

The BioPortal OOR

<http://bioportal.bioontology.org>

Mark A. Musen and the BioPortal team
Stanford University



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Welcome

Welcome to the National Center for Biomedical Ontology's BioPortal. BioPortal is a Web-based application for accessing and sharing biomedical ontologies.

New features in BioPortal 2.0 include:

- Full ontology navigation using **Flash visualization**
- **Web-service access** to BioPortal content and capabilities, which enables developers to use our BioPortal services in their tools.
- Ability to add **Marginal Notes** to classes in BioPortal ontologies, a feature that enables the community to comment on ontologies and to discuss their contents
- Ability to create **Point to Point Mappings** between concepts in different BioPortal ontologies
- **Bulk export of ontology-to-ontology mappings** in RDF format
- **Navigation of multiple ontologies**, which enables users to have several ontologies opened simultaneously in different tabs in the user interface
- **URIs for all ontology content**, which enable developers to access and share BioPortal content from their applications
- **Improved support through Protégé** for ontologies in OWL format

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Ontology Name	Format	Version	Author	Uploaded On	
African Traditional Medicine	OBOF	1.0.1	Ghislain Atemezing	04/15/2008	
Amino Acid	OWL-FULL	1.2		01/16/2007	Explore
Amphibian gross anatomy	OBOF	1.8	AmphiAnat list	07/30/2008	Explore
Animal natural history and life history	PROTEGE	See Remote Site	Http://animaldiversity Administrators	08/20/2008	
Basic Vertebrate Anatomy	OWL-FULL	1.1		01/16/2007	Explore
Bilateria anatomy	OBOF	See Remote Site	Thorsten Heinrich	08/20/2008	
Biological imaging methods	OBOF	1.1	Image Administrators	07/30/2008	Explore
Biological process	OBOF	1.274	Gene Ontology	08/20/2008	Explore
Biomedical Resource Ontology	OWL-DL	2.0	Daniel Rubin, Natasha Noy	08/06/2008	Explore
BIRNLex	OWL-DL	1.3.1	William Bug	03/24/2008	Explore
BRENDA tissue / enzyme source	OBOF	See Remote Site	BrendaTissue Administrators	08/20/2008	
C. elegans development	OBOF	1.3	Worm_development Administrators	07/30/2008	Explore
C. elegans gross anatomy	OBOF	1.7	Http://brebiou Administrators	07/30/2008	Explore

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Search Ontologies

Select Ontologies

Mouse gross anatomy and development
 Mouse pathology
 Multiple alignment
NCI Thesaurus
 NIFSTD
 NanoParticle Ontology (NPO)
 OBO relationship types
 Ontology for Genetic Interval

Search Query

Search Text:
 Search In: ☒ Class/Type Name ☐ Attributes
 Search Type: ☒ Contains
 Include Obsolete: ☐

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[Mouse gross anatomy and development](#)
[Mouse pathology](#)
[Multiple alignment](#)
[NCI Thesaurus](#)
[NIFSTD](#)
[NanoParticle Ontology \(NPO\)](#)
[OBO relationship types](#)
[Ontology for Genetic Interval](#)

Search Query

Search Text:

Search In:

☒ Class/Type Name ☐ Attributes

Search Type:

☒ Contains

Include Obsolete:

☐**NCI Thesaurus****Concept Name****Found In**

Secondary Gleason Score for Prostate Cancer	Concept Name
Prevention of Skin Cancer	Concept Name
Breast Cancer Pathologic Regional Lymph Nodes TNM Finding	Concept Name
Breast Cancer Treatment	Concept Name
Exocrine Pancreatic Cancer pM1 TNM Finding	Concept Name
Vermont Cancer Center at the University of Vermont	Concept Name
Kidney Cancer pN2 TNM Finding	Concept Name

NCI Thesaurus in BioPortal

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BioPortal_{2.0}

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Home Browse Search All Mappings **NCI Thesaurus**

Malignant_Skin_Neoplasm (Link To Concept)

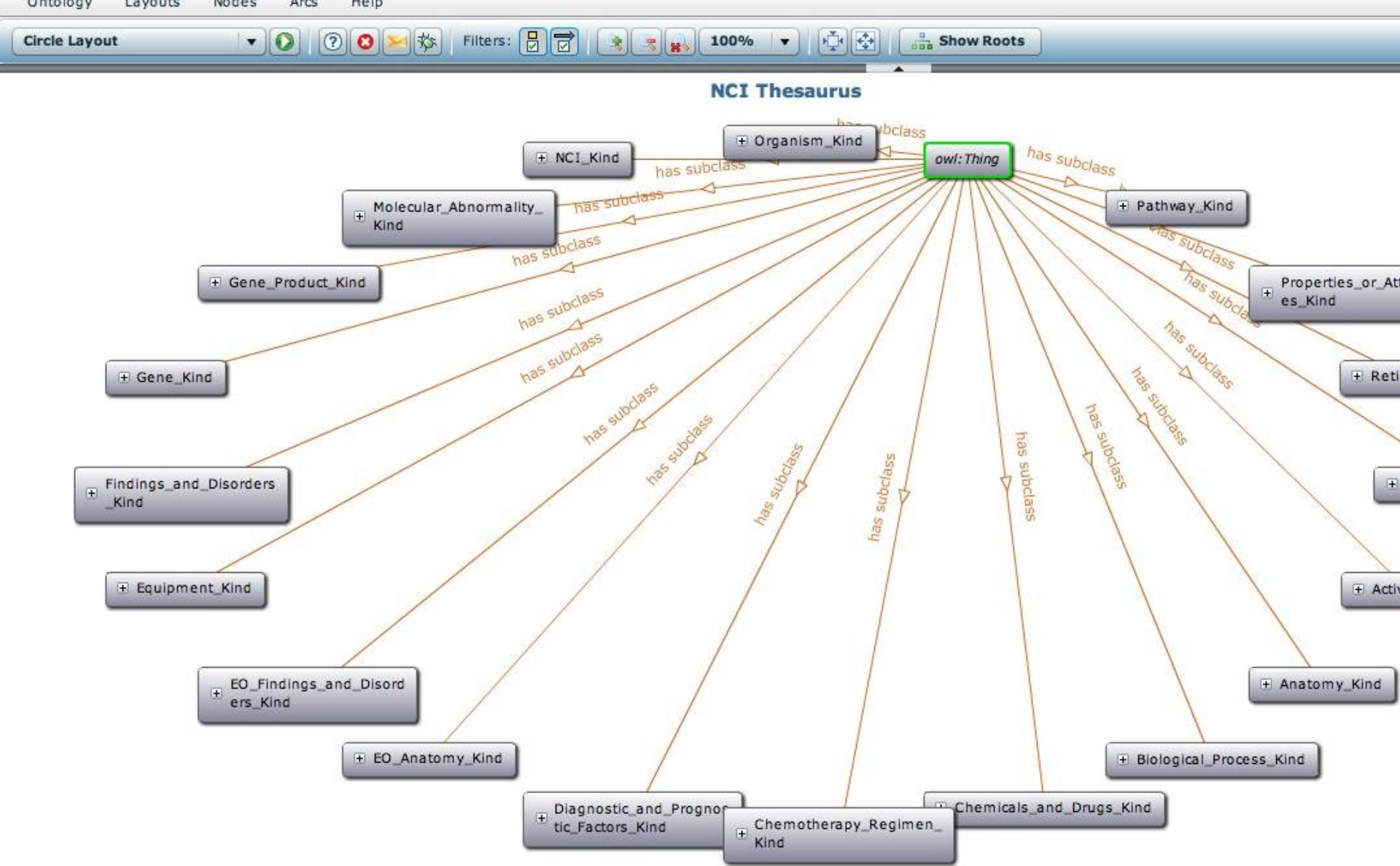
Details Visualization Marginal Notes Mappings Resources

Show Network Neighborhood

Full Version

```
graph TD;
    SN[Skin_Neoplasm] -- "has subclass" --> MSN[Malignant_Skin_Neoplasm];
    MSN -- "has subclass" --> CPLL[Cutaneous_Precursor_Lymphoblastic_Leukemia_Lymphoma];
    MSN -- "has subclass" --> BNL[Blastic_NK-Cell_Lymphoma];
    MSN -- "has subclass" --> CM[Cutaneous_Melanoma];
    MSN -- "has subclass" --> MDN[Malignant_Dermal_Neoplasm];
    MSN -- "has subclass" --> MSAN[Malignant_Skin_Appendage_Neoplasm];
    MSN -- "has subclass" --> CL[Cutaneous_Lymphoma];
    MSN -- "has subclass" --> SC[Skin_Carcinoma];
    MSN -- "has subclass" --> MTSM[Metastasis_to_Skin];
    MSN -- "has subclass" --> MSN2[Malignant_Scrotal_Neoplasm];
```


The diagram illustrates the hierarchical structure of the NCI Thesaurus for Malignant_Skin_Neoplasm. At the top is the concept **Skin_Neoplasm**, which has a subclass **Malignant_Skin_Neoplasm**. **Malignant_Skin_Neoplasm** is further divided into several subclasses: **Cutaneous_Precursor_Lymphoblastic_Leukemia_Lymphoma**, **Blastic_NK-Cell_Lymphoma**, **Cutaneous_Melanoma**, **Malignant_Dermal_Neoplasm**, **Malignant_Skin_Appendage_Neoplasm**, **Cutaneous_Lymphoma**, **Skin_Carcinoma**, **Metastasis_to_Skin**, and **Malignant_Scrotal_Neoplasm**. The relationships are labeled "has subclass".



Circle Layout visualization of NCI Thesaurus

Mappings between ontologies

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Home Browse Search All Mappings FMA

Segment_of_trachea
Segment_of_lymphatic_tree_org
Clavicular_bone_proper
Segment_of_tooth
Segment_of_neural_tree_organ
+ Olfactory_nerve
+ Nerve_trunk
+ Ganglion
+ Autonomic_ganglion
+ Sensory_ganglion
+ Ganglion_of_cranial_nerve
+ Nerve
+ Segment_of_nerve
+ Olfactory_bulb
Segment_of_gingiva
Trapezium_proper
Segment_of_tracheobronchial_tr
Segment_of_peritoneal_sac
Segment_of_esophagus
Segment_of_pericardial_sac
Segment_of_cervix

Autonomic_ganglion ([Link To Concept](#))

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New Point-to-Point Mapping

Mapping To	Source	Mapped By	Mapped On	Notes
ganglion (Mouse adult gross anatomy)	exact match or synonym match	nigam	05/08/08	View Notes
autonomic ganglion (Mouse adult gross anatomy)	exact match or synonym match	nigam	05/08/08	View Notes
ganglion (Zebrafish anatomy and development)	exact match or synonym match	nigam	05/08/08	View Notes

Creating a “point to point” mapping

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View Ontology Metadata

mouse anatomy
adult mouse
anatomic region
body fluid/substance
organ system
integumental system
hemolymphoid system
endocrine system
connective tissue
musculoskeletal system
cardiovascular system
sensory organ system
exocrine system
visceral organ system
nervous system
immune system

immune system

Details Visualize

New Point-to-Point Mapping

Mapping To

Immune System

Immune System

Immune System

immune system

New Mapping For Immune System

Point-to-Point Mapping from immune system to :

Ontology: NCI Thesaurus

Search: immune

Search Cancel

Preview of Immune_System_Part, Immune_System_Part

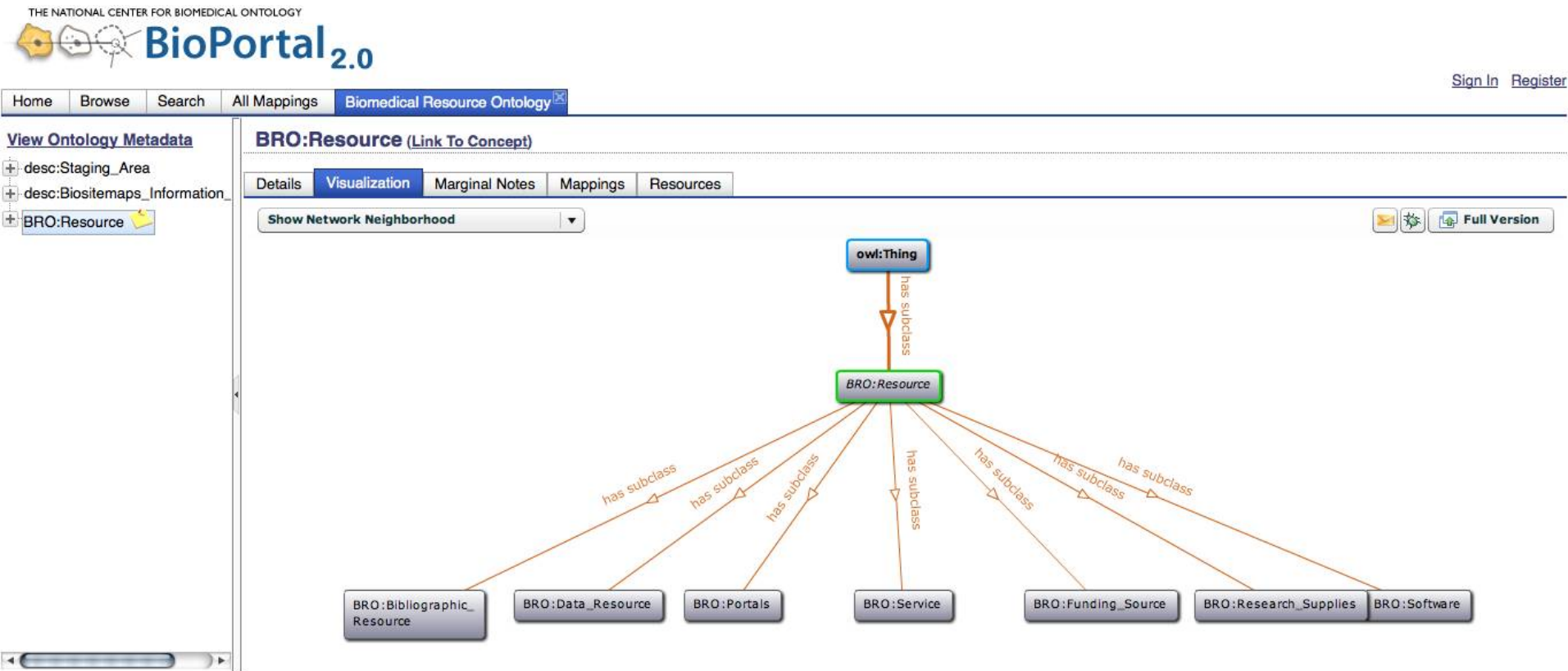
- **Display Name:** Immune System Part
- **Code:** C13033
- **Label:** Immune System Part
- **Type:** owl:Class
- **Synonym:** Immune System Part
- **Full Syn:** Immune System PartDNCTRM , Immune System PartPTCTRM , Immune System PartPTNCI
- **Rdf Type:**
- **Nci Meta Cui:** CL099556
- **Semantic Type:** Body Part, Organ, or Organ Component
- **Preferred Name:** Immune System Part
- **Sub Class Of:** Body_Part

Create ☒ Bi-Directional?

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Mapped On	Notes
04/23/08	View Notes
04/23/08	View Notes
05/08/08	View Notes
05/08/08	View Notes

Biomedical Resource Ontology in BioPortal



View Ontology Metadata

- + desc:Staging_Area
- + desc:Biositemaps_Information_
- BRO:Resource
 - + BRO:Portals
 - + BRO:Data_Resource
 - + BRO:Bibliographic_Resource
 - + BRO:Service
 - + **BRO:Funding_Source**
 - + BRO:Research_Supplies
 - + BRO:Software

BRO:Funding_Source ([Link To Concept](#))

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Comment: Funding source => subclass of DavidStates at 08/08/08 16:36

The funding source for a software or data resource is an important aspect of provenance. The BRO is not, however, a definitive ontology of funding sources for software. Not sure what the appropriate external namespace should be, but this does not fall under BRO.

[Reply](#)

Comment: RE:Funding source => subclass of PeterLyster at 08/11/08 14:08

I added Funding Source for a basically utilitarian reason. Specifically, so one can tag a 'resource' as coming from a 'funding source' (e.g., NIH is in a sense a resource to the community of biomedical scientists because it provides funding). I'm not entirely sure of the ontological or academic standing of this class name, but I want it somewhere in the BRO for utilitarian reasons.

[Reply](#)

New Marginal Note

NCI Thesaurus in BioPortal

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Malignant_Skin_Neoplasm (Link To Concept)

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Open Biomedical Resources

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Home Browse Search All Mappings **NCI Thesaurus** Biomedical Resource Ontology Mouse adult gross anatomy

e_Disorder
Cancer-Related_Condition
Differentiation-Induced_Abnormalities
Disorder_by_Site
Reproductive_System_Disorder
Eye_Disorder
Nervous_System_Disorder
Breast_Disorder
Endocrine_Disorder
Skin_Disorder
+ Cutaneous_Precancerous_Condition
+ Non-Neoplastic_Skin_Disorder
+ Hair_Disorder
+ Skin_Vascular_Disorder
- Skin_Neoplasm
+ Dermal_Neoplasm
+ Epithelial_Skin_Neoplasm
+ Cutaneous_Hematopoietic_Disorder
+ Malignant_Skin_Neoplasm
+ Scrotal_Neoplasm
+ Melanocytic_Skin_Neoplasm

Malignant_Skin_Neoplasm ([Link To Concept](#))

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ClinicalTrials.gov

ClinicalTrials.gov provides regularly updated information about federally and privately supported clinical research in human volunteers. ClinicalTrials.gov gives you information about a trial's purpose, who may participate, locations, and phone numbers for more details. The information provided on ClinicalTrials.gov should be used in conjunction with advice from health care professionals. Before searching, you may want to learn more about clinical trials.

Annotations:796


Gene Expression
Omnibus DataSets

A gene expression/molecular abundance repository supporting MIAME compliant data submissions, and a curated, online resource for gene expression data browsing, query and retrieval.

Annotations:9


ArrayExpress

ArrayExpress is a public repository for microarray data, which is aimed at storing MIAME-compliant data in accordance with MGED recommendations. The ArrayExpress Data Warehouse stores gene-indexed expression profiles from a curated subset of experiments in the repository.

Annotations:16


ARRS GoldMiner

ARRS GoldMiner provides instant access to images published in selected peer-reviewed radiology journals. This new, web-based system allows viewers to search for images by findings, anatomy, imaging technique, and patient age and sex.

Annotations:131


NextBio

NextBio's data and literature search engine makes massive amounts of disparate biological, clinical and chemical data from public and proprietary sources searchable, regardless of data type and origin, empowering researchers to quickly understand their own experimental results within the context of other research.

Annotations:0

Open Biomedical Resources

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BioPortal_{2.0}

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e_Disorder
Cancer-Related_Condition
Differentiation-Induced_Abnormalities
Disorder_by_Site
Reproductive_System_Disorder
Eye_Disorder
Nervous_System_Disorder
Breast_Disorder
Endocrine_Disorder
Skin_Disorder
+ Cutaneous_Precancerous_Condition
+ Non-Neoplastic_Skin_Disorder
+ Hair_Disorder
+ Skin_Vascular_Disorder
- Skin_Neoplasm
+ Dermal_Neoplasm
+ Epithelial_Skin_Neoplasm
+ Cutaneous_Hematopoietic_Disorder
+ Malignant_Skin_Neoplasm
+ Scrotal_Neoplasm
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Malignant_Skin_Neoplasm ([Link To Concept](#))

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Annotations:9

[Cutaneous malignant melanoma](#)

ID: 1375 Annotation Context: closure

[Transcription factor FoxM1 inactivation effect on breast cancer cell](#)

ID: 1477 Annotation Context: closure

[Melanoma progression](#)

ID: 1989 Annotation Context: closure

[Melanoma, cutaneous malignant, classification](#)

ID: 2 Annotation Context: closure

[Ductal carcinoma in situ to invasive ductal carcinoma progression \(HG-U133A\)](#)

ID: 2045 Annotation Context: closure

[Ductal carcinoma in situ to invasive ductal carcinoma progression \(HG-U133 2.0\)](#)

ID: 2046 Annotation Context: closure

[Non-melanoma skin cancer](#)

ID: 2046

What's in BioPortal today?

Statistics

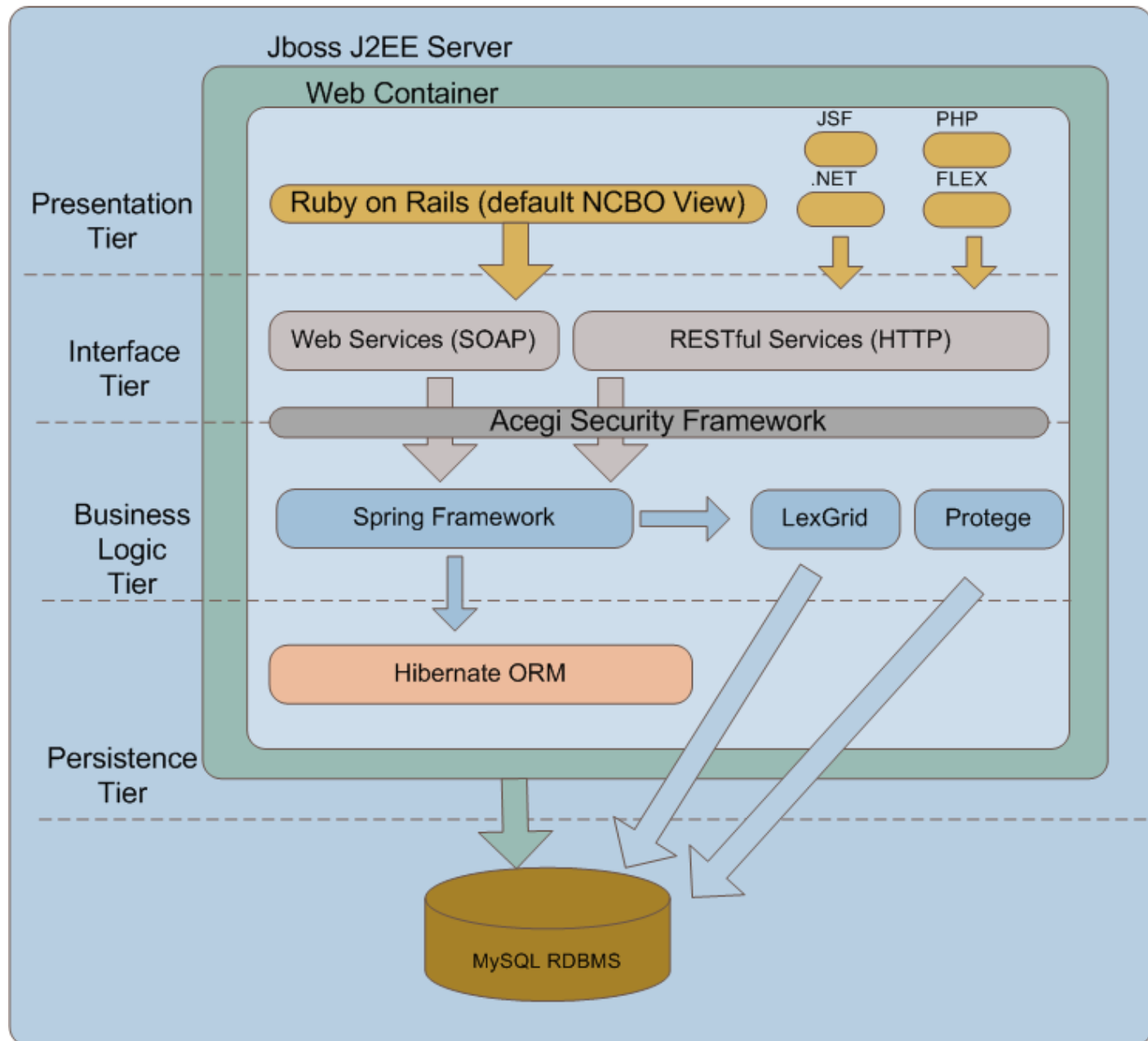
Total Number of Ontologies: 111

NCBO Library: 78

Remote Ontologies: 33

Number of Classes/Types: 500109*

*from ontologies that have been parsed and indexed



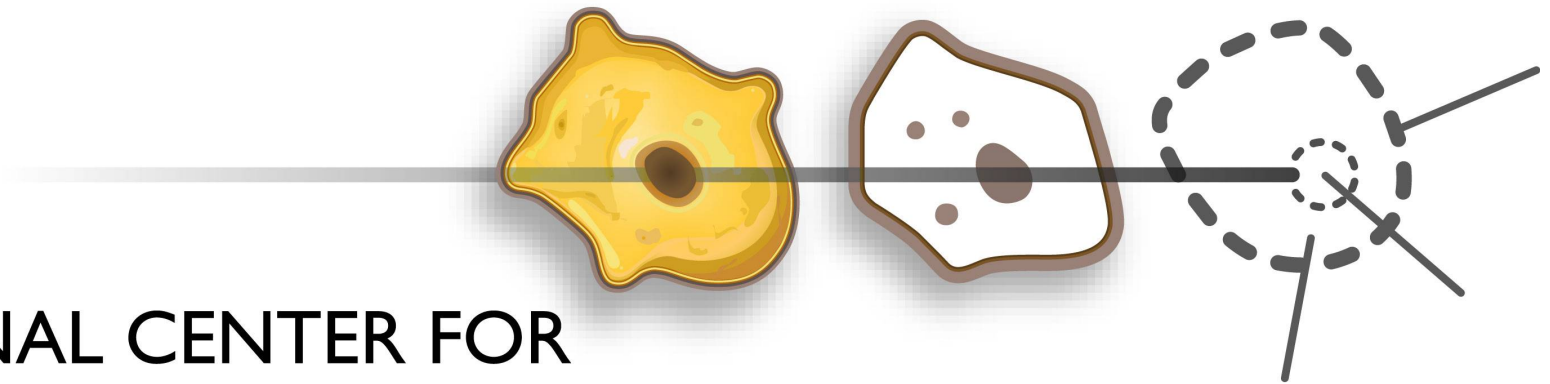
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