

Package ‘ReactomePA’

May 27, 2022

Type Package

Title Reactome Pathway Analysis

Version 1.41.0

Maintainer Guangchuang Yu <guangchuangyu@gmail.com>

Description This package provides functions for pathway analysis based on REACTOME pathway database. It implements enrichment analysis, gene set enrichment analysis and several functions for visualization.

Depends R (>= 3.4.0)

Imports AnnotationDbi, DOSE (>= 3.5.1), enrichplot, ggplot2 (>= 3.3.5), ggraph, reactome.db, igraph, graphite

Suggests BiocStyle, clusterProfiler, knitr, rmarkdown, org.Hs.eg.db, prettydoc, testthat

VignetteBuilder knitr

ByteCompile true

License GPL-2

URL <https://yulab-smu.top/biomedical-knowledge-mining-book/>

BugReports <https://github.com/GuangchuangYu/ReactomePA/issues>

biocViews Pathways, Visualization, Annotation, MultipleComparison, GeneSetEnrichment, Reactome

RoxygenNote 7.1.2

Encoding UTF-8

git_url <https://git.bioconductor.org/packages/ReactomePA>

git_branch master

git_last_commit 79a22cd

git_last_commit_date 2022-04-26

Date/Publication 2022-05-27

Author Guangchuang Yu [aut, cre],
Vladislav Petyuk [ctb]

R topics documented:

ReactomePA-package	2
DataSet	3
enrichPathway	3
getALLEG	4
getDb	5
gsePathway	5
viewPathway	6

Index	8
--------------	----------

ReactomePA-package	<i>Reactome Pathway Analysis</i>
--------------------	----------------------------------

Description

This package is designed for reactome pathway analysis.

Details

Package: ReactomePA
 Type: Package
 Version: 1.9.4
 Date: 02-09-2012
 biocViews: Bioinformatics, Pathway, Visualization
 Depends: AnnotationDbi, org.Hs.eg.db, igraph, plyr, methods, stats, qvalue, reactome.db
 Suggests: GOsemSim, DOSE, clusterProfiler
 License: GPL-2

Author(s)

Guangchuang Yu <guangchuangyu@gmail.com>

Maintainer: Guangchuang Yu <guangchuangyu@gmail.com>

See Also

[enrichResult](#)

DataSet	<i>Datasets sample contains a sample of gene IDs.</i>
---------	---

Description

Datasets sample contains a sample of gene IDs.

enrichPathway	<i>Pathway Enrichment Analysis of a gene set. Given a vector of genes, this function will return the enriched pathways with FDR control.</i>
---------------	--

Description

Pathway Enrichment Analysis of a gene set. Given a vector of genes, this function will return the enriched pathways with FDR control.

Usage

```
enrichPathway(
  gene,
  organism = "human",
  pvalueCutoff = 0.05,
  pAdjustMethod = "BH",
  qvalueCutoff = 0.2,
  universe,
  minGSSize = 10,
  maxGSSize = 500,
  readable = FALSE
)
```

Arguments

gene	a vector of entrez gene id.
organism	one of "human", "rat", "mouse", "celegans", "yeast", "zebrafish", "fly".
pvalueCutoff	Cutoff value of pvalue.
pAdjustMethod	one of "holm", "hochberg", "hommel", "bonferroni", "BH", "BY", "fdr", "none"
qvalueCutoff	Cutoff value of qvalue
universe	background genes
minGSSize	minimal size of genes annotated by Ontology term for testing.
maxGSSize	maximal size of each geneSet for analyzing
readable	whether mapping gene ID to gene Name

Value

A enrichResult instance.

Author(s)

Guangchuang Yu <http://ygc.name>

See Also

[enrichResult-class](#)

Examples

```
gene <- c("11171", "8243", "112464", "2194",
"9318", "79026", "1654", "65003",
"6240", "3476", "6238", "3836",
"4176", "1017", "249")
yy = enrichPathway(gene, pvalueCutoff=0.05)
head(summary(yy))
#plot(yy)
```

getALLEG

getALLEG

Description

get all entrezgene ID of a specific organism

Usage

```
getALLEG(organism)
```

Arguments

organism species

Value

entrez gene ID vector

Author(s)

Yu Guangchuang

getDb	<i>getDb</i>
-------	--------------

Description

mapping organism name to annotationDb package name

Usage

```
getDb(organism)
```

Arguments

organism one of supported organism

Value

annotationDb name

Author(s)

Yu Guangchuang

gsePathway	<i>gsePathway</i>
------------	-------------------

Description

Gene Set Enrichment Analysis of Reactome Pathway

Usage

```
gsePathway(  
  geneList,  
  organism = "human",  
  exponent = 1,  
  minGSSize = 10,  
  maxGSSize = 500,  
  eps = 1e-10,  
  pvalueCutoff = 0.05,  
  pAdjustMethod = "BH",  
  verbose = TRUE,  
  seed = FALSE,  
  by = "fgsea",  
  ...  
)
```

Arguments

geneList	order ranked geneList
organism	organism
exponent	weight of each step
minGSSize	minimal size of each geneSet for analyzing
maxGSSize	maximal size of each geneSet for analyzing
eps	This parameter sets the boundary for calculating the p value.
pvalueCutoff	pvalue Cutoff
pAdjustMethod	pvalue adjustment method
verbose	print message or not
seed	logical
by	one of 'fgsea' or 'DOSE'
...	other parameter

Value

gseaResult object

Author(s)

Yu Guangchuang

viewPathway

viewPathway

Description

view reactome pathway

Usage

```
viewPathway(  
  pathName,  
  organism = "human",  
  readable = TRUE,  
  foldChange = NULL,  
  keyType = "ENTREZID",  
  layout = "kk"  
)
```

Arguments

pathName	pathway Name
organism	supported organism
readable	logical
foldChange	fold change
keyType	keyType of gene ID (i.e. names of foldChange, if available)
layout	graph layout

Details

plotting reactome pathway

Value

plot

Author(s)

Yu Guangchuang

Index

- * **datasets**

- DataSet, [3](#)

- * **manip**

- enrichPathway, [3](#)

- * **package**

- ReactomePA-package, [2](#)

DataSet, [3](#)

enrichPathway, [3](#)

enrichResult, [2](#)

getALLEG, [4](#)

getDb, [5](#)

gsePathway, [5](#)

ReactomePA (ReactomePA-package), [2](#)

ReactomePA-package, [2](#)

viewPathway, [6](#)