

# Semantic artefact and ontology services for long-term data interpretation

*PV 2023 Conference  
CERN, Switzerland*

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*What would happen if we would be able to preserve data for so long but we would have lost the ways to interpret the knowledge contained in these data?*



The tape-unit reel-display system (RDS) shown mounted over tape units in the 6600 computing complex, in 1965.

Image credit: CERN.

# Decouple the “model” from the data themselves

- Preserve the data and save this model for future interpretation.
- Separation data/model by annotating or describing data with **semantic artefacts**
- Semantic artefacts: ontologies, terminologies, taxonomies, thesauri, vocabularies, metadata schemas and standards

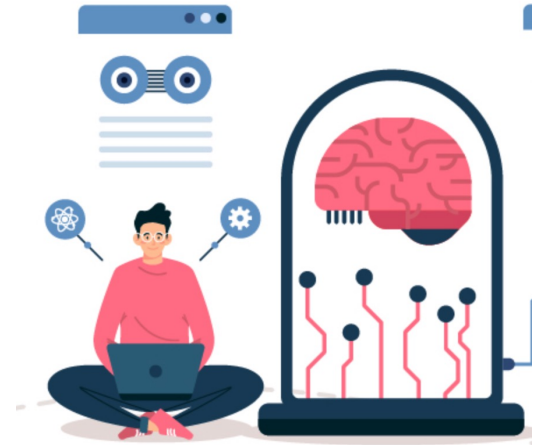


# The talks fits in 2 statements

#1

We need to develop services to adopt and facilitate **semantic artefacts use when archiving data**

(e.g., semantic annotation, indexing, knowledge graphs, linked data)



#2

Semantic artefacts are themselves data so we need to develop **long term repositories for archiving semantic artefacts**

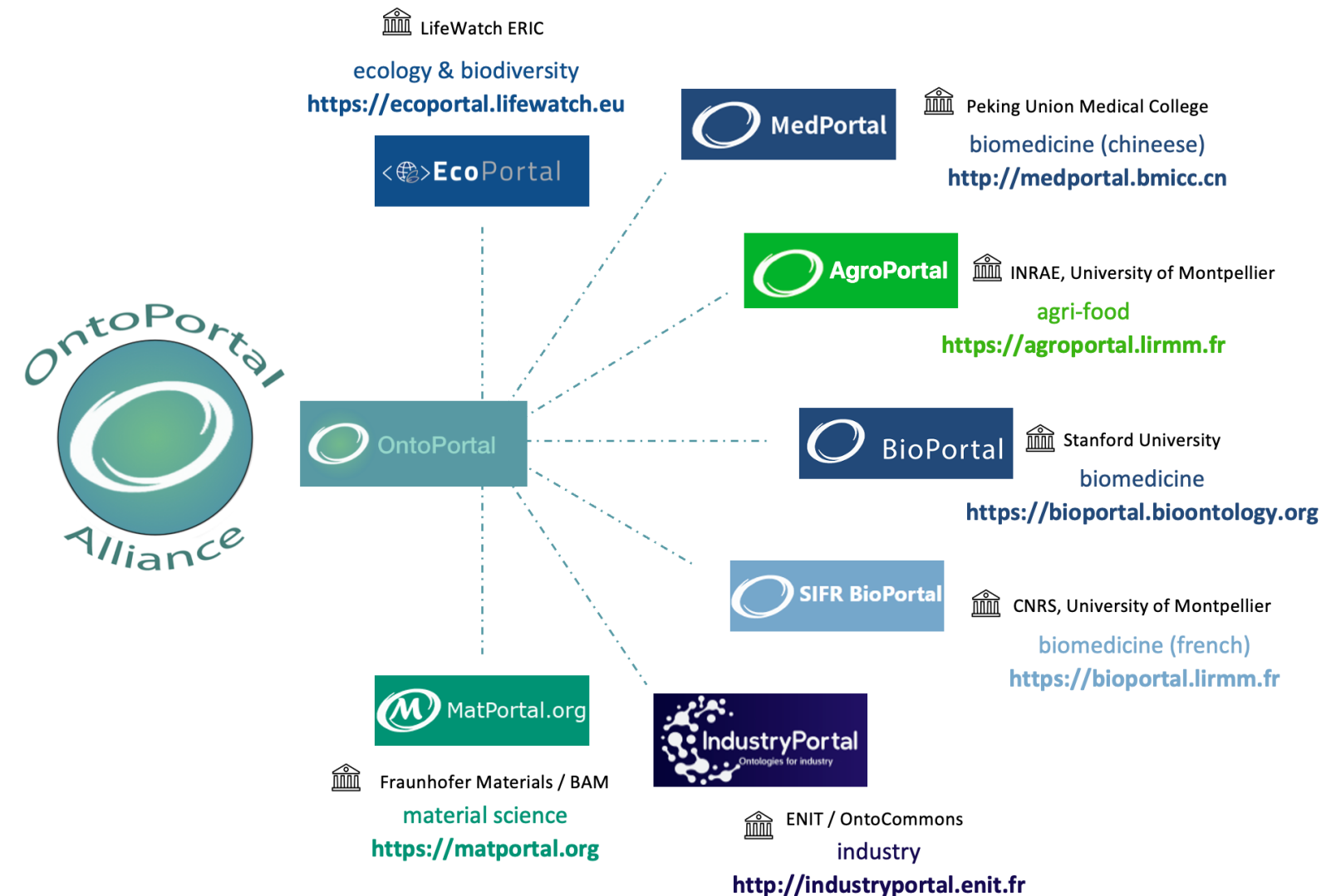
(e.g., gather them, save them, deals with format heterogeneity, versioning...)





We develop an  
open-source  
semantic artefact  
and ontology  
repository  
technology called  
OntoPortal

<https://ontoportal.org>

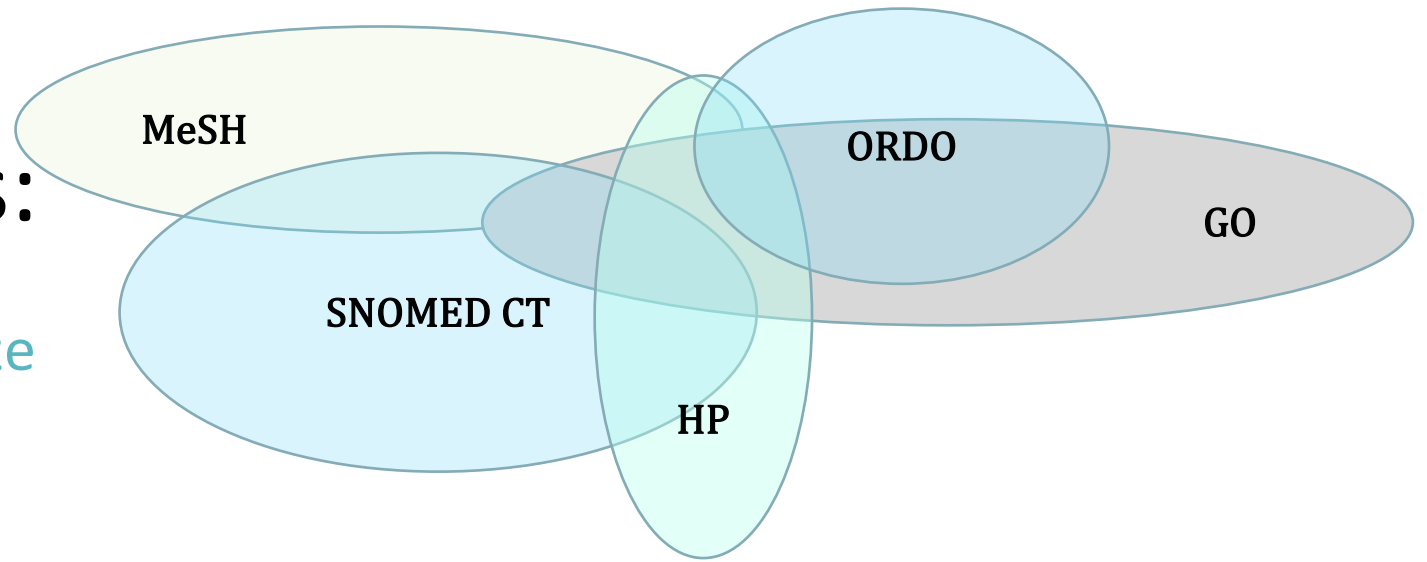




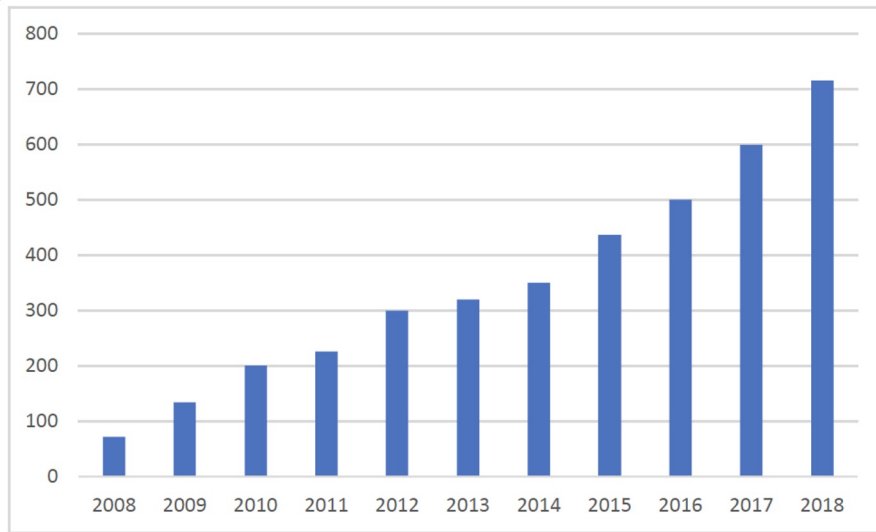
# A few elements on ontology repositories

# Issues with ontologies:

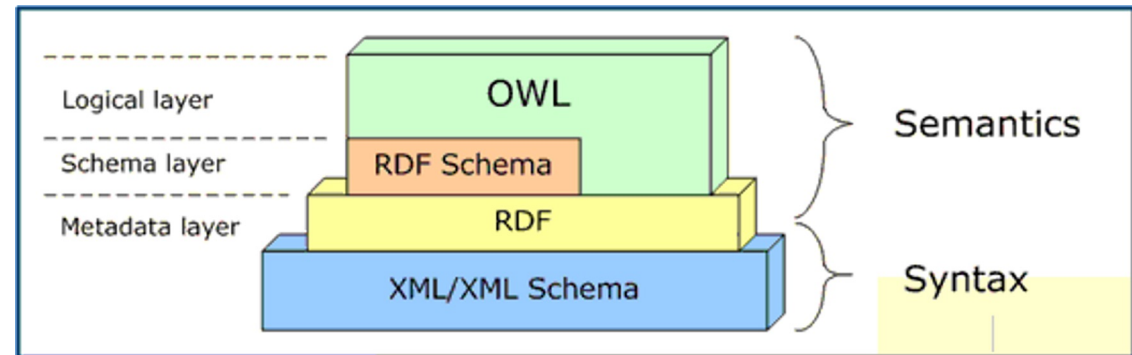
- spread out,
- in different formats, of different size
- with different structures
- increasing number
- overlapping



Overlapping ontologies



Number of ontologies in the NCBO BioPortal




Variety of representation languages

# Why ontology repositories are important?


- You've built an ontology, how do you let the world **know**?
- You need an ontology, **where** do you go to get it?
- How do you know whether an ontology is any **good**?
- How do you find **data** resources that are relevant to the domain of the ontology?
- How could you leverage your ontology to enable new **science**?
- How could you use ontologies without **managing** them ?



# Ontology repositories help to make ontologies FAIR

**F**indable 

**A**ccessible 

**I**nteroperable 

**R**e-usable 

Ontology Browser interface showing a list of ontologies such as AGROVOC (AGROVOC), National Agricultural Library Thesaurus (NALT), and others. The interface includes search filters, a list of ontologies with their respective counts, and a sidebar for navigation.

### API Documentation

#### General Usage

This API is comprised of a set of resources (Ontologies, Classes, etc) and related endpoints (Search, Annotator, Recommender) that are connected together via links, much like webpages. We recommend that you try browsing the API using a web browser. Chrome and Firefox work very well while IE does not! before you start writing code. For more information, please see the documentation on Media Types and Hypertext Links or view our sample code, available in Java, Python, Ruby and other languages (please email [ajgonon@bioontology.org](mailto:ajgonon@bioontology.org) if you would like examples in another language).

#### Common Parameters

Parameter	Possible Values	Description
apikey	{your api key}	An API Key is required to access any API call. It can be provided in three ways: 1. Using the <code>apikey</code> query string parameter 2. Providing an <code>Authorization</code> header: <code>Authorization: apikey token=your_apikey</code> (replace your <code>apikey</code> with your actual key) 3. When using a web browser to explore the API, if you provide your API Key once using method 1, it will be stored in a cookie for subsequent requests. You can

SPARQL httpd server v1.1.5-122-;

KB ontologies\_api

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>  
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

```
SELECT * WHERE {
  ?s ?p ?o
} LIMIT 10
```

SPARQL query results showing a network graph of class mappings and a table of interportal mappings. The graph shows relationships between various classes (e.g., CO\_326, CO\_327, CO\_328, CO\_329, CO\_330, CO\_331, CO\_332, CO\_333, CO\_334, CO\_335, CO\_336, CO\_337, CO\_338, CO\_339, CO\_340, CO\_341, CO\_342, CO\_343, CO\_344, CO\_345, CO\_346, CO\_347, CO\_348, CO\_349, CO\_350, CO\_351, CO\_352, CO\_353, CO\_354, CO\_355, CO\_356, CO\_357, CO\_358, CO\_359, CO\_360, CO\_361, CO\_362, CO\_363, CO\_364, CO\_365, CO\_366, CO\_367, CO\_368, CO\_369, CO\_370, CO\_371, CO\_372, CO\_373, CO\_374, CO\_375, CO\_376, CO\_377, CO\_378, CO\_379, CO\_380, CO\_381, CO\_382, CO\_383, CO\_384, CO\_385, CO\_386, CO\_387, CO\_388, CO\_389, CO\_390, CO\_391, CO\_392, CO\_393, CO\_394, CO\_395, CO\_396, CO\_397, CO\_398, CO\_399, CO\_400, CO\_401, CO\_402, CO\_403, CO\_404, CO\_405, CO\_406, CO\_407, CO\_408, CO\_409, CO\_410, CO\_411, CO\_412, CO\_413, CO\_414, CO\_415, CO\_416, CO\_417, CO\_418, CO\_419, CO\_420, CO\_421, CO\_422, CO\_423, CO\_424, CO\_425, CO\_426, CO\_427, CO\_428, CO\_429, 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MAPPING TO	ONTOLOGY	SOURCE	RELATION
Implantation de prothèse	Medical Subject Headings, version française	CUI	
Mise en place de prothèse	Dictionnaire médical pour les activités réglementaires en matière de médicaments	CUI	

MAPPING TO	ONTOLOGY	SOURCE	RELATIONS
Prothèse	<a href="http://portal.bioontology.org/ontologies/MSTDE">http://portal.bioontology.org/ontologies/MSTDE</a>	REST	skos:exactmatch gold:freetranslation

OntoBiotope website showing details for the OntoBiotope ontology. The page includes a summary of the ontology, metrics (e.g., number of classes, properties, instances), additional metadata (e.g., version, release date), and project information (e.g., funding, contact details).

# Challenges for ontology repositories

HABILITATION A DIRIGER DES RECHERCHES (HDR)  
Spécialité Informatique  
Ecole Doctorale Information, Structures, Systèmes  
Université de Montpellier

**ONTOLOGY REPOSITORY AND  
ONTOLOGY-BASED SERVICES**  
Challenges, contributions and applications to  
biomedicine & agronomy


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Jury  
(defense May 28th 2019)

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Nathalie Aussenac-Gilles (DR CNRS), CNRS, Toulouse (reviewer)		
Mathieu D'Aquin (professor), National University of Ireland, Galway (reviewer)		
Fabian Gandon (DR INRIA), INRIA Sophia Antipolis (examiner)		
Juliette Dibia-Barthélemy (professor), AgroParisTech, Paris (examiner)		
Pascal Poncelet (professor), University of Montpellier (examiner)		
Mark A. Musen (professor), Stanford University (invited)		
Stefano A. Cerri (prof. emeritus), University of Montpellier (invited)		

Laboratory of Informatics, Robotics, and Microelectronics of Montpellier (LIRMM),  
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Ontology metadata, evaluation and selection



Multilingualism



Ontology alignment



Generic ontology-based services  
(especially for free text data)

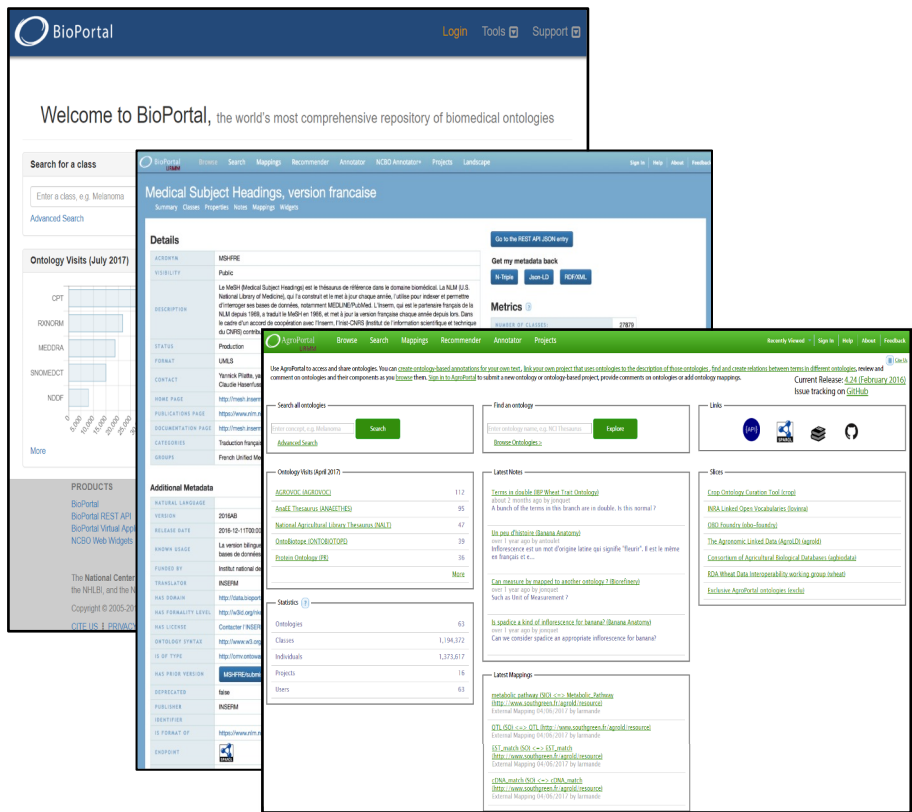


Annotations and linked data



Scalability and interoperability

# Collaborative projects on ontology-based services in biomedicine and agronomy

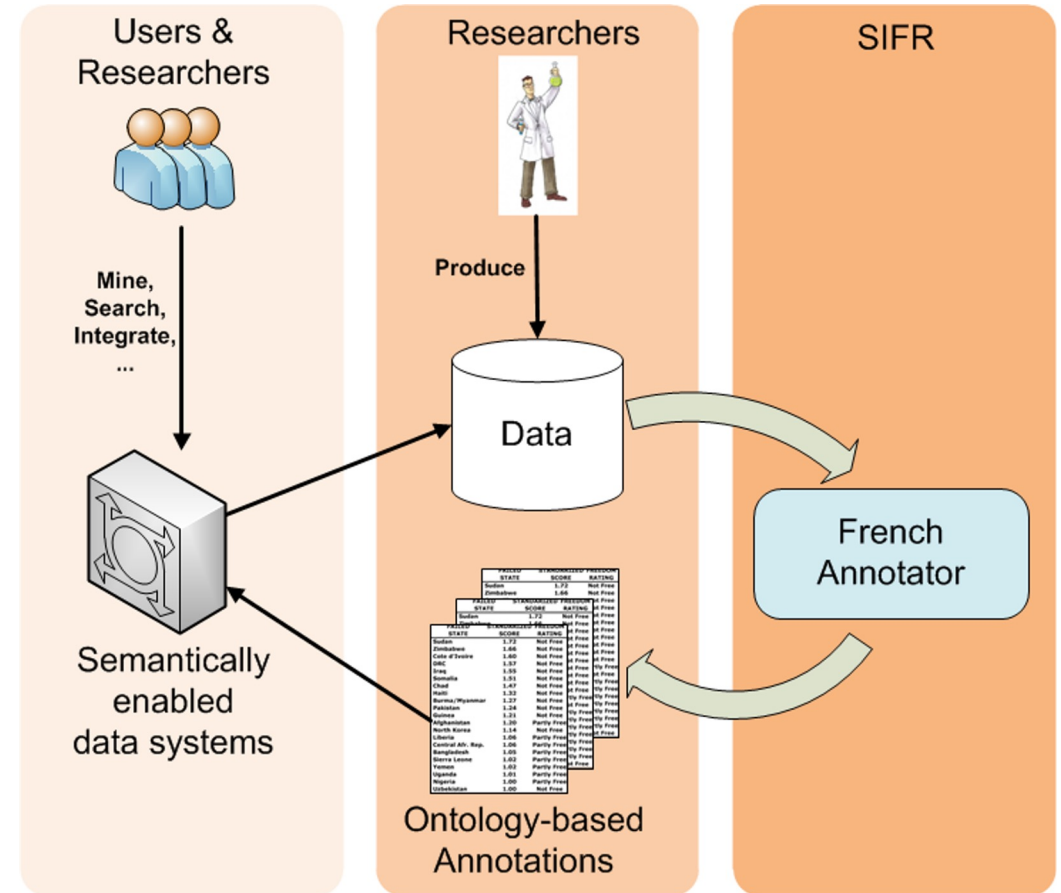




# SIFR: Semantic Indexing of French Biomedical Data Resources

<http://www.lirmm.fr/sifr>

- Ontology-based services to index, mine and retrieve French biomedical data
- In France, there is already a reference repository for medical terminologies but **nothing public for annotation**
- Crucial need for **tools & services for French biomedical data**



# Medical Subject Headings, version française

Summary Classes Properties Notes Mappings Widgets

## Details

ACRONYM	MSHFRE
VISIBILITY	Public
DESCRIPTION	Le MeSH (Medical Subject Headings) est le thésaurus de référence dans le domaine biomédical. La NLM (U.S. National Library of Medicine), qui l'a construit et le met à jour chaque année, l'utilise pour indexer et permettre d'interroger ses bases de données, notamment MEDLINE/PubMed. L'Inserm, qui est le partenaire français de la NLM depuis 1969, a traduit le MeSH en 1986, et met à jour la version française chaque année depuis lors. Dans le cadre d'un accord de coopération avec l'Inserm, l'Inist-CNRS (Institut de l'information scientifique et technique du CNRS) contribue à la mise à jour de la version française depuis 2004.
STATUS	Production
FORMAT	UMLS
CONTACT	Yannick Platteau, y.platteau@inserm.fr Claudie Hasenfuß, c.hasenfu@inserm.fr
HOME PAGE	<a href="http://mesh.inserm.fr/">http://mesh.inserm.fr/</a>
PUBLICATIONS PAGE	<a href="https://www.nlm.nih.gov/pubs/medsh.html">https://www.nlm.nih.gov/pubs/medsh.html</a>
DOCUMENTATION PAGE	<a href="http://mesh.inserm.fr/">http://mesh.inserm.fr/</a>
CATEGORIES	Traduction française
GROUPS	French Unified M

Go to the REST API JSON entry

Get my metadata back

N-Triple Json-LD RDF/XML

## Metrics

NUMBER OF CLASSES:	27879
NUMBER OF INDIVIDUALS:	0
NUMBER OF PROPERTIES:	6
MAXIMUM DEPTH:	15

## Additional Metadata

NATURAL LANGUAGE	
VERSION	2016AB
RELEASE DATE	2016-12-11T00:00:00Z
KNOWN USAGE	La version bilingue des bases de données
FUNDED BY	Institut national de la Santé et de la Recherche Médicale
TRANSLATOR	INSERM
HAS DOMAIN	<a href="http://data.bioportal.org/">http://data.bioportal.org/</a>
HAS FORMALITY LEVEL	<a href="http://w3id.org/ontology/">http://w3id.org/ontology/</a>
HAS LICENSE	Contactez l'INSERM
ONTOLOGY SYNTAX	<a href="http://www.w3.org/2001/XMLSchema#rdf">http://www.w3.org/2001/XMLSchema#rdf</a>
IS OF TYPE	<a href="http://omv.ontology.org/">http://omv.ontology.org/</a>
HAS PRIOR VERSION	MSHFRE/subr
DEPRECATED	false
PUBLISHER	INSERM
IDENTIFIER	
IS FORMAT OF	<a href="https://www.nlm.nih.gov/pubs/medsh.html">https://www.nlm.nih.gov/pubs/medsh.html</a>
ENDPOINT	

The screenshot shows the 'Browse' page of BioPortal. At the top, there's a search bar and a 'Showing 28 of 29' indicator. Below this, there are several ontology cards, each with a title, description, and statistics (projects and classes). The 'Medical Subject Headings, version française (MSHFRE)' card is highlighted with a blue border and a green arrow pointing to it from the right. To the right of the ontology cards, there is a line graph showing the number of classes over time from June 2018 to November 2018. The graph shows a general upward trend with some fluctuations.

# A dedicated version of BioPortal for French ontologies

<http://bioportal.lirmm.fr>

28 monolingual ontologies/terminologies

- From the UMLS or HeTOP or uploaded by users
- Cleaned and checked for annotation



C. Jonquet, A. Annane, K. Bouarech, V. Emonet & S. Melzi. **SIFR BioPortal: French biomedical ontologies and terminologies available for semantic annotation**, In *16th Journées Francophones d'Informatique Médicale, JFIM'16*. Genève, Suisse, July 2016.

# SIFR Annotator

- Detect biomedical entities in French biomedical text
- Use semantics inside ontologies
- Performs comparably to other knowledge-based annotation approaches
  - 3 corpus (titles from French MEDLINE, EMEA drug labels and CépiDC death certificates)
  - Participate in CLEF eHealth 2017 competition

SOFTWARE

Open Access



## SIFR annotator: ontology-based semantic annotation of French biomedical text and clinical notes

Andon Tchechmedjiev<sup>1,3\*</sup>, Amine Abdaoui<sup>1</sup>, Vincent Emonet<sup>1</sup>, Stella Zevio<sup>1</sup> and Clement Jonquet<sup>1,2</sup>

### Abstract

**Background:** Despite a wide adoption of English in science, a significant amount of biomedical data are produced in other languages, such as French. Yet a majority of natural language processing or semantic tools as well as domain terminologies or ontologies are only available in English, and cannot be readily applied to other languages, due to fundamental linguistic differences. However, semantic resources are required to design semantic indexes and transform biomedical (text)data into knowledge for better information mining and retrieval.

**Results:** We present the SIFR Annotator (<http://bioportal.lirmm.fr/annotator>), a publicly accessible ontology-based annotation web service to process biomedical text data in French. The service, developed during the *Semantic Indexing of French Biomedical Data Resources (2013–2019)* project is included in the SIFR BioPortal, an open platform to host French biomedical ontologies and terminologies based on the technology developed by the US *National Center for Biomedical Ontology*. The portal facilitates use and fostering of ontologies by offering a set of services –search,

- Easy to use web service
  - Free and open access
  - Easy to plug-in external workflows
  - Annotations in several formats with concept URIs
  - Multiple parameters



# Annotator

The SIFR BioPortal Annotator processes text submitted by users, recognizes relevant ontology terms in the text and returns the annotations to the user. Use the interface below to submit get ontology-based annotations. Hover the mouse pointer on any button to see what it does.

Le mélanome est un cancer de la peau ou des muqueuses, développé aux dépens des mélanocytes (tumeur mélanocytaire).

Son siège initial est la peau dans l'immense majorité des cas. Il existe toutefois des mélanomes de l'œil (mélanome choroïdien), des muqueuses (bouche, canal anal, vagin), et plus rarement encore des organes internes.

# French/SIFR Annotator

Detect biomedical entities in French biomedical text

<http://bioportal.lirmm.fr/annotator>

insert sample text

### Ontology filters

**Select Ontologies**

MDRFRE x MSHFRE x

clear selection select from list

**Select UMLS Semantic Types** ?

Type here to select UMLS semantic types

**Select UMLS Semantic Groups** ?

Maladies (DISO) x Anatomie (ANAT) x

### Matching parameters

Match Longest Only

Match Partial Words

Include Mappings

Exclude Numbers

Exclude Synonyms

Lemmatize (beta)

**Ancestors Level:** None ? **Include Score:** cvalue ? **Score threshold:** 0

**Get Annotations**



**Annotations**  
Only results from ontologies with semantic types available are displayed. total results 28 (direct 13 / ancestor 15 / mapping 0)

CLASS	filter	ONTOLOGY	filter	TYPE	filter	UMLS SEM TYPE	CONTEXT	MATCHED CLASS	filter	MATCHED ONTOLOGY	filter	SCORE
Cancer de la peau		Dictionnaire médical pour les activités réglementaires en matière de médicaments		direct			... est un <b>cancer de la peau</b> ou des muqueuses, ...	Cancer de la peau		Dictionnaire médical pour les activités réglementaires en matière de médicaments		19.932
Cancer de la peau		Dictionnaire médical pour les activités réglementaires en matière de médicaments		direct			... est un <b>cancer de la peau</b> ou des muqueuses, ...	Cancer de la peau		Dictionnaire médical pour les activités réglementaires en matière de médicaments		19.932
Maladies de la peau		Medical Subject Headings, version française		ancestor			... est un <b>cancer de la peau</b> ou des muqueuses, ...	Tumeurs cutanées		Medical Subject Headings, version française		19.196
Tumeurs par siège		Medical Subject Headings, version française		ancestor			... est un <b>cancer de la peau</b> ou des muqueuses, ...	Tumeurs cutanées		Medical Subject Headings, version française		19.196
Tumeurs malignes et non précisées de la peau (excl. mélanomes)		Dictionnaire médical pour les activités réglementaires en matière de médicaments		ancestor			... est un <b>cancer de la peau</b> ou des muqueuses, ...	Cancer de la peau		Dictionnaire médical pour les activités réglementaires en matière de médicaments		19.196
Tumeurs cutanées		Medical Subject Headings, version française		direct			... est un <b>cancer de la peau</b> ou des muqueuses, ...	Tumeurs cutanées		Medical Subject Headings, version française		18.000
Mélanome		Dictionnaire médical pour les activités réglementaires en matière de médicaments		direct			Le <b>mélanome</b> est un cancer ...	Mélanome		Dictionnaire médical pour les activités réglementaires en matière de médicaments		4.322
Mélanome		Dictionnaire médical pour les activités réglementaires en matière de médicaments		direct			Le mélanome est un cancer de la peau ou des muqueuses, développé aux dépens des mélanocytes (tumeur mélanocytaire). ... de l'œil ( <b>mélanome</b> choroïdien), des muqueuses ...	Mélanome		Dictionnaire médical pour les activités réglementaires en matière de médicaments		4.322
Mélanome		Medical Subject Headings, version française		direct			Le <b>mélanome</b> est un cancer ...	Mélanome		Medical Subject Headings, version française		4.322
Mélanome		Medical Subject Headings, version française		direct			Le mélanome est un cancer de la peau ou des muqueuses, développé aux dépens des mélanocytes (tumeur mélanocytaire). ... de l'œil ( <b>mélanome</b> choroïdien), des muqueuses ...	Mélanome		Medical Subject Headings, version française		4.322
Tumeurs neuroendocrines		Medical Subject Headings, version française		ancestor			Le <b>mélanome</b> est un cancer ...	Mélanome		Medical Subject Headings, version française		4.200
Nævus et mélanomes		Medical Subject Headings, version française		ancestor			Le <b>mélanome</b> est un cancer ...	Mélanome		Medical Subject Headings, version française		4.200
Tumeurs neuroendocrines		Medical Subject Headings, version française		ancestor			Le mélanome est un cancer de la peau ou des muqueuses, développé aux dépens des mélanocytes (tumeur mélanocytaire). ... de l'œil ( <b>mélanome</b> choroïdien), des muqueuses ...	Mélanome		Medical Subject Headings, version française		4.200
Nævus et mélanomes		Medical Subject Headings, version française		ancestor			Le mélanome est un cancer de la peau ou des muqueuses, développé aux dépens des mélanocytes (tumeur mélanocytaire). ... de l'œil ( <b>mélanome</b> choroïdien), des muqueuses ...	Mélanome		Medical Subject Headings, version française		4.200
Mélanocytes		Medical Subject Headings, version française		direct			... dépens des <b>mélanocytes</b> (tumeur mélanocytaire). Son siège ...	Mélanocytes		Medical Subject Headings, version française		3.322
Tumeur		Dictionnaire médical pour les activités réglementaires en matière de médicaments		direct			... des mélanocytes ( <b>tumeur</b> mélanocytaire). Son siège initial ...	Tumeur		Dictionnaire médical pour les activités réglementaires en matière de médicaments		3.322
Peau		Medical Subject Headings, version française		direct			Le mélanome est un cancer de la peau ou des muqueuses, développé aux dépens des mélanocytes (tumeur mélanocytaire). ... est la <b>peau</b> dans l'immense majorité ...	Peau		Medical Subject Headings, version française		3.322
Bouche		Medical Subject Headings, version française		direct			Le mélanome est un cancer de la peau ou des muqueuses, développé aux dépens des mélanocytes (tumeur mélanocytaire). ... des muqueuses ( <b>bouche</b> , canal anal, vagin), ...	Bouche		Medical Subject Headings, version française		3.322

# AgroPortal: a vocabulary and ontology repository for agronomy

<http://agroportal.lirmm.fr>



- Develop and support a reference ontology repository
  - **Primary focus** on the agronomy & close related domains (plant sciences, food and biodiversity)
- Reusing the NCBO BioPortal technology
  - **Avoid to re-implement** what has been done, facilitate interoperability
  - **Reusing** the scientific outcomes, experience & methods of the biomedical domain
- **Enable straightforward use of agronomic related ontologies**
  - Respect the requirements & specificities of the agronomic community
  - Fully semantic web compliant infrastructure
  - Enable **new science**

# AgroPortal an ontology repository

for agronomy, food, plant sciences & biodiversity

<http://agroportal.lirmm.fr>

**Browse**

Browse the library of ontologies

Search... Showing 131 of 137 Sort: Popular

**Submit New Ontology**

**Entry Type**

- Ontology (131)
- Ontology View (6)

**Uploaded in the Last**

**Category**

- Agricultural Resear... (24)
- Animal Science an... (11)
- Biodiversity and E... (17)
- Breeding and Gen... (1)
- Farms and Farmin... (7)
- Fisheries and Aqua... (2)
- Food Security (2)
- Food and Human ... (6)
- Forest Science... (1)

**Group**

- AGBIODATA (18)
- AGROLD (5)
- CROP (37)
- INRAE (30)
- OBO-FOUNDRY (23)
- RICE (24)
- SEMANDIV (11)
- WHEAT (19)

**Format**

- OBO (12)
- OWL (105)
- SKOS (11)
- UMLS (2)

**Ontology Content**

- AnaEE Thesaurus (ANAETHES)**  
The AnaEE thesaurus aims to provide a controlled vocabulary for the semantic description of the study of continental ecosystems and their biodiversity  
Uploaded: 12/12/20 **project** 4 **concept** 3,247
- OntoBiotope (ONTOBIOTOPE)**  
OntoBiotope is an ontology of microorganism habitats  
Uploaded: 9/25/19 **project** 6 **class** 3,602
- DEMETER Agriculture Information Model (DEMETER-AIM)**  
The DEMETER Agri Profile is a master profile importing focused specific profiles/modules of DEMETER AIM.  
Uploaded: 10/30/20 **project** 1 **concept** 173
- AGROVOC (AGROVOC)**  
AGROVOC is a controlled vocabulary covering all areas of interest of the Food and Agriculture Organization (FAO) of the United Nations, including food, nutrition, agriculture, fisheries, forestry, environment etc  
Uploaded: 12/30/20 **project** 4 **concept** 837,185
- Global Agricultural Concept Scheme (GACS)**  
The Global Agricultural Concept Scheme (GACS) is a hub for concepts related to agriculture, in multiple languages, for use in Linked Data  
Uploaded: 6/4/18 **project** 2 **concept** 584,881
- Animal Disease Ontology (ANDO)**  
L'ontologie des maladies animales est un référentiel de maladies touchant des animaux de rente et d'agents pathogènes ainsi que des relations qu'ils entretiennent  
Uploaded: 11/14/18 **project** 2 **class** 1,656
- Agri-Food Experiment Ontology (AFEO)**  
The Agri-Food Experiment Ontology (AFEO), a new ontology network was developed based on two existing ontology resources, i.e  
Uploaded: 8/5/20 **notes** 1 **project** 2 **class** 68

**Welcome to AgroPortal, a vocabulary and ontology repository for agronomy and related domains**

Search for a class  
Enter a class, e.g. Melanoma

Find an ontology  
Start typing ontology name, then choose from list

**Advanced Search**

**Ontology Visits (December 2020)**

ANAETHES	~85
ONTOBIOTOPE	~75
DEMETER-AIM	~65
AGROVOC	~55
GACS	~45

**AgroPortal Statistics**

Ontologies	131
Classes	2,648,090
Individuals	2,194,309
Projects	47
Users	246

**Supported by**

With the collaboration of

**PRODUCTS**  
OntoPortal  
NCBO Web Widgets

**SUPPORT**  
Contact Us  
Documentation  
NCBO Wiki  
OntoPortal admin

**ABOUT**  
About Us  
D2KAB project

**CONNECT**  
Twitter, GitHub, LinkedIn icons

AgroPortal is currently being developed within French ANR D2KAB project (ANR-18-CE23-0017). It also receives or received support from ANR SIFR project (ANR-12-JS02-0010), European Union H2020-MSCA SIFRm project (No 701771), the NUMEV Labex (ANR-10-LABX-0020), the IBC of Montpellier project (ANR-11-BINF0002), the Agro Labex (ANR-10-LABX-0001) as well as from University of Montpellier, CNRS and INRAE.

- 131 ontologies, 90 candidates
- 5 driving use cases
- ~240 registered users

# Browse and select ontologies

- Allows to search, order and select ontologies using a **faceted search** approach, based on the metadata

The screenshot shows the AgroPortal website interface. At the top, there is a green navigation bar with the AgroPortal logo and links for Browse, Search, Mappings, Recommender, Annotator, Projects, and Landscape. On the right side of the bar are 'Login' and 'Support' buttons. The main heading is 'Browse', with a sub-heading 'Browse the library of ontologies'. A search bar is present, and the page indicates 'Showing 136 of 140' results, sorted by 'Popular'. The sidebar on the left contains several faceted search filters: 'Submit New Ontology', 'Entry Type' (with 'Ontology (136)' selected), 'Uploaded in the Last' (with a dropdown menu), 'Category' (with various categories and counts), and 'Group' (with various groups and counts). The main content area displays a list of ontologies, each with a title, description, upload date, and statistics. The 'AnaEE Thesaurus (ANAEETHES)' is highlighted with a red box, showing 4 projects and 3,247 concepts. Other ontologies include AGROVOC (4 projects, 893,416 concepts), French Crop Usage (CROPUSAGE) (2 notes, 2 projects, 533 concepts), Agriculture and Forestry Ontology (AFO) (31,991 concepts), and Agronomy Ontology (AGRO) (4 projects, 3,500 classes).

AgroPortal Browse Search Mappings Recommender Annotator Projects Landscape Login Support

## Browse

Browse the library of ontologies ?

Search... Showing 136 of 140 Sort: Popular

**Submit New Ontology**

**Entry Type**

- Ontology (136)
- Ontology View (4)

**Uploaded in the Last**

Category

- Agricultural Resear... (27)
- Animal Science an... (11)
- Biodiversity and Ec... (17)
- Breeding and Gene... (1)
- Farms and Farming... (8)
- Fisheries and Aqua... (2)
- Food Security (2)
- Food and Human ... (10)

**Group**

- AGBIODATA (18)
- AGROLD (5)
- CROP (37)
- INRAE (30)
- OBO-FOUNDRY (23)
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- WHEAT (19)

**AnaEE Thesaurus (ANAEETHES)**

The AnaEE thesaurus aims to provide a controlled vocabulary for the semantic description of the study of continental ecosystems and their biodiversity

Uploaded: 12/12/20

4 3,247

**AGROVOC (AGROVOC)**

Since the early 1980's, the Food and Agriculture Organization of the United Nations (FAO) has coordinated AGROVOC, a valuable tool for data to be classified homogeneously, facilitating interoperability and reuse

Uploaded: 7/5/21

4 893,416

**French Crop Usage (Classification des plantes cultivées en France en fonction des usages) (CROPUSAGE)**

Les sources utilisées sont le registre parcellaire, le larousse agricole, wikipédia, le catalogue officiel des espèces et variétés de plantes cultivées en France du GEVES, les fiches "les plantes fourragères pour les prairies" du GNIS, la base Ephy, la liste des cultures à utiliser pour renseigner le descriptif des parcelles et les statistiques agricoles annuelle de l'Agreste

Uploaded: 8/17/21

2 2 533

**Agriculture and Forestry Ontology (AFO)**

The Agriculture and Forestry Ontology (AFO) is based on the Agriforest thesaurus maintained by the Viikki Campus Library, University of Helsinki

Uploaded: 12/27/18

31,991

**Agronomy Ontology (AGRO)**

Agro, the Agronomy Ontology, describes agronomic practices, techniques, and variables used in agronomic experiments

4 3,500



# Describe ontologies with semantic metadata

- Display “per ontology”
  - Ontology specific properties => viewable and editable within the ontology specific page
- Everything you need to know about an ontology
- URIs used in the backend to store the information
  - e.g., CC-BY => <https://creativecommons.org/licenses/by-nd/4.0/>
- “Get my metadata back” buttons

**OntoBiotope**

Summary Classes Properties Notes Mappings Widgets

**Details**

ACRONYM	ONTOBIOTOPE
VISIBILITY	Public
DESCRIPTION	OntoBiotope is an ontology of microorganism habitats. Its modeling principle and its lexicon reflect the biotope classification used by biologists to describe microorganism isolation sites (e.g. GenBank, GOLD, ATCC). OntoBiotope is developed and maintained by the Meta-omics of Microbial Ecosystems (MEM) network in which 30 microbiologists from INRA (French National Institute for Agricultural Research) from all fields of applied microbiology participate. The relevance of OntoBiotope terms is evaluated through the PubMedBiotope semantic search engine. It identifies and categorizes microbial biotopes in all PubMed abstracts by applying the TolMap method (Text to Ontology Mapping) to the OntoBiotope ontology. It also indexes 3.35 millions relations between taxa and their habitats.
STATUS	Production
FORMAT	OBO
CONTACT	Claire Nédellec, claire.nedellec@jouy.inra.fr
HOME PAGE	<a href="http://lov.inra.inra.fr/">http://lov.inra.inra.fr/</a>
PUBLICATIONS PAGE	<a href="https://doi.org/10.1105/1471-2105-16-S10-S1">https://doi.org/10.1105/1471-2105-16-S10-S1</a>
DOCUMENTATION PAGE	<a href="http://lov.inra.inra.fr/">http://lov.inra.inra.fr/</a>
CATEGORIES	Natural Resources, Earth and Environment
GROUPS	INRA Linked Open Vocabularies

**Additional Metadata**

NATURAL LANGUAGE	
VERSION	1.2
RELEASE DATE	2015-06-29T00:00:00+00:00
KEYWORDS	information extraction, corpus annotation, natural language processing, ontology building, biology, genetics
KNOWN USAGE	Used by the BioNLP Shared task (Bacteria Biotope task) in 2011, 2013 and 2016
NOTES	OntoBiotope is developed and maintained by the Meta-omics of Microbial Ecosystems (MEM) network in which 30 microbiologists from INRA (French National Institute for Agricultural Research) from all fields of applied microbiology participate.
CREATORS	Claire Nédellec
DESIGNED FOR ONTOLOGY TASK	<a href="http://omv.ontoware.org/2005/05/ontology#AnnotationTask">http://omv.ontoware.org/2005/05/ontology#AnnotationTask</a>
ENDORSED BY	INRA ( <a href="http://www.inra.fr/">http://www.inra.fr/</a> )
FUNDED BY	INRA ( <a href="http://www.inra.fr/">http://www.inra.fr/</a> )
HAS FORMALITY LEVEL	<a href="http://w3id.org/inkos/inkostype#ontology">http://w3id.org/inkos/inkostype#ontology</a>
HAS LICENSE	
ONTOLOGY SYNTAX	<a href="http://purl.obolibrary.org/obo/oboformat/spec.html">http://purl.obolibrary.org/obo/oboformat/spec.html</a>
IS OF TYPE	<a href="http://omv.ontoware.org/2005/05/ontology#DomainOntology">http://omv.ontoware.org/2005/05/ontology#DomainOntology</a>
PUBLISHER	INRA ( <a href="http://www.inra.fr/">http://www.inra.fr/</a> )
IDENTIFIER	<a href="https://doi.org/10.15454/1.4382640528105164E12">doi.org/10.15454/1.4382640528105164E12</a>
COPYRIGHT HOLDER	INRA ( <a href="http://www.inra.fr/">http://www.inra.fr/</a> )

**Metrics**

NUMBER OF CLASSES:	2320
NUMBER OF INDIVIDUALS:	0
NUMBER OF PROPERTIES:	0
MAXIMUM DEPTH:	13
MAXIMUM NUMBER OF CHILDREN:	42
AVERAGE NUMBER OF CHILDREN:	3
CLASSES WITH A SINGLE CHILD:	248
CLASSES WITH MORE THAN 25 CHILDREN:	3
CLASSES WITH NO DEFINITION:	2320

**Visits** Download as CSV

**Reviews** Add your review

No reviews available.

**Submissions**

SUBMISSION	RELEASE DATE	UPLOAD DATE	DOWNLOADS
1.2 (Parsed, Indexed, Metrics, Annotator)	06/29/2015	06/12/2016	OBO   CSV   RDF/XML
BioNLP-ST 2013 version (Archived)	06/29/2015	06/29/2015	OBO

**Views** Create new view

No views available.

**Projects Using This Ontology** Create new project

PROJECT	DESCRIPTION	PEOPLE	INSTITUTION
LOVInra - Linked Open Vocabularies	LOVInra est un service proposé par la Délégation à...	Sophie Aubin (sophie.aubin@versailles.inra.fr)	INRA
OntoBiotope	L'ambition pour OntoBiotope est de normaliser la description...	Claire Nédellec (claire.nedellec@jouy.inra.fr)	INRA
VEST-AgroPortal Map of Standards	This VEST-AgroPortal provides a global map of existing...	Valeria Pesce (valeria.pesce@fao.org)	Food & Agriculture Organization

**Get my metadata back**

N-Triples JSON-LD RDF/XML

**Go to the REST API JSON entry**

**includedinDataCatalog**

<http://lov.inra.inra.fr/2015/07/30/ontobiotope/> VEST Registry

**logo**

# Ontology Recommender

Get recommendations for the most relevant ontologies based on an excerpt from a biomedical text or a list of keywords [?](#)

## Input

Text  Keywords (separated by commas)

## Output

Ontologies  Ontology sets

[insert sample input](#)

Some useful technical specifications for timber purchase. For example, the following criteria can be used in the technical specifications of a contract that is sustainable in environmental terms:

- the assurance that the rate of harvesting of timber does not exceed levels that can be permanently sustained;
- use of environment-friendly non-chemical methods of pest control, and the avoidance of use of chemical pesticides.

[advanced options](#)

[Get Recommendations](#)

# Ontology Recommender

Get recommendations for the most relevant ontologies based on an excerpt from a biomedical text or a list of keywords [?](#)

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Some useful technical specifications for timber purchase. For example, the following criteria can be used in the technical specifications of a contract that is sustainable in environmental terms: - the assurance that the **rate** of harvesting of timber does not exceed levels that can be permanently sustained; - use of environment-friendly non-chemical methods of **pest** control, and the avoidance of use of chemical **pesticides**.

[advanced options](#)

[Edit Input](#)

## Recommended ontologies

POS.	ONTOLOGY	FINAL SCORE	COVERAGE SCORE	ACCEPTANCE SCORE	DETAIL SCORE	SPECIALIZATION SCORE	ANNOTATIONS	HIGHLIGHT ANNOTATIONS	
1	<a href="#">ANAEETHES</a>	29.5	26.3	0.0	0.0	100.0	3		<input checked="" type="checkbox"/>
2	<a href="#">WHEATPHENOTYPE</a>	22.8	31.6	0.0	13.7	22.6	3		<input type="checkbox"/>
3	<a href="#">IO</a>	17.2	15.8	0.0	45.1	11.9	2		<input type="checkbox"/>
4	<a href="#">EFO</a>	16.4	21.1	0.0	20.6	9.0	2		<input type="checkbox"/>
5	<a href="#">ENVO</a>	15.4	15.8	0.0	35.9	10.4	2		<input type="checkbox"/>
6	<a href="#">STY</a>	15.2	21.1	0.0	7.8	18.3	2		<input type="checkbox"/>
7	<a href="#">NCBITAXON</a>	13.7	21.1	0.0	7.8	6.5	2		<input type="checkbox"/>
8	<a href="#">SIO</a>	8.4	10.5	0.0	13.7	6.8	1		<input type="checkbox"/>
9	<a href="#">PATO</a>	8.4	10.5	0.0	7.8	9.5	1		<input type="checkbox"/>
10	<a href="#">AEO</a>	7.4	10.5	0.0	5.9	8.3	1		<input type="checkbox"/>
11	<a href="#">AFEO</a>	7.7	10.5	0.0	5.9	6.6	1		<input type="checkbox"/>
12	<a href="#">PCO</a>	7.7	10.5	0.0	7.8	5.3	1		<input type="checkbox"/>

# AgroPortal Recommender

get the most relevant ontologies for your data

# Align ontologies one another

AgroPortal LIRMM

Browse Search Mappings Recommender Annotator Projects Admin

Recently Viewed | antool

## AnaEE Thesaurus

Summary Classes Properties Notes Mappings Widgets Edit ontology information Add submission Edit submission information (1.0)

Jump To:

- abiotic environment
- AnaEE-France service identification and partners
- biotic environment
- chemical compound
- carbon forms
- carbon dioxide**
- carbonate
- Dissolved organic carbon
- inorganic carbon
- insoluble organic carbon
- organic carbon
- Particulate organic carbon
- total carbon
- total organic carbon
- chemical elements
- chloride
- ions
- metals
- molecule
- nitrogen forms
- organic matter
- organic molecules
- oxygen forms
- pesticide
- phosphorus forms
- pollutant
- reactive oxygen species

concept by concept

Details Visualization Notes (0) **Class Mappings (4)**

Create New Mapping Create New External Mapping

### Internal mappings

MAPPING TO	ONTOLOGY	SOURCE	RELATION
<a href="#">carbon dioxide</a>	<a href="#">Environment Ontology</a>	LOOM	
<a href="#">carbon dioxide</a>	<a href="#">Experimental Factor Ontology</a>	LOOM	
<a href="#">CarbonDioxide</a>	<a href="#">XEML Environment Ontology</a>	LOOM	
<a href="#">Carbon dioxide</a>	<a href="#">Biorefinery</a>	LOOM	

### Interportal mappings

MAPPING TO	ONTOLOGY	SOURCE	RELATION
There are currently no interportal mappings for this class.			

### External mappings

MAPPING TO	ONTOLOGY	SOURCE	RELATION
There are currently no external mappings for this class.			

## Mappings

ONTOLOGY	MAPPINGS
<a href="#">Agri-Food Experiment Ontology</a>	1
<a href="#">Agricultural Experiments Ontology</a>	5
<a href="#">Banana Anatomy</a>	2
<a href="#">Basic Formal Ontology</a>	1
<a href="#">Biorefinery</a>	13
<a href="#">Cell Ontology</a>	4
<a href="#">Chickpea Ontology</a>	14
<a href="#">Comparative Data Analysis Ontology</a>	3
<a href="#">Durum Wheat</a>	2
<a href="#">EDAM bioinformatics operations, data types, formats, identifiers and topics</a>	25
<a href="#">Environment Ontology</a>	72
<a href="#">Environment Ontology for Livestock</a>	10
<a href="#">Experimental Factor Ontology</a>	93
<a href="#">Gene Ontology</a>	5
<a href="#">GENO Ontology</a>	5
<a href="#">Genomic Feature and Variation Ontology</a>	5
<a href="#">Gramene Taxonomy Ontology</a>	3
<a href="#">Groundnut Ontology</a>	16
<a href="#">IBP Cassava Trait Ontology</a>	23
<a href="#">IBP Cowpea Trait Ontology</a>	25
<a href="#">IBP Crop Research Ontology</a>	22

# REST Service API:

<http://data.agroportal.lirmm.fr/documentation>

**API Documentation**

### General Usage

This API is comprised of a set of resources (Ontologies, Classes, etc) and related endpoints (Search, Annotator, Recommender) that are connected together via links, much like webpages. We recommend that you try browsing the API using a web browser (Chrome and Firefox work very well while IE does not) before you start writing code. For more information, please see the documentation on [Media Types and Hypermedia Links](#) or view our [sample code](#), available in Java, Python, Ruby and other languages (please email [support@bioontology.org](mailto:support@bioontology.org) if you would like examples in another language).

### Common Parameters

Parameter	Possible Values	Description
apikey	{your api key}	An API Key is required to access any API call. It can be provided in three ways: <ol style="list-style-type: none"><li>Using the <code>apikey</code> query string parameter</li><li>Providing an <code>Authorization</code> header: <code>Authorization: apikey token=your_apikey</code> (replace 'your_apikey' with your actual key)</li><li>When using a web browser to explore the API, if you provide your API Key once using method 1, it will be stored in a cookie for subsequent requests. You can override this by providing a different API Key in a new call.</li></ol>
include	all {comma-separated list of attributes, EX: attr1,attr2}	By default, the API will show a subset of the available attributes for a given media type. This behavior can be overridden by providing <code>include=all</code> to show all attributes or <code>include=attribute1,attribute2</code> to include a specific list. The API is optimized to return the default values, so overriding this can impact the performance of your request.  The <code>include=all</code> option is most useful for testing in the browser. Use it to identify the set of attributes required and use only those by passing them as a comma separated list, e.g. <code>include=prefLabel,cui</code> .  The <code>include</code> parameter is currently unsupported on Annotator and Recommender endpoints.
format	json jsonp xml	The API returns JSON as the default content type. This can be overridden by using the <code>format</code> query string parameter. The API also respects <code>Accept</code> header entries, with precedence given to the <code>format</code> parameter.

## SPARQL endpoint:

<http://sparql.agroportal.lirmm.fr>

**SPARQL httpd server v1.1.5-122-g1788d29 test query**

**KB ontologies\_api**

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT * WHERE {
  ?s ?p ?o
} LIMIT 10
```

Soft limit  xml

# OntoPortal Alliance: Synchronizing and mutualizing research and development efforts

Representing OntoPortal adopters and end users

- to **maximize OntoPortal value** (state-of-the-art service portfolio)
- to improve OntoPortal **software** while managing several parallel and different installations
- to **increase semantic uptake** in science communities and facilitate adoption of the FAIR principles
- to increase the ecosystem's **long term** operational and financial health







# We develop and maintain ontology repositories in the OntoPortal Alliance (1/3)



## BioPortal

Welcome to BioPortal, the world's most comprehensive repository of biomedical ontologies

Search for a class: Enter a class, e.g. Melanoma

Find an ontology: Start entering ontology name, e.g. Cancer, then choose from list

Ontology Visits (July 2017): Bar chart showing visits for various ontologies like OPT, RINORSA, MEDORA, SNOMEDCT, NEOF.

Products: BioPortal, BioPortal REST API, BioPortal Virtual Appliance, NCI Web Widgets

Support: Contact Us, Documentation, NCI Web Widgets

About: About Us, Mission & Vision, Team, Projects

Connect: Facebook, Twitter, RSS

The National Center for Biomedical Ontology was founded as one of the National Centers for Biomedical Computing, supported by the NIGR, the NHLBI, and the NIH Common Fund under grant U54-HQ004028. Copyright © 2005-2017, The Board of Trustees of Leland Stanford Junior University. All rights reserved. QITE US 1. PRIVACY POLICY 1. TERMS

<http://bioportal.bioontology.org>



## SIFR BioPortal

Medical Subject Headings, version française

Details: MSHFRE, Public, Production, UMLS, Yarnick Platte, yarnick.platte@inserm.fr, Claude Haerfais, haerfai@inserm.fr

Metrics: 27879 classes, 0 individuals, 6 properties, 15 maximum depth, 164 maximum number of children, 4 average number of children, 3173 classes with a single child, 136 classes with more than 23 children, 27740 classes with no definition.

Visits: Line graph showing visits over time from 2010 to 2017.

Additional Metadata: Natural Language: French, Version: 2016A, Release Date: 2016-10-11T00:00:00-00:00, Know Usage: La version française est souvent utilisée comme outil de traduction, ainsi que pour l'indexation et l'interrogation de bases de données en français.

<https://bioportal.lirmm.fr>

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## AgroPortal

Search all ontologies: Enter concept, e.g. Mécanisme

Find an ontology: Enter ontology name, e.g. NCIT Thesaurus

Ontology Visits (April 2017): Table showing visits for various ontologies like AGROVOC, ANAF, National Agricultural Library Thesaurus (NAL), OntoBiotope (ONTOBIOTOPE), Protein Ontology (PT).

Latest Notes: Terms in double (BP Wheat Trait Ontology), A bunch of terms in this branch are in double. Is this normal?, Un peu d'histoire (Banana Anatomy), over 1 year ago to present, Inférence est un mot d'origine latine qui signifie "l'éclair", il est le même en français et...

Statistics: Ontologies: 63, Classes: 1,194,372, Individuals: 1,373,617, Projects: 16, Users: 63

Latest Mappings: metabolic\_pathway (GO) ↔ Metabolic Pathway, EST\_match (GO) ↔ EST\_match, cDNA\_match (GO) ↔ cDNA\_match

<http://agroportal.lirmm.fr>



# We develop and maintain ontology repositories in the OntoPortal Alliance (2/3)



EcoPortal

Search for a class  
Enter a class, e.g. Shape, Trait, etc.

Find a semantic resource (ontology, thesaurus, etc.)  
Start entering ontology name, e.g. PhytoTraits, then choose from list

Ontology Visits (June 2019)

Ecoportal Statistics

Ontologies	6
Classes	137

PRODUCTS: EcoPortal REST API  
SUPPORT: Contact Us, Help  
ABOUT: About Us, Team, Projects

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CITE US | PRIVACY POLICY | TERMS

Powered by NCBO BioPortal

<http://ecoportal.lifewatchitaly.eu>



MedPortal

MedPortal  
Ontologies Search Annotator Recommender Mappings Cases

Browse  
Browse the library of ontologies

Search... Showing 6 of 45 Sort: Popular

- Human Phenotype Ontology China (HPCH)** (31,808)  
The Human Phenotype Ontology China is being developed to provide a structured and controlled vocabulary for the phenotypic features encountered in human hereditary and other disease.  
Uploaded: 11/21/19
- International Classification of Diseases, 10th Edition, China (ICD10CN)** (53,171)  
International Classification of Diseases, 10th Edition, Version 10th, China  
Uploaded: 11/11/19
- International Classification of Diseases, 11th Edition, China (ICD11CN)** (33,460)  
International Classification of Diseases, 11th Edition, Version 10th, China  
Uploaded: 11/11/19
- Basic Formal Ontology (Chinese Translation) (BFO-ZH)** (37)  
A Chinese translated version of the BFO-2.0  
Uploaded: 7/14/20
- Cell Line Ontology (Chinese Translation) (CLO\_SCN)** (4,809)  
中文细胞系本体，数据基于国家实验细胞资源服务共享平台，框架源于CLO (cell line ontology) 本体框架，适用于中文语言环境的CLO中文高版本。  
Uploaded: 11/21/19

<http://medportal.bmicc.cn/>  
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And other installations with







# We develop and maintain ontology repositories in the OntoPortal Alliance (3/3)



MatPortal

MatPortal.org Ontologies Search Annotator Recommender Mappings Login Support

Welcome to MatPortal, the ontology repository for materials science, Beta Test!

Search for a class: Enter a class, e.g. Aluminium

Find an ontology: Start typing ontology name, then choose from list

Ontology Visits (May 2021):

NMRRVOCAB	~80
MOL_TENSILE	~70
BIVMD-DOMAN	~60
EMMD	~40
MDO-FULL	~30

MatPortal Statistics:

Ontologies	12
Classes	4,983

A Matolab Project | Fraunhofer Materials | BAM | Powered by BioPortal

<https://matportal.org/>



IndustryPortal

IndustryPortal Ontologies Search Mappings Recommender Annotator Projects Landscape Soutiens Team Login Support

Welcome to IndustryPortal, a common ontology portal for industry and related domains

Search for a class: Enter a class, e.g. Melanoma

Find an ontology: Start typing ontology name, then choose from list

IndustryPortal Statistics:

Ontologies	54
Classes	27,093
Individuals	22,760
Projects	9
Users	36

FAIR Scores (beta): Average 0.56 (0.47), Min 0.1 (0.24), Max 0.73 (0.97), Median 0.44 (0.52)

Start typing to select ontologies or leave blank to use all

Findable, Accessible, Interoperable, Reusable scores: 0-100 scale

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BiodivPortal



EarthPortal

# Making OntoPortal a real open source project

The screenshot shows the GitHub organization page for OntoPortal Alliance. At the top, there's a navigation bar with links for Pull requests, Issues, Codespaces, Marketplace, and Explore. The organization's profile includes a logo, name, and a description: "The OntoPortal Alliance is dedicated to promoting semantic and ontology services based on the open, collaboratively developed OntoPortal technology." It also shows 10 followers and links to the website and Twitter. Below the profile, there are tabs for Overview, Repositories (20), Projects (1), Packages, Teams (9), People (26), and Settings. The main content area displays the README.md file, which contains a welcome message and links to the organization's website, documentation, and issue submission page. A "Pinned" section lists four repositories: ontoportal-project, documentation, ontoportal\_web\_ui, and ontologies\_api, each with a brief description and statistics. On the right side, there are sections for "View as: Public", "Discussions", "People", and "Top languages".

Search or jump to... Pull requests Issues Codespaces Marketplace Explore

**OntoPortal Alliance**  
The OntoPortal Alliance is dedicated to promoting semantic and ontology services based on the open, collaboratively developed OntoPortal technology.  
10 followers <https://ontoportal.org> @ontoportal

Overview Repositories 20 Projects 1 Packages Teams 9 People 26 Settings

README.md

Hi there 🙌,

Welcome to the OntoPortal Alliance Github organization.

We are dedicated to promoting semantic and ontology services based on the open, collaboratively developed OntoPortal technology.

If you want to know more about us ,see <https://ontoportal.org>

If you want to see our documentation, see <https://ontoportal.github.io/documentation>

If you want to get our appliance that bundle all our technologies, see <https://ontoportal.github.io/documentation/administration/general/introduction>

If you want to submit an issue, feature request or ask a question, it is here <https://github.com/ontoportal/ontoportal-project/issues/new/choose>

View as: **Public** ▾  
You are viewing the README and pinned repositories as a public user.  
[Get started with tasks](#) that most successful organizations complete.

Discussions  
Set up discussions to engage with your community!  
[Turn on discussions](#)

People  
[View all](#)  
[Invite someone](#)

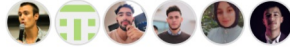





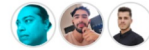
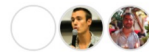

Top languages  
Ruby Java JavaScript C  
SCSS

**Pinned** Customize pins

- ontoportal-project** (Public)  
Ontoportal alliance centralized repository for the management of the ontoportal project (centralized issues, discussions, ...)
- documentation** (Public)  
Instructions for installing the OntoPortal Virtual Appliance (3.0 and later)  
SCSS 4 5
- ontoportal\_web\_ui** (Public)  
Forked from ncbo/bioportal\_web\_ui  
A Rails application for ontologies  
JavaScript 1
- ontologies\_api** (Public)  
Forked from ncbo/ontologies\_api  
Hypermedia API for OntoPortal ontology-related projects  
Ruby 1

# Membership increasing


- 7 existing public repositories. 2 others in the pipe
- 1 active commercial participant
- Multiple interested parties beyond that
  - 60 installation of the appliance

<input type="checkbox"/>	<b>AgroPortal</b> Member of the AgroPortal and SIFR BioPortal team mostly at LIRMM and MISTEA		6 members	0 teams
<input type="checkbox"/>	<b>BiodivPortal</b> NFDI4biodiv team working on a dedicated OntoPortal		2 members	0 teams
<input type="checkbox"/>	<b>BioPortal</b> Members of the BioPortal team mostly at Stanford BMIR.		6 members	0 teams
<input type="checkbox"/>	<b>CogniZone</b> Member of the Cogni.zone SME team.		1 member	0 teams
<input type="checkbox"/>	<b>EarthPortal</b> Members of the EarthPortal team mostly at CNRS and DataTerra		2 members	0 teams
<input type="checkbox"/>	<b>EcoPortal</b> Members of the EcoPortal team mostly at LifeWatch ERIC		4 members	0 teams
<input type="checkbox"/>	<b>IndustryPortal</b> Members of IndustryPortal team mostly at ENIT		3 members	0 teams
<input type="checkbox"/>	<b>MatPortal</b> Members of the MatPortal team mostly at Fraunhofer		3 members	0 teams
<input type="checkbox"/>	<b>MedPortal</b> Members of the MedPortal team mostly at BMICC.		3 members	0 teams

Semantic artefacts are a key elements to achieving FAIR and **these artefacts and their catalogues have to be FAIR too**

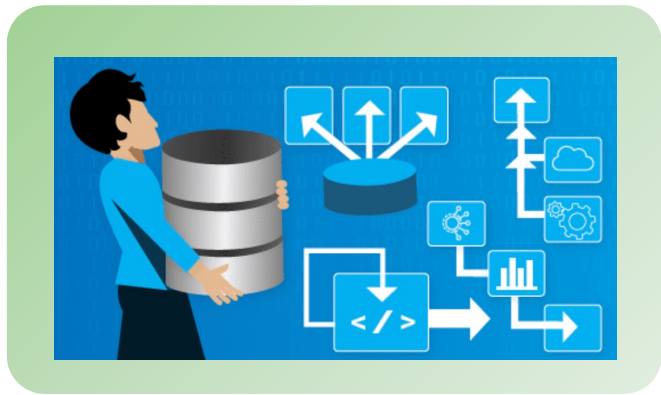


- AgroPortal
- EcoPortal
- EarthPortal



**WP4**

Greater and more harmonised use of **semantic artefacts** throughout the EOSC ecosystem, leading to semantic interoperability **within and between disciplines.**



# Summary

## Questions ?

