

Package ‘rWikiPathways’

April 15, 2020

Type Package

Title rWikiPathways - R client library for the WikiPathways API

Version 1.6.1

Date 2019-11-19

Imports caTools, httr, rjson, utils, XML

Suggests testthat, BiocStyle, knitr, rmarkdown

Description Use this package to interface with the WikiPathways API.

License MIT + file LICENSE

URL <https://github.com/wikipathways/rwikipathways>

BugReports <https://github.com/wikipathways/rwikipathways/issues>

LazyLoad yes

biocViews Visualization, GraphAndNetwork, ThirdPartyClient, Network,
Metabolomics

NeedsCompilation no

VignetteBuilder knitr

RoxygenNote 7.0.0

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

git_branch RELEASE_3_10

git_last_commit a022537

git_last_commit_date 2019-11-20

Date/Publication 2020-04-14

Author Egon Willighagen [aut, cre] (<<https://orcid.org/0000-0001-7542-0286>>),
Alex Pico [aut] (<<https://orcid.org/0000-0001-5706-2163>>)

Maintainer Egon Willighagen <egon.willighagen@gmail.com>

R topics documented:

downloadPathwayArchive	2
findPathwayIdsByLiterature	3
findPathwayIdsByText	4
findPathwayIdsByXref	4
findPathwayNamesByLiterature	5

findPathwayNamesByText	6
findPathwayNamesByXref	6
findPathwaysByLiterature	7
findPathwaysByText	7
findPathwaysByXref	8
findPathwayUrlsByLiterature	9
findPathwayUrlsByText	9
findPathwayUrlsByXref	10
getColorPathway	10
getCurationTagNames	11
getCurationTags	12
getEveryCurationTag	12
getOntologyTermIds	13
getOntologyTermNames	13
getOntologyTerms	14
getPathway	14
getPathwayHistory	15
getPathwayIdsByCurationTag	15
getPathwayIdsByOntologyTerm	16
getPathwayIdsByParentOntologyTerm	16
getPathwayInfo	17
getPathwaysByCurationTag	17
getPathwaysByOntologyTerm	18
getPathwaysByParentOntologyTerm	18
getRecentChanges	19
getRecentChangesIds	19
getRecentChangesNames	20
getXrefList	20
listOrganisms	21
listPathwayIds	21
listPathwayNames	22
listPathways	22
listPathwayUrls	23
wikipathwaysAPI	23
wikipathwaysGET	24
Index	25

downloadPathwayArchive

Download Pathway Archive

Description

Access the monthly archives of pathway content from WikiPathways.

Usage

```
downloadPathwayArchive(
  date = "current",
  organism = NULL,
  format = c("gpml", "gmt", "svg"),
  destpath = "./"
)
```

Arguments

date	(optional) The timestamp for a monthly release (e.g., 20171010) or "current" (default) for latest release.
organism	(optional) A particular species. See listOrganisms .
format	(optional) Either gpml (default), gmt or svg.
destpath	(optional) Destination path for file to be downloaded to. Default is current working directory.

Details

If you do not specify an organism, then an archive file will not be downloaded. Rather, the archive will be opened in a tab in your default browser.

Value

Filename of downloaded file or an opened tab in default browser

Examples

```
downloadPathwayArchive() ## open in browser
downloadPathwayArchive(format="gmt") ## open in browser
downloadPathwayArchive(date="20171010", format="svg") ## open in browser
downloadPathwayArchive(date="20171010", organism="Mus musculus", format="svg") ## download file
downloadPathwayArchive(organism="Mus musculus") ## download file
```

findPathwayIdsByLiterature

Find Pathway WPIDs By Literature

Description

Retrieve list of pathway WPIDs containing the query citation.

Usage

```
findPathwayIdsByLiterature(query)
```

Arguments

query	The character string to search for, e.g., a PMID, title keyword or author name.
-------	---

Value

A list of WPIDs

Examples

```
{
  findPathwayIdsByLiterature('19649250')
  findPathwayIdsByLiterature('smith')
  findPathwayIdsByLiterature('cancer')
}
```

findPathwayIdsByText *Find Pathway WPIDs By Text*

Description

Retrieve list of pathway WPIDs containing the query text.

Usage

```
findPathwayIdsByText(query)
```

Arguments

query A character string to search for, e.g., "cancer"

Value

A list of WPIDs

Examples

```
{
  findPathwayIdsByText('cancer')
}
```

findPathwayIdsByXref *Find Pathway WPIDs By Xref*

Description

Retrieve list of pathway WPIDs containing the query Xref by identifier and system code.

Usage

```
findPathwayIdsByXref(identifier, systemCode)
```

Arguments

identifier (character) The official ID specified by a data source or system

systemCode (character) The BridgeDb code associated with the data source or system, e.g.,

En (Ensembl), L (Entrez), Ch (HMDB), etc. See column two of <https://github.com/bridgedb/BridgeDb>

Details

Note: there will be multiple listings of the same pathway if the Xref is present multiple times.

Value

A list of WPIDs

Examples

```
{
  findPathwayIdsByXref('ENSG00000232810', 'En')
}
```

findPathwayNamesByLiterature

Find Pathway Names By Literature

Description

Retrieve list of pathway names containing the query citation.

Usage

```
findPathwayNamesByLiterature(query)
```

Arguments

query The character string to search for, e.g., a PMID, title keyword or author name.

Details

Note: there will be multiple listings of the same pathway name if copies exist for multiple species.

Value

A list of lists

Examples

```
{
  findPathwayNamesByLiterature('19649250')
  findPathwayNamesByLiterature('smith')
  findPathwayNamesByLiterature('cancer')
}
```

findPathwayNamesByText

Find Pathway Names By Text

Description

Retrieve list of pathway names containing the query text.

Usage

```
findPathwayNamesByText(query)
```

Arguments

query A character string to search for, e.g., "cancer"

Details

Note: there will be multiple listings of the same pathway name if copies exist for multiple species.

Value

A list of lists

Examples

```
{  
  findPathwayNamesByText('cancer')  
}
```

findPathwayNamesByXref

Find Pathway Names By Xref

Description

Retrieve list of pathway names containing the query Xref by identifier and system code.

Usage

```
findPathwayNamesByXref(identifier, systemCode)
```

Arguments

identifier (character) The official ID specified by a data source or system

systemCode (character) The BridgeDb code associated with the data source or system, e.g.,

En (Ensembl), L (Entrez), Ch (HMDB), etc. See column two of <https://github.com/bridgedb/BridgeDB>

Details

Note: there will be multiple listings of the same pathway if the Xref is present multiple times.

Value

A list of lists

Examples

```
{  
  findPathwayNamesByXref('ENSG00000232810', 'En')  
}
```

findPathwaysByLiterature
Find Pathways By Literature

Description

Retrieve a list of pathways containing the query citation.

Usage

```
findPathwaysByLiterature(query)
```

Arguments

query The character string to search for, e.g., a PMID, title keyword or author name.

Value

A list of lists

Examples

```
{  
  findPathwaysByLiterature('19649250')  
  findPathwaysByLiterature('smith')  
  findPathwaysByLiterature('cancer')  
}
```

findPathwaysByText *Find Pathways By Text*

Description

Retrieve a list of pathways containing the query text.

Usage

```
findPathwaysByText(query)
```

Arguments

query A character string to search for, e.g., "cancer"

Value

A list of lists

Examples

```
{  
  findPathwaysByText('cancer')  
}
```

findPathwaysByXref *Find Pathways By Xref*

Description

Retrieve a list of pathways containing the query Xref by identifier and system code.

Usage

```
findPathwaysByXref(identifier, systemCode)
```

Arguments

identifier (character) The official ID specified by a data source or system

systemCode (character) The BridgeDb code associated with the data source or system, e.g.,
En (Ensembl), L (Entrez), Ch (HMDB), etc. See column two of <https://github.com/bridgedb/BridgeDb>

Details

Note: there will be multiple listings of the same pathway if the Xref is present mutiple times.

Value

A list of lists

Examples

```
{  
  findPathwaysByXref('ENSG00000232810', 'En')  
}
```

`findPathwayUrlsByLiterature`*Find Pathway URLs By Literature*

Description

Retrieve list of pathway URLs containing the query citation.

Usage

```
findPathwayUrlsByLiterature(query)
```

Arguments

`query` The character string to search for, e.g., a PMID, title keyword or author name.

Value

A list of lists

Examples

```
{  
  findPathwayUrlsByLiterature('19649250')  
  findPathwayUrlsByLiterature('smith')  
  findPathwayUrlsByLiterature('cancer')  
}
```

`findPathwayUrlsByText` *Find Pathway URLs By Text*

Description

Retrieve list of pathway URLs containing the query text.

Usage

```
findPathwayUrlsByText(query)
```

Arguments

`query` A character string to search for, e.g., "cancer"

Value

A list of lists

Examples

```
{  
  findPathwayUrlsByText('cancer')  
}
```

findPathwayUrlsByXref *Find Pathway URLs By Xref*

Description

Retrieve list of pathway URLs containing the query Xref by identifier and system code.

Usage

```
findPathwayUrlsByXref(identifier, systemCode)
```

Arguments

identifier	(character) The official ID specified by a data source or system
systemCode	(character) The BridgeDb code associated with the data source or system, e.g., En (Ensembl), L (Entrez), Ch (HMDB), etc. See column two of https://github.com/bridgedb/BridgeDb

Details

Note: there will be multiple listings of the same pathway if the Xref is present multiple times.

Value

A list of lists

Examples

```
{
  findPathwayUrlsByXref('ENSG00000232810', 'En')
}
```

getColoredPathway *Get Colored Pathway*

Description

Retrieve a pathway image file with specified nodes colored by specified colors. This service may not always be available.

Usage

```
getColoredPathway(
  pathway,
  revision = 0,
  graphId = NULL,
  color = NULL,
  fileType = c("svg", "png", "pdf")
)
```

Arguments

pathway	WikiPathways identifier (WPID) for the pathway to download, e.g. WP4
revision	(integer, optional) Number to indicate a specific revision to download
graphId	A character string or vector indicating the nodes to color
color	(optional) String or vector indicating the highlighting color, e.g., #FF8855. Default is red. You can provide a single color for mutiple nodes; otherwise color list and graphId must be the same length.
fileType	(optional) Image file format, e.g., svg (default), png or pdf.

Value

Image file

Examples

```
## Not run:
svg = getColoredPathway(pathway="WP554", graphId="ef1f3")
svg = getColoredPathway(pathway="WP554", graphId=c("ef1f3","e68e0"))
svg = getColoredPathway(pathway="WP554", graphId=c("ef1f3","e68e0"),
                        color="00FF00")
svg = getColoredPathway(pathway="WP554", graphId=c("ef1f3","e68e0"),
                        color=c("FF0000", "0000FF"))
# writeLines(svg, "pathway.svg")

## End(Not run)
```

getCurationTagNames *Get Curation Tag Names on a Pathway*

Description

Retrieve names of curation tags for a specific pathway.

Usage

```
getCurationTagNames(pathway)
```

Arguments

pathway	WikiPathways identifier (WPID) for the pathway to download, e.g. WP4
---------	--

Value

A list of tag names

Examples

```
{
getCurationTagNames('WP554')
}
```

getCurationTags *Get Curation Tags on a Pathway*

Description

Retrieve information about curation tags for a specific pathway.

Usage

```
getCurationTags(pathway)
```

Arguments

pathway WikiPathways identifier (WPID) for the pathway to download, e.g. WP4

Value

A list of tag name, display name, revision, text, timestampe and user

Examples

```
{
  getCurationTags('WP554')
}
```

getEveryCurationTag *Get Every Instance of a Curation Tag*

Description

Retrieve information about every instance of a given curation tag.

Usage

```
getEveryCurationTag(tag)
```

Arguments

tag (character) Official name of curation tag, e.g., "Curation:FeaturedPathway"

Value

A list of tag name, display name, revision, text, timestampe and user

Examples

```
{
  getEveryCurationTag('Curation:FeaturedPathway')
}
```

getOntologyTermIds *Get Ontology Term IDs by Pathway*

Description

Retrieve identifiers of ontology terms for a specific pathway.

Usage

```
getOntologyTermIds(pathway)
```

Arguments

pathway WikiPathways identifier (WPID) for the pathway to download, e.g. WP4

Value

A list of term identifiers

Examples

```
{
  getOntologyTermIds('WP554')
}
```

getOntologyTermNames *Get Ontology Term Names by Pathway*

Description

Retrieve names of ontology terms for a specific pathway.

Usage

```
getOntologyTermNames(pathway)
```

Arguments

pathway WikiPathways identifier (WPID) for the pathway to download, e.g. WP4

Value

A list of term names

Examples

```
{
  getOntologyTermNames('WP554')
}
```

getOntologyTerms	<i>Get Ontology Terms by Pathway</i>
------------------	--------------------------------------

Description

Retrieve information about ontology terms for a specific pathway.

Usage

```
getOntologyTerms(pathway)
```

Arguments

pathway	WikiPathways identifier (WPID) for the pathway to download, e.g. WP4
---------	--

Value

A list of tag name, display name, revision, text, timestampe and user

Examples

```
{
  getOntologyTerms('WP554')
}
```

getPathway	<i>Get Pathway</i>
------------	--------------------

Description

Retrieve a specific pathway in the GPML format

Usage

```
getPathway(pathway, revision = 0)
```

Arguments

pathway	WikiPathways identifier (WPID) for the pathway to download, e.g. WP4
revision	(integer, optional) Number to indicate a specific revision to download

Value

GPML

Examples

```
{
  getPathway('WP554')
}
```

getPathwayHistory *Get Pathway History*

Description

Retrieve the revision history of a pathway.

Usage

```
getPathwayHistory(pathway, timestamp)
```

Arguments

pathway	WikiPathways identifier (WPID) for the pathway to download, e.g. WP4
timestamp	(integer) Limit by time, only history items after the given time, e.g., 20180201 for revisions since Feb 1st, 2018. Any length of timestamp is accepted, upto 14 digits, e.g., 2018, 201802, 20180201063011, etc.

Value

A list of revisions, including user and comment

Examples

```
{
  getPathwayHistory('WP554', 20180201)
}
```

getPathwayIdsByCurationTag
Get Pathway WPIDs by Curation Tag

Description

Retrieve pathway WPIDs for every pathway with a given curation tag.

Usage

```
getPathwayIdsByCurationTag(tag)
```

Arguments

tag	(character) Official name of curation tag, e.g., "Curation:FeaturedPathway"
-----	---

Value

A list of pathway WPIDs

Examples

```
{
  getPathwayIdsByCurationTag('Curation:FeaturedPathway')
}
```

`getPathwayIdsByOntologyTerm`*Get Pathway WPIDs by Ontology Term*

Description

Retrieve pathway WPIDs for every pathway with a given ontology term.

Usage

```
getPathwayIdsByOntologyTerm(term)
```

Arguments

term (character) Official name of ontology term, e.g., "PW:0000045"

Value

A list of pathway WPIDs

Examples

```
{  
  getPathwayIdsByOntologyTerm('PW:0000045')  
}
```

`getPathwayIdsByParentOntologyTerm`*Get Pathway WPIDs by Parent Ontology Term*

Description

Retrieve pathway WPIDs for every pathway with a child term of given ontology term

Usage

```
getPathwayIdsByParentOntologyTerm(term)
```

Arguments

term (character) Official name of ontology term, e.g., "PW:0000045"

Value

A list of pathway WPIDs

Examples

```
{  
  getPathwayIdsByParentOntologyTerm('PW:0000045')  
}
```

getPathwayInfo	<i>Get Pathway Info</i>
----------------	-------------------------

Description

Retrieve information for a specific pathway

Usage

```
getPathwayInfo(pathway)
```

Arguments

pathway WikiPathways identifier (WPID) for the pathway to download, e.g. WP4

Value

A list of pathway WPID, URL, name, species and latest revision

Examples

```
{
  getPathwayInfo('WP554')
}
```

getPathwaysByCurationTag	<i>Get Pathways by Curation Tag</i>
--------------------------	-------------------------------------

Description

Retrieve pathway information for every pathway with a given curation tag.

Usage

```
getPathwaysByCurationTag(tag)
```

Arguments

tag (character) Official name of curation tag, e.g., "Curation:FeaturedPathway"

Value

A list of pathway information, including WPID, url, name, species and revision

Examples

```
{
  getPathwaysByCurationTag('Curation:FeaturedPathway')
}
```

`getPathwaysByOntologyTerm`*Get Pathways by Ontology Term*

Description

Retrieve pathway information for every pathway with a given ontology term.

Usage

```
getPathwaysByOntologyTerm(term)
```

Arguments

`term` (character) Official name of ontology term, e.g., "PW:0000045"

Value

A list of pathway information, including WPID, url, name, species and revision

Examples

```
{
  getPathwaysByOntologyTerm('PW:0000045')
}
```

`getPathwaysByParentOntologyTerm`*Get Pathways by Parent Ontology Term*

Description

Retrieve pathway information for every pathway with a child term of given ontology term.

Usage

```
getPathwaysByParentOntologyTerm(term)
```

Arguments

`term` (character) Official name of ontology term, e.g., "PW:0000045"

Value

A list of pathway information, including WPID, url, name, species and revision

Examples

```
{
  getPathwaysByParentOntologyTerm('PW:0000045')
}
```

getRecentChanges *Get Recent Changes*

Description

Retrieve recent changes to pathways at WikiPathways.

Usage

```
getRecentChanges(timestamp)
```

Arguments

timestamp (14 digits, YYYYMMDDhhmmss) Limit by time, only history items after the given time, e.g., 20180201000000 for changes since Feb 1st, 2018.

Value

A list of changes, including pathway WPID, name, url, species and revision

Examples

```
{
  getRecentChanges('20180201000000')
}
```

getRecentChangesIds *Get WPIDs of Recent Changes*

Description

Retrieve WPIDs of recently changed pathways at WikiPathways.

Usage

```
getRecentChangesIds(timestamp)
```

Arguments

timestamp (14 digits, YYYYMMDDhhmmss) Limit by time, only history items after the given time, e.g., 20180201000000 for changes since Feb 1st, 2018.

Value

A list of WPIDs

Examples

```
{
  getRecentChangesIds('20180201000000')
}
```

getRecentChangesNames *Get Pathway Names of Recent Changes*

Description

Retrieve names of recently changed pathways at WikiPathways.

Usage

```
getRecentChangesNames(timestamp)
```

Arguments

timestamp (14 digits, YYYYMMDDhhmmss) Limit by time, only history items after the given time, e.g., 20180201000000 for changes since Feb 1st, 2018.

Value

A list of pathway names. Note: pathway deletions will be listed as blank names.

Examples

```
{
  getRecentChangesNames('20180201000000')
}
```

getXrefList *Get Xref List*

Description

Retrieve the Xref identifiers for a specific pathway in a particular system code

Usage

```
getXrefList(pathway, systemCode)
```

Arguments

pathway WikiPathways identifier (WPID) for the pathway to download, e.g. WP4
 systemCode (character) The BridgeDb code associated with the data source or system, e.g., En (Ensembl), L (Entrez), Ch (HMDB), etc. See column two of <https://github.com/bridgedb/BridgeDb>

Value

A list of Xrefs identifiers

Examples

```
{
  xrefs = getXrefList("WP2338", "L")
}
```

listOrganisms	<i>List Organisms</i>
---------------	-----------------------

Description

Retrieve the list of organisms supported by WikiPathways

Usage

```
listOrganisms()
```

Value

A list of organisms

Examples

```
{  
  listOrganisms()  
}
```

listPathwayIds	<i>List Pathway WPIDs</i>
----------------	---------------------------

Description

Retrieve list of pathway WPIDs per species.

Usage

```
listPathwayIds(organism = "")
```

Arguments

organism (character, optional) A particular species. See [listOrganisms](#). Default is all species.

Details

Basically returns a subset of [listPathways](#) result

Value

A list of WPIDs

Examples

```
{  
  listPathwayIds('Mus musculus')  
}
```

listPathwayNames	<i>List Pathway Names</i>
------------------	---------------------------

Description

Retrieve list of pathway names per species.

Usage

```
listPathwayNames(organism = "")
```

Arguments

organism (character, optional) A particular species. See [listOrganisms](#). Default is all species.

Details

Basically returns a subset of [listPathways](#) result

Value

A list of names

Examples

```
{
  listPathwayNames('Mus musculus')
}
```

listPathways	<i>List Pathways</i>
--------------	----------------------

Description

Retrieve list of pathways per species, including WPID, name, species, URL and latest revision number.

Usage

```
listPathways(organism = "")
```

Arguments

organism (character, optional) A particular species. See [listOrganisms](#). Default is all species.

Value

A list of lists

Examples

```
{
  listPathways('Mus musculus')
}
```

listPathwayUrls	<i>List Pathway URLs</i>
-----------------	--------------------------

Description

Retrieve list of pathway URLs per species.

Usage

```
listPathwayUrls(organism = "")
```

Arguments

organism (character, optional) A particular species. See [listOrganisms](#). Default is all species.

Details

Basically returns a subset of [listPathways](#) result

Value

A list of URLs

Examples

```
{
  listPathwayUrls('Mus musculus')
}
```

wikipathwaysAPI	<i>Open Swagger docs for WikiPathways API</i>
-----------------	---

Description

Opens swagger docs in default browser for available API calls.

Usage

```
wikipathwaysAPI(base.url = .baseUrl)
```

Arguments

base.url (optional) Ignore unless you need to specify a custom domain.

Value

New tab in default browser

Examples

```
{
  wikipathwaysAPI()
}
```

wikipathwaysGET

WikiPathways GET

Description

Constructs the query, makes GET call and processes the result

Usage

```
wikipathwaysGET(
  operation,
  parameters = NULL,
  format = c("json", "xml", "html", "jpg", "pdf", "dump"),
  base.url = .baseUrl
)
```

Arguments

operation	A character string to be converted to the query namespace
parameters	A named list of values to be converted to query parameters
format	(character) The format of the return, e.g., json (default), xml, html, jpg, pdf, dump
base.url	(optional) Ignore unless you need to specify a custom domain.

Value

query result content

Examples

```
{
  wikipathwaysGET('listOrganisms')
}
```


Index

[downloadPathwayArchive](#), 2

[findPathwayIdsByLiterature](#), 3

[findPathwayIdsByText](#), 4

[findPathwayIdsByXref](#), 4

[findPathwayNamesByLiterature](#), 5

[findPathwayNamesByText](#), 6

[findPathwayNamesByXref](#), 6

[findPathwaysByLiterature](#), 7

[findPathwaysByText](#), 7

[findPathwaysByXref](#), 8

[findPathwayUrlsByLiterature](#), 9

[findPathwayUrlsByText](#), 9

[findPathwayUrlsByXref](#), 10

[getColoredPathway](#), 10

[getCurationTagNames](#), 11

[getCurationTags](#), 12

[getEveryCurationTag](#), 12

[getOntologyTermIds](#), 13

[getOntologyTermNames](#), 13

[getOntologyTerms](#), 14

[getPathway](#), 14

[getPathwayHistory](#), 15

[getPathwayIdsByCurationTag](#), 15

[getPathwayIdsByOntologyTerm](#), 16

[getPathwayIdsByParentOntologyTerm](#), 16

[getPathwayInfo](#), 17

[getPathwaysByCurationTag](#), 17

[getPathwaysByOntologyTerm](#), 18

[getPathwaysByParentOntologyTerm](#), 18

[getRecentChanges](#), 19

[getRecentChangesIds](#), 19

[getRecentChangesNames](#), 20

[getXrefList](#), 20

[listOrganisms](#), 3, 21, 21, 22, 23

[listPathwayIds](#), 21

[listPathwayNames](#), 22

[listPathways](#), 21, 22, 22, 23

[listPathwayUrls](#), 23

[wikipathwaysAPI](#), 23

[wikipathwaysGET](#), 24