Package ‘ontoCAT’

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Type Package
Title Ontology traversal and search
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Description The ontoCAT R package provides a simple interface to ontologies described in widely used standard formats, stored locally in the filesystem or accessible online.
License Apache License 2.0
LazyLoad yes
biocViews Classification, DataRepresentation
Depends rJava, methods
NeedsCompilation no

R topics documented:

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The ontoCAT package provides a simple interface to the Experimental Factor Ontology (EFO) and to any other ontology described in OWL or OBO format.

Package can load the ontology from a local file or on the fly from a URL and internally create the inferred ontology view. Experimental Factor Ontology (EFO) is the default ontology, loaded from: http://efo.svn.sourceforge.net/viewvc/efo/trunk/src/efoinowl/InferredEFOOWLview/EFO_inferred.owl. The package’s methods allow to parse an ontology, search terms in it, find out term parents and children. The package is based on the Ontology Common API Tasks Java library (http://www.ontocat.org) as well as various other utilities methods and depends on rJava R package.
getAccession

Details

Package: ontoCAT
Type: Package
Version: 1.0.0
Date: 2010-09-20
License: Apache License
LazyLoad: yes

Author(s)

Natalja Kurbatova <natalja@ebi.ac.uk>

References

Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology, OntologyTerm, getOntology and getEFO

Examples

efo<-getEFO()
file <- system.file("extdata", "cell.obo", package="ontoCAT")
ontology <- getOntology(file)

getAccession

Returns accession of the ontology term

Description

Returns accession string of the OntologyTerm object.

Usage

getAccession(object)
getAllTermChildren

Arguments

object1 instance of the Ontology class

Value

Returns accession string of the ontology term.

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEFO()
term <- getTermById(efo,"EFO_0000827")
getAccession(term)

generateTermChildren

Returns all children of term of interest

Description

Returns set of all children of the term of interest. Term in the set is represented as the instance of the OntologyTerm class

Usage

generateTermChildren(object1,object2)

Arguments

object1 instance of the Ontology class

object2 instance of the OntologyTerm class
getAllTermChildrenById

Value

Returns set of ontology terms: each term in the set is the instance of the `OntologyTerm` class

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

`Ontology` and `OntologyTerm`

Examples

```r
efo <- getEFO()
term <- getTermById(efo,"EFO_0004902")
ggetAllTermChildren(efo,term)
```

```r
ggetAllTermChildrenById(object,id)
```

Usage

Returns set of all children of the term of interest. Term in the set is represented as the instance of the `OntologyTerm` class

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>object</td>
<td>instance of the <code>Ontology</code> class</td>
</tr>
<tr>
<td>id</td>
<td>accession string of the term of interest</td>
</tr>
</tbody>
</table>

Value

Returns set of ontology terms: each term in the set is the instance of the `OntologyTerm` class
**getAllTermIds**

**Author(s)**
Natalja Kurbatova

**References**


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

**See Also**

`Ontology`, `OntologyTerm` and `getAllTermChildren`

---

| getAllTermIds | Returns accessions of all ontology terms |

**Description**

Returns accessions of all loaded ontology terms

**Usage**

`getAllTermIds(object)`

**Arguments**

| object       | instance of the `Ontology` class |

**Value**

Returns accession strings of all terms from loaded ontology.

**Author(s)**
Natalja Kurbatova
**getAllTermParents**

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

[Ontology](#) and [OntologyTerm](#)

**Examples**

```r
file <- system.file("extdata", "cell.obo", package="ontoCAT")
ontologyFromFile <- getOntology(file)
getAllTermIds(ontologyFromFile)
```

**getAllTermParents** Returns set of all parents of the term of interest

**Description**

Returns set of all parents of the term of interest. Term in the set is represented as the instance of the [OntologyTerm](#) class

**Usage**

```r
getAllTermParents(object1,object2)
```

**Arguments**

- **object1**: instance of the [Ontology](#) class
- **object2**: instance of the [OntologyTerm](#) class

**Value**

Returns set of ontology terms: each term in the set is the instance of the [OntologyTerm](#) class

**Author(s)**

Natalja Kurbatova
References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

*Ontology* and *OntologyTerm*

Examples

```r
efo <- getEFO()
term <- getTermById(efo,"EFO_0004902")
ggetAllTermParents(efo,term)
```

`getAllTermParentsById`  *Returns set of all parents of the term of interest*

Description

Returns set of all parents of the term of interest. Term in the set is represented as the instance of the *OntologyTerm* class

Usage

```r
ggetAllTermParentsById(object,id)
```

Arguments

- `object`: instance of the *Ontology* class
- `id`: accession string of the term of interest

Value

Returns set of ontology terms: each term in the set is the instance of the *OntologyTerm* class

Author(s)

Natalja Kurbatova
References


Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology, OntologyTerm and getAllTermParents

ggetAllTerms

Returns all ontology terms

Description

Returns set of ontology terms, where each term is an instance of the OntologyTerm class.

Usage

ggetAllTerms(object)

Arguments

object instance of the Ontology class

Value

Returns all terms from loaded ontology as objects of OntologyTerm class.

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/
getEFO

Returns an instance of the EFO ontology parser

Description
Loads the latest EFO version on the fly, creating the inferred ontology classes.

Usage
getEFO()

Value
Returns an instance of the Ontology class.

Author(s)
Natalja Kurbatova

References
Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also
Ontology and OntologyTerm

Examples
efo<-getEFO()
getEFOBranchRootIds(efo)
getTermParentsById(efo,"EFO_0001221")
term_efo <- getTermById(efo,"EFO_0004902")
isEFOBranchRoot(efo,term_efo)
searchTermPrefix(efo,"leuk")
getTermAndAllChildren(efo,term_efo)
getEFOBranchRootIds

Description

Returns accessions of EFO branch roots. Function specific for EFO.

Usage

getEFOBranchRootIds(object)

Arguments

object instance of the Ontology class

Value

Returns list of accessions.

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEO()
gEFOBranchRootIds(efo)
getLabel

Returns label of the ontology term

Description

Returns label of the OntologyTerm object.

Usage

getLabel(object)

Arguments

object instance of the OntologyTerm class

Value

Returns label of the ontology term.

Author(s)

Natalja Kurbatova

References

Adamusiak T, Burdett T, van der Velde K J, Abeygunawardena N, Antonakaki D, Parkinson H
and Swertz M: OntoCAT – a simpler way to access ontology resources. Available from Nature
Precedings http://dx.doi.org/10.1038/npre.2010.4666.1 (2010)
A, Parkinson H: Modeling Sample Variables with an Experimental Factor Ontology. Bioinformatics
2010, 26(8):1112–1118
Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEFO()
term <- getTermById(efo,"EFO_0004902")
getLabel(term)
getOntology

Returns an instance of the ontology parser created from OWL or OBO file. Reasoning over ontologies and extracting relationships is supported by using HermiT reasoner.

Description

Loads the ontology described in OWL or OBO format from the local file or on the fly by using URL.

Usage

getOntology(pathToURI)

Arguments

pathToURI  a character string giving the URL or local name of the file to load ontology from

Value

Returns an instance of the Ontology class.

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

ontologyFromURL <- getOntology("http://www.ebi.ac.uk/efo/efo.owl")
getTermParentsById(ontologyFromURL,"EFO_0001221")
file <- system.file("extdata", "cell.obo", package="ontoCAT")
ontologyFromFile <- getOntology(file)
getAllTermIds(ontologyFromFile)
getOntologyAccession  

Returns ontology accession

Description

Returns ontology accession

Usage

getOntologyAccession(object)

Arguments

object instance of the Ontology class

Value

Returns ontology accession string.

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEF0()
getOntologyAccession(efo)
getOntologyDescription

Returns ontology description

Description

Returns ontology description

Usage

getOntologyDescription(object)

Arguments

object instance of the Ontology class

Value

Returns ontology description.

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEFO()
getOntologyDescription(efo)
getOntologyNoReasoning

*Returns an instance of the ontology parser created from OWL or OBO file without reasoning*

**Description**

Loads the ontology described in OWL or OBO format from the local file or on the fly by using URL.

**Usage**

```java
getOntologyNoReasoning(pathToURI)
```

**Arguments**

- `pathToURI` a character string giving the URL or local name of the file to load ontology from

**Value**

Returns an instance of the `Ontology` class.

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

`Ontology` and `OntologyTerm`
getOntologyRelationNames

Returns list of relations used in ontology

Description

Returns set of strings - relation names used in ontology

Usage

getOntologyRelationNames(object)

Arguments

object instance of the Ontology class

Value

Returns set of strings: each string in the set is the name of the relation

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm
getRootIds

Returns root terms of ontology

Description

Returns accessions of root terms of the ontology. For some ontologies these functions might fail when the ontology used was not design to have root classes

Usage

getRootIds(object)

Arguments

object instance of the Ontology class

Value

Returns list of accessions.

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEF0()
getRootIds(efo)
getRoots

getRoots  

Returns root terms of ontology

Description

Returns root terms of the ontology. For some ontologies these functions might fail when the ontology used was not design to have root classes

Usage

getRoots(object)

Arguments

object 

instance of the Ontology class

Value

Returns set of terms. Term in the set is the instance of OntologyTerm class

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEFO()
getRoots(efo)
getTermAndAllChildren  Returns accessions of all term’s parents and term itself

Description
Returns accessions of term itself and all its children recursively.

Usage
\[
\text{getTermAndAllChildren(object1, object2)}
\]

Arguments
- \text{object1} instance of the \text{Ontology} class
- \text{object2} instance of the \text{OntologyTerm} class

Value
Returns list of accessions.

Author(s)
Natalja Kurbatova

References
Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also
- \text{Ontology} and \text{OntologyTerm}

Examples
\[
\text{efo} \leftarrow \text{getEFO()}
\text{term} \leftarrow \text{getTermById(efo,"EFO_0004902")}
\text{getTermAndAllChildren(efo,term)}
\]
getTermAndAllChildrenById

Returns accessions of all term’s parents and term itself

Description

Returns accessions of term itself and all its children recursively.

Usage

getTermAndAllChildrenById(object, id)

Arguments

Object | Description
--- | ---
object | instance of the Ontology class
id | accession string of the term of interest

Value

Returns list of accessions.

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm and getTermAndAllChildren
**getTermById**

Returns ontology term as the instance of the **OntologyTerm** class

**Usage**

```
getTermById(object, id)
```

**Arguments**

- `object` instance of the **Ontology** class
- `id` accession string of the term of interest

**Value**

Returns ontology term: instance of the **OntologyTerm** class

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

**Ontology** and **OntologyTerm**

**Examples**

```
efo <- getEFO()
geTermById(efo,"EFO_0000827")
```
**getDescription**

Returns set of direct children of the term of interest. Term in the set is represented as the instance of the `OntologyTerm` class.

**Usage**

```r
getTermChildren(object1, object2)
```

**Arguments**

- `object1`: instance of the `Ontology` class
- `object2`: instance of the `OntologyTerm` class

**Value**

Returns set of ontology terms: each term in the set is the instance of the `OntologyTerm` class.

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

`Ontology` and `OntologyTerm`

**Examples**

```r
efo <- getEFO()
term <- getTermById(efo, "EFO_0004902")
getTermChildren(efo, term)
```
**getDescription**

Returns direct children of term of interest

**Description**

Returns set of direct children of the term of interest. Term in the set is represented as the instance of the `OntologyTerm` class

**Usage**

```
getTermChildrenById(object, id)
```

**Arguments**

- **object**: instance of the `Ontology` class
- **id**: accession string of the term of interest

**Value**

Returns set of ontology terms: each term in the set is the instance of the `OntologyTerm` class

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

`Ontology`, `OntologyTerm` and `getTermChildren`
getTermDefinitions

Description

Returns set of ontology term’s definitions if there are some

Usage

getTermDefinitions(object1,object2)

Arguments

<table>
<thead>
<tr>
<th>object1</th>
<th>instance of the Ontology class</th>
</tr>
</thead>
<tbody>
<tr>
<td>object2</td>
<td>instance of the OntologyTerm class</td>
</tr>
</tbody>
</table>

Value

Returns set of ontology term’s definitions if there are some

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEFO()
term <- getTermById(efo,"EFO_0000322")
getTermDefinitions(efo,term)
**getTermDefinitionsById**

*Returns set of ontology term’s definitions*

**Description**

Returns set of ontology term’s definitions if there are some

**Usage**

```
getTermDefinitionsById(object, id)
```

**Arguments**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>object</td>
<td>instance of the Ontology class</td>
</tr>
<tr>
<td>id</td>
<td>accession string of the term of interest</td>
</tr>
</tbody>
</table>

**Value**

Returns set of ontology term’s definitions if there are some

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

Ontology, OntologyTerm and getTermDefinitions
**getTermNameById**

*Returns ontology term’s label*

**Description**

Returns ontology term’s label

**Usage**

```r
getTermNameById(object, id)
```

**Arguments**

- `object`: instance of the `Ontology` class
- `id`: accession string of the term of interest

**Value**

Returns ontology term’s label

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

`Ontology` and `OntologyTerm`

**Examples**

```r
efo <- getEFO()
getTermNameById(efo,"EFO_0000827")
```
getTermParents

Returns set of direct parents of the term of interest

Description

Returns set of direct parents of the term of interest. Term in the set is represented as the instance of the OntologyTerm class

Usage

getTermParents(object1,object2)

Arguments

object1 instance of the Ontology class

object2 instance of the OntologyTerm class

Value

Returns set of ontology terms: each term in the set is the instance of the OntologyTerm class

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEFO()
term <- getTermById(efo,"EFO_0004902")
gTermParents(efo,term)
**getTermParentsById**

Returns set of direct parents of the term of interest

**Description**

Returns set of direct parents of the term of interest. Term in the set is represented as the instance of the `OntologyTerm` class

**Usage**

`getTermParentsById(object, id)`

**Arguments**

- `object`: instance of the `Ontology` class
- `id`: accession string of the term of interest

**Value**

Returns set of ontology terms: each term in the set is the instance of the `OntologyTerm` class

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

`Ontology`, `OntologyTerm` and `getTermParents`
getTermRelationNames

**getTermRelationNames**  
*Returns list of relation names available for the term*

**Description**

Returns set of strings - relation names between term of interest and other terms in ontology

**Usage**

```java
getTermRelationNames(object1, object2)
```

**Arguments**

- **object1**: instance of the `Ontology` class
- **object2**: instance of the `OntologyTerm` class

**Value**

Returns set of ontology term’s synonyms if there are some

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

[Ontology](#) and [OntologyTerm](#)
getTermRelationNamesById

Returns list of relation names available for the term

Description

Returns set of strings - relation names between term of interest and other terms in ontology

Usage

getTermRelationNamesById(object,id)

Arguments

object instance of the Ontology class
id accession string of the term of interest

Value

Returns set of ontology term’s synonyms if there are some

Author(s)

Natalja Kurbatova

References


Experiment Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology, OntologyTerm and getTermRelationNames
**getTermRelations**

Returns set of terms that are in defined relation with term of interest

**Description**

Returns set of terms that are in defined relation with the term of interest

**Usage**

```java
getTermRelations(object1, object2, relation)
```

**Arguments**

- `object1`: instance of the `Ontology` class
- `object2`: instance of the `OntologyTerm` class
- `relation`: relation name

**Value**

Returns set of ontology term’s synonyms if there are some

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

*Ontology* and *OntologyTerm*
**getTermRelationsById**

Returns set of terms that are in defined relation with term of interest

**Description**

Returns set of terms that are in defined relation with the term of interest

**Usage**

```java
getTermRelationsById(object, id, relation)
```

**Arguments**

- **object**: instance of the `Ontology` class
- **id**: accession string of the term of interest
- **relation**: relation name

**Value**

Returns set of ontology term’s synonyms if there are some

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

`Ontology` and `OntologyTerm` and `getTermRelations`
getTermSynonyms

**Description**

Returns set of ontology term’s synonyms if there are some

**Usage**

```
getTermSynonyms(object1, object2)
```

**Arguments**

- **object1** instance of the `Ontology` class
- **object2** instance of the `OntologyTerm` class

**Value**

Returns set of ontology term’s synonyms if there are some

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

`Ontology` and `OntologyTerm`

**Examples**

```r
efo <- getEFO()
term <- getTermById(efo,"EFO_0000827")
getTermSynonyms(efo, term)
```
**getTermSynonymsById**  
*Returns set of ontology term’s synonyms*

**Description**

Returns set of ontology term’s synonyms if there are some

**Usage**

```java
getTermSynonymsById(object, id)
```

**Arguments**

- `object` : instance of the `Ontology` class
- `id` : accession string of the term of interest

**Value**

Returns set of ontology term’s synonyms if there are some

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

`Ontology`, `OntologyTerm` and `getTermSynonyms`
hasTerm

Returns true if term is in ontology

Description
Returns true if term is in the ontology

Usage

hasTerm(object, id)

Arguments

object instance of the Ontology class
id accession string of the term of interest

Value
Returns true or false

Author(s)
Natalja Kurbatova

References
Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also
Ontology and OntologyTerm

Examples

efo <- getEFO()
hasTerm(efo,"EFO_0000322")
isEFOBranchRoot  

Returns true if term is the branch root in EFO

Description

Returns true if term is the branch root in EFO. Function specific for EFO.

Usage

isEFOBranchRoot(object1,object2)

Arguments

object1  
instance of the Ontology class

object2  
instance of the OntologyTerm class

Value

Returns true or false

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEFO()
term <- getTermById(efo,"EFO_0000322")
isEFOBranchRoot(efo,term)
isEFOBranchRootById

Returns true if term is the branch root in EFO

Description

Returns true if term is the branch root in EFO. Function specific for EFO.

Usage

isEFOBranchRootById(object, id)

Arguments

object instance of the Ontology class
id accession string of the term of interest

Value

Returns true or false

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology, OntologyTerm and isEFOBranchRoot
**isRoot**  

*Returns true if term is the root in the ontology hierarchy*

**Description**

Returns true if term is the root in the ontology hierarchy

**Usage**

```r
isRoot(object1, object2)
```

**Arguments**

- `object1` instance of the `Ontology` class
- `object2` instance of the `OntologyTerm` class

**Value**

Returns true or false

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

*Ontology* and *OntologyTerm*

**Examples**

```r
efo <- getEFO()
term <- getTermById(efo,"EFO_0000322")
isRoot(efo,term)
```
**isRootById**

*Returns true if term is the root in the ontology hierarchy*

**Description**

Returns true if term is the root in the ontology hierarchy

**Usage**

```
isRootById(object, id)
```

**Arguments**

- **object**: instance of the `Ontology` class
- **id**: accession string of the term of interest

**Value**

Returns true or false

**Author(s)**

Natalja Kurbatova

**References**


Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)

Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)


**See Also**

`Ontology`, `OntologyTerm` and `isRoot`
Ontology-class  

Class "Ontology"

Description

Supports basic operations with ontologies: traversal and search

Accessing the ontologies

The appropriate way to access ontology is via the helper `getOntology` function.

Accessing the EFO

The appropriate way to access EFO is via the helper `getEFO` function.

Slots

- `ontology`: Object of class "jobjRef" No user-serviceable parts inside. Maps to an internal Java Ontology object.

Methods

- `getAllTermChildren` signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns list of term’s all children
- `getAllTermChildrenById` signature(object = "Ontology", id = "character"): Returns list of term’s all children
- `getAllTermIds` signature(object = "Ontology"): Returns list of all term accessions
- `getAllTermParents` signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns list of term’s all parents
- `getAllTermParentsById` signature(object = "Ontology", id = "character"): Returns list of term’s all parents
- `getAllTerms` signature(object = "Ontology"): Returns list of all terms
- `getEFOBranchRootIds` signature(object = "Ontology"): Returns set of branch root accessions. Method specific for EFO ontology
- `getOntologyAccession` signature(object = "Ontology"): Returns parsed ontology accession
- `getOntologyDescription` signature(object = "Ontology"): Returns parsed ontology description
- `getRootIds` signature(object = "Ontology"): Returns list of root terms accessions, if there are any
- `getRoots` signature(object = "Ontology"): Returns list of root terms, if there are any
- `getTermAndAllChildren` signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns list of accessions of term itself and all its children recursively
- `getTermAndAllChildrenById` signature(object = "Ontology", id = "character"): Returns list of accessions of term itself and all its children recursively
- `getTermById` signature(object = "Ontology", id = "character"): Fetch term by accession. Returns external term representation if found in ontology, null otherwise
getTermChildren signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns list of term’s direct children
getTermChildrenById signature(object = "Ontology", id = "character"): Returns list of term’s direct children
getTermDefinitions signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns set of term’s definitions if there are some
getTermNameById signature(object = "Ontology", id = "character"): Returns term’s label by accession
getTermParents signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns list of term’s direct parents
getTermParentsById signature(object = "Ontology", id = "character"): Returns list of term’s direct parents
getTermSynonyms signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns set of term’s synonyms if there are some
hasTerm signature(object = "Ontology", id = "character"): Check if term with specified accession exists in ontology
isEFOBranchRoot signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns true if term is branch root of EFO. Method specific for EFO ontology
isEFOBranchRootById signature(object = "Ontology", id = "character"): Returns true if term is branch root of EFO. Method specific for EFO ontology
isRoot signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns true if term is root of ontology
isRootById signature(object = "Ontology", id = "character"): Returns true if term is root of ontology
searchTerm signature(object = "Ontology", id = "character"): Searches for term in ontology by name
searchTermPrefix signature(object = "Ontology", prefix = "character"): Searches for term in ontology by name
showHierarchyDownToTerm signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns set of terms that represent ontology "opened" down to specified term, hence displaying all its parents first and then a tree level, containing specified term
showHierarchyDownToTermById signature(object = "Ontology", id = "character"): Returns set of terms that represent ontology "opened" down to specified term, hence displaying all its parents first and then a tree level, containing specified term
showPathsToTerm signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns paths to the specified term from ontology’s root term
showPathsToTermById signature(object = "Ontology", id = "character"): Returns paths to the specified term from ontology’s root term
getOntologyRelationNames signature(object = "Ontology"): Returns list of relations used in ontology
getTermRelationNames signature(object1 = "Ontology", object2 = "OntologyTerm"): Returns list of relations that term has
getTermRelationNamesById signature(object1 = "Ontology", id = "character"): Returns list of relations that term has
getTermRelations signature(object1 = "Ontology", object2 = "OntologyTerm", relation = "character"): Returns list of terms that are in defined relation with term of interest
getTermRelations signature(object = "Ontology", id = "character", relation = "character"): Returns list of terms that are in defined relation with term of interest
OntologyTerm-class

Note
This package ships with the EFO OWL file, version released at the time of the package build. Provided EFO OWL file can be loaded as any other OWL or OBO file by using `getOntology` function.

Another option is to load the latest EFO version on the fly by using `getEFO` function.

Author(s)
Natalja Kurbatova

References
Experimental Factor Ontology [http://www.ebi.ac.uk/efo](http://www.ebi.ac.uk/efo)
Ontology Common API Tasks java library [http://www.ontocat.org](http://www.ontocat.org)

See Also
`getOntology`, `getEFO` and `OntologyTerm`

Examples

```r
ontology <- getEFO()
getEFOBranchRootIds(ontology)
term <- getTermById(ontology,"EFO_0001221")
getTermParents(ontology,term)
searchTermPrefix(ontology,"leuk")
getTermAndAllChildrenById(ontology,"EFO_0000318")
searchTerm(ontology,"thymus")
file <- system.file("extdata", "cell.obo", package="ontoCAT")
ontology <- getOntology(file)
getAllTermIds(ontology)
```

 OntologyTerm-class Class "OntologyTerm"

Description
External view for an ontological terms in ontoCAT package

Objects from the Class
Don’t create objects of this class. It is a wrapper around an internal Java representation.
Slots

term: Object of class "jobjRef" No user-serviceable parts inside.

Methods

getAccession signature(object = "OntologyTerm"): Returns accession of the term
getLabel signature(object = "OntologyTerm"): Returns description of the term
show signature(object = "OntologyTerm"): Displays term accession and description string

Author(s)

Tomasz Adamusiak

References

Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology

Examples

ontology <- getEFO()
term <- getTermById(ontology,"EFO_0001221")
show(term)
getAccession(term)
getLabel(term)

searchTerm

Searches term by its name in ontology

Description

Searches the term by its name in the ontology. Returns list of term’s accessions.

Usage

searchTerm(object,id)
searchTermPrefix

Arguments

object instance of the Ontology class
id term’s name or part of the name

Value

Returns list of accessions

Author(s)

Natalja Kurbatova

References

Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology and OntologyTerm

Examples

efo <- getEFO()
searchTerm(efo,"thymus")

searchTermPrefix

Searches for term by prefix in ontology

Description

Searches the term by prefix in the ontology. Returns list of term’s accessions.

Usage

searchTermPrefix(object,prefix)

Arguments

object instance of the Ontology class
prefix prefix to search for
showHierarchyDownToTerm

Value
Returns list of accessions

Author(s)
Natalja Kurbatova

References
Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also
Ontology and OntologyTerm

Examples

```r
efo <- getEFO()
searchTermPrefix(efo,"thy")
```

---

showHierarchyDownToTerm

*Returns tree representation of term’s parents*

Description
Returns set of terms that represent ontology "opened" down to specified term, hence displaying all its parents first and then a tree level, containing specified term. Term in the set is represented as the instance of the OntologyTerm class.

Usage

```r
showHierarchyDownToTerm(object1,object2)
```

Arguments

- `object1` instance of the Ontology class
- `object2` instance of the OntologyTerm class

Value
Returns set of ontology terms: each term in the set is the instance of the OntologyTerm class
Author(s)
Natalja Kurbatova

References
Experimental Factor Ontology http://www.ebi.ac.uk/efo
Ontology Common API Tasks java library http://www.ontocat.org
Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also
*Ontology* and *OntologyTerm*

Examples
```r
efo <- getEFO()
term <- getTermById(efo,"EFO_0000827")
showHierarchyDownToTerm(efo,term)
```

Description
Returns set of terms that represent ontology "opened" down to specified term, hence displaying all its parents first and then a tree level, containing specified term. Term in the set is represented as the instance of the *OntologyTerm* class.

Usage
```r
showHierarchyDownToTermById(object,id)
```

Arguments
- `object` instance of the *Ontology* class
- `id` accession string of the term of interest

Value
Returns set of ontology terms: each term in the set is the instance of the *OntologyTerm* class

Author(s)
Natalja Kurbatova
References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

Ontology, OntologyTerm and showHierarchyDownToTerm

showPathsToTerm

Returns paths to the term

Description

Returns paths to the specified term from ontology’s root term. Term in the set is represented as the instance of the OntologyTerm class.

Usage

```
showPathsToTerm(object1,object2)
```

Arguments

- **object1**: instance of the Ontology class
- **object2**: instance of the OntologyTerm class

Value

Returns paths in a string form

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/
showPathsToTermById

See Also

Ontology and OntologyTerm

Examples

```r
efo <- getEFO()
term <- getTermById(efo,"EFO_0000827")
showPathsToTerm(efo,term)
```

Description

Returns paths to the specified term from ontology’s root term. Term in the set is represented as the instance of the OntologyTerm class.

Usage

```r
showPathsToTermById(object,id)
```

Arguments

- **object**: instance of the Ontology class
- **id**: accession string of the term of interest

Value

Returns paths in a string form

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology http://www.ebi.ac.uk/efo

Ontology Common API Tasks java library http://www.ontocat.org

Java sources and javadocs: http://sourceforge.net/projects/ontocat/files/

See Also

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