Package 'ontoCAT'

April 5, 2014

Type Package

Title Ontology traversal and search

Version 1.14.0

Date 2011-06-06

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. The full version of ontoCAT R package also supports searching for ontology terms across multiple ontologies and in major ontology repositories, as well as a number of advanced ontology navigation functions: www.ontocat.org/wiki/r

License Apache License 2.0

LazyLoad yes

biocViews Classification, DataRepresentation

Depends rJava, methods

R topics documented:

`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 utilites methods and depends on rJava R package.

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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, OntologyTerm, getOntology and getEFO

Examples

```
efo<-getEFO()
ontology <- getOntology("./ontoCAR/extdata/cell.obo")
```

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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_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

```
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_0000322")
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

```
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, 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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
getAllTermIds(efo)
```

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

```
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_0000827")
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

```
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, 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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
getAllTerms(efo)
```

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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
getEFOBranchRootIds(efo)
getTermParentsById(efo,"EFO_0001221")
term_efo <- getTermById(efo,"EFO_0000322")
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_0000827")
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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

```
ontologyFromURL <- getOntology("http://www.ebi.ac.uk/efo/efo.owl")
getOntologyRelationNames(ontologyFromURL)
getTermParentsById(ontologyFromURL,"EFO_0001221")
ontologyFromFile <- getOntology("./ontoCAT/extdata/cell.obo")
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
getOntologyDescription(efo)
```

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

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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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

```
ontologyFromURL <- getOntologyNoReasoning("http://www.ebi.ac.uk/efo/efo.owl")
getOntologyRelationNames(ontologyFromURL)
```

`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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
getOntologyRelationNames(efo)
```

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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
getRootIds(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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_0000322")
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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 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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_0000322")
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, 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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, 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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_0000827")
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

```
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, 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 synonymss 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 (2010)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_0000827")
getTermRelationNames(efo,term)
```

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 synonymss 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 (2010)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, 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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_0000827")
getTermRelations(efo,term,"has_part")
```

`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 synonymss 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 (2010)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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` 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 synonymss 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 (2010)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_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 synonymss 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 (2010)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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`, `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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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`, `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

```
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, 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 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 `getEFO` function.

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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

`getOntology`,`getEFO` and `OntologyTerm`

Examples

```
ontology <- getEFO()
getEFOBranchRootIds(ontology)
term <- getTermById(ontology,"EFO_0001221")
getTermParents(ontology,term)
searchTermPrefix(ontology,"leuk")
getTermAndAllChildrenById(ontology,"EFO_0000318")
searchTerm(ontology,"thymus")
ontology <- getOntology("http://www.ebi.ac.uk/efo/efo.owl")
ontology <- getOntology("./ontoCAT/extdata/cell.obo")
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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`

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)
```

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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
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

Value

Returns list of accessions

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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()
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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, 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

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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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_0000827")
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

```
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, 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)

Malone J, Holloway E, Adamusiak T, Kapushesky M, Zheng J, Kolesnikov N, Zhukova A, Brazma 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, OntologyTerm and showPathsToTerm

Index