

# ontoCAT

October 25, 2011

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Ontology-class      *Class "Ontology"*

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## 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"): 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 "jobRef" 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)
```

---

|              |                                        |
|--------------|----------------------------------------|
| 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)

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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()
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 <code>Ontology</code> class     |
| object2 | instance of the <code>OntologyTerm</code> 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 <code>Ontology</code> 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 <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

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

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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

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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")
getLabel(term)
```

---

|             |                                                                    |
|-------------|--------------------------------------------------------------------|
| getOntology | Returns an instance of the ontology parser created from OWL or OBO |
|-------------|--------------------------------------------------------------------|

---

### 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)

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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

```
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)

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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()  
getOntologyDescription(efo)
```

---

```
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

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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**

|                      |                                                    |
|----------------------|----------------------------------------------------|
| <code>object1</code> | instance of the <a href="#">Ontology</a> class     |
| <code>object2</code> | 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)

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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_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 | <i>Returns ontology term</i> |
|-------------|------------------------------|

---

**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 `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**

|                     |                                             |
|---------------------|---------------------------------------------|
| <code>object</code> | instance of the <code>Ontology</code> 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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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 <code>Ontology</code> class     |
| object2 | instance of the <code>OntologyTerm</code> 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**

|                     |                                                |
|---------------------|------------------------------------------------|
| <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 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 <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

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

|                     |                                             |
|---------------------|---------------------------------------------|
| <code>object</code> | instance of the <code>Ontology</code> 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

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**

|                      |                                                    |
|----------------------|----------------------------------------------------|
| <code>object1</code> | instance of the <a href="#">Ontology</a> class     |
| <code>object2</code> | 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

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 <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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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 <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)

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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")
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**

|                       |                                                |
|-----------------------|------------------------------------------------|
| <code>object</code>   | instance of the <a href="#">Ontology</a> class |
| <code>id</code>       | accession string of the term of interest       |
| <code>relation</code> | 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)

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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 [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)

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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()  
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

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 <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](#) 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

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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_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**

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

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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 `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

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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_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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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](#)

---

ontoCAR-package      *The ontoCAT package provides a simple interface to the Experimental*

---

## 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 utilities 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](mailto: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")
```

---

|            |                                              |
|------------|----------------------------------------------|
| 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)

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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    *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 <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)

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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

|                      |                                                 |
|----------------------|-------------------------------------------------|
| <code>object1</code> | instance of the <code>Ontology</code> class     |
| <code>object2</code> | instance of the <code>OntologyTerm</code> 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 <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)

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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 [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 <code>Ontology</code> class     |
| object2 | instance of the <code>OntologyTerm</code> 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**

|                     |                                             |
|---------------------|---------------------------------------------|
| <code>object</code> | instance of the <code>Ontology</code> class |
| <code>id</code>     | 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

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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 `showPathsToTerm`

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