Package ‘meshr’

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Title Tools for conducting enrichment analysis of MeSH
Description A set of annotation maps describing the entire MeSH assembled using data from MeSH.
Version 2.10.0
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Description

meshr package conducts a MeSH enrichment analysis employing gene-MeSH annotation data. A hypergeometric test accounting for a multiple testing correction is used to find significantly enriched MeSH terms.

Details

Package: meshr
Version: 1.2.6
Date: 3-20-2015
biocViews: AnnotationData, FunctionalAnnotation, Bioinformatics, Statistics, Annotation, MultipleComparisons
Depends: R (>= 3.0.1), cummeRbund, org.Hs.eg.db, fdrtool, Category, BiocGenerics, methods, MeSH.db, MeSH.AOR.db, MeSH.PCR.db, MeSHDbi, MeSH.Hsa.eg.db, MeSH.Aca.eg.db, MeSH.Atu.K84.eg.db, MeSH.Bsu.168.eg.db, MeSH.Syn.eg.db
Imports: 
Suggests: 
License: Artistic-2.0

Index:

meshHyperGTest performs a hypergeometric statistical test.

Further information is available in the vignettes.

Author(s)

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See Also

MeSHHyperGParams-class, MeSHHyperGResult-class, meshHyperGTest

Examples

ls("package:meshr")
category

A function to return the name of MeSH category

Description
This function returns the name of MeSH category.

Usage
category(r)
category(r) <- value

Arguments
r An object containing annotation information.
value The annotation information to set on object.

Author(s)
Koki Tsuyuzaki

Examples
showMethods("category")

database

A function to return the name of MeSH database

Description
This function returns the name of MeSH database.

Usage
database(r)
database(r) <- value

Arguments
r An object containing annotation information.
value The annotation information to set on object.

Author(s)
Koki Tsuyuzaki
Description


Objects from the Class

Objects can be created by calls of the form new("MeSHHyperGParams", ...).

Slots

geneIds: Object of class "ANY": A vector of gene identifiers. Numeric and character vectors are probably the only things that make sense. These are the gene ids for the selected gene set.

universeGeneIds: Object of class "ANY": A vector of gene ids in the same format as geneIds defining a subset of the gene ids on the chip that will be used as the universe for the hypergeometric calculation.

annotation: A string giving the name of the gene-MeSH annotation package like MeSH.XXX.eg.db.

meshdb: A string giving the name of the MeSH database like MeSH.db.

category: A string giving the name of the MeSH category like A, B, C, D, ...and so on.

database: A string giving the name of the MeSH database like gendoo, gene2pubmed, ...and so on.

pvalueCutoff: A numeric values between zero and one used as a p-value or FDR cutoff for hypergeometric test depending on pAdjust. The default is set to 0.05.

pAdjust: A string which can be one of the Benjamini-Hochberg procedure (a.k.a. q-value) ("BH"), Q-value ("QV"), empirical Bayes method ("lFDR"), and unadjusted p-value ("none") for multiple testing correction.

Methods

geneIds(p), geneIds(p) <- value Accessor methods for the geneIds.
uuniverseGeneIds(p), universeGeneIds(p) <- value Accessor methods for the geneIds.
annotation(p), annotation(p) <- value Accessor methods for the gene-MeSH annotation data.
pAdjust(p) An accessor method for the choice of a method for multiple testing correction.
pvalueCutoff(p) An accessor method for the choice of a threshold when conducting enrichment analysis.
**Description**

This class represents the results of a test for overrepresentation of MeSH terms among genes in a selected gene set based upon the Hypergeometric distribution.

For details on extracting information from this object, please read the documentation in the `MeSHHyperGParams-class`.

**Objects from the Class**

Objects can be created by calls of the form `new("MeSHHyperGResult", ...)`.

**Slots**

- `meshCategory`: Object of class "character" representing the category of MeSH terms tested.
- `meshAnnotation`: Object of class "character". The name of the annotation data used in the analysis.
- `meshDatabase`: Object of class "character". The name of the database used in the analysis.
- `ORA`: Object of class "data.frame". MeSH IDs, MeSH Terms, P-value, and other statistics is returned.

**Methods**

- `meshCategory` signature(r = "MeSHHyperGResult"): Returns the MeSH category used in the analysis.
- `meshAnnotation` signature(r = "MeSHHyperGResult"): Returns the name of the annotation data used in the analysis.
- `meshDatabase` signature(r = "MeSHHyperGResult"): Returns the name of the database used in the analysis.
- `meshIds` signature(r = "MeSHHyperGResult"): Returns the character vector of the MeSH IDs identified as significant in the analysis.
- `meshTerms` signature(r = "MeSHHyperGResult"): Returns the character vector of the MeSH terms identified as significant in the analysis.
meshHyperGTest

**pvalues** signature(r = "MeSHHyperGResult"): Returns the associated p-values of significantly enriched MeSH terms.

**summary** signature(r = "MeSHHyperGResult"): Returns a data.frame summarizing the test result. Optional arguments pvalue and categorySize allow specification of maximum p-value and minimum categorySize, respectively. Optional argument htmlLinks is a logical value indicating whether to add HTML links (useful in conjunction with xtables print method with type set to "html").

**show** signature(object = "MeSHHyperGResult"): Return a short description of the result.

**Author(s)**
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**See Also**
meshr-package, MeSHHyperGParams-class, meshHyperGTest

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**Description**

Given a MeSHHyperGParams object containing a set of selected and background gene IDs, and gene-MeSH annotation data of interest, meshHyperGTest performs Hypergeometric test for over-representation of each MeSH term accounting for the multiple testing correction.

**Arguments**

- **p**
  A MeSHHyperGParams object

**Details**

For details on creating MeSHHyperGParams object, please read the documentation in the MeSHHyperGParams-class.

**Value**

A MeSHHyperGResult object.

**Author(s)**
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**See Also**
meshr-package, MeSHHyperGParams-class, MeSHHyperGResult-class
Examples

showMethods("meshHyperGTest")
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