Universidad Nacional de San Agustín

Data bases

The COVID-19 Ontology

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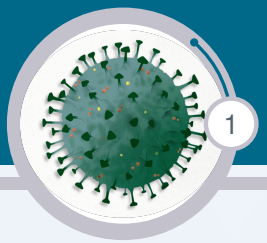
Content



The COVID-19 Ontology
- Introduction
- Material and methods
- Results

Motivation and objective

Motivation

According to Sargsyan [1], there is lots of research about COVID-19.

For example, a simple search with the key words: “(covid-19 OR SARS COV 2) AND drug” return **375000** results on Google Schoolar.

Objective

Develop an COVID-19 ontology to facilitate dedicated literature searches on COVID-19 pathophysiology, epidemiology, targets and medical implications.

Material and methods
Source of information

- 32 Research articles and 10 Reviews.
- WHO.
- Radiology Assistant COVID-19.
- Centre for Evidence-Based Medicine.
- Texas Medical Center.
- Yale Medicine.
- Targeting COVID-19: GHDDI Info Sharing Portal.
- Summit Medical Group.
- Georgetown University.
- SciBiteLabs.

Material and methods

Construction of the ontology

Protégé

Open Biological and Biomedical Ontology (OBO) Foundry

BFO Basic Formal Ontology

Material and methods
Metadata

Property	Description
label	Name of the concept
oboInowl:hasDefinition	Definition
rdfs:isDefinedBy	Source of the definition
oboInOwl:hasDbXRef	Link from Pubmed/NCBI
rdfs:seeAlso	Additional relevant links
oboInOwl:hasExactSynonym	Synonyms
oboInOwl:hasRelatedSynonym	Related synonyms

Table: Metadata used in COVID-19 ontology

Material and methods
Custom metadata

Property	Description
fromSciBite	SciBite
fromBEL	COVID-19 BEL
fromPubMed	PubMed
fromArticle	Other resources than PubMed
fromNCBIBook	NCBI Books
CommentonDefinition	The information is modified
CommentonHierarchy	Explain the hierarchy
DrugsinVirtualScreening	Mention the drugs suggested in virtual screening

Table: Metadata to indicate the source of information.

Results
Comparison

Property	No of concepts	Common concepts	Uncommon concepts
COVID-19	2268		
COVID19-Whuan	52	1	51
COVIDCRFRAPID	398	46	352
IDO-COVID-19	486	60	426
CIDO	5156	528	4628
CODO	52	3	49

Table: Metadata to indicate the source of information.

Results

Filtering the relevant documents of COVID-19

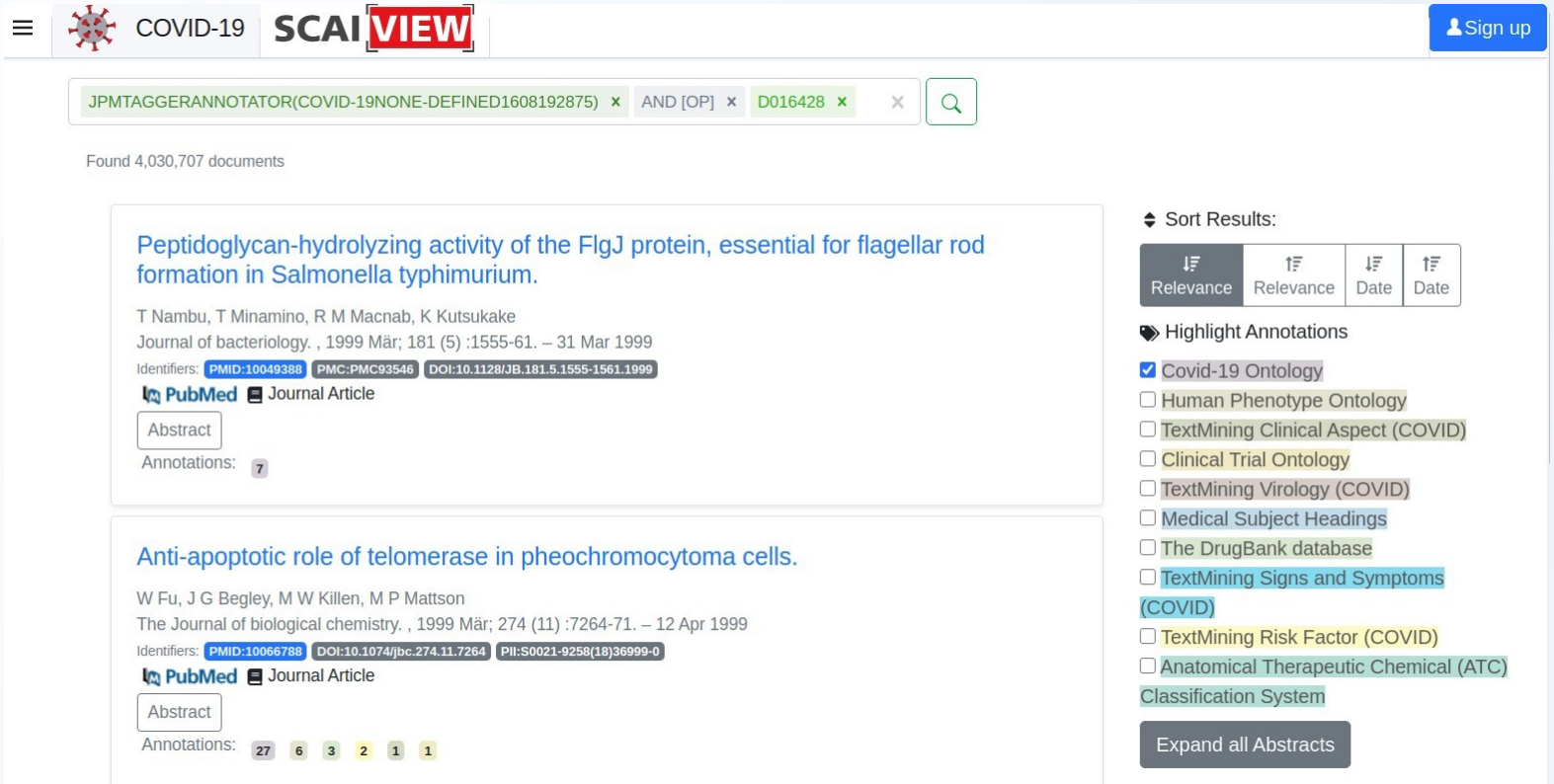
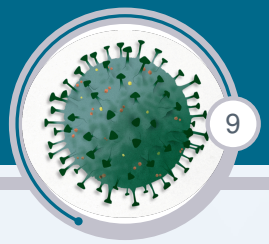


Figure: Results filtering COVID-19 in scaiview.

References I



[1] A. Sargsyan, S. Baksi, J. Darms, S. Madan, S. Gebel, O. Keminer, G. M. Jose, H. Balabin, L. N. DeLong, M. Kohler *et al.*, "The covid-19 ontology," *Bioinformatics*, 2020.