

# Package ‘**ontoCAT**’

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**Type** Package

**Title** Ontology traversal and search

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**Description** The ontoCAT R package provides a simple interface to ontologies described in widely used standard formats, stored locally in the filesystem or accessible online. 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](http://www.ontocat.org/wiki/r)

**License** Apache License 2.0

**LazyLoad** yes

**biocViews** Classification, DataRepresentation

**Depends** rJava, methods

## R topics documented:

ontoCAR-package . . . . .	2
getAccession . . . . .	4
getAllTermChildren . . . . .	5
getAllTermChildrenById . . . . .	6
getAllTermIds . . . . .	7
getAllTermParents . . . . .	8
getAllTermParentsById . . . . .	9
getAllTerms . . . . .	10
getEFO . . . . .	11
getEFOBranchRootIds . . . . .	12
getLabel . . . . .	13

getOntology . . . . .	14
getOntologyAccession . . . . .	15
getOntologyDescription . . . . .	16
getOntologyNoReasoning . . . . .	17
getOntologyRelationNames . . . . .	18
getRootIds . . . . .	19
getRoots . . . . .	20
getTermAndAllChildren . . . . .	21
getTermAndAllChildrenById . . . . .	22
getTermById . . . . .	23
getTermChildren . . . . .	24
getTermChildrenById . . . . .	25
getTermDefinitions . . . . .	26
getTermDefinitionsById . . . . .	27
getTermNameById . . . . .	28
getTermParents . . . . .	29
getTermParentsById . . . . .	30
getTermRelationNames . . . . .	31
getTermRelationNamesById . . . . .	32
getTermRelations . . . . .	33
getTermRelationsById . . . . .	34
getTermSynonyms . . . . .	35
getTermSynonymsById . . . . .	36
hasTerm . . . . .	37
isEFOBranchRoot . . . . .	38
isEFOBranchRootById . . . . .	39
isRoot . . . . .	40
isRootById . . . . .	41
Ontology-class . . . . .	42
OntologyTerm-class . . . . .	45
searchTerm . . . . .	46
searchTermPrefix . . . . .	47
showHierarchyDownToTerm . . . . .	48
showHierarchyDownToTermById . . . . .	49
showPathsToTerm . . . . .	50
showPathsToTermById . . . . .	51

**Index****52**


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 ontoCAR-package

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

---

## Description

The ontoCAT package provides a simple interface to the Experimental Factor Ontology (<http://www.ebi.ac.uk/efo>) and to any other ontology described in OWL or OBO format.

Package can load the ontology from a local file or on the fly from a URL and internally create the inferred ontology view. Experimental Factor Ontology (EFO) is the default ontology, loaded from: [http://efo.svn.sourceforge.net/viewvc/efo/trunk/src/efoinowl/InferredEFOOWLview/EFO\\_inferred.owl](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
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License:	Apache License
LazyLoad:	yes

## Author(s)

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## 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**

<code>object</code>	instance of the <a href="#">Ontology</a> class
<code>id</code>	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

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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

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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 <a href="#">Ontology</a> 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)

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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>

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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	<i>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.</i>
-------------	---

---

### 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 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

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

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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 <a href="#">Ontology</a> class
object2	instance of the <a href="#">OntologyTerm</a> 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

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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 <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> class
object2	instance of the <a href="#">OntologyTerm</a> 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

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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 <a href="#">Ontology</a> 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

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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

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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 <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> class
object2	instance of the <a href="#">OntologyTerm</a> 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

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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 <a href="#">Ontology</a> 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

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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

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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 <a href="#">Ontology</a> 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)

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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 <a href="#">Ontology</a> class
object2	instance of the <a href="#">OntologyTerm</a> 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

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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 <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> class
object2	instance of the <a href="#">OntologyTerm</a> 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

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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 <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> class
object2	instance of the <a href="#">OntologyTerm</a> 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 <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> class
object2	instance of the <a href="#">OntologyTerm</a> 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

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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 <a href="#">Ontology</a> 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

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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 "jobRef" 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"): Re-  
turns 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>

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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

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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	<i>Searches term by its name in ontology</i>
------------	--

---

**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 <a href="#">Ontology</a> 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

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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	<i>Searches for term by prefix in ontology</i>
------------------	--

---

**Description**

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

**Usage**

```
searchTermPrefix(object, prefix)
```

**Arguments**

object	instance of the <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> class
object2	instance of the <a href="#">OntologyTerm</a> 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

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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 <a href="#">Ontology</a> 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

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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 <a href="#">Ontology</a> class
object2	instance of the <a href="#">OntologyTerm</a> 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

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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 <a href="#">Ontology</a> 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)

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**See Also**

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

# Index

- \*Topic **classes**
  - Ontology-class, [42](#)
  - OntologyTerm-class, [45](#)
- \*Topic **package**
  - ontoCAR-package, [2](#)
  
- [getAccession](#), [4](#)
- [getAccession](#), OntologyTerm-method (OntologyTerm-class), [45](#)
- [getAllTermChildren](#), [5](#), [6](#)
- [getAllTermChildren](#), Ontology, OntologyTerm-method (Ontology-class), [42](#)
- [getAllTermChildrenById](#), [6](#)
- [getAllTermChildrenById](#), Ontology, character-method (Ontology-class), [42](#)
- [getAllTermIds](#), [7](#)
- [getAllTermIds](#), Ontology-method (Ontology-class), [42](#)
- [getAllTermParents](#), [8](#), [9](#)
- [getAllTermParents](#), Ontology, OntologyTerm-method (Ontology-class), [42](#)
- [getAllTermParentsById](#), [9](#)
- [getAllTermParentsById](#), Ontology, character-method (Ontology-class), [42](#)
- [getAllTerms](#), [10](#)
- [getAllTerms](#), Ontology-method (Ontology-class), [42](#)
- [getEFO](#), [3](#), [11](#), [42](#), [44](#)
- [getEFOBranchRootIds](#), [12](#)
- [getEFOBranchRootIds](#), Ontology-method (Ontology-class), [42](#)
- [getLabel](#), [13](#)
- [getLabel](#), OntologyTerm-method (OntologyTerm-class), [45](#)
- [getOntology](#), [3](#), [14](#), [42](#), [44](#)
- [getOntologyAccession](#), [15](#)
- [getOntologyAccession](#), Ontology-method (Ontology-class), [42](#)
- [getOntologyDescription](#), [16](#)
- [getOntologyDescription](#), Ontology-method (Ontology-class), [42](#)
- [getOntologyNoReasoning](#), [17](#)
- [getOntologyRelationNames](#), [18](#)
- [getOntologyRelationNames](#), Ontology-method (Ontology-class), [42](#)
- [getRootIds](#), [19](#)
- [getRootIds](#), Ontology-method (Ontology-class), [42](#)
- [getRoots](#), [20](#)
- [getRoots](#), Ontology-method (Ontology-class), [42](#)
- [getTermAndAllChildren](#), [21](#), [22](#)
- [getTermAndAllChildren](#), Ontology, OntologyTerm-method (Ontology-class), [42](#)
- [getTermAndAllChildrenById](#), [22](#)
- [getTermAndAllChildrenById](#), Ontology, character-method (Ontology-class), [42](#)
- [getTermById](#), [23](#)
- [getTermById](#), Ontology, character-method (Ontology-class), [42](#)
- [getTermChildren](#), [24](#), [25](#)
- [getTermChildren](#), Ontology, OntologyTerm-method (Ontology-class), [42](#)
- [getTermChildrenById](#), [25](#)
- [getTermChildrenById](#), Ontology, character-method (Ontology-class), [42](#)
- [getTermDefinitions](#), [26](#), [27](#)
- [getTermDefinitions](#), Ontology, OntologyTerm-method (Ontology-class), [42](#)
- [getTermDefinitionsById](#), [27](#)
- [getTermDefinitionsById](#), Ontology, character-method (Ontology-class), [42](#)
- [getTermNameById](#), [28](#)
- [getTermNameById](#), Ontology, character-method (Ontology-class), [42](#)
- [getTermParents](#), [29](#), [30](#)
- [getTermParents](#), Ontology, OntologyTerm-method (Ontology-class), [42](#)

- getTermParentsById, [30](#)
- getTermParentsById, Ontology, character-method (Ontology-class), [42](#)
- getTermRelationNames, [31](#), [32](#)
- getTermRelationNames, Ontology, OntologyTerm-method (Ontology-class), [42](#)
- getTermRelationNamesById, [32](#)
- getTermRelationNamesById, Ontology, character-method (Ontology-class), [42](#)
- getTermRelations, [33](#), [34](#)
- getTermRelations, Ontology, OntologyTerm, character-method (Ontology-class), [42](#)
- getTermRelationsById, [34](#)
- getTermRelationsById, Ontology, character, character-method (Ontology-class), [42](#)
- getTermSynonyms, [35](#), [36](#)
- getTermSynonyms, Ontology, OntologyTerm-method (Ontology-class), [42](#)
- getTermSynonymsById, [36](#)
- getTermSynonymsById, Ontology, character-method (Ontology-class), [42](#)
  
- hasTerm, [37](#)
- hasTerm, Ontology, character-method (Ontology-class), [42](#)
  
- isEFOBranchRoot, [38](#), [39](#)
- isEFOBranchRoot, Ontology, OntologyTerm-method (Ontology-class), [42](#)
- isEFOBranchRootById, [39](#)
- isEFOBranchRootById, Ontology, character-method (Ontology-class), [42](#)
- isRoot, [40](#), [41](#)
- isRoot, Ontology, OntologyTerm-method (Ontology-class), [42](#)
- isRootById, [41](#)
- isRootById, Ontology, character-method (Ontology-class), [42](#)
  
- ontoCAR (ontoCAR-package), [2](#)
- ontoCAR-package, [2](#)
- Ontology, [3–41](#), [45–51](#)
- Ontology-class, [42](#)
- OntologyTerm, [3–41](#), [44](#), [46–51](#)
- OntologyTerm-class, [45](#)
  
- searchTerm, [46](#)
- searchTerm, Ontology, character-method (Ontology-class), [42](#)
- searchTermPrefix, [47](#)
- searchTermPrefix, Ontology, character-method (Ontology-class), [42](#)
- show, OntologyTerm-method (OntologyTerm-class), [45](#)
- showHierarchyDownToTerm, [48](#), [49](#)
- showHierarchyDownToTerm, Ontology, OntologyTerm-method (Ontology-class), [42](#)
- showHierarchyDownToTermById, [49](#)
- showHierarchyDownToTermById, Ontology, character-method (Ontology-class), [42](#)
- showPathsToTerm, [50](#), [51](#)
- showPathsToTerm, Ontology, OntologyTerm-method (Ontology-class), [42](#)
- showPathsToTermById, [51](#)
- showPathsToTermById, Ontology, character-method (Ontology-class), [42](#)