

# Package ‘bioCancer’

October 15, 2023

**Title** Interactive Multi-Omics Cancers Data Visualization and Analysis

**Version** 1.28.0

**Date** 2022-04-26

**Description** bioCancer is a Shiny App to visualize and analyse interactively Multi-Assays of Cancer Genomic Data.

**Depends** R (>= 3.6.0), radiant.data (>= 0.9.1), XML(>= 3.98)

**Imports** R.oo, R.methodsS3, httr, DT (>= 0.3), dplyr (>= 0.7.2), shiny (>= 1.0.5), AlgDesign (>= 1.1.7.3), import (>= 1.1.0), methods, AnnotationDbi, shinythemes, Biobase, geNetClassifier, org.Hs.eg.db, org.Bt.eg.db, DOSE, clusterProfiler, reactome.db, ReactomePA, DiagrammeR(<= 1.01), visNetwork, htmlwidgets, plyr, tibble, GO.db

**Suggests** BiocStyle, prettydoc, rmarkdown, knitr, testthat (>= 0.10.0)

**VignetteBuilder** knitr

**URL** <http://kmezhoud.github.io/bioCancer>

**BugReports** <https://github.com/kmezhoud/bioCancer/issues>

**License** AGPL-3 | file LICENSE

**LazyData** true

**biocViews** GUI, DataRepresentation, Network, MultipleComparison, Pathways, Reactome, Visualization, GeneExpression, GeneTarget

**RoxygenNote** 7.1.2

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---

AnnotationFuncs-package

*Annotation translation functions*

---

## Description

Package: AnnotationFuncs  
 Type: Package  
 Version: 1.3.0  
 Date: 2011-06-10  
 License: GPL-2  
 LazyLoad: yes

## Details

Functions for handling translations between different identifiers using the Biocore Data Team data-packages (e.g. org.Bt.eg.db). Primary functions are [translate](#) for translating and [getOrthologs](#) for efficient lookup of homologues using the Inparanoid databases. Other functions include functions for selecting Refseqs or Gene Ontologies (GO).

**Author(s)**

Stefan McKinnon Edwards <stefan.hoj-edwards@agrsci.dk>

**References**

<http://www.iysik.com/index.php?page=annotation-functions>

**See Also**

[translate](#), [getOrthologs](#)

**Examples**

```
library(org.Bt.eg.db)
gene.symbols <- c('DRBP1', 'SERPINA1', 'FAKE', 'BLABLA')
# Find entrez identifiers of these genes.
eg <- translate(gene.symbols, org.Bt.egSYMBOL2EG)
# Note that not all symbols were translated.

# Go directly to Refseq identifiers.
refseq <- translate(gene.symbols, from=org.Bt.egSYMBOL2EG, to=org.Bt.egREFSEQ)
# Pick the proteins:
pickRefSeq(refseq, priorities=c('NP', 'XP'), reduce='all')
```

---

*.dbEscapeString*      *Private Escape string*

---

**Description**

Does not escape strings, but raises an error if any character expect normal letters and underscores are found in the string.

**Usage**

```
.dbEscapeString(str, raise.error = TRUE)
```

**Arguments**

`str`                      String to test  
`raise.error`            Logical, whether to raise an error or not.

**Value**

Invisible logical

---

.getTableNames                    *Gets the table name from the INPARANOID style genus names.*

---

### **Description**

Gets the table name from the INPARANOID style genus names.

### **Usage**

```
.getTableNames(genus)
```

### **Arguments**

genus                    5 character INPARANOID genus name, such as "BOSTA", "HOMSA" or "MUSMU".

### **Value**

Table name for genus.

### **Author(s)**

Stefan McKinnon Edwards <stefanm.edwards@agrsci.dk>

### **References**

<http://www.bioconductor.org/packages/release/bioc/html/AnnotationDbi.html>

---

.pickRef                    *Secret function that does the magic for pickRefSeq.*

---

### **Description**

Do not use it, use [pickRefSeq!](#)

### **Usage**

```
.pickRef(l, priorities, reduce = c("all", "first", "last"))
```

### **Arguments**

l                    List.  
priorities           How to prioritize.  
reduce               How to reduce.

**Value**

List.

**Note**

Hey, you found a secret function! Keep it that way!

**Author(s)**

Stefan McKinnon Edwards <stefan.hoj-edwards@agrsci.dk>

**See Also**

[pickRefSeq](#)

---

attriColorGene

*Attribute Color to Gene*

---

**Description**

Attribute Color to Gene

**Usage**

```
attriColorGene(df)
```

**Arguments**

df                    data frame with mRNA or CNA or mutation frequency or methylation (numeric).

**Value**

A list colors for every gene

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
geneList <- whichGeneList("73")
ProfData <- getProfileData.CGDS(cgds,
  geneList, "gbm_tcga_pub_mrna", "gbm_tcga_pub_all")
rownames(ProfData) <- NULL
clr <- attriColorGene(ProfData)

## End(Not run)
```

---

attriColorValue	<i>Attribute Color to Value</i>
-----------------	---------------------------------

---

## Description

Attribute Color to Value

## Usage

```
attriColorValue(Value, df, colors=c(a,b,c),feet)
```

## Arguments

Value	integer
df	data frame with numeric values
colors	a vector of 5 colors
feet	the interval between two successive colors in the palette (0.1)

## Value

Hex Color Code

## Examples

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
geneList <- whichGeneList("73")
ProfData <- getProfileData.CGDS(cgds,
  geneList, "gbm_tcga_pub_mrna", "gbm_tcga_pub_all")
rownames(ProfData) <- NULL
clrRef <- attriColorValue(1.2,
  ProfData,
  colors = c("blue3", "white", "red"),
  feet=10)

## End(Not run)
```

---

attriColorVector      *Attribute color to a vector of numeric values*

---

### Description

Attribute color to a vector of numeric values

### Usage

```
attriColorVector(Value, vector, colors=c(a,b,c),feet)
```

### Arguments

Value	numeric
vector	A vector of numeric data
colors	3 colors
feet	An interval between two numeric value needed to change the color

### Value

A vector of colors

### Examples

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
geneList <- whichGeneList("73")
ProfData <- getProfileData.CGDS(cgds,
  geneList, "gbm_tcga_pub_mrna", "gbm_tcga_pub_all")
rownames(ProfData) <- NULL
clrVec <- attriColorVector(1.2,
  ProfData[1,],
  colors = c("blue", "white", "red"),
  feet=1)

## End(Not run)
```

---

attriShape2Gene      *Attribute shape to nodes*

---

### Description

Attribute shape to nodes

### Usage

```
attriShape2Gene(gene, genelist)
```



**Arguments**

gene	Gene symbol
genelist	Gene list

**Value**

A character "BRCA1[shape = 'circle', "

**Examples**

```
how <- "runManually"
## Not run:
GeneList <- whichGeneList("73")
attriShape2Gene("P53", GeneList)
attriShape2Gene("GML", GeneList)

## End(Not run)
```

---

attriShape2Node	<i>Attributes shape to Nodes</i>
-----------------	----------------------------------

---

**Description**

Attributes shape to Nodes

**Usage**

```
attriShape2Node(gene, genelist)
```

**Arguments**

gene	symbol "TP53"
genelist	a vector of gene symbol

**Value**

A data frame with egdes attributes

**Examples**

```
GeneList <- c("DKK3", "NBN", "MYO6", "TP53", "PML", "IFI16", "BRCA1")
NodeShape <- attriShape2Gene("DKK3", GeneList)
```

---

 bioCancer

*Launch bioCancer with default browser*


---

**Description**

The Main function to run bioCancer App

**Usage**

```
bioCancer()
```

**Value**

web page of bioCancer Shiny App

**Examples**

```
ShinyApp <- 1
## Not run:
bioCancer()

## End(Not run)
```

---

 CGDS

*CGDS connect object to cBioPortal*


---

**Description**

Creates a CGDS connection object from a CGDS endpoint URL. This object must be passed on to the methods which query the server.

**Usage**

```
CGDS(url,verbose=FALSE,ploterrmsg='',token=NULL)
```

**Arguments**

url	A CGDS URL (required).
verbose	A boolean variable specifying verbose output (default FALSE)
ploterrmsg	An optional message to display in plots if an error occurs (default ”)
token	An optional ’Authorization: Bearer’ token to connect to cBioPortal instances that require authentication (default NULL)

---

checkDimensions	<i>Check wich Cases and genetic profiles are available for every seleted study</i>
-----------------	--

---

**Description**

Check wich Cases and genetic profiles are available for every seleted study

**Usage**

```
checkDimensions(panel,StudyID)
```

**Arguments**

panel	panel can take to strings 'Circomics' or 'Networking'
StudyID	Study reference using cBioPortal index

**Value**

A data frame with two column (Cases, Genetic profiles). Every row has a dimension (CNA, mRNA...). The data frame is filled with yes/no response.

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
df <- checkDimensions(panel='Networking', StudyID= "gbm_tcga_pub")

## End(Not run)
```

---

coffeewheel	<i>This is an htmlwidgets-based visualization tool for hierarchical data. It is zoomable, meaning that you can interact with the hierarchy and zoom in/out accordingly.</i>
-------------	---

---

**Description**

This is an htmlwidgets-based visualization tool for hierarchical data. It is zoomable, meaning that you can interact with the hierarchy and zoom in/out accordingly.

**Usage**

```
coffeewheel(treeData, width=600, height=600, main="", partitionAttribute="value")
```

**Arguments**

treeData	A hierarchical tree data as in example
width	600
height	600
main	Title
partitionAttribute	"value"

**Value**

A circular layout with genetic profile.

**Examples**

```
How <- "runManually"
## Not run:
  coffeewheel(treeData = sampleWheelData)

## End(Not run)
```

---

coffeewheelOutput      *Widget output function for use in Shiny*

---

**Description**

Widget output function for use in Shiny

**Usage**

```
coffeewheelOutput(outputId, width=700, height=700)
```

**Arguments**

outputId	id
width	700
height	700

**Value**

A circular layout with genetic profile in Shiny App.

**Examples**

```
How <- "runManually"
## Not run:
  coffeewheel(treeData = sampleWheelData)

## End(Not run)
```

---

displayTable	<i>Display dataframe in table using DT package</i>
--------------	--

---

**Description**

Display dataframe in table using DT package

**Usage**

```
displayTable(df)
```

**Arguments**

df                    a dataframe

**Value**

A table

**Examples**

```
## Not run:  
session <- NULL  
cgds <- CGDS("http://www.cbioportal.org/")  
Studies<- getCancerStudies.CGDS(cgds)  
displayTable(Studies)  
  
## End(Not run)
```

---

Edges_Diseases_obj	<i>get Edges dataframe for Gene/Disease association from geNetClassifier</i>
--------------------	--

---

**Description**

get Edges dataframe for Gene/Disease association from geNetClassifier

**Usage**

```
Edges_Diseases_obj(genesclassdetails)
```

**Arguments**

genesclassdetails  
                  a dataframe from geNetClassifier

**Value**

A data frame with edges attributes

**Examples**

```
GenesClassDetails <- structure(list(Genes = c("FANCF", "MLH1", "MSH2", "ATR", "PARP1",  
"CHEK2", "RAD51"), ranking = c(1L, 1L, 1L, 2L, 3L, 1L, 2L), class = c("brca_tcga",  
"gbm_tcga", "lihc_tcga", "lihc_tcga", "lihc_tcga", "lusc_tcga",  
"lusc_tcga"), postProb = c(1, 0.99, 1, 0.99, 0.99, 1,  
0.98), exprsMeanDiff = c(180, 256, -373, -268,  
-1482, 258, 143), exprsUpDw = c("UP", "UP", "DOWN",  
"DOWN", "DOWN", "UP", "UP")), .Names = c("Genes", "ranking",  
"class", "postProb", "exprsMeanDiff", "exprsUpDw"),  
class = "data.frame", row.names = c(NA,-7L))  
  
Ed_Diseases_obj <- Edges_Diseases_obj(genesclassdetails=GenesClassDetails)
```

---

epiGenomics

*Default dataset of bioCancer*

---

**Description**

Default dataset of bioCancer

**Usage**

```
epiGenomics
```

**Format**

An object of class `data.frame` with 48 rows and 7 columns.

**Author(s)**

Karim Mezhoud <kmezhoud@gmail.com>

---

findPhantom	<i>Check if PhantomJS is installed. Similar to webshot</i>
-------------	--

---

**Description**

Check if PhantomJS is installed. Similar to webshot

**Usage**

```
findPhantom()
```

**Value**

Logic object

**Examples**

```
How <- "runManually"  
## Not run:  
findPhantom()  
  
## End(Not run)
```

---

getCancerStudies.CGDS	<i>S3 method to get Cancer Studies</i>
-----------------------	--

---

**Description**

S3 method to get Cancer Studies

**Usage**

```
getCancerStudies.CGDS(x, ...)
```

**Arguments**

x	connection object
...	not used

**Examples**

```
# Create CGDS object  
mycgds <- CGDS("http://www.cbioportal.org/")  
# Get available case lists (collection of samples) for a given cancer study  
mycancerstudy <- getCancerStudies.CGDS(mycgds)[2,1]
```

---

getCaseLists.CGDS      *S3 method to get Cases Lists*

---

**Description**

S3 method to get Cases Lists

**Usage**

```
getCaseLists.CGDS(x, cancerStudy,...)
```

**Arguments**

x	connection object
cancerStudy	cancer study ID
...	Not used

**Examples**

```
# Create CGDS object
mycgds <- CGDS("http://www.cbioportal.org/")
# Get list of cancer studies at server
mycancerstudy <- getCancerStudies.CGDS(mycgds)[2,1]
# Get available case lists (collection of samples) for a given cancer study
mycaselist <- getCaseLists.CGDS(mycgds,mycancerstudy)[1,1]
```

---

getClinicalData.CGDS      *S3 method to get Clinical Data*

---

**Description**

S3 method to get Clinical Data

**Usage**

```
getClinicalData.CGDS(x, caseList, cases, caseIdsKey, ...)
```

**Arguments**

x	connection object
caseList	A list of cases ID
cases	A vector of case IDs
caseIdsKey	only used by web portal
...	not used



## Examples

```
#Create CGDS object
mycgds <- CGDS("http://www.cbioportal.org/")
# Get available case lists (collection of samples) for a given cancer study
mycancerstudy <- getCancerStudies.CGDS(mycgds)[2,1]
mycaselist <- getCaseLists.CGDS(mycgds,mycancerstudy)[1,1]
```

---

getEvidenceCodes      *Returns GO evidence codes.*

---

## Description

Returns GO evidence codes.

## Usage

```
getEvidenceCodes()
```

## Value

Matrix of two columns, first column with codes, second column with description of codes.

## Author(s)

Stefan McKinnon Edwards <stefan.hoj-edwards@agrsci.dk>

## References

?org.Bt.egGO

## See Also

[pickGO](#)

## Examples

```
getEvidenceCodes()
```

getFreqMutData            *get mutation frequency*

---

**Description**

get mutation frequency

**Usage**

```
getFreqMutData(list, geneListLabel)
```

**Arguments**

`list`                    a list of data frame with mutation data. Each data frame is for one study  
`geneListLabel`        file name of geneList examples: "73"

**Value**

a data frame with mutation frequency. gene is in rows and study is in column

**Examples**

```
## Not run:  
cgds <- CGDS("http://www.cbioportal.org/")  
geneList <- whichGeneList("73")  
r_data <- new.env()  
MutData <- getMutationData.CGDS(cgds, "gbm_tcga_pub_all",  
  "gbm_tcga_pub_mutations", geneList )  
FreqMut <- getFreqMutData(list(ls1=MutData, ls2=MutData), "73")  
  
## End(Not run)
```

---

getGenesClassification  
                          *get genes classification*

---

**Description**

get genes classification

**Usage**

```
getGenesClassification(checked_Studies, GeneList,  
  samplesize, threshold, listGenProfs, listCases)
```

**Arguments**

checked_Studies	checked studies
GeneList	gene list
samplesize	sample size
threshold	p-value threshold
listGenProfs	list of genetic profiles
listCases	list of cases

**Value**

A table with genes classed by study

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
listStudies <- getCancerStudies.CGDS(cgds)
checked_Studies <- listStudies[3:5]
listCases <- getList_Cases(listStudies[1:3])
listGenProfs <- getList_GenProfs(listStudies[1:3])
GeneList <- c('P53', 'IFI16', 'BRCA1')
samplesize <- 50
threshold <- 0.95
table <- getGenesClassification(checked_Studies, GeneList,
  samplesize ,threshold ,listGenProfs, listCases)

## End(Not run)
```

---

getGeneticProfiles.CGDS

*S3 method to get Genetic Profiles*

---

**Description**

S3 method to get Genetic Profiles

**Usage**

```
getGeneticProfiles.CGDS(x, cancerStudy, ...)
```

**Arguments**

x	connection object
cancerStudy	cancer study ID
...	not used

**Examples**

```
# Create CGDS object
mycgds <- CGDS("http://www.cbioportal.org/")
# Get list of cancer studies at server
mycancerstudy <- getCancerStudies.CGDS(mycgds)[2,1]
# Get available case lists (collection of samples) for a given cancer study
mycaselist <- getCaseLists.CGDS(mycgds,mycancerstudy)[1,1]
# Get available genetic profiles
mygeneticprofile <- getGeneticProfiles.CGDS(mycgds,mycancerstudy)[1,1]
# Get data slices for a specified list of genes, genetic profile and case list
myProfileData <- getProfileData.CGDS(mycgds,c('BRCA1', 'BRCA2'),mygeneticprofile,mycaselist)
```

---

getListProfData	<i>get list of data frame with profiles data (CNA,mRNA, Methylation, Mutation...)</i>
-----------------	---

---

**Description**

get list of data frame with profiles data (CNA,mRNA, Methylation, Mutation...)

**Usage**

```
getListProfData(panel, geneListLabel)
```

**Arguments**

panel	Panel name (string) in which Studies are selected. There are two panels ("Circomics" or "Networking")
geneListLabel	The label of GeneList. There are three cases: "Genes" user gene list, "Reactome_GeneList" GeneList plus genes from reactomeFI "file name" from Examples

**Value**

A LIST of profiles data (CNA, mRNA, Methylation, Mutation, miRNA, RPPA). Each dimension content a list of studies.

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
geneList <- whichGeneList("73")
r_data <- new.env()
MutData <- getMutationData.CGDS(cgds,"gbm_tcga_pub_all",
  "gbm_tcga_pub_mutations", geneList )
FreqMut <- getFreqMutData(list(ls1=MutData, ls2=MutData), "73")
input <- NULL
```

```
input[['StudiesIDCircos']] <- c("luad_tcga_pub","blca_tcga_pub")
ListProfData <- getListProfData(panel= "Circomics","73")
## End(Not run)
```

---

getList\_Cases                    *get list of cases of each selected study in Classifier panel*

---

### Description

get list of cases of each selected study in Classifier panel

### Usage

```
getList_Cases(checked_Studies)
```

### Arguments

checked\_Studies  
                  checked studies

### Value

listes of cases

### Examples

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
listStudies <- getCancerStudies.CGDS(cgds)
listCases <- getList_Cases(listStudies[1:3])

## End(Not run)
```

---

getList\_GenProfs                *get list of genetic profiles of each selected study in Classifier panel*

---

### Description

get list of genetic profiles of each selected study in Classifier panel

### Usage

```
getList_GenProfs(checked_Studies)
```

**Arguments**

checked\_Studies  
checked studies

**Value**

listes of genetics profiles

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
listStudies <- getCancerStudies.CGDS(cgds)
listGenProfs <- getList_GenProfs(listStudies[1:3])

## End(Not run)
```

---

getMegaProfData	<i>search and get genetic profiles (CNA,mRNA, Methylation, Mutation...) of gene list upper than 500</i>
-----------------	---

---

**Description**

search and get genetic profiles (CNA,mRNA, Methylation, Mutation...) of gene list upper than 500

**Usage**

```
getMegaProfData(MegaGeneList, GenProf, Case, Class)
```

**Arguments**

MegaGeneList	A list of genes upper than 500
GenProf	genetic profile reference
Case	Case reference
Class	indicates the panel ProfData or Mutdata

**Details**

See <https://github.com/kmezhoud/bioCancer/wiki>

**Value**

A data frame with Genetic profile

## Examples

```
GeneList <- c("ALK", "JAK3", "SHC3", "TP53", "MYC", "PARP")
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
listCase_gbm_tcga_pub <- getCaseLists.CGDS(cgds, "gbm_tcga_pub")[,1]
listGenProf_gbm_tcga_pub <- getGeneticProfiles.CGDS(cgds, "gbm_tcga_pub")[,1]

ProfData_Mut <- grepRef("gbm_tcga_pub_all", listCase_gbm_tcga_pub,
  "gbm_tcga_pub_mutations", listGenProf_gbm_tcga_pub, GeneList, Mut=1)

## End(Not run)
```

---

getMutationData.CGDS *S3 method to get Mutation Data*

---

## Description

S3 method to get Mutation Data

## Usage

```
getMutationData.CGDS(x, caseList, geneticProfile, genes, ...)
```

## Arguments

x	connection object
caseList	A case list ID
geneticProfile	A genetic profile ID with mutation data
genes	A vector of genes list
...	not used

## Examples

```
#Create CGDS object
mycgds <- CGDS("http://www.cbioportal.org/")
# Get Extended Mutation Data for EGFR and PTEN in TCGA GBM
myMutationData <- getMutationData.CGDS(mycgds, "gbm_tcga_all", "gbm_tcga_mutations", c('EGFR', 'PTEN'))
```

---

getOrthologs

*Performs quicker lookup for orthologs in homologue data packages*


---

### Description

Using the INPARANOID data packages such as `hom.Hs.inp.db` is very, very slow and can take up to 11 min (on this particular developers workstation). This function introduces a new method that can do it in just 20 seconds (on the developers workstation). In addition, it includes options for translating between different identifiers both before and after the mapping.

### Usage

```
getOrthologs(
  values,
  mapping,
  genus,
  threshold = 1,
  pre.from = NULL,
  pre.to = NULL,
  post.from = NULL,
  post.to = NULL,
  ...
)
```

### Arguments

<code>values</code>	Vector, coerced to character vector, of values needed mapping by homology.
<code>mapping</code>	Homology mapping object, such as <code>hom.Hs.inpBOSTA</code> or <code>revmap(hom.Hs.inpBOSTA)</code> .
<code>genus</code>	Character vector. 5 character INPARANOID style genus name of the mapping object, e.g. 'BOSTA' for both <code>hom.Hs.inpBOSTA</code> and <code>revmap(hom.Hs.inpBOSTA)</code> .
<code>threshold</code>	Numeric value between 0 and 1. Only clustered homologues with a pairwise score above the threshold is included. The native implementation has this set to 1.
<code>pre.from</code>	Mapping object if <code>values</code> needs translation before mapping. E.g. <code>values</code> are <code>entrez</code> and <code>hom.Hs.inpBOSTA</code> requires <code>ENSEMBLPROT</code> , <code>hom.Hs.inpAPIME</code> requires <code>Refseq</code> (?). Arguments <code>from</code> and <code>to</code> are just like in <a href="#">translate</a> .
<code>pre.to</code>	Second part of translation before mapping.
<code>post.from</code>	Translate the result from homology mapping to a desired id; just like in <a href="#">translate</a> .
<code>post.to</code>	Second part of translation after mapping.
<code>...</code>	Additional arguments sent to <a href="#">translate</a> .

### Value

List. Names of list corresponds to `values`, except those that could not be mapped nor translated. Entries are character vectors.



**Author(s)**

Stefan McKinnon Edwards <stefan.hoj-edwards@agrsci.dk>

**References**

?hom.Hs.inp.db - <http://inparanoid.sbc.su.se/>

Berglund, A.C., Sjolund, E., Ostlund, G., Sonnhammer, E.L.L. (2008) InParanoid 6: eukaryotic ortholog clusters with inparalogs *Nucleic Acids Res.* **36**:D263–266

O'Brien, K.P., Mairo, R., Sonnhammer, E.L.L (2005) Inparanoid: A Comprehensive Database of Eukaryotic Orthologs *NAR* **33**:D476–D480

Remm, M., Storm, C.E.V, Sonnhammer, E.L.L (2001) Automatic clustering of orthologs and inparalogs from pairwise species comparisons *J. Mol. Biol.* **314**:1041–1052

**See Also**

[translate](#), [.getTableNames](#), [mapLists](#)

**Examples**

```
tmp <-1
```

---

getProfileData.CGDS    *S3 method to get Profile Data*

---

**Description**

S3 method to get Profile Data

**Usage**

```
getProfileData.CGDS(x, genes, geneticProfiles, caseList, cases, caseIdsKey, ...)
```

**Arguments**

x	connection object
genes	A genes list
geneticProfiles	A genetic Profile ID
caseList	A cases list ID
cases	A vector of cases ID
caseIdsKey	Only used by web portal
...	not used

**Examples**

```
# Create CGDS object
mycgds <- CGDS("http://www.cbioportal.org/")
# Get list of cancer studies at server
mycancerstudy <- getCancerStudies.CGDS(mycgds)[2,1]
# Get available case lists (collection of samples) for a given cancer study
mycaselist <- getCaseLists.CGDS(mycgds,mycancerstudy)[1,1]
# Get available genetic profiles
mygeneticprofile <- getGeneticProfiles.CGDS(mycgds,mycancerstudy)[1,1]
# Get data slices for a specified list of genes, genetic profile and case list
myProfileData <- getProfileData.CGDS(mycgds,c('BRCA1', 'BRCA2'),mygeneticprofile,mycaselist)
# Get data slice for a single gene
mysigneProfileData <- getProfileData.CGDS(mycgds,'HMGA2',mygeneticprofile,mycaselist)
```

---

getSequenced\_SampleSize

*get samples size of sequenced genes*

---

**Description**

get samples size of sequenced genes

**Usage**

```
getSequenced_SampleSize(StudyID)
```

**Arguments**

StudyID            Study reference using cBioPortal index

**Value**

dataframe with sample size for each selected study.

**Examples**

```
## Not run:
sampleSize <- getSequenced_SampleSize(input$StudiesIDCircos)

## End(Not run)
```

---

grepRef                      *search and get genetic profiles (CNA,mRNA, Methylation, Mutation...)*

---

## Description

search and get genetic profiles (CNA,mRNA, Methylation, Mutation...)

## Usage

```
grepRef(regex1, listRef1, regex2, listRef2, GeneList, Mut)
```

## Arguments

regex1	Case id (cancer_study_id_[mutations, cna, methylation, mrna ]).
listRef1	A list of cases for one study.
regex2	Genetic Profile id (cancer_study_id_[mutations, cna, methylation, mrna ]).
listRef2	A list of Genetic Profiles for one study.
GeneList	A list of genes
Mut	Condition to set if the genetic profile is mutation or not (0,1)

## Details

See <https://github.com/kmezhound/bioCancer/wiki>

## Value

A data frame with Genetic profile

## Examples

```
GeneList <- c("ALK", "JAK3", "SHC3", "TP53", "MYC", "PARP")
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
listCase_gbm_tcga_pub <- getCaseLists.CGDS(cgds, "gbm_tcga_pub")[,1]
listGenProf_gbm_tcga_pub <- getGeneticProfiles.CGDS(cgds, "gbm_tcga_pub")[,1]

ProfData_Mut <- grepRef("gbm_tcga_pub_all", listCase_gbm_tcga_pub,
  "gbm_tcga_pub_mutations", listGenProf_gbm_tcga_pub, GeneList, Mut=1)

## End(Not run)
```

---

`mapLists`*Replaces contents of list A with elements of list B*

---

### Description

Combines two lists, A and B, such that `names(A)` are preserved, mapping to the values of B, using `names(B)` as look up. Ie. replaces values in A with values in B, using `names(B)` as look up for values in A. Once more? See examples. *NB!* None-mapped entries are returned as NA, but can be removed using [removeNAs](#).

### Usage

```
mapLists(A, B, removeNAs = TRUE)
```

### Arguments

A	List, elements are coerced to character for mapping to B.
B	List.
removeNAs	Boolean, whether to remove the NAs that occur because an element was not found in B.

### Value

List.

### Author(s)

Stefan McKinnon Edwards <stefan.hoj-edwards@agrsci.dk>

### See Also

[removeNAs](#)

### Examples

```
A <- list('a1'='alpha', 'a2'='beta', 'a3'=c('gamma', 'delta'))
B <- list('alpha'='b1', 'gamma'=c('b2', 'b3'), 'delta'='b4')
mapLists(A, B)
```

---

`metabologram`*Circular plot of hierarchital data of genetic profile.*

---

**Description**

Circular plot of hierarchital data of genetic profile.

**Usage**

```
metabologram(treeData,width=600,height=600,main="",showLegend=FALSE,
             legendBreaks=NULL,
             legendColors=NULL,
             fontSize=12,
             legendText="Legend")
```

**Arguments**

<code>treeData</code>	A hierarchical tree data as in example
<code>width</code>	600
<code>height</code>	600
<code>main</code>	Title
<code>showLegend</code>	FALSE
<code>legendBreaks</code>	NULL
<code>legendColors</code>	NULL
<code>fontSize</code>	12
<code>legendText</code>	Legend

**Value**

A circular layout with genetic profile.

**See Also**

<https://github.com/armish/metabologram>

**Examples**

```
How <- "runManually"
## Not run:
metabologram(treeData = sampleWheelData, width=600,
             height=600, main="title", showLegend = TRUE, fontSize = 10,
             legendBreaks=c("NA","Min","Negative", "0", "Positive", "Max"),
             legendColors=c("black","blue","cyan","white","yellow","red") ,
             legendText="Legend")

## End(Not run)
```

---

metabologramOutput	<i>Widget output function for use in Shiny</i>
--------------------	--

---

**Description**

Widget output function for use in Shiny

**Usage**

```
metabologramOutput(outputId, width = 600, height = 500)
```

**Arguments**

outputId	id
width	600
height	600

**Value**

A circular plot with genetic profile in Shiny App.

**Examples**

```
## Not run:
library(bioCancer)
bioCancer::metabologram(treeData = sampleMetabologramData)

## End(Not run)
```

---

Mutation_obj	<i>Attribute mutation frequency to nodes</i>
--------------	--

---

**Description**

Attribute mutation frequency to nodes

**Usage**

```
Mutation_obj(list, FreqMutThreshold, geneListLabel)
```

**Arguments**

list	A list of data frame with mutation data. Each data frame to study
FreqMutThreshold	threshold Rate of cases (patients) having mutation (0-1).
geneListLabel	file name of geneList examples: "73"

**Value**

A dat frame with mutation frequency. Ech column corresponds to a study.

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
geneList <- whichGeneList("73")
MutData <- getMutationData.CGDS(cgds,"gbm_tcga_pub_all",
"gbm_tcga_pub_mutations", geneList )
listMutData <- list(ls1=MutData, ls2=MutData)
FreqMutThreshold <- 10
r_data <- new.env()
MutObj <- Mutation_obj(listMutData, 10, "73")

## End(Not run)
```

---

Node_df_FreqIn	<i>Attributes size to Nodes depending on number of interaction</i>
----------------	--

---

**Description**

Attributes size to Nodes depending on number of interaction

**Usage**

```
Node_df_FreqIn(geneList, freqIn)
```

**Arguments**

geneList	a vector of genes
freqIn	dataframe with Node interaction frequencies

**Value**

A data frame with nodes size attributes

**Examples**

```
Node_df_FreqIn
## Not run:
r_data <- new.env()
r_data[["FreqIn"]] <- structure(list(Genes = c("ATM", "ATR", "BRCA1", "BRCA2", "CHEK1",
"CHEK2", "FANCF", "MDC1", "RAD51"), FreqSum = c(0.04, 0.05, 0.05,
0.03, 0.05, 0.04, 0.03, 0.03, 0.02)), .Names = c("Genes", "FreqSum"),
class = "data.frame", row.names = c(NA, -9L))
GeneList <- whichGeneList("DNA_damage_Response")
node_df <- Node_df_FreqIn(GeneList, r_data$FreqIn)
```

```
## End(Not run)
```

---

Node\_Diseases\_obj      *Attributes color and shape to Nodes of Diseases*

---

### Description

Attributes color and shape to Nodes of Diseases

### Usage

```
Node_Diseases_obj(genesclasssdetails)
```

### Arguments

genesclasssdetails  
a dataframe from geNetClassifier function

### Value

A data frame with nodes Shapes and colors

### Examples

```
GenesClassDetails <- structure(list(Genes = c("FANCF", "MLH1", "MSH2", "ATR", "PARP1",
"CHEK2", "RAD51"), ranking = c(1L, 1L, 1L, 2L, 3L, 1L, 2L), class = c("brca_tcga",
"gbm_tcga", "lihc_tcga", "lihc_tcga", "lihc_tcga", "lusc_tcga",
"lusc_tcga"), postProb = c(1, 0.99, 1, 0.99, 0.99, 1,
0.98), exprsMeanDiff = c(180, 256, -373, -268,
-1482, 258, 143), exprsUpDw = c("UP", "UP", "DOWN",
"DOWN", "DOWN", "UP", "UP")), .Names = c("Genes", "ranking",
"class", "postProb", "exprsMeanDiff", "exprsUpDw"),
class = "data.frame", row.names = c(NA,-7L))
Node_Diseases_df <- Node_Diseases_obj(genesclasssdetails= GenesClassDetails)
```

---

Node\_obj\_CNA\_ProfData      *Attribute CNA data to node border*

---

### Description

Attribute CNA data to node border

### Usage

```
Node_obj_CNA_ProfData(list)
```



**Arguments**

`list`                    A list of data frame with CNA data. Each data frame corresponds to a study.

**Value**

A data frame with node border attributes

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
GeneList <- whichGeneList("DNA_damage_Response")
ProfDataCNA <- getProfileData.CGDS(cgds, GeneList, "brca_tcga_pub_gistic", "brca_tcga_pub_all")
ListProfDataCNA <- list(ls1=ProfDataCNA, ls2=ProfDataCNA)
nodeObj <- Node_obj_CNA_ProfData(ListProfDataCNA)

## End(Not run)
```

---

Node_obj_FreqIn	<i>Attribute interaction frequency to node size</i>
-----------------	---

---

**Description**

Attribute interaction frequency to node size

**Usage**

```
Node_obj_FreqIn(geneList)
```

**Arguments**

`geneList`                A list of gene symbol

**Value**

A data frame with node attributes

**Examples**

```
r_data <- new.env()
r_data[["FreqIn"]] <- structure(list(Genes = c("ATM", "ATR", "BRCA1", "BRCA2", "CHEK1",
"CHEK2", "FANCF", "MDC1", "RAD51"), FreqSum = c(0.04, 0.05, 0.05,
0.03, 0.05, 0.04, 0.03, 0.03, 0.02)), .Names = c("Genes", "FreqSum"),
class = "data.frame", row.names = c(NA, -9L))
## Not run:
GeneList <- whichGeneList("DNA_damage_Response")
nodeObj <- Node_obj_FreqIn(GeneList)

## End(Not run)
```

---

Node\_obj\_Met\_ProfData *Attribute gene Methylation to Nodes*

---

**Description**

Attribute gene Methylation to Nodes

**Usage**

```
Node_obj_Met_ProfData(list, type, threshold)
```

**Arguments**

list	a list of data frame with methylation data
type	HM450 or HM27
threshold	the Rate cases (patients) that have a silencing genes by methylation

**Value**

a data frame with node shape attributes

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
GeneList <- whichGeneList("DNA_damage_Response")
ProfDataMET <- getProfileData(cgds, GeneList, "gbm_tcga_pub_methylation", "gbm_tcga_pub_all")
ListProfDataMET <- list(ls1=ProfDataMET, ls2=ProfDataMET)
nodeObj <- Node_obj_Met_ProfData(ListProfDataMET, "HM450", 0.1)

## End(Not run)
```

---

Node\_obj\_mRNA\_Classifier

*Attribute genes expression to color nodes*

---

**Description**

Attribute genes expression to color nodes

**Usage**

```
Node_obj_mRNA_Classifier(geneList, genesclassdetails)
```

**Arguments**

geneList            A gene list.  
genesclassdetails  
                      A dataframe with genes classes and genes expression.

**Value**

A data frame with node color attributes

**Examples**

```
r_data <- new.env()
input <- NULL

r_data[["FreqIn"]] <- structure(list(Genes = c("ATM", "ATR", "BRCA1", "BRCA2", "CHEK1",
"CHEK2", "FANCF", "MDC1", "RAD51"), FreqSum = c(0.04, 0.05, 0.05,
0.03, 0.05, 0.04, 0.03, 0.03, 0.02)), .Names = c("Genes", "FreqSum"),
class = "data.frame", row.names = c(NA, -9L))

GenesClassDetails <- structure(list(Genes = c("FANCF", "MLH1", "MSH2", "ATR", "PARP1",
"CHEK2", "RAD51"), ranking = c(1L, 1L, 1L, 2L, 3L, 1L, 2L), class = c("brca_tcga",
"gbm_tcga", "lihc_tcga", "lihc_tcga", "lihc_tcga", "lusc_tcga",
"lusc_tcga"), postProb = c(1, 0.99, 1, 0.99, 0.99, 1,
0.98), exprsMeanDiff = c(180, 256, -373, -268,
-1482, 258, 143), exprsUpDw = c("UP", "UP", "DOWN",
"DOWN", "DOWN", "UP", "UP")), .Names = c("Genes", "ranking",
"class", "postProb", "exprsMeanDiff", "exprsUpDw"),
class = "data.frame", row.names = c(NA,-7L))
## Not run:
GeneList <- whichGeneList("DNA_damage_Response")
nodeObj <- Node_obj_mRNA_Classifier(GeneList, GenesClassDetails)

## End(Not run)
```

---

pickGO

*Cleans up result from org.Xx.egGO and returns specific GO identifiers*

---

**Description**

Cleans up result from org.Xx.egGO and returns GO identifier for either biological process (BP), cellular component (CC), or molecular function (MF). Can be used on list of GOs from [translate](#), or a single list of GOs from an annotation package. May reduce list, if the (sub)list does not contain the chosen class!

**Usage**

```
pickGO(l, evidence = NA, category = NA)
```

**Arguments**

l	Character vector, or list of, og GO identifiers.
evidence	Character vector, filters on which kind of evidence to return; for a larger list see <a href="#">getEvidenceCodes</a> . \* Evidence codes may be: c('IMP', 'IGI', 'IPI', 'ISS', 'IDA', 'IEP', 'IEA', '\* Leave as NA to ignore filtering on this part.
category	Character vector, filters on which ontology to return: biological process (BP), cellular component (CC), or molecular function (MF). \* Leave as NA to ignore filtering on this part.

**Value**

List with only the picked elements.

**Author(s)**

Stefan McKinnon Edwards <stefan.hoj-edwards@agrsci.dk>

**See Also**

[pickRefSeq](#), [getEvidenceCodes](#), [translate](#)

**Examples**

```
library(org.Bt.eg.db)
genes <- c(280705, 280706, 100327208)
GO <- translate(genes, org.Bt.egGO)
# Get all biological processes:
pickGO(GO, category='BP')
# Get all ontologies with experimental evidence:
pickGO(GO, evidence=c('IMP', 'IGI', 'IPI', 'ISS', 'IDA', 'IEP', 'IEA'))
```

---

pickRefSeq

*Picks a prioritised RefSeq identifier from a list of identifiers*

---

**Description**

When translating to RefSeq, typically multiple identifiers are returned, referring to different types of products, such as genomic molecule, mature mRNA or the protein, and they can be predicted, properties that can be read from the prefix (<http://www.ncbi.nlm.nih.gov/refseq/key.html>). E.g. "XM\_" is predicted mRNA and "NP\_" is a protein. Run ?org.Bt.egREFSEQ.

**Usage**

```
pickRefSeq(
  l,
  priorities = c("NP", "XP", "NM", "XM"),
  reduce = c("all", "first", "last")
)
```

**Arguments**

l	Vector or list of RefSeqs accessions to pick from. If list given, applies the prioritization to each element in the list.
priorities	Character vector of prioritised prefixes to pick by. Eg. <code>c("NP", "NM")</code> returns RefSeqs starting 'NP', and if none found, those starting 'NM'. If no RefSeqs are found according to the priorities, Null is returned, unless the last element in priorities is '*'. Uses <code>grepl</code> , so see these for pattern matching. Default: <code>c('NP','XP','NM','XM')</code>
reduce	Reducing method, either return all annotations (one-to-many relation) or the first or last found annotation. The reducing step is applied after translating to the goal: <code>all</code> : returns all annotations <code>first</code> or <code>last</code> : choose first or last of arbitrarily ordered list.

**Value**

If vector given, returns vector. If list given, returns list without element where nothing could be picked.

**Author(s)**

Stefan McKinnon Edwards <stefan.hoj-edwards@agrsci.dk>

**Examples**

```
library(org.Bt.eg.db)
symbols <- c("SERPINA1", "KERA", "CD5")
refseq <- translate(symbols, from=org.Bt.egSYMBOL2EG, to=org.Bt.egREFSEQ)
mRNA <- pickRefSeq(refseq, priorities=c('NM','XM'))
proteins <- pickRefSeq(refseq, priorities=c('NP','XP'))
```

---

processURL.CGDS

*S3 method to process URL*

---

**Description**

These methods should not be invoked by the user.

**Usage**

```
processURL.CGDS(x, url, force.comment.char.blank, ...)
```

**Arguments**

x	A connection object
url	URL
force.comment.char.blank	a boolean param to force comment
...	not used

removeNAs

*Removes entries equal NA from list or vector*

---

**Description**

Removes entries equal NA, but not mixed entries containing, amongst others, NA. Good for use after [mapLists](#) that might return entries equal NA.

**Usage**

```
removeNAs(l)
```

**Arguments**

l                    Vector or list.

**Author(s)**

Stefan McKinnon Edwards <stefan.hoj-edwards@agrsci.dk>

**Examples**

```
removeNAs(list('a'=NA, 'b'=c(NA, 'B'), 'c'='C'))
```

---

renderCoffeewheel

*Widget render function for use in Shiny*

---

**Description**

Widget render function for use in Shiny

**Usage**

```
renderCoffeewheel(expr, env = parent.frame(), quoted = FALSE)
```

**Arguments**

expr                id  
env                 parent.frame()  
quoted              FALSE

**Value**

A circular layout with genetic profile in Shiny App.

**Examples**

```
How <- "runManually"  
## Not run:  
coffeewheel(treeData = sampleWheelData)  
  
## End(Not run)
```

---

renderMetabologram      *Widget render function for use in Shiny*

---

**Description**

Widget render function for use in Shiny

**Usage**

```
renderMetabologram(expr, env= parent.frame(), quoted = FALSE)
```

**Arguments**

expr	expression
env	parent.frame()
quoted	FALSE

**Value**

A circular plot with genetic profile in Shiny App.

**Examples**

```
## Not run:  
library(bioCancer)  
bioCancer::metabologram(treeData = sampleMetabologramData)  
  
## End(Not run)
```

reStrColorGene      *Restructure the list of color attributed to the genes in every dimension for every studies*

---

**Description**

Restructure the list of color attributed to the genes in every dimension for every studies

**Usage**

```
reStrColorGene(df)
```

**Arguments**

df                    data frame with colors attributed to the genes

**Value**

Hierarchical color attribute: gene > color

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
geneList <- whichGeneList("73")
ProfData <- getProfileData.CGDS(cgds,
  geneList, "gbm_tcga_pub_mrna", "gbm_tcga_pub_all")
rownames(ProfData) <- NULL
ls <- reStrColorGene(ProfData)

## End(Not run)
```

---

reStrDimension      *Restructure the list of color attributed to the genes in every study for every dimensions*

---

**Description**

Restructure the list of color attributed to the genes in every study for every dimensions

**Usage**

```
reStrDimension(LIST)
```

**Arguments**

LIST                  list of hierarchical dimensions



**Value**

Hierarchical structure of: Study > dimensions > gene > color

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
geneList <- whichGeneList("73")
ProfData <- getProfileData.CGDS(cgds,
  geneList, "gbm_tcga_pub_mrna", "gbm_tcga_pub_all")
rownames(ProfData) <- NULL
TREE <- reStrDimension(list(
  list1=list(df1=ProfData,df2=ProfData),
  list2=list(df3=ProfData,df4=ProfData)))

## End(Not run)
```

---

reStrDisease

*Restructure the list of color attributed to the genes in every disease*


---

**Description**

Restructure the list of color attributed to the genes in every disease

**Usage**

```
reStrDisease(List)
```

**Arguments**

List                    of data frame with color attributes

**Value**

Hierarchy of dimensions in the same study: dimensions > gene > color

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
geneList <- whichGeneList("73")
ProfData <- getProfileData.CGDS(cgds,
  geneList, "gbm_tcga_pub_mrna", "gbm_tcga_pub_all")
rownames(ProfData) <- NULL
tree <- reStrDisease(list(df1=ProfData,df2=ProfData))

## End(Not run)
```

---

returnTextAreaInput    *Return message when the filter formula is not correct (mRNA > 500)*

---

### Description

Return message when the filter formula is not correct (mRNA > 500)

### Usage

```
returnTextAreaInput(inputId,  
                    label= NULL,  
                    rows = 2,  
                    placeholder = NULL,  
                    resize= "vertical",  
                    value = "")
```

### Arguments

inputId	The ID of the object
label	Text describes the box area
rows	Number of rows
placeholder	Error message if needed
resize	orientation of text
value	default text in the area box

### Value

text message

### Examples

```
ShinyApp <- 1  
## Not run:  
returnTextAreaInput(inputId = "data-filter",  
                    label = "Error message",  
                    rows = 2,  
                    placeholder = "Provide a filter (e.g., Genes == 'ATM') and press return",  
                    resize = "vertical",  
                    value="")  
  
## End(Not run)
```

---

setVerbose.CGDS	<i>S3 method to set verbose</i>
-----------------	---------------------------------

---

**Description**

Sets verbose logging level for CGDS function calls.

**Usage**

```
setVerbose.CGDS(x, verbose, ...)
```

**Arguments**

x	A connection object
verbose	Activate verbose logging (boolean)
...	not used

**Examples**

```
# Create CGDS object  
mycgds <- CGDS("http://www.cbioportal.org/")  
# Activate verbose logging  
setVerbose.CGDS(mycgds, TRUE)
```

---

Studies_obj	<i>get object for grViz. Link Studies to genes</i>
-------------	--

---

**Description**

get object for grViz. Link Studies to genes

**Usage**

```
Studies_obj(df)
```

**Arguments**

df	data frame with gene classes
----	------------------------------

**Value**

grViz object. a data frame with Study attributes

**Examples**

```

Studies_obj(data.frame("col1", "col2", "col3", "col4", "col5", "col6"))
## Not run:
Genes ranking      class postProb exprsMeanDiff exprsUpDw
1 FANCF           1 brca_tcga 1.00000      179.9226      UP
2 MLH1            1 gbm_tcga 0.99703      256.3173      UP

## End(Not run)

```

---

switchButton	<i>A function to change the Original checkbox of rshiny into a nice true/false or on/off switch button No javascript involved. Only CSS code.</i>
--------------	---

---

**Description**

To be used with CSS script 'button.css' stored in a 'www' folder in your Shiny app folder

**Usage**

```
switchButton(inputId, label = NULL, value = FALSE, col = "GB", type = "TF")
```

**Arguments**

inputId	The input slot that will be used to access the value.
label	Display label for the control, or NULL for no label.
value	Initial value (TRUE or FALSE).
col	Color set of the switch button. Choose between "GB" (Grey-Blue) and "RG" (Red-Green)
type	Text type of the button. Choose between "TF" (TRUE - FALSE), "OO" (ON - OFF) or leave empty for no text.

---

test.CGDS	<i>S3 method to test cBioPortal connection</i>
-----------	--

---

**Description**

S3 method to test cBioPortal connection

**Usage**

```
test.CGDS(x, ...)
```

**Arguments**

x	connection object
...	not used

---

 translate

*Translate between different identifiers*


---

## Description

Function for translating from one annotation to another, eg. from RefSeq to Ensemble. This function takes a vector of annotation values and translates first to the primary annotation in the Biocore Data Team package (ie. entrez gene identifier for org.Bt.eg.db) and then to the desired product, while removing non-translated annotations and optionally reducing the result so there is only a one-to-one relation.

## Usage

```
translate(
  values,
  from,
  to = NULL,
  reduce = c("all", "first", "last"),
  return.list = TRUE,
  remove.missing = TRUE,
  simplify = FALSE,
  ...
)
```

## Arguments

values	Vector of annotations that needs translation. Coerced to character vector.
from	Type of annotation values are given in. NB! take care in the orientation of the package, ie. if you have RefSeq annotations, use org.Bt.egREFSEQ2EG or (in some cases) revmap(org.Bt.egREFSEQ).
to	Desired goal, eg. org.Bt.egENSEMBLPROT. If NULL (default), goal if the packages primary annotation (eg. entrez gene for org.Bt.eg.db). Throws a warning if the organisms in from and to are not the same.
reduce	Reducing method, either return all annotations (one-to-many relation) or the first or last found annotation. The reducing step is applied after translating to the goal: all: returns all annotations first or last: choose first or last of arbitrarily ordered list.
return.list	Logical, when TRUE, returns the translation as a list where names
remove.missing	Logical, whether to remove non-translated values, defaults TRUE.
simplify	Logical, unlists the result. Defaults to FALSE. Usefull when using translate in a lapply or sapply.
...	Additional arguments sent to <a href="#">pickGO</a> if from returns GO set.

**Details**

If you want to do some further mapping on the result, you will have to use either `unlist` or `lapply`, where the first returns all the end-products of the first mapping, returning a new list, and the latter produces a list-within-list.

If `from` returns GO identifiers (e.g. `from = org.Bt.egGO`), then the returned resultset is more complex and consists of several layers of lists instead of the usual list of character vectors. If `to` has also been specified, the GO IDs must be extracted (internally) and you have the option of filtering for evidence and category at this point. See [pickGO](#).

**Value**

List; names of elements are values and the elements are the translated elements, or NULL if not translatable with `remove.missing = TRUE`.

**Note**

Requires user to deliver the annotation packages such as `org.Bt.egREFSEQ`.

**Author(s)**

Stefan McKinnon Edwards <[stefan.hoj-edwards@agrsci.dk](mailto:stefan.hoj-edwards@agrsci.dk)>

**See Also**

[pickRefSeq](#), [pickGO](#)

**Examples**

```
library(org.Bt.eg.db)
genes <- c(280705, 280706, 100327208)
translate(genes, org.Bt.egSYMBOL)

symbols <- c("SERPINA1", "KERA", "CD5")
refseq <- translate(symbols, from=org.Bt.egSYMBOL2EG, to=org.Bt.egREFSEQ)
# Pick the proteins:
pickRefSeq(refseq, priorities=c('NP', 'XP'), reduce='all')

# If you wanted do do some further mapping on the result from
# translate, simply use lapply.

library(GO.db)
GO <- translate(genes, org.Bt.egGO)
# Get all biological processes:
pickGO(GO, category='BP')
# Get all ontologies with experimental evidence:
pickGO(GO, evidence=c('IMP', 'IGI', 'IPI', 'ISS', 'IDA', 'IEP', 'IEA'))
```

---

UnifyRowNames	<i>Unify row names in data frame with the same order of gene list.</i>
---------------	--

---

**Description**

Unify row names in data frame with the same order of gene list.

**Usage**

```
UnifyRowNames(x, geneList)
```

**Arguments**

x	data frame with gene symbol in the row name
geneList	a gene list

**Value**

a data frame having the gene in row name ordered as in gene list.

**Examples**

```
## Not run:
cgds <- CGDS("http://www.cbioportal.org/")
geneList <- whichGeneList("73")
ProfData <- getProfileData.CGDS(cgds,
  geneList, "gbm_tcga_pub_mrna", "gbm_tcga_pub_all")
rownames(ProfData) <- NULL
geneListOrder <- UnifyRowNames(list(
  list1=list(df1=ProfData,df2=ProfData),
  list2=list(df3=ProfData,df4=ProfData)),
  geneList)

## End(Not run)
```

---

user_CNA	<i>Example of Copy Number Alteration (CNA) dataset</i>
----------	--

---

**Description**

Example of Copy Number Alteration (CNA) dataset

**Usage**

```
user_CNA
```

**Format**

An object of class `data.frame` with 579 rows and 13 columns.

**Author(s)**

Karim Mezhoud <kmezhoud@gmail.com>

---

user\_MetHM27

*Example of Methylation HM27 dataset*

---

**Description**

Example of Methylation HM27 dataset

**Usage**

```
user_MetHM27
```

**Format**

An object of class `data.frame` with 600 rows and 13 columns.

**Author(s)**

Karim Mezhoud <kmezhoud@gmail.com>

---

user\_MetHM450

*Example of Methylation HM450 dataset*

---

**Description**

Example of Methylation HM450 dataset

**Usage**

```
user_MetHM450
```

**Format**

An object of class `data.frame` with 10 rows and 13 columns.

**Author(s)**

Karim Mezhoud <kmezhoud@gmail.com>



---

user\_mRNA

*Example of mRNA expression dataset*

---

**Description**

Example of mRNA expression dataset

**Usage**

user\_mRNA

**Format**

An object of class `data.frame` with 307 rows and 13 columns.

**Author(s)**

Karim Mezhoud <kmezhoud@gmail.com>

---

user\_Mut

*Example of Mutation dataset*

---

**Description**

Example of Mutation dataset

**Usage**

user\_Mut

**Format**

An object of class `data.frame` with 37 rows and 23 columns.

**Author(s)**

Karim Mezhoud <kmezhoud@gmail.com>

---

whichGeneList      *Verify which gene list is selected*

---

**Description**

Verify which gene list is selected

**Usage**

```
whichGeneList(geneListLabel)
```

**Arguments**

geneListLabel      The label of GeneList. There are three cases: "Genes" user gene list, "Reactome\_GeneList" GeneList plus genes from reactomeFI "file name" from Examples

**Value**

Gene List label

**Examples**

```
How <- "runManually"
## Not run:
whichGeneList("102")

## End(Not run)
```

---

widgetThumbnail      *Capture html output widget as .png in R*

---

**Description**

Capture html output widget as .png in R

**Usage**

```
widgetThumbnail(p, thumbName, width = 1024, height = 1024)
```

**Arguments**

p                    is the html widget  
thumbName           is the name of the new png file  
width                1024  
height               1024

**Value**

3 files .html, .js and .png

**Examples**

```
How <- "runManually"
## Not run:
# Load package
library(networkD3)
library(htmlwidgets)
# Create fake data
src <- c("A", "A", "A", "A", "B", "B", "C", "C", "D")
target <- c("B", "C", "D", "J", "E", "F", "G", "H", "I")
networkData <- data.frame(src, target)
# Plot
plot = simpleNetwork(networkData)
# Save html as png
widgetThumbnail(p = plot, thumbName = "plot", width = 1024, height = 1024)

## End(Not run)
```

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