Package ‘ontoCAT’

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Author Natalja Kurbatova, Tomasz Adamusiak, Pavel Kurnosov, Morris Swertz, Misha Kapushevsky
Maintainer Natalja Kurbatova <natalja@ebi.ac.uk>
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
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ontoCAR-package

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

Description

The ontoCAT package provides a simple interface to the Experimental Factor Ontology (http://www.ebi.ac.uk/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)

gAccession

Returns accession of the ontology term

Description

Returns accession string of the OntologyTerm object.

Usage

gAccession(object)
getAllTermChildren

Arguments

object  
instance of the OntologyTerm 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

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

ggetAllTermChildren

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

ggetAllTermChildren(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")
g GetAllTermChildren(efo,term)
```

getAllTermChildrenById

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

```r
g GetAllTermChildrenById(object,id)
```

Arguments

```r
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.
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]

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
cell <- system.file("extdata", "cell.obo", package="ontocat")
ontologyFromCell <- getOntology(cell)
getAllTermIds(ontologyFromCell)
```

```text
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
ggetAllTermParents(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
**getAllTermParentsById**

**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")
g getAllTermParents(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
g getAllTermParentsById(object,id)
```

**Arguments**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>object</td>
<td>instance of the <em>Ontology</em> 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

**Author(s)**

Natalja Kurbatova
getAllTerms

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

getAllTerms

Returns all ontology terms

Description

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

Usage

getAllTerms(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/
See Also

Ontology and OntologyTerm

Examples

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

getEFO

*Returns an instance of the EFO ontology parser*

Description

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

Usage

```r
gETCHO()
```

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

```r
efo<-getEFO()

gETCHOBachRootIds(efo)

gETCHMParentsById(efo,"EFO_0001221")

term_efo <- getTermById(efo,"EFO_0004902")
isEFOBranchRoot(efo,term_efo)

srETCHMPrefix(efo,"leuk")

gETCHMAndAllChildren(efo,term_efo)
```
Description

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

Usage

gEOF0BranchRootIds(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

```r
efo <- getEF0()
gEOF0BranchRootIds(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

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

**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](http://www.ebi.ac.uk/efo)

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


**See Also**

- **Ontology** and **OntologyTerm**

**Examples**

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

```r
efo <- getEF0()
getOntologyAccession(efo)
```
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

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

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
**getOntologyRelationNames**

*Returns list of relations used in ontology*

**Description**

Returns set of strings - relation names used in ontology

**Usage**

\[
\text{getOntologyRelationNames(object)}
\]

**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](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**
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

ggetRootIds(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

### Description

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

### Usage

```r
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](http://www.ebi.ac.uk/efo)

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


### See Also

- `Ontology`
- `OntologyTerm`

### Examples

```r
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**

```
getTermAndAllChildren(object1,object2)
```

**Arguments**

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

**Value**

Returns list of accessions.

**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()
term <- getTermById(efo,"EFO_0004902")
geTermAndAllChildren(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**

```java
getTermAndAllChildrenById(object, id)
```

**Arguments**

- **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](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 `getTermAndAllChildren`
**getTermById**

*Returns ontology term*

**Description**

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()
getTermById(efo,"EFO_0000827")
```
**getTermChildren**  

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**

```
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**

```
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**

```java
getDescription(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 **getDescription**
getTermDefinitions

Returns set of ontology term’s definitions

Description

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

Usage

getTermDefinitions(object1,object2)

Arguments

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

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

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

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, OntologyTerm and getTermDefinitions
getTermNameById

**Returns ontology term’s label**

**Description**

Returns ontology term’s label

**Usage**

`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")
getTermParents(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

```java
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  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

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

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
**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

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](http://dx.doi.org/10.1038/npre.2010.4666.1) (2010)


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 `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

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

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
**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**

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

**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>
<tr>
<td>relation</td>
<td>relation name</td>
</tr>
</tbody>
</table>

**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

Returns set of ontology term’s synonyms

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

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")
getTermSynonyms(efo,term)
**getTermSynonymsById**

*Returns set of ontology term’s synonyms*

**Description**

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

**Usage**

`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

```r
efo <- getEF0()
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

<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 true or false

Author(s)

Natalja Kurbatova

References


Experimental Factor Ontology \( \text{http://www.ebi.ac.uk/efo} \)

Ontology Common API Tasks java library \( \text{http://www.ontocat.org} \)

Java sources and javadocs: \( \text{http://sourceforge.net/projects/ontocat/files/} \)

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
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 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 prefix
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
gTermRelations 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.
**searchTerm**

**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**

```r
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
- **prefix**: prefix to search for

**Value**

Returns list of accessions

**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()
  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**

```r
  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](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()
searchTermPrefix(efo,"thy")
```

**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
showHierarchyDownToTermById

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
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**

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**

```
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**

Adamusiak T, Burdette 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](http://dx.doi.org/10.1038/npre.2010.4666.1) (2010)


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 **showPathsToTerm**
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