Package ‘ontoCAT’

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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
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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.

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 utilites methods and depends on rJava R package.

Details

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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

```r
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)

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

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

**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
getAllTermChildren(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")
ggetAllTermChildren(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**

`getAllTermChildrenById(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 `getAllTermChildren`
getAllTermIds

Description

Returns accessions of all loaded ontology terms

Usage

ggetAllTermIds(object)

Arguments

object instance of the Ontology class

Value

Returns accession strings of all terms from loaded ontology.

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)
ggetAllTermIds(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](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")
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**

```java
getAllTermParentsById(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 *getAllTermParents*
getAllTerms  

Returns all ontology terms

Description

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

Usage

g totalitarianTerms(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

file <- system.file("extdata", "cell.obo", package="ontocAT")
ontologyFromFile <- getOntology(file)
g totalitarianTerms(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

g ETF0()

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

Returns all term's parents

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 <- getEFO()
getEFOBranchRootIds(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
getOntologyAccession

Examples

```r
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
getOntologyDescription

Examples

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

getOntologyDescription

*Returns ontology description*

Description

Returns ontology description

Usage

```r
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](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()
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**

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

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 <- getEFO()
gegetRootIds(efo)
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**

```
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**

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

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<th>Method</th>
<th>Returns ontology term</th>
</tr>
</thead>
</table>

**Description**

Returns ontology term as the instance of the `OntologyTerm` class.

**Usage**

```r
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**

```r
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**

```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)
```
**getTermChildrenById**

*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

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**

```java
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](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**

```
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**

```r
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](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")
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](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**


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 synonymss 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

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
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 getTermRelations
**getTermSynonyms**

Returns set of ontology term’s synonyms

---

**Description**

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

**Usage**

```r
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**

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 the 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

<table>
<thead>
<tr>
<th>object</th>
<th>instance of the Ontology class</th>
</tr>
</thead>
<tbody>
<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 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 "objRef" 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
Ontology-class

**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 prefix in ontology

**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 under given accession 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

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 getEF0 function.

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
getOntology, getEF0 and OntologyTerm

Examples

```r
ontology <- getEF0()
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**

```r
searchTerm(object, id)
```

**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](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

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

Value

Returns list of accessions

Author(s)

Natalja Kurbatova

References

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

```
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](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**
showHierarchyDownToTermById

Examples

efo <- getEF0()
term <- getTermById(efo,"EFO_0000827")
showHierarchyDownToTerm(efo,term)

showHierarchyDownToTermById

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

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/

See Also
Ontology and OntologyTerm

Examples
efo <- getEFO()
term <- getTermById(efo,"EFO_0000027")
showPathsToTerm(efo,term)
**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**

```java
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](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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