway	0.3157000
Pancreatic cancer	0.4552000
Pancreatic secretion	0.0217500
Pantothenate and CoA biosynthesis	0.1032000
Parkinson's disease	0.1369000
Pathogenic Escherichia coli infection	0.2566000
Pentose and glucuronate interconversions	-0.3245000
Pentose phosphate pathway	0.0887500
Pertussis	0.0474100
Phenylalanine metabolism	-0.0854600
Phenylalanine, tyrosine and tryptophan biosynthesis	0.3318000
Phosphatidylinositol signaling system	1.2160000
Phototransduction	-0.4718000
Platelet activation	0.2366000
Porphyrin and chlorophyll metabolism	-0.0386500
Primary bile acid biosynthesis	-0.3186000
Prion diseases	0.3085000
Progesterone-mediated oocyte maturation	0.2142000
Prolactin signaling pathway	0.3257000
Propanoate metabolism	0.3899000
Prostate cancer	0.4344000
Proximal tubule bicarbonate reclamation	0.1665000
Pyrimidine metabolism	1.7830000
Pyruvate metabolism	0.4217000
Renal cell carcinoma	0.3722000
Retinol metabolism	-1.8710000
Retrograde endocannabinoid signaling	-0.1145000
Rheumatoid arthritis	-0.2070000
Riboflavin metabolism	0.0339300
RIG-I-like receptor signaling pathway	0.2521000
Salivary secretion	0.0675400
Salmonella infection	0.3875000
Selenocompound metabolism	0.3259000
Serotonergic synapse	-0.1401000
Shigellosis	0.3427000
Signaling pathways regulating pluripotency of stem cells	0.2766000
Small cell lung cancer	0.5491000
Sphingolipid metabolism	0.6306000
Sphingolipid signaling pathway	0.3637000
Staphylococcus aureus infection	-0.2312000
Starch and sucrose metabolism	0.0862300
Steroid biosynthesis	0.3639000
Steroid hormone biosynthesis	-1.1390000
Sulfur metabolism	0.5064000

Synaptic vesicle cycle	0.5580000
Synthesis and degradation of ketone bodies	0.0508600
Systemic lupus erythematosus	-0.3298000
Taste transduction	-0.0414300
Taurine and hypotaurine metabolism	-0.3580000
T cell receptor signaling pathway	0.1630000
Terpenoid backbone biosynthesis	0.3242000
TGF-beta signaling pathway	0.3021000
Thiamine metabolism	0.0784900
Thyroid cancer	0.3199000
Thyroid hormone signaling pathway	0.5756000
Thyroid hormone synthesis	0.0111700
Tight junction	0.3168000
TNF signaling pathway	0.2863000
Toll-like receptor signaling pathway	0.0875300
Toxoplasmosis	0.2843000
Transcriptional misregulation in cancer	0.0864700
Tryptophan metabolism	-0.2987000
Type I diabetes mellitus	-0.4215000
Type II diabetes mellitus	0.1421000
Tyrosine metabolism	-0.3861000
Ubiquinone and other terpenoid-quinone biosynthesis	0.2584000
Valine, leucine and isoleucine degradation	0.4436000
Vascular smooth muscle contraction	0.1477000
Vasopressin-regulated water reabsorption	0.0034570
VEGF signaling pathway	0.2461000
Vibrio cholerae infection	0.3543000
Viral carcinogenesis	0.3375000
Viral myocarditis	0.1320000
Vitamin B6 metabolism	0.0026330
Vitamin digestion and absorption	-0.4495000
Wnt signaling pathway	0.1230000

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Acute myeloid leukemia	0.4310000
Adherens junction	0.5648000
Adipocytokine signaling pathway	0.2360000
Adrenergic signaling in cardiomyocytes	-0.3015000
African trypanosomiasis	-0.2464000
Alanine, aspartate and glutamate metabolism	0.5616000
Aldosterone-regulated sodium reabsorption	0.1254000
Allograft rejection	-0.4136000
alpha-Linolenic acid metabolism	0.0127900
Alzheimer's disease	0.3021000
Aminoacyl-tRNA biosynthesis	0.2690000
Amino sugar and nucleotide sugar metabolism	0.4253000
Amoebiasis	-0.0765000

Amphetamine addiction	-0.0875900
AMPK signaling pathway	0.4708000
Amyotrophic lateral sclerosis (ALS)	0.1819000
Antigen processing and presentation	-0.1490000
Apoptosis	0.1996000
Arachidonic acid metabolism	-1.0520000
Arginine and proline metabolism	0.0469200
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.3113000
Ascorbate and aldarate metabolism	-0.5696000
Asthma	-0.4242000
Autoimmune thyroid disease	-0.4136000
Axon guidance	0.2425000
Bacterial invasion of epithelial cells	0.4698000
Basal cell carcinoma	0.0418700
B cell receptor signaling pathway	0.1352000
beta-Alanine metabolism	-0.2496000
Bile secretion	-0.0002646
Biotin metabolism	0.2507000
Bladder cancer	0.4356000
Butanoate metabolism	0.1942000
Caffeine metabolism	-0.4007000
Carbohydrate digestion and absorption	0.0382600
Cardiac muscle contraction	-0.2016000
Cell adhesion molecules (CAMs)	-0.2406000
Cell cycle	0.9289000
Chagas disease (American trypanosomiasis)	0.2902000
Chemical carcinogenesis	-0.8228000
Choline metabolism in cancer	0.3107000
Cholinergic synapse	0.1500000
Chronic myeloid leukemia	0.5510000
Circadian entrainment	-0.0342600
Circadian rhythm	0.5153000
Citrate cycle (TCA cycle)	0.9169000
Cocaine addiction	0.0226600
Colorectal cancer	0.3954000
Complement and coagulation cascades	-0.2237000
Cysteine and methionine metabolism	0.5173000
Cytosolic DNA-sensing pathway	0.2201000
D-Glutamine and D-glutamate metabolism	0.2812000
Dilated cardiomyopathy	0.0715800
Dopaminergic synapse	0.0419200
Dorso-ventral axis formation	0.2756000
Drug metabolism - cytochrome P450	-0.4373000
Drug metabolism - other enzymes	0.0679800
ECM-receptor interaction	0.1553000
Endocrine and other factor-regulated calcium reabsorption	-0.1023000

Endometrial cancer	0.4944000
Epithelial cell signaling in Helicobacter pylori infection	0.1656000
Epstein-Barr virus infection	0.3661000
ErbB signaling pathway	0.3279000
Estrogen signaling pathway	0.1797000
Ether lipid metabolism	0.0497900
Fat digestion and absorption	0.3115000
Fatty acid biosynthesis	0.3528000
Fatty acid degradation	0.5047000
Fatty acid elongation	0.2763000
Fc epsilon RI signaling pathway	0.2120000
Fc gamma R-mediated phagocytosis	0.3377000
Folate biosynthesis	0.2659000
FoxO signaling pathway	0.3095000
Fructose and mannose metabolism	0.4293000
GABAergic synapse	-0.4563000
Galactose metabolism	0.3491000
Gap junction	0.1306000
Gastric acid secretion	0.1878000
Glioma	0.3828000
Glucagon signaling pathway	0.4240000
Glutamatergic synapse	-0.1601000
Glutathione metabolism	0.3677000
Glycerolipid metabolism	0.5944000
Glycerophospholipid metabolism	0.6986000
Glycine, serine and threonine metabolism	-0.0831100
Glycolysis / Gluconeogenesis	0.4900000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.4083000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.3575000
Glycosaminoglycan degradation	0.3240000
Glycosphingolipid biosynthesis - ganglio series	0.2523000
Glycosphingolipid biosynthesis - globo series	-0.0823500
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.3097000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.4094000
Glyoxylate and dicarboxylate metabolism	0.2959000
GnRH signaling pathway	0.2935000
Graft-versus-host disease	-0.3237000
Hedgehog signaling pathway	0.0517800
Hepatitis B	0.3100000
Hepatitis C	0.4027000
Herpes simplex infection	0.2967000
HIF-1 signaling pathway	0.5105000
Histidine metabolism	-0.3581000
Huntington's disease	0.7877000
Hypertrophic cardiomyopathy (HCM)	0.2012000
Inflammatory bowel disease (IBD)	-0.1762000

Inflammatory mediator regulation of TRP channels	0.1349000
Influenza A	0.2937000
Inositol phosphate metabolism	0.9649000
Insulin secretion	-0.1066000
Insulin signaling pathway	0.4370000
Intestinal immune network for IgA production	-0.2022000
Legionellosis	-0.0868000
Leishmaniasis	-0.0628000
Leukocyte transendothelial migration	0.1132000
Linoleic acid metabolism	-1.2300000
Lipoic acid metabolism	-0.1508000
Long-term depression	0.1654000
Long-term potentiation	0.2230000
Lysine biosynthesis	-0.1025000
Lysine degradation	0.6158000
Malaria	-0.1979000
Maturity onset diabetes of the young	-0.1956000
Measles	0.1806000
Melanogenesis	0.1229000
Melanoma	0.2838000
Metabolism of xenobiotics by cytochrome P450	-1.0980000
Mineral absorption	-0.0491300
Morphine addiction	-0.2744000
mTOR signaling pathway	0.2798000
Mucin type O-Glycan biosynthesis	-0.5047000
Natural killer cell mediated cytotoxicity	0.0181700
Neuroactive ligand-receptor interaction	-0.4454000
Neurotrophin signaling pathway	0.3060000
NF-kappa B signaling pathway	0.1643000
N-Glycan biosynthesis	0.5779000
Nicotinate and nicotinamide metabolism	-0.1008000
Nitrogen metabolism	0.6581000
NOD-like receptor signaling pathway	0.2197000
Non-alcoholic fatty liver disease (NAFLD)	0.2029000
Non-small cell lung cancer	0.4803000
Notch signaling pathway	0.3561000
One carbon pool by folate	0.9876000
Oocyte meiosis	0.6898000
Osteoclast differentiation	0.1105000
Ovarian steroidogenesis	0.0120300
Oxidative phosphorylation	0.4759000
p53 signaling pathway	0.3314000
Pancreatic cancer	0.4764000
Pancreatic secretion	0.0299600
Pantothenate and CoA biosynthesis	0.1088000
Parkinson's disease	0.1907000

Pathogenic Escherichia coli infection	0.2682000
Pentose and glucuronate interconversions	-0.2996000
Pentose phosphate pathway	0.1188000
Pertussis	0.0782900
Phenylalanine metabolism	-0.0807500
Phenylalanine, tyrosine and tryptophan biosynthesis	0.3379000
Phosphatidylinositol signaling system	1.2940000
Phototransduction	-0.4165000
Platelet activation	0.2455000
Porphyrin and chlorophyll metabolism	-0.0196700
Primary bile acid biosynthesis	-0.2882000
Prion diseases	0.3094000
Progesterone-mediated oocyte maturation	0.2495000
Prolactin signaling pathway	0.3336000
Propanoate metabolism	0.4072000
Prostate cancer	0.4661000
Proximal tubule bicarbonate reclamation	0.1693000
Pyrimidine metabolism	1.8160000
Pyruvate metabolism	0.4391000
Renal cell carcinoma	0.3937000
Retinol metabolism	-1.8340000
Retrograde endocannabinoid signaling	-0.0664700
Rheumatoid arthritis	-0.1713000
Riboflavin metabolism	0.0416100
RIG-I-like receptor signaling pathway	0.2614000
Salivary secretion	0.0777900
Salmonella infection	0.3920000
Selenocompound metabolism	0.3284000
Serotonergic synapse	-0.1233000
Shigellosis	0.3471000
Signaling pathways regulating pluripotency of stem cells	0.2921000
Small cell lung cancer	0.5719000
Sphingolipid metabolism	0.6423000
Sphingolipid signaling pathway	0.3909000
Staphylococcus aureus infection	-0.1762000
Starch and sucrose metabolism	0.1405000
Steroid biosynthesis	0.3696000
Steroid hormone biosynthesis	-1.1250000
Sulfur metabolism	0.5069000
Synaptic vesicle cycle	0.5658000
Synthesis and degradation of ketone bodies	0.0870200
Systemic lupus erythematosus	-0.3204000
Taste transduction	-0.0362100
Taurine and hypotaurine metabolism	-0.3364000
T cell receptor signaling pathway	0.1653000
Terpenoid backbone biosynthesis	0.3461000

TGF-beta signaling pathway	0.3101000
Thiamine metabolism	0.1078000
Thyroid cancer	0.3253000
Thyroid hormone signaling pathway	0.5865000
Thyroid hormone synthesis	0.0414300
Tight junction	0.3229000
TNF signaling pathway	0.2943000
Toll-like receptor signaling pathway	0.0974900
Toxoplasmosis	0.2878000
Transcriptional misregulation in cancer	0.1022000
Tryptophan metabolism	-0.2852000
Type I diabetes mellitus	-0.4184000
Type II diabetes mellitus	0.1623000
Tyrosine metabolism	-0.3791000
Ubiquinone and other terpenoid-quinone biosynthesis	0.2651000
Valine, leucine and isoleucine degradation	0.4968000
Vascular smooth muscle contraction	0.1698000
Vasopressin-regulated water reabsorption	0.0058140
VEGF signaling pathway	0.2503000
Vibrio cholerae infection	0.3773000
Viral carcinogenesis	0.3449000
Viral myocarditis	0.1320000
Vitamin B6 metabolism	0.0360000
Vitamin digestion and absorption	-0.4371000
Wnt signaling pathway	0.1335000
	sample.Median
Acute myeloid leukemia	0.437200
Adherens junction	0.573500
Adipocytokine signaling pathway	0.247100
Adrenergic signaling in cardiomyocytes	-0.243700
African trypanosomiasis	-0.211100
Alanine, aspartate and glutamate metabolism	0.584800
Aldosterone-regulated sodium reabsorption	0.152700
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	0.444600
Amoebiasis	-0.068700
Amphetamine addiction	-0.066680
AMPK signaling pathway	0.476900
Amyotrophic lateral sclerosis (ALS)	0.185800
Antigen processing and presentation	-0.127200
Apoptosis	0.207800
Arachidonic acid metabolism	-0.998600
Arginine and proline metabolism	0.078230

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	0.486100
Basal cell carcinoma	0.046180
B cell receptor signaling pathway	0.146100
beta-Alanine metabolism	-0.223800
Bile secretion	0.016000
Biotin metabolism	0.257300
Bladder cancer	0.443900
Butanoate metabolism	0.203300
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	0.191400
Chronic myeloid leukemia	0.563000
Circadian entrainment	-0.026000
Circadian rhythm	0.517300
Citrate cycle (TCA cycle)	0.920700
Cocaine addiction	0.056470
Colorectal cancer	0.404800
Complement and coagulation cascades	-0.198600
Cysteine and methionine metabolism	0.540500
Cytosolic DNA-sensing pathway	0.236200
D-Glutamine and D-glutamate metabolism	0.290800
Dilated cardiomyopathy	0.101400
Dopaminergic synapse	0.054520
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	-0.082340
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	0.207400
Ether lipid metabolism	0.087340
Fat digestion and absorption	0.318400

Fatty acid biosynthesis	0.363700
Fatty acid degradation	0.522400
Fatty acid elongation	0.298200
Fc epsilon RI signaling pathway	0.224900
Fc gamma R-mediated phagocytosis	0.341000
Folate biosynthesis	0.275700
FoxO signaling pathway	0.310300
Fructose and mannose metabolism	0.468100
GABAergic synapse	-0.394200
Galactose metabolism	0.354000
Gap junction	0.137800
Gastric acid secretion	0.206800
Glioma	0.409100
Glucagon signaling pathway	0.454900
Glutamatergic synapse	-0.116200
Glutathione metabolism	0.372000
Glycerolipid metabolism	0.608500
Glycerophospholipid metabolism	0.734000
Glycine, serine and threonine metabolism	-0.033290
Glycolysis / Gluconeogenesis	0.508700
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.421600
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.402500
Glycosaminoglycan degradation	0.330300
Glycosphingolipid biosynthesis - ganglio series	0.256700
Glycosphingolipid biosynthesis - globo series	-0.079450
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.262900
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.433100
Glyoxylate and dicarboxylate metabolism	0.298900
GnRH signaling pathway	0.300400
Graft-versus-host disease	-0.311200
Hedgehog signaling pathway	0.057950
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	0.148800
Influenza A	0.309900
Inositol phosphate metabolism	0.990800
Insulin secretion	-0.091920
Insulin signaling pathway	0.450300
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	0.250700
Lysine biosynthesis	-0.093210
Lysine degradation	0.619700
Malaria	-0.163800
Maturity onset diabetes of the young	-0.172400
Measles	0.184000
Melanogenesis	0.135400
Melanoma	0.302300
Metabolism of xenobiotics by cytochrome P450	-1.041000
Mineral absorption	-0.032990
Morphine addiction	-0.217700
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	-0.071040
Nitrogen metabolism	0.666200
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	1.022000
Oocyte meiosis	0.706800
Osteoclast differentiation	0.113400
Ovarian steroidogenesis	0.042800
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	0.214900
Pathogenic Escherichia coli infection	0.301000
Pentose and glucuronate interconversions	-0.280700
Pentose phosphate pathway	0.215800
Pertussis	0.089160
Phenylalanine metabolism	-0.068270
Phenylalanine, tyrosine and tryptophan biosynthesis	0.341600
Phosphatidylinositol signaling system	1.331000

Phototransduction	-0.362100
Platelet activation	0.255600
Porphyrin and chlorophyll metabolism	-0.009479
Primary bile acid biosynthesis	-0.272200
Prion diseases	0.317800
Progesterone-mediated oocyte maturation	0.263300
Prolactin signaling pathway	0.336700
Propanoate metabolism	0.414800
Prostate cancer	0.477600
Proximal tubule bicarbonate reclamation	0.176800
Pyrimidine metabolism	1.832000
Pyruvate metabolism	0.497600
Renal cell carcinoma	0.414600
Retinol metabolism	-1.815000
Retrograde endocannabinoid signaling	-0.019680
Rheumatoid arthritis	-0.151100
Riboflavin metabolism	0.045690
RIG-I-like receptor signaling pathway	0.275000
Salivary secretion	0.082100
Salmonella infection	0.416100
Selenocompound metabolism	0.344100
Serotonergic synapse	-0.109900
Shigellosis	0.378000
Signaling pathways regulating pluripotency of stem cells	0.322400
Small cell lung cancer	0.604100
Sphingolipid metabolism	0.746400
Sphingolipid signaling pathway	0.407900
Staphylococcus aureus infection	-0.155500
Starch and sucrose metabolism	0.167000
Steroid biosynthesis	0.397400
Steroid hormone biosynthesis	-1.044000
Sulfur metabolism	0.523300
Synaptic vesicle cycle	0.580600
Synthesis and degradation of ketone bodies	0.103300
Systemic lupus erythematosus	-0.303400
Taste transduction	-0.034030
Taurine and hypotaurine metabolism	-0.314800
T cell receptor signaling pathway	0.172500
Terpenoid backbone biosynthesis	0.359200
TGF-beta signaling pathway	0.316600
Thiamine metabolism	0.125000
Thyroid cancer	0.338300
Thyroid hormone signaling pathway	0.606600
Thyroid hormone synthesis	0.061240
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	0.269700
Valine, leucine and isoleucine degradation	0.524400
Vascular smooth muscle contraction	0.184300
Vasopressin-regulated water reabsorption	0.037200
VEGF signaling pathway	0.267600
Vibrio cholerae infection	0.397100
Viral carcinogenesis	0.349000
Viral myocarditis	0.147400
Vitamin B6 metabolism	0.053650
Vitamin digestion and absorption	-0.425600
Wnt signaling pathway	0.146500

	sample.Mean
Acute myeloid leukemia	0.43340
Adherens junction	0.56780
Adipocytokine signaling pathway	0.24450
Adrenergic signaling in cardiomyocytes	-0.26300
African trypanosomiasis	-0.20860
Alanine, aspartate and glutamate metabolism	0.58050
Aldosterone-regulated sodium reabsorption	0.15220
Allograft rejection	-0.39860
alpha-Linolenic acid metabolism	0.03085
Alzheimer's disease	0.30610
Aminoacyl-tRNA biosynthesis	0.28320
Amino sugar and nucleotide sugar metabolism	0.43720
Amoebiasis	-0.06726
Amphetamine addiction	-0.06594
AMPK signaling pathway	0.47940
Amyotrophic lateral sclerosis (ALS)	0.18800
Antigen processing and presentation	-0.13170
Apoptosis	0.20280
Arachidonic acid metabolism	-1.00400
Arginine and proline metabolism	0.06390
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.31700
Ascorbate and aldarate metabolism	-0.55730
Asthma	-0.40700
Autoimmune thyroid disease	-0.39860
Axon guidance	0.25480
Bacterial invasion of epithelial cells	0.48550
Basal cell carcinoma	0.05891

B cell receptor signaling pathway	0.14090
beta-Alanine metabolism	-0.21000
Bile secretion	0.01503
Biotin metabolism	0.25900
Bladder cancer	0.44720
Butanoate metabolism	0.19800
Caffeine metabolism	-0.39040
Carbohydrate digestion and absorption	0.07084
Cardiac muscle contraction	-0.19230
Cell adhesion molecules (CAMs)	-0.22260
Cell cycle	0.95260
Chagas disease (American trypanosomiasis)	0.29790
Chemical carcinogenesis	-0.79820
Choline metabolism in cancer	0.31650
Cholinergic synapse	0.18730
Chronic myeloid leukemia	0.56540
Circadian entrainment	-0.01728
Circadian rhythm	0.51950
Citrate cycle (TCA cycle)	0.92100
Cocaine addiction	0.03846
Colorectal cancer	0.40310
Complement and coagulation cascades	-0.20050
Cysteine and methionine metabolism	0.53160
Cytosolic DNA-sensing pathway	0.23430
D-Glutamine and D-glutamate metabolism	0.29110
Dilated cardiomyopathy	0.10870
Dopaminergic synapse	0.04848
Dorso-ventral axis formation	0.29040
Drug metabolism - cytochrome P450	-0.43340
Drug metabolism - other enzymes	0.06982
ECM-receptor interaction	0.22220
Endocrine and other factor-regulated calcium reabsorption	-0.09567
Endometrial cancer	0.51210
Epithelial cell signaling in Helicobacter pylori infection	0.17550
Epstein-Barr virus infection	0.36840
ErbB signaling pathway	0.35450
Estrogen signaling pathway	0.19860
Ether lipid metabolism	0.12210
Fat digestion and absorption	0.31670
Fatty acid biosynthesis	0.36460
Fatty acid degradation	0.52060
Fatty acid elongation	0.29980
Fc epsilon RI signaling pathway	0.22270
Fc gamma R-mediated phagocytosis	0.34300
Folate biosynthesis	0.27700
FoxO signaling pathway	0.31230

Fructose and mannose metabolism	0.46440
GABAergic synapse	-0.40090
Galactose metabolism	0.39200
Gap junction	0.13560
Gastric acid secretion	0.21020
Glioma	0.40880
Glucagon signaling pathway	0.44900
Glutamatergic synapse	-0.13620
Glutathione metabolism	0.38320
Glycerolipid metabolism	0.62020
Glycerophospholipid metabolism	0.76190
Glycine, serine and threonine metabolism	-0.04123
Glycolysis / Gluconeogenesis	0.51000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.42320
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.38570
Glycosaminoglycan degradation	0.33050
Glycosphingolipid biosynthesis - ganglio series	0.25510
Glycosphingolipid biosynthesis - globo series	-0.07973
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.25840
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.43710
Glyoxylate and dicarboxylate metabolism	0.29890
GnRH signaling pathway	0.29720
Graft-versus-host disease	-0.30950
Hedgehog signaling pathway	0.06313
Hepatitis B	0.31930
Hepatitis C	0.40760
Herpes simplex infection	0.31200
HIF-1 signaling pathway	0.52380
Histidine metabolism	-0.35340
Huntington's disease	0.80280
Hypertrophic cardiomyopathy (HCM)	0.20560
Inflammatory bowel disease (IBD)	-0.17070
Inflammatory mediator regulation of TRP channels	0.14340
Influenza A	0.31080
Inositol phosphate metabolism	0.98140
Insulin secretion	-0.08750
Insulin signaling pathway	0.44870
Intestinal immune network for IgA production	-0.20020
Legionellosis	-0.08233
Leishmaniasis	-0.05233
Leukocyte transendothelial migration	0.12510
Linoleic acid metabolism	-1.21800
Lipoic acid metabolism	-0.12390
Long-term depression	0.19500
Long-term potentiation	0.23950
Lysine biosynthesis	-0.05364

Lysine degradation	0.61890
Malaria	-0.17720
Maturity onset diabetes of the young	-0.17590
Measles	0.18530
Melanogenesis	0.13860
Melanoma	0.33430
Metabolism of xenobiotics by cytochrome P450	-1.05700
Mineral absorption	-0.03403
Morphine addiction	-0.21330
mTOR signaling pathway	0.28840
Mucin type O-Glycan biosynthesis	-0.44020
Natural killer cell mediated cytotoxicity	0.02931
Neuroactive ligand-receptor interaction	-0.40730
Neurotrophin signaling pathway	0.32090
NF-kappa B signaling pathway	0.17530
N-Glycan biosynthesis	0.64540
Nicotinate and nicotinamide metabolism	-0.08361
Nitrogen metabolism	0.66470
NOD-like receptor signaling pathway	0.22690
Non-alcoholic fatty liver disease (NAFLD)	0.21450
Non-small cell lung cancer	0.49240
Notch signaling pathway	0.37410
One carbon pool by folate	1.00200
Oocyte meiosis	0.71340
Osteoclast differentiation	0.11590
Ovarian steroidogenesis	0.05478
Oxidative phosphorylation	0.47890
p53 signaling pathway	0.33590
Pancreatic cancer	0.48050
Pancreatic secretion	0.07391
Pantothenate and CoA biosynthesis	0.11150
Parkinson's disease	0.20200
Pathogenic Escherichia coli infection	0.29720
Pentose and glucuronate interconversions	-0.28160
Pentose phosphate pathway	0.24640
Pertussis	0.08634
Phenylalanine metabolism	-0.06581
Phenylalanine, tyrosine and tryptophan biosynthesis	0.34030
Phosphatidylinositol signaling system	1.30700
Phototransduction	-0.37450
Platelet activation	0.25820
Porphyrin and chlorophyll metabolism	-0.01099
Primary bile acid biosynthesis	-0.27570
Prion diseases	0.32620
Progesterone-mediated oocyte maturation	0.25170
Prolactin signaling pathway	0.33670

Propanoate metabolism	0.41470
Prostate cancer	0.46710
Proximal tubule bicarbonate reclamation	0.17610
Pyrimidine metabolism	1.85900
Pyruvate metabolism	0.49710
Renal cell carcinoma	0.41390
Retinol metabolism	-1.79900
Retrograde endocannabinoid signaling	-0.01608
Rheumatoid arthritis	-0.15920
Riboflavin metabolism	0.06365
RIG-I-like receptor signaling pathway	0.27460
Salivary secretion	0.08424
Salmonella infection	0.41840
Selenocompound metabolism	0.34980
Serotonergic synapse	-0.10320
Shigellosis	0.38440
Signaling pathways regulating pluripotency of stem cells	0.32060
Small cell lung cancer	0.60060
Sphingolipid metabolism	0.76790
Sphingolipid signaling pathway	0.40460
Staphylococcus aureus infection	-0.16210
Starch and sucrose metabolism	0.15060
Steroid biosynthesis	0.40010
Steroid hormone biosynthesis	-1.03400
Sulfur metabolism	0.52430
Synaptic vesicle cycle	0.58060
Synthesis and degradation of ketone bodies	0.10130
Systemic lupus erythematosus	-0.29380
Taste transduction	-0.03253
Taurine and hypotaurine metabolism	-0.32000
T cell receptor signaling pathway	0.17410
Terpenoid backbone biosynthesis	0.35430
TGF-beta signaling pathway	0.32100
Thiamine metabolism	0.11950
Thyroid cancer	0.33920
Thyroid hormone signaling pathway	0.60530
Thyroid hormone synthesis	0.05317
Tight junction	0.33210
TNF signaling pathway	0.29740
Toll-like receptor signaling pathway	0.10310
Toxoplasmosis	0.29330
Transcriptional misregulation in cancer	0.10830
Tryptophan metabolism	-0.27750
Type I diabetes mellitus	-0.39430
Type II diabetes mellitus	0.16920
Tyrosine metabolism	-0.34400

Ubiquinone and other terpenoid-quinone biosynthesis	0.27030
Valine, leucine and isoleucine degradation	0.51000
Vascular smooth muscle contraction	0.18000
Vasopressin-regulated water reabsorption	0.06212
VEGF signaling pathway	0.26700
Vibrio cholerae infection	0.40450
Viral carcinogenesis	0.35020
Viral myocarditis	0.14990
Vitamin B6 metabolism	0.06281
Vitamin digestion and absorption	-0.42690
Wnt signaling pathway	0.14960

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Acute myeloid leukemia	0.4397000
Adherens junction	0.5765000
Adipocytokine signaling pathway	0.2555000
Adrenergic signaling in cardiomyocytes	-0.2052000
African trypanosomiasis	-0.1732000
Alanine, aspartate and glutamate metabolism	0.6036000
Aldosterone-regulated sodium reabsorption	0.1796000
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	0.4565000
Amoebiasis	-0.0594600
Amphetamine addiction	-0.0450200
AMPK signaling pathway	0.4855000
Amyotrophic lateral sclerosis (ALS)	0.1919000
Antigen processing and presentation	-0.1099000
Apoptosis	0.2110000
Arachidonic acid metabolism	-0.9502000
Arginine and proline metabolism	0.0952100
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	0.5018000
Basal cell carcinoma	0.0632100
B cell receptor signaling pathway	0.1518000
beta-Alanine metabolism	-0.1841000
Bile secretion	0.0313000
Biotin metabolism	0.2656000
Bladder cancer	0.4555000
Butanoate metabolism	0.2070000
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	0.2287000
Chronic myeloid leukemia	0.5773000
Circadian entrainment	-0.0090250
Circadian rhythm	0.5216000
Citrate cycle (TCA cycle)	0.9248000
Cocaine addiction	0.0722800
Colorectal cancer	0.4126000
Complement and coagulation cascades	-0.1754000
Cysteine and methionine metabolism	0.5549000
Cytosolic DNA-sensing pathway	0.2504000
D-Glutamine and D-glutamate metabolism	0.3007000
Dilated cardiomyopathy	0.1386000
Dopaminergic synapse	0.0610800
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	-0.0756800
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	0.2263000
Ether lipid metabolism	0.1596000
Fat digestion and absorption	0.3235000
Fatty acid biosynthesis	0.3755000
Fatty acid degradation	0.5383000
Fatty acid elongation	0.3217000
Fc epsilon RI signaling pathway	0.2356000
Fc gamma R-mediated phagocytosis	0.3463000
Folate biosynthesis	0.2868000
FoxO signaling pathway	0.3132000
Fructose and mannose metabolism	0.5032000
GABAergic synapse	-0.3388000
Galactose metabolism	0.3969000
Gap junction	0.1429000
Gastric acid secretion	0.2292000
Glioma	0.4351000
Glucagon signaling pathway	0.4799000

Glutamatergic synapse	-0.0921900
Glutathione metabolism	0.3875000
Glycerolipid metabolism	0.6344000
Glycerophospholipid metabolism	0.7973000
Glycine, serine and threonine metabolism	0.0085860
Glycolysis / Gluconeogenesis	0.5288000
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.4365000
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.4307000
Glycosaminoglycan degradation	0.3368000
Glycosphingolipid biosynthesis - ganglio series	0.2595000
Glycosphingolipid biosynthesis - globo series	-0.0768300
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.2116000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.4608000
Glyoxylate and dicarboxylate metabolism	0.3018000
GnRH signaling pathway	0.3041000
Graft-versus-host disease	-0.2969000
Hedgehog signaling pathway	0.0693000
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	0.1574000
Influenza A	0.3270000
Inositol phosphate metabolism	1.0070000
Insulin secretion	-0.0727900
Insulin signaling pathway	0.4620000
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	0.2672000
Lysine biosynthesis	-0.0443700
Lysine degradation	0.6228000
Malaria	-0.1431000
Maturity onset diabetes of the young	-0.1527000
Measles	0.1887000
Melanogenesis	0.1511000
Melanoma	0.3528000
Metabolism of xenobiotics by cytochrome P450	-1.0000000

Mineral absorption	-0.0178900
Morphine addiction	-0.1565000
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	-0.0538700
Nitrogen metabolism	0.6728000
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	1.0360000
Oocyte meiosis	0.7304000
Osteoclast differentiation	0.1189000
Ovarian steroidogenesis	0.0855500
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	0.2262000
Pathogenic Escherichia coli infection	0.3300000
Pentose and glucuronate interconversions	-0.2627000
Pentose phosphate pathway	0.3435000
Pertussis	0.0972000
Phenylalanine metabolism	-0.0533300
Phenylalanine, tyrosine and tryptophan biosynthesis	0.3440000
Phosphatidylinositol signaling system	1.3430000
Phototransduction	-0.3201000
Platelet activation	0.2683000
Porphyrin and chlorophyll metabolism	-0.0007985
Primary bile acid biosynthesis	-0.2598000
Prion diseases	0.3347000
Progesterone-mediated oocyte maturation	0.2655000
Prolactin signaling pathway	0.3397000
Propanoate metabolism	0.4223000
Prostate cancer	0.4786000
Proximal tubule bicarbonate reclamation	0.1836000
Pyrimidine metabolism	1.8750000
Pyruvate metabolism	0.5555000
Renal cell carcinoma	0.4347000
Retinol metabolism	-1.7790000

Retrograde endocannabinoid signaling	0.0307200
Rheumatoid arthritis	-0.1390000
Riboflavin metabolism	0.0677300
RIG-I-like receptor signaling pathway	0.2882000
Salivary secretion	0.0885500
Salmonella infection	0.4425000
Selenocompound metabolism	0.3655000
Serotonergic synapse	-0.0898800
Shigellosis	0.4152000
Signaling pathways regulating pluripotency of stem cells	0.3509000
Small cell lung cancer	0.6328000
Sphingolipid metabolism	0.8721000
Sphingolipid signaling pathway	0.4216000
Staphylococcus aureus infection	-0.1415000
Starch and sucrose metabolism	0.1771000
Steroid biosynthesis	0.4278000
Steroid hormone biosynthesis	-0.9524000
Sulfur metabolism	0.5407000
Synaptic vesicle cycle	0.5954000
Synthesis and degradation of ketone bodies	0.1176000
Systemic lupus erythematosus	-0.2767000
Taste transduction	-0.0303500
Taurine and hypotaurine metabolism	-0.2984000
T cell receptor signaling pathway	0.1812000
Terpenoid backbone biosynthesis	0.3673000
TGF-beta signaling pathway	0.3275000
Thiamine metabolism	0.1367000
Thyroid cancer	0.3523000
Thyroid hormone signaling pathway	0.6255000
Thyroid hormone synthesis	0.0729900
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	0.2750000
Valine, leucine and isoleucine degradation	0.5376000
Vascular smooth muscle contraction	0.1945000
Vasopressin-regulated water reabsorption	0.0935000
VEGF signaling pathway	0.2843000
Vibrio cholerae infection	0.4243000
Viral carcinogenesis	0.3543000

Viral myocarditis	0.1653000
Vitamin B6 metabolism	0.0804600
Vitamin digestion and absorption	-0.4154000
Wnt signaling pathway	0.1627000
	sample.Max.
Acute myeloid leukemia	0.44100
Adherens junction	0.58040
Adipocytokine signaling pathway	0.25840
Adrenergic signaling in cardiomyocytes	-0.18380
African trypanosomiasis	-0.15790
Alanine, aspartate and glutamate metabolism	0.60600
Aldosterone-regulated sodium reabsorption	0.18340
Allograft rejection	-0.35330
alpha-Linolenic acid metabolism	0.06570
Alzheimer's disease	0.31530
Aminoacyl-tRNA biosynthesis	0.31780
Amino sugar and nucleotide sugar metabolism	0.47260
Amoebiasis	-0.05393
Amphetamine addiction	-0.03979
AMPK signaling pathway	0.49330
Amyotrophic lateral sclerosis (ALS)	0.20750
Antigen processing and presentation	-0.10600
Apoptosis	0.21380
Arachidonic acid metabolism	-0.94960
Arginine and proline metabolism	0.10010
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.34390
Ascorbate and aldarate metabolism	-0.52950
Asthma	-0.36940
Autoimmune thyroid disease	-0.35330
Axon guidance	0.27920
Bacterial invasion of epithelial cells	0.50450
Basal cell carcinoma	0.10800
B cell receptor signaling pathway	0.15480
beta-Alanine metabolism	-0.13020
Bile secretion	0.04941
Biotin metabolism	0.27480
Bladder cancer	0.47800
Butanoate metabolism	0.21680
Caffeine metabolism	-0.35380
Carbohydrate digestion and absorption	0.14220
Cardiac muscle contraction	-0.17630
Cell adhesion molecules (CAMs)	-0.20010
Cell cycle	0.99440
Chagas disease (American trypanosomiasis)	0.30790
Chemical carcinogenesis	-0.76080
Choline metabolism in cancer	0.32410

Cholinergic synapse	0.23720
Chronic myeloid leukemia	0.58550
Circadian entrainment	0.02192
Circadian rhythm	0.53080
Citrate cycle (TCA cycle)	0.92880
Cocaine addiction	0.07258
Colorectal cancer	0.41930
Complement and coagulation cascades	-0.16480
Cysteine and methionine metabolism	0.57230
Cytosolic DNA-sensing pathway	0.25610
D-Glutamine and D-glutamate metabolism	0.30790
Dilated cardiomyopathy	0.18280
Dopaminergic synapse	0.07982
Dorso-ventral axis formation	0.30790
Drug metabolism - cytochrome P450	-0.42470
Drug metabolism - other enzymes	0.08589
ECM-receptor interaction	0.36360
Endocrine and other factor-regulated calcium reabsorption	-0.06143
Endometrial cancer	0.54090
Epithelial cell signaling in Helicobacter pylori infection	0.19150
Epstein-Barr virus infection	0.37680
ErbB signaling pathway	0.38620
Estrogen signaling pathway	0.23220
Ether lipid metabolism	0.27990
Fat digestion and absorption	0.33750
Fatty acid biosynthesis	0.38020
Fatty acid degradation	0.57710
Fatty acid elongation	0.33050
Fc epsilon RI signaling pathway	0.24600
Fc gamma R-mediated phagocytosis	0.35910
Folate biosynthesis	0.29090
FoxO signaling pathway	0.32000
Fructose and mannose metabolism	0.54050
GABAergic synapse	-0.31160
Galactose metabolism	0.51280
Gap junction	0.14470
Gastric acid secretion	0.24720
Glioma	0.43890
Glucagon signaling pathway	0.49920
Glutamatergic synapse	-0.09115
Glutathione metabolism	0.42460
Glycerolipid metabolism	0.70430
Glycerophospholipid metabolism	0.92000
Glycine, serine and threonine metabolism	0.04436
Glycolysis / Gluconeogenesis	0.58890
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.45190

Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.43590
Glycosaminoglycan degradation	0.34180
Glycosphingolipid biosynthesis - ganglio series	0.26400
Glycosphingolipid biosynthesis - globo series	-0.06976
Glycosphingolipid biosynthesis - lacto and neolacto series	-0.12550
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.47770
Glyoxylate and dicarboxylate metabolism	0.30910
GnRH signaling pathway	0.30760
Graft-versus-host disease	-0.28790
Hedgehog signaling pathway	0.09218
Hepatitis B	0.33650
Hepatitis C	0.42370
Herpes simplex infection	0.33430
HIF-1 signaling pathway	0.55510
Histidine metabolism	-0.33800
Huntington's disease	0.83030
Hypertrophic cardiomyopathy (HCM)	0.21950
Inflammatory bowel disease (IBD)	-0.16110
Inflammatory mediator regulation of TRP channels	0.16340
Influenza A	0.33340
Inositol phosphate metabolism	1.01300
Insulin secretion	-0.04789
Insulin signaling pathway	0.46220
Intestinal immune network for IgA production	-0.19110
Legionellosis	-0.07251
Leishmaniasis	-0.03578
Leukocyte transendothelial migration	0.15970
Linoleic acid metabolism	-1.18300
Lipoic acid metabolism	-0.07257
Long-term depression	0.23390
Long-term potentiation	0.27050
Lysine biosynthesis	0.07530
Lysine degradation	0.63010
Malaria	-0.09539
Maturity onset diabetes of the young	-0.15200
Measles	0.19440
Melanogenesis	0.16880
Melanoma	0.48920
Metabolism of xenobiotics by cytochrome P450	-0.98640
Mineral absorption	-0.01296
Morphine addiction	-0.07391
mTOR signaling pathway	0.30360
Mucin type O-Glycan biosynthesis	-0.31920
Natural killer cell mediated cytotoxicity	0.05384
Neuroactive ligand-receptor interaction	-0.36800
Neurotrophin signaling pathway	0.34520

NF-kappa B signaling pathway	0.19950
N-Glycan biosynthesis	0.72200
Nicotinate and nicotinamide metabolism	-0.04135
Nitrogen metabolism	0.67320
NOD-like receptor signaling pathway	0.24880
Non-alcoholic fatty liver disease (NAFLD)	0.24680
Non-small cell lung cancer	0.51350
Notch signaling pathway	0.45580
One carbon pool by folate	1.05700
Oocyte meiosis	0.75310
Osteoclast differentiation	0.13230
Ovarian steroidogenesis	0.12290
Oxidative phosphorylation	0.48820
p53 signaling pathway	0.35340
Pancreatic cancer	0.49900
Pancreatic secretion	0.15250
Pantothenate and CoA biosynthesis	0.11950
Parkinson's disease	0.24130
Pathogenic Escherichia coli infection	0.33040
Pentose and glucuronate interconversions	-0.24070
Pentose phosphate pathway	0.46520
Pertussis	0.11960
Phenylalanine metabolism	-0.04124
Phenylalanine, tyrosine and tryptophan biosynthesis	0.34600
Phosphatidylinositol signaling system	1.34900
Phototransduction	-0.30220
Platelet activation	0.28510
Porphyrin and chlorophyll metabolism	0.01364
Primary bile acid biosynthesis	-0.23990
Prion diseases	0.36080
Progesterone-mediated oocyte maturation	0.26590
Prolactin signaling pathway	0.34750
Propanoate metabolism	0.43920
Prostate cancer	0.47890
Proximal tubule bicarbonate reclamation	0.18440
Pyrimidine metabolism	1.99100
Pyruvate metabolism	0.57140
Renal cell carcinoma	0.45420
Retinol metabolism	-1.69600
Retrograde endocannabinoid signaling	0.08953
Rheumatoid arthritis	-0.12750
Riboflavin metabolism	0.12930
RIG-I-like receptor signaling pathway	0.29630
Salivary secretion	0.10520
Salmonella infection	0.45410
Selenocompound metabolism	0.38500

Serotonergic synapse	-0.05298
Shigellosis	0.43890
Signaling pathways regulating pluripotency of stem cells	0.36070
Small cell lung cancer	0.64530
Sphingolipid metabolism	0.94840
Sphingolipid signaling pathway	0.43890
Staphylococcus aureus infection	-0.10620
Starch and sucrose metabolism	0.18240
Steroid biosynthesis	0.44170
Steroid hormone biosynthesis	-0.90760
Sulfur metabolism	0.54440
Synaptic vesicle cycle	0.60320
Synthesis and degradation of ketone bodies	0.14790
Systemic lupus erythematosus	-0.23850
Taste transduction	-0.02065
Taurine and hypotaurine metabolism	-0.29250
T cell receptor signaling pathway	0.18830
Terpenoid backbone biosynthesis	0.37440
TGF-beta signaling pathway	0.34870
Thiamine metabolism	0.14930
Thyroid cancer	0.36030
Thyroid hormone signaling pathway	0.63230
Thyroid hormone synthesis	0.07904
Tight junction	0.34420
TNF signaling pathway	0.30620
Toll-like receptor signaling pathway	0.11820
Toxoplasmosis	0.30420
Transcriptional misregulation in cancer	0.12020
Tryptophan metabolism	-0.25320
Type I diabetes mellitus	-0.34520
Type II diabetes mellitus	0.18790
Tyrosine metabolism	-0.28530
Ubiquinone and other terpenoid-quinone biosynthesis	0.28350
Valine, leucine and isoleucine degradation	0.54780
Vascular smooth muscle contraction	0.20380
Vasopressin-regulated water reabsorption	0.17060
VEGF signaling pathway	0.28660
Vibrio cholerae infection	0.46960
Viral carcinogenesis	0.36520
Viral myocarditis	0.17270
Vitamin B6 metabolism	0.14130
Vitamin digestion and absorption	-0.40700
Wnt signaling pathway	0.18260
	p.value
Acute myeloid leukemia	4.679187e-01
Adherens junction	1.384856e-01

Adipocytokine signaling pathway	1.952346e-01
Adrenergic signaling in cardiomyocytes	7.612278e-01
African trypanosomiasis	4.682416e-01
Alanine, aspartate and glutamate metabolism	9.493295e-02
Aldosterone-regulated sodium reabsorption	5.774420e-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	8.124383e-02
Amoebiasis	6.617064e-01
Amphetamine addiction	3.204489e-03
AMPK signaling pathway	7.010723e-01
Amyotrophic lateral sclerosis (ALS)	2.354015e-01
Antigen processing and presentation	1.139761e-02
Apoptosis	7.640618e-02
Arachidonic acid metabolism	1.097568e-01
Arginine and proline metabolism	1.804279e-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	2.778934e-01
Basal cell carcinoma	2.101500e-03
B cell receptor signaling pathway	2.844850e-01
beta-Alanine metabolism	9.344103e-01
Bile secretion	3.897434e-01
Biotin metabolism	5.909040e-01
Bladder cancer	1.837957e-01
Butanoate metabolism	3.096456e-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	5.536059e-01
Chronic myeloid leukemia	3.874615e-01
Circadian entrainment	6.391208e-01
Circadian rhythm	2.025562e-05
Citrate cycle (TCA cycle)	3.967858e-01
Cocaine addiction	5.783471e-01
Colorectal cancer	9.205659e-01

Complement and coagulation cascades	6.211332e-02
Cysteine and methionine metabolism	4.822799e-01
Cytosolic DNA-sensing pathway	8.123825e-01
D-Glutamine and D-glutamate metabolism	4.414690e-02
Dilated cardiomyopathy	3.162048e-02
Dopaminergic synapse	6.125377e-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	6.126610e-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	1.668893e-01
Ether lipid metabolism	5.789992e-01
Fat digestion and absorption	9.823653e-03
Fatty acid biosynthesis	1.323411e-01
Fatty acid degradation	2.220921e-01
Fatty acid elongation	4.298000e-01
Fc epsilon RI signaling pathway	4.787622e-01
Fc gamma R-mediated phagocytosis	3.446828e-01
Folate biosynthesis	4.454349e-01
FoxO signaling pathway	5.366351e-01
Fructose and mannose metabolism	8.114928e-01
GABAergic synapse	5.308101e-01
Galactose metabolism	6.913817e-01
Gap junction	6.617566e-02
Gastric acid secretion	1.048388e-01
Glioma	1.511666e-01
Glucagon signaling pathway	4.448527e-01
Glutamatergic synapse	9.633678e-01
Glutathione metabolism	4.693660e-01
Glycerolipid metabolism	2.321556e-02
Glycerophospholipid metabolism	6.242891e-01
Glycine, serine and threonine metabolism	2.962396e-01
Glycolysis / Gluconeogenesis	9.671893e-01
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	5.834182e-01
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	6.083384e-01
Glycosaminoglycan degradation	4.509541e-03
Glycosphingolipid biosynthesis - ganglio series	5.480292e-01
Glycosphingolipid biosynthesis - globo series	4.333208e-01
Glycosphingolipid biosynthesis - lacto and neolacto series	8.861219e-01
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	8.525705e-01
Glyoxylate and dicarboxylate metabolism	4.200999e-04

GnRH signaling pathway	2.712824e-02
Graft-versus-host disease	1.754120e-01
Hedgehog signaling pathway	2.402475e-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	3.445052e-01
Influenza A	1.549479e-01
Inositol phosphate metabolism	8.611462e-01
Insulin secretion	2.665487e-01
Insulin signaling pathway	2.679513e-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	1.369738e-01
Lysine biosynthesis	1.904448e-01
Lysine degradation	4.765994e-02
Malaria	4.080270e-01
Maturity onset diabetes of the young	5.769450e-01
Measles	8.548674e-01
Melanogenesis	1.206594e-01
Melanoma	3.889056e-01
Metabolism of xenobiotics by cytochrome P450	4.867636e-01
Mineral absorption	3.341493e-01
Morphine addiction	6.225981e-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	9.062345e-01
Nitrogen metabolism	1.018369e-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	2.445995e-02
Oocyte meiosis	3.896374e-03
Osteoclast differentiation	3.008375e-01
Ovarian steroidogenesis	9.684947e-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	1.311750e-01
Pathogenic Escherichia coli infection	4.480331e-01
Pentose and glucuronate interconversions	1.335812e-01
Pentose phosphate pathway	5.395466e-01
Pertussis	3.423775e-01
Phenylalanine metabolism	5.477357e-02
Phenylalanine, tyrosine and tryptophan biosynthesis	6.245936e-04
Phosphatidylinositol signaling system	4.912809e-01
Phototransduction	8.429404e-01
Platelet activation	1.353465e-01
Porphyrin and chlorophyll metabolism	6.763440e-01
Primary bile acid biosynthesis	5.245803e-01
Prion diseases	7.811634e-01
Progesterone-mediated oocyte maturation	4.428550e-01
Prolactin signaling pathway	8.024226e-01
Propanoate metabolism	8.104834e-02
Prostate cancer	3.351046e-01
Proximal tubule bicarbonate reclamation	6.942137e-01
Pyrimidine metabolism	1.318121e-01
Pyruvate metabolism	4.653296e-01
Renal cell carcinoma	3.570001e-01
Retinol metabolism	1.698224e-01
Retrograde endocannabinoid signaling	8.648620e-01
Rheumatoid arthritis	2.880170e-01
Riboflavin metabolism	6.513512e-01
RIG-I-like receptor signaling pathway	8.665204e-01
Salivary secretion	4.209770e-01
Salmonella infection	2.262457e-01
Selenocompound metabolism	3.287668e-01
Serotonergic synapse	5.472214e-01
Shigellosis	2.329993e-01
Signaling pathways regulating pluripotency of stem cells	6.684990e-02
Small cell lung cancer	8.860703e-01
Sphingolipid metabolism	8.678058e-01
Sphingolipid signaling pathway	9.823105e-02
Staphylococcus aureus infection	2.318215e-01

Starch and sucrose metabolism	2.209481e-02
Steroid biosynthesis	5.225772e-01
Steroid hormone biosynthesis	1.083607e-01
Sulfur metabolism	1.841501e-01
Synaptic vesicle cycle	4.780804e-01
Synthesis and degradation of ketone bodies	1.054738e-01
Systemic lupus erythematosus	2.161239e-01
Taste transduction	1.303071e-03
Taurine and hypotaurine metabolism	4.036299e-02
T cell receptor signaling pathway	2.344028e-01
Terpenoid backbone biosynthesis	2.202087e-01
TGF-beta signaling pathway	4.660747e-01
Thiamine metabolism	8.784280e-02
Thyroid cancer	5.796910e-02
Thyroid hormone signaling pathway	4.540432e-01
Thyroid hormone synthesis	2.650294e-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	1.013923e-01
Valine, leucine and isoleucine degradation	5.131578e-01
Vascular smooth muscle contraction	2.627034e-01
Vasopressin-regulated water reabsorption	6.349579e-01
VEGF signaling pathway	1.547803e-02
Vibrio cholerae infection	7.507316e-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	4.311888e-02
	q.value
Acute myeloid leukemia	0.694677396
Adherens junction	0.409917238
Adipocytokine signaling pathway	0.466043812
Adrenergic signaling in cardiomyocytes	0.857830349
African trypanosomiasis	0.694677396
Alanine, aspartate and glutamate metabolism	0.369738847
Aldosterone-regulated sodium reabsorption	0.734501866
Allograft rejection	0.424976922
alpha-Linolenic acid metabolism	0.430299556

Alzheimer's disease	0.694677396
Aminoacyl-tRNA biosynthesis	0.912359861
Amino sugar and nucleotide sugar metabolism	0.334002404
Amoebiasis	0.777242424
Amphetamine addiction	0.101628076
AMPK signaling pathway	0.798143846
Amyotrophic lateral sclerosis (ALS)	0.517417254
Antigen processing and presentation	0.155336994
Apoptosis	0.334002404
Arachidonic acid metabolism	0.374861684
Arginine and proline metabolism	0.449245407
Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.694677396
Ascorbate and aldarate metabolism	0.424976922
Asthma	0.326756648
Autoimmune thyroid disease	0.424976922
Axon guidance	0.334002404
Bacterial invasion of epithelial cells	0.577362635
Basal cell carcinoma	0.077755517
B cell receptor signaling pathway	0.584774760
beta-Alanine metabolism	0.951555405
Bile secretion	0.686690688
Biotin metabolism	0.741133796
Bladder cancer	0.449245407
Butanoate metabolism	0.608330249
Caffeine metabolism	0.252408056
Carbohydrate digestion and absorption	0.326756648
Cardiac muscle contraction	0.878910611
Cell adhesion molecules (CAMs)	0.771032183
Cell cycle	0.077755517
Chagas disease (American trypanosomiasis)	0.694677396
Chemical carcinogenesis	0.577362635
Choline metabolism in cancer	0.136516753
Cholinergic synapse	0.731550704
Chronic myeloid leukemia	0.686690688
Circadian entrainment	0.762821603
Circadian rhythm	0.004496748
Citrate cycle (TCA cycle)	0.688175446
Cocaine addiction	0.734501866
Colorectal cancer	0.941777074
Complement and coagulation cascades	0.326756648
Cysteine and methionine metabolism	0.694677396
Cytosolic DNA-sensing pathway	0.892816416
D-Glutamine and D-glutamate metabolism	0.280017474
Dilated cardiomyopathy	0.245807803
Dopaminergic synapse	0.755615179
Dorso-ventral axis formation	0.374010009

Drug metabolism - cytochrome P450	0.409917238
Drug metabolism - other enzymes	0.694677396
ECM-receptor interaction	0.252408056
Endocrine and other factor-regulated calcium reabsorption	0.755615179
Endometrial cancer	0.967032272
Epithelial cell signaling in Helicobacter pylori infection	0.136516753
Epstein-Barr virus infection	0.285959618
ErbB signaling pathway	0.694677396
Estrogen signaling pathway	0.430807158
Ether lipid metabolism	0.734501866
Fat digestion and absorption	0.150718633
Fatty acid biosynthesis	0.409917238
Fatty acid degradation	0.513587974
Fatty acid elongation	0.694677396
Fc epsilon RI signaling pathway	0.694677396
Fc gamma R-mediated phagocytosis	0.637663112
Folate biosynthesis	0.694677396
FoxO signaling pathway	0.730353123
Fructose and mannose metabolism	0.892816416
GABAergic synapse	0.727406472
Galactose metabolism	0.794409446
Gap junction	0.326756648
Gastric acid secretion	0.374861684
Glioma	0.424976922
Glucagon signaling pathway	0.694677396
Glutamatergic synapse	0.968494659
Glutathione metabolism	0.694677396
Glycerolipid metabolism	0.233689045
Glycerophospholipid metabolism	0.757334362
Glycine, serine and threonine metabolism	0.597865445
Glycolysis / Gluconeogenesis	0.968494659
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.735902519
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	0.755615179
Glycosaminoglycan degradation	0.111235346
Glycosphingolipid biosynthesis - ganglio series	0.730353123
Glycosphingolipid biosynthesis - globo series	0.694677396
Glycosphingolipid biosynthesis - lacto and neolacto series	0.919248000
Glycosylphosphatidylinositol(GPI)-anchor biosynthesis	0.913046880
Glyoxylate and dicarboxylate metabolism	0.046219928
GnRH signaling pathway	0.233689045
Graft-versus-host disease	0.442516739
Hedgehog signaling pathway	0.233689045
Hepatitis B	0.734501866
Hepatitis C	0.688175446
Herpes simplex infection	0.397172747
HIF-1 signaling pathway	0.762821603

Histidine metabolism	0.326756648
Huntington's disease	0.430807158
Hypertrophic cardiomyopathy (HCM)	0.136516753
Inflammatory bowel disease (IBD)	0.213497645
Inflammatory mediator regulation of TRP channels	0.637663112
Influenza A	0.424976922
Inositol phosphate metabolism	0.913046880
Insulin secretion	0.563560115
Insulin signaling pathway	0.233689045
Intestinal immune network for IgA production	0.621841669
Legionellosis	0.730353123
Leishmaniasis	0.334002404
Leukocyte transendothelial migration	0.155336994
Linoleic acid metabolism	0.245807803
Lipoic acid metabolism	0.424976922
Long-term depression	0.650836542
Long-term potentiation	0.409917238
Lysine biosynthesis	0.459551518
Lysine degradation	0.285959618
Malaria	0.694677396
Maturity onset diabetes of the young	0.734501866
Measles	0.913046880
Melanogenesis	0.399796657
Melanoma	0.686690688
Metabolism of xenobiotics by cytochrome P450	0.694677396
Mineral absorption	0.635839532
Morphine addiction	0.757334362
mTOR signaling pathway	0.252408056
Mucin type O-Glycan biosynthesis	0.414712467
Natural killer cell mediated cytotoxicity	0.148636621
Neuroactive ligand-receptor interaction	0.734501866
Neurotrophin signaling pathway	0.563560115
NF-kappa B signaling pathway	0.732953900
N-Glycan biosynthesis	0.757334362
Nicotinate and nicotinamide metabolism	0.931407672
Nitrogen metabolism	0.150718633
NOD-like receptor signaling pathway	0.694677396
Non-alcoholic fatty liver disease (NAFLD)	0.930044522
Non-small cell lung cancer	0.913046880
Notch signaling pathway	0.694677396
One carbon pool by folate	0.233689045
Oocyte meiosis	0.108124372
Osteoclast differentiation	0.601674946
Ovarian steroidogenesis	0.968494659
Oxidative phosphorylation	0.374861684
p53 signaling pathway	0.333957453

Pancreatic cancer	0.430807158
Pancreatic secretion	0.724742336
Pantothenate and CoA biosynthesis	0.233689045
Parkinson's disease	0.409917238
Pathogenic Escherichia coli infection	0.694677396
Pentose and glucuronate interconversions	0.409917238
Pentose phosphate pathway	0.730353123
Pertussis	0.637663112
Phenylalanine metabolism	0.319992986
Phenylalanine, tyrosine and tryptophan biosynthesis	0.046219928
Phosphatidylinositol signaling system	0.694677396
Phototransduction	0.913046880
Platelet activation	0.409917238
Porphyrin and chlorophyll metabolism	0.786117093
Primary bile acid biosynthesis	0.724742336
Prion diseases	0.875849889
Progesterone-mediated oocyte maturation	0.694677396
Prolactin signaling pathway	0.890689079
Propanoate metabolism	0.334002404
Prostate cancer	0.635839532
Proximal tubule bicarbonate reclamation	0.794409446
Pyrimidine metabolism	0.409917238
Pyruvate metabolism	0.694677396
Renal cell carcinoma	0.650836542
Retinol metabolism	0.433339793
Retrograde endocannabinoid signaling	0.913046880
Rheumatoid arthritis	0.586603374
Riboflavin metabolism	0.771032183
RIG-I-like receptor signaling pathway	0.913046880
Salivary secretion	0.694677396
Salmonella infection	0.517417254
Selenocompound metabolism	0.634662828
Serotonergic synapse	0.730353123
Shigellosis	0.517417254
Signaling pathways regulating pluripotency of stem cells	0.326756648
Small cell lung cancer	0.919248000
Sphingolipid metabolism	0.913046880
Sphingolipid signaling pathway	0.374010009
Staphylococcus aureus infection	0.517417254
Starch and sucrose metabolism	0.233689045
Steroid biosynthesis	0.724742336
Steroid hormone biosynthesis	0.374861684
Sulfur metabolism	0.449245407
Synaptic vesicle cycle	0.694677396
Synthesis and degradation of ketone bodies	0.374861684
Systemic lupus erythematosus	0.510420240

```
Taste transduction                                                0.072320444
Taurine and hypotaurine metabolism                                0.271532808
T cell receptor signaling pathway                                 0.517417254
Terpenoid backbone biosynthesis                                   0.513587974
TGF-beta signaling pathway                                        0.694677396
Thiamine metabolism                                               0.354565482
Thyroid cancer                                                    0.321728512
Thyroid hormone signaling pathway                                 0.694677396
Thyroid hormone synthesis                                         0.563560115
Tight junction                                                    0.694677396
TNF signaling pathway                                             0.694677396
Toll-like receptor signaling pathway                              0.326756648
Toxoplasmosis                                                     0.794409446
Transcriptional misregulation in cancer                           0.369738847
Tryptophan metabolism                                             0.913317663
Type I diabetes mellitus                                          0.656447560
Type II diabetes mellitus                                         0.608330249
Tyrosine metabolism                                               0.694677396
Ubiquinone and other terpenoid-quinone biosynthesis               0.374861684
Valine, leucine and isoleucine degradation                        0.721019234
Vascular smooth muscle contraction                                0.563560115
Vasopressin-regulated water reabsorption                          0.762821603
VEGF signaling pathway                                            0.190895687
Vibrio cholerae infection                                         0.850318406
Viral carcinogenesis                                              0.245807803
Viral myocarditis                                                 0.781195614
Vitamin B6 metabolism                                             0.321728512
Vitamin digestion and absorption                                  0.326756648
Wnt signaling pathway                                             0.280017474

$errors
named list()
```

Apart from the expected arguments: a count 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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the `"TMM"` method is used for the normalization. The user can select `DESeq2` by setting argument `norm.method` to `"DESeq2"`. The node labels of pathway topologies are automatically converted into entrezIDs. This is controlled with `IDs` argument. A converstion into the gene symbols is available too. Please note, that the node labels should be the same as the rownames of count 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 and the user can select between log fold-change (`gene.stat="logFC"`) or test statistic (`gene.stat="stats"`). These statistics are later used in the visualization of a selected pathway.

3.6 TBS

TBS 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.

```
> tbs<-TBS(hnrnp.cnts, group, pathways, type="RNASeq",  logFC.th=-1, nperm=100)
> #528 node labels mapped to the expression data
> #Average coverage 83.16538
> #0 (out of 10) pathways without a mapped node
> #test was not specified. 'vstlimma' used as default
> #Found 5702 differentially expressed genes
> #Preparing permutation table and downstream list
> #Observed scores..
> #Random scores..
> #100
> #Normalization and p-values...
> res(tbs)
> #                                          TBS.obs.norm    p      p.adj
> #Acute myeloid leukemia                      -1.6325413 0.05 0.06250000
> #Adherens junction                           -3.9416308 0.01 0.01666667
> #Adipocytokine signaling pathway             -3.1989858 0.00 0.00000000
> #Adrenergic signaling in cardiomyocytes     -16.1777366 0.00 0.00000000
> #African trypanosomiasis                     -4.0834773 0.00 0.00000000
> #Alanine, aspartate and glutamate metabolism  0.0137086 0.44 0.48888889
> #Alcoholism                                  -4.1997338 0.00 0.00000000
> #Aldosterone-regulated sodium reabsorption    1.9996012 1.00 1.00000000
> #Allograft rejection                         -3.4004380 0.01 0.01666667
> #alpha-Linolenic acid metabolism             -2.6720346 0.02 0.02857143
```

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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the `"limma"` method is used for the differential expression analysis on gene-level. The user can select `DESeq2` by setting argument `test` to `"DESeq2"`. The node labels of pathway topologies are automatically converted into entrezIDs. This is controlled with `IDs` argument. A converstion into the gene symbols is available too. Please note, that the node labels should be the same as the rownames of

count data matrix. The default thresholds for the differential expression analysis of genes 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 and the user can select between log fold-change (`gene.stat="logFC"`) or test statistic (`gene.stat="stats"`). These statistics are later used in the visualization of a selected pathway. The last argument `nperm` 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
> #test was not specified. 'vstlimma' used as default
> #Preparing data..
> #1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25
> #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 count 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 `"RNA-Seq"` for RNA-Seq data). The others arguments are optional. By default, the `"limma"` method is used for the differential expression analysis on gene-level and `TMM` for data normalization prior to calculating the TIFs. The user can select `DESeq2` by setting argument `test` to `"DESeq2"`. The node labels of pathway topologies are automaticaly converted into entrezIDs. This is controlled with `IDs` argument. A converstion into the gene symbols is available too. Please note, that the node labels should be the same as the rownames of count 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 and the user can select between log fold-change (`gene.stat="logFC"`) or test statistic (`gene.stat="stats"`). 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.

```
> library(gageData)
> data(hnrnp.cnts)
> group<-c(rep("sample",4), rep("control",4))
> hnrnp.cnts<-hnrnp.cnts[rowSums(hnrnp.cnts)>0,]
> cli<-Clipper(hnrnp.cnts, group, pathways[1:2], type="RNASeq", testCliques=TRUE)
> plot(cli,1, kegg)
>
```

In the visualization of the results from TBS, 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,]
> spi<-SPIA(hnrnp.cnts, group, kegg[45:50], type="RNASeq", logFC.th=-1)
> plot(spi,"Complement and coagulation cascades", kegg[45:50], fontsize=50)
>
```

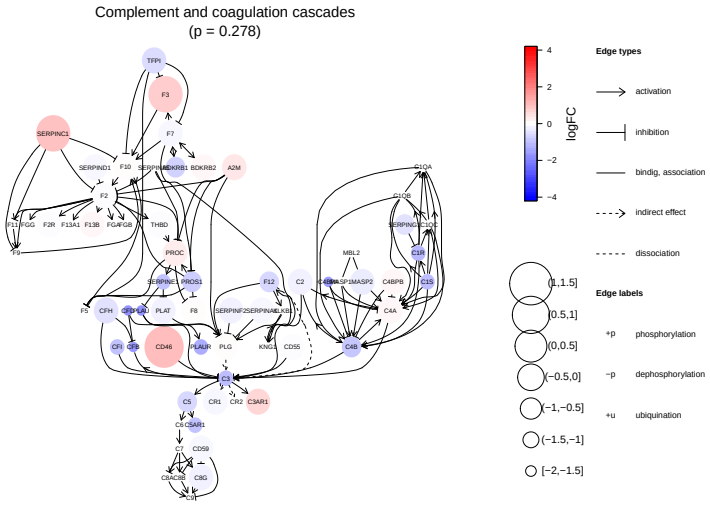
Complement and coagulation cascades
(p = 0.278)
TFPI
F3
F7
SERPINC1
SERPIND1
F10
SERPINA5
BDKRB1
BDKRB2
A2M
F2
F11
F2R
F13A1
F13B
F12A
F12B
THBD
PROC
SERPINE1
PROS1
F12
C2
MASP1
MASP2
C4BPB
C1QA
C1QB
SERPING1
C1QC
MBL2
C1R
C1S
F9
CFH
CFHR1
PLAT
F8
SERPINF2
SERPINA1
KLKB1
C4A
CFI
CFB
CD46
PLAUR
PLG
KNG1
CD55
C4B
C3
C5
CR1
CR2
C3AR1
C5AR1
C7
CD59
C8A
C8B
C8G
C9
logFC
4
2
0
−2
−4
Edge types
activation
inhibition
bindig, association
indirect effect
dissociation
Edge labels
(1,1.5]
(0.5,1]
(0,0.5]
(−0.5,0]
(−1,−0.5]
(−1.5,−1]
[−2,−1.5]
+p
phosphorylation
−p
dephosphorylation
+u
ubiquination

Figure 4.1:

Bibliography

[Al-Haj Ibrahim *et al.*(2012)] Al-Haj Ibrahim, M., Jassim, S., Cawthorne, M. A., and Langlands, K. (2012). A topology-based score for pathway enrichment. *J Comput Biol*.

[Anders and Huber(2010)] Anders, S. and Huber, W. (2010). Differential expression analysis for sequence count data. *Genome Biology*, **11**(10), R106.

[Dillies *et al.*(2013)] Dillies, M.-A., Rau, A., Aubert, J., Hennequet-Antier, C., Jeanmougin, M., Servant, N., Keime, C., Marot, G., Castel, D., Estelle, J., Guernec, G., Jagla, B., Jouneau, L., Laloe, D., Le Gall, C., Schaeffer, B., Le Crom, S., Guedj, M., and Jaffrezic, F. (2013). A comprehensive evaluation of normalization methods for illumina high-throughput rna sequencing data analysis. *Briefings in Bioinformatics*, **14**(6), 671–683.

[Draghici *et al.*(2007)] Draghici, S., Khatri, P., Tarca, A. L., Amin, K., Done, A., Voichita, C., Georgescu, C., and Romero, R. (2007). A systems biology approach for pathway level analysis. *Genome Research*, **17**(10), 000.

[Gao and Wang(2007)] Gao, S. and Wang, X. (2007). Tappa: topological analysis of pathway phenotype association. *Bioinformatics*, **23**(22), 3100–3102.

[Hung *et al.*(2010)] Hung, J.-H., Whitfield, T., Yang, T.-H., Hu, Z., Weng, Z., and DeLisi, C. (2010). Identification of functional modules that correlate with phenotypic difference: the influence of network topology. *Genome Biology*, **11**(2), R23.

[Jacob *et al.*(2010)] Jacob, L., Neuvial, P., and Dudoit, S. (2010). Gains in Power from Structured Two-Sample Tests of Means on Graphs. *ArXiv e-prints*.

[Martini *et al.*(2012)] Martini, P., Sales, G., Massa, M. S., Chiogna, M., and Romualdi, C. (2012). Along signal paths: an empirical gene set approach exploiting pathway topology. *Nucleic Acids Research*.

[Massa *et al.*(2010)] Massa, M., Chiogna, M., and Romualdi, C. (2010). Gene set analysis exploiting the topology of a pathway. *BMC Systems Biology*, **4**(1), 121.

[R Core Team(2014)] R Core Team (2014). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.

[Robinson and Oshlack(2010] Robinson, M. and Oshlack, A. (2010). A scaling normalization method for differential expression analysis of rna-seq data. *Genome Biology*, **11**(3), R25.

[Sales *et al.*(2012)] Sales, G., Calura, E., Cavalieri, D., and Romualdi, C. (2012). graphite - a bioconductor package to convert pathway topology to gene network. *BMC Bioinformatics*, **13**(1), 20.

[Tarca *et al.*(2009)] Tarca, A. L., Draghici, S., Khatri, P., Hassan, S. S., Mittal, P., Kim, J.-s., Kim, C. J., Kusanovic, J. P., and Romero, R. (2009). A novel signaling pathway impact analysis. *Bioinformatics*, **25**(1), 75–82.