

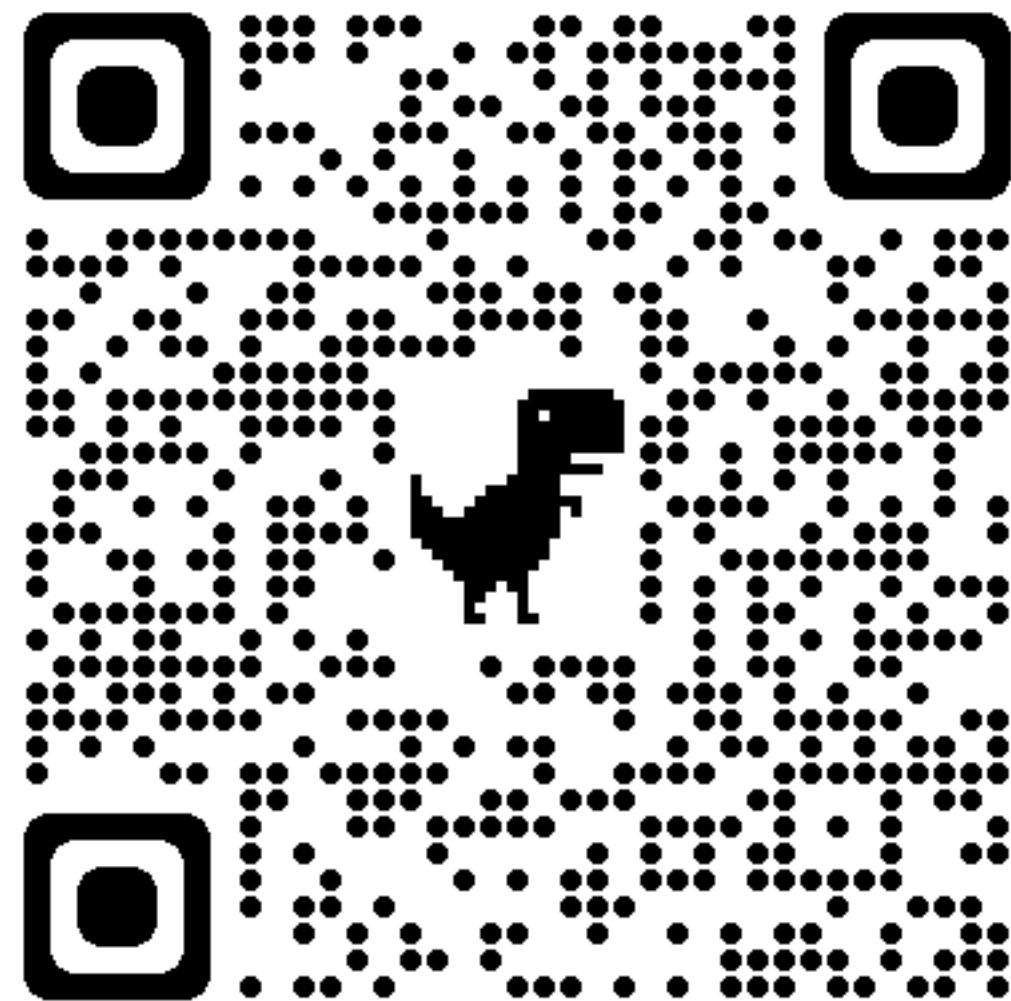
Wikidata and OBO

Aligning Open Biological and Biomedical Ontology Foundry ontologies with Wikidata

Andra Waagmeester - 24 April 2023 - 16th Annual International Biocuration Conference

Wikidata

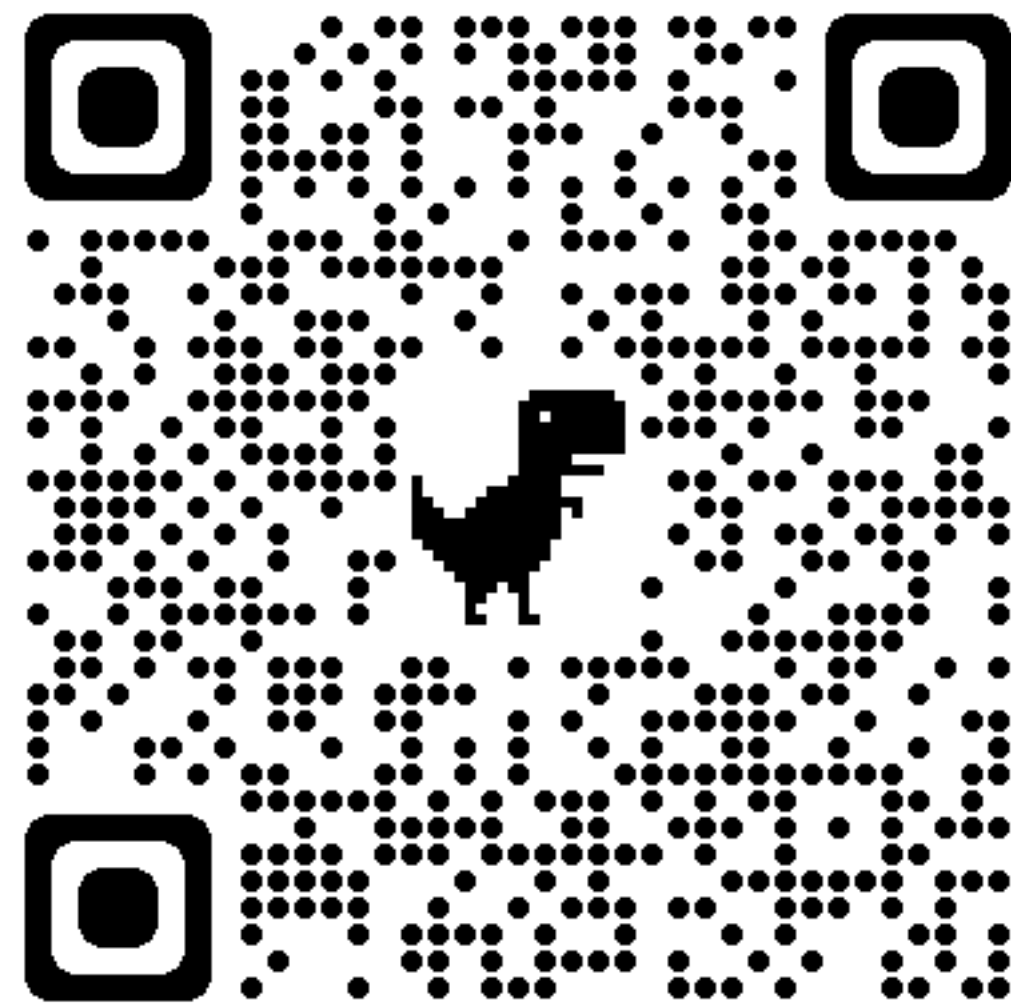
www.wikidata.org



A screenshot of the Wikidata Main Page. The page features a blue header with the Wikidata logo and a search bar. Below the header is a blue banner with the text "Help choose the best image of the year. View the candidates and vote for your favorite." and a close button. The main content area is divided into three columns. The left column contains a "Main menu" with links to various pages like "Main page", "Community portal", "Project chat", "Create a new Item", "Recent changes", "Random Item", "Query Service", "Nearby", "Help", "Donate", "Switch to old look", "Lexicographical data", "Create a new Lexeme", "Recent changes", "Random Lexeme", "In Wikipedia", and language options. The middle column contains a "Welcome to Wikidata" section with a network diagram and text stating "the free knowledge base with 102,812,391 data items that anyone can edit." and a "Learn about data" section with text and images of Earth, a calculator, and a mountain. The right column contains a "Tools" section with links to "Actions", "Subscribe", "General", "What links here", "Related changes", "Special pages", "Permanent link", "Page information", "Wikidata item", and "In other projects".

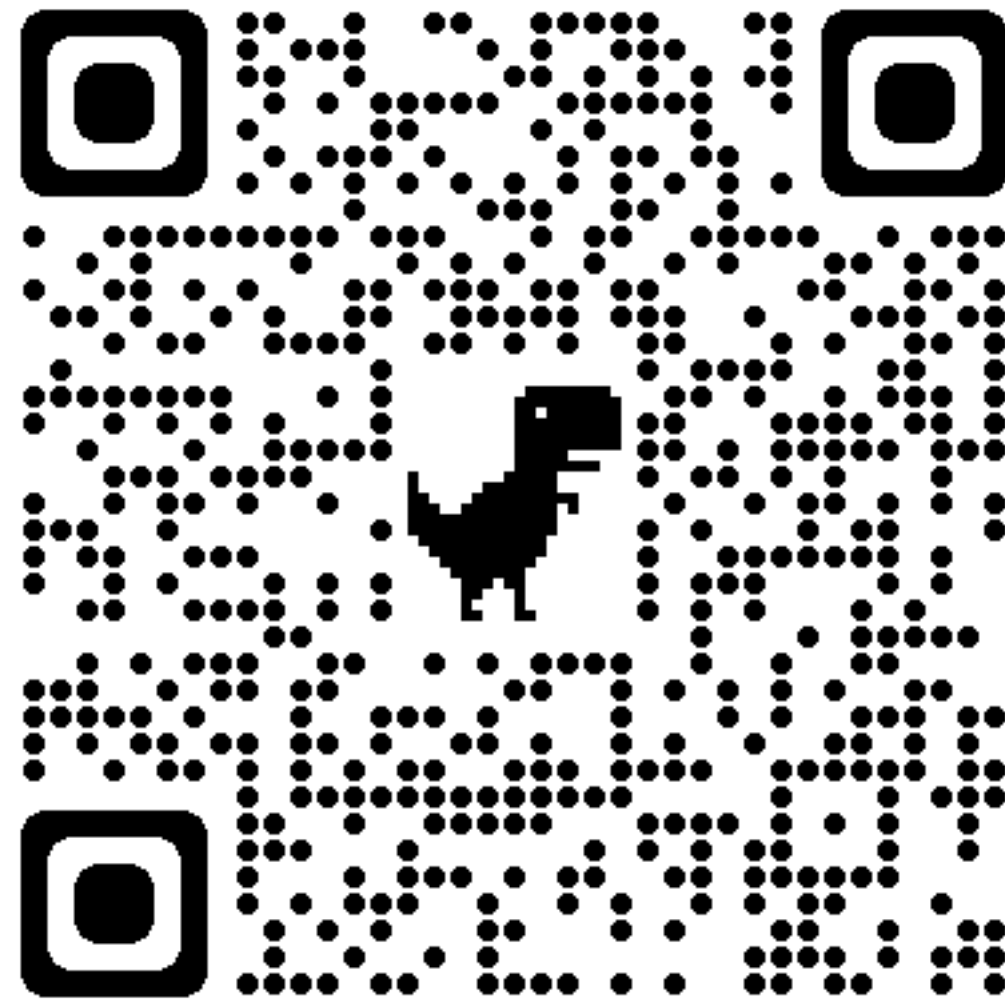
Andra Waagmeester

<https://scholia.toolforge.org/author/Q19845625>

A screenshot of a web browser displaying the Scholia profile page for Andra Waagmeester. The browser's address bar shows the URL <https://scholia.toolforge.org/author/Q19845625>. The page header includes the Scholia logo and navigation menus for Author, Work, Organization, Location, Event, Project, Award, Topic, Tools, and Help. A search bar is also present. The main content area features the author's name "Andra Waagmeester (Q19845625)" in a large blue font, with a link to "author / Q19845625" and an "Improve data" button. Below the name, there is a list of related authors: Egon Willighagen, Aaron Halfaker, Andrew I. Su, Mikkel Wallentin, Ludovic Orlando, Taha Yasseri, Oliver Fiehn, Klaas Enno Stephan, Michael S. Diamond, and Michel Dumontier. Social media links for ORCID, GitHub, Twitter, and Mastodon are provided, along with a link to the author's profile on Maastricht University. A "Table of Contents" section lists various metrics and visualizations such as "List of publications", "Topics", "Use", "Venue statistics", "Review statistics", "Co-author graph", "Timeline", "Academic tree", "Citation statistics", "Associated images", and "Events". On the right side of the page, there is a portrait photograph of Andra Waagmeester. The browser's taskbar at the bottom shows a file named "qrcode_www.wi...png" and a "Show all" button.

Biocuration 2023 (Wikidata)

<https://www.wikidata.org/wiki/Q111430238>



The screenshot shows the Wikidata page for the 16th Annual International Biocuration Conference (2023) (Q111430238). The page includes a search bar, a navigation menu, and a table of properties in various languages. A banner at the top promotes a #WikiForHumanRights writing challenge. The main content area shows the item's description and a table of labels and descriptions in English, Spanish, French, Dutch, and Sranan Tongo. The 'Statements' section shows the item is an instance of 'academic conference'.

16th Annual International Biocuration Conference (2023) (Q111430238)

edition of annual conference series
biocuration2023 | Biocuration 2023

Recoin: Most relevant properties which are absent

In more languages

Language	Label	Description	Also known as
English	16th Annual International Biocuration Conference (2023) by Cthoyt	edition of annual conference series by Cthoyt	biocuration2023 Biocuration 2023 by Cthoyt and TiagoLubiana
Spanish	No label defined	No description defined	
French	No label defined	No description defined	
Dutch	No label defined	No description defined	
Sranan Tongo	No label defined	No description defined	

All entered languages

Statements

instance of academic conference by Cthoyt

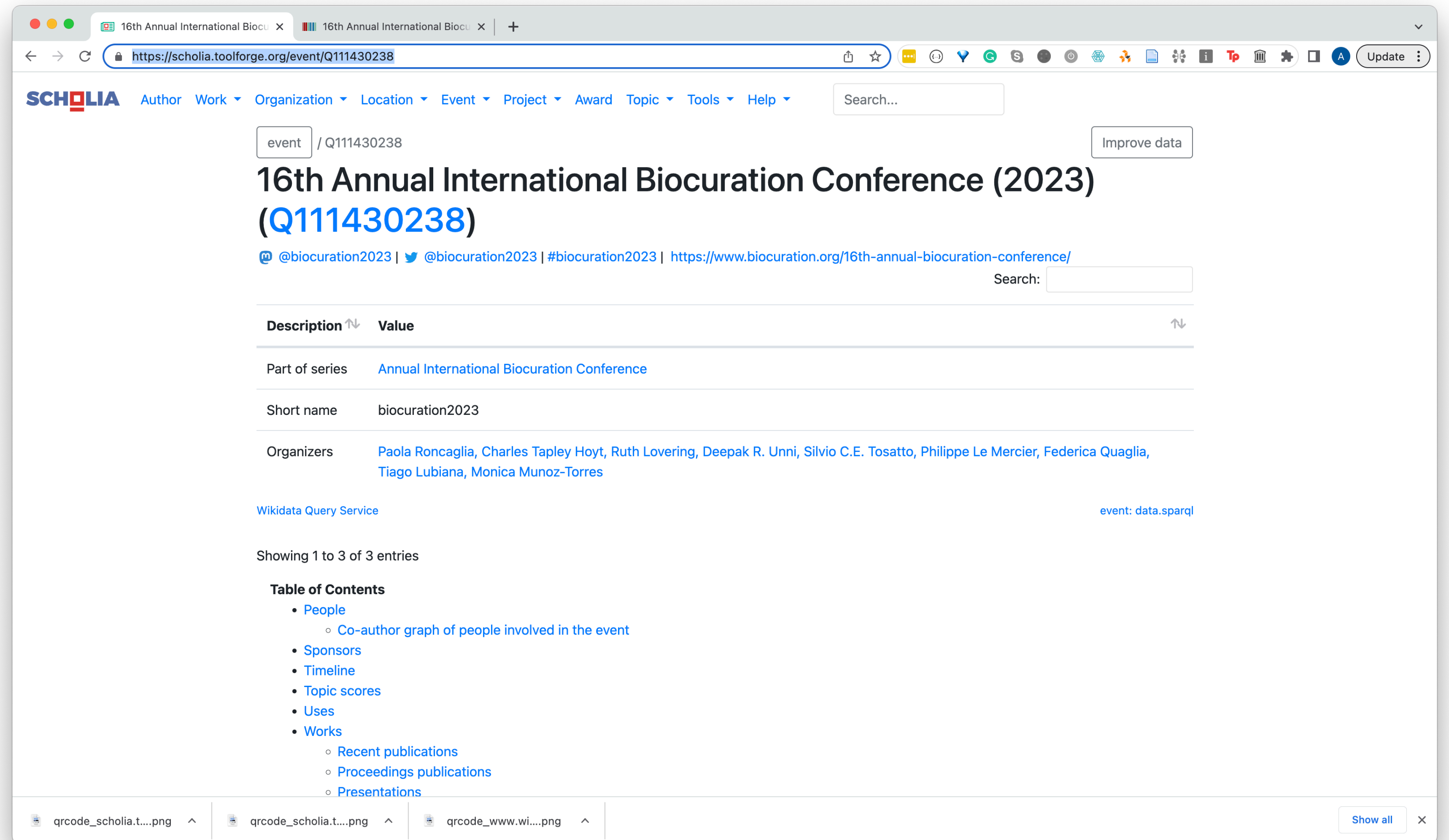
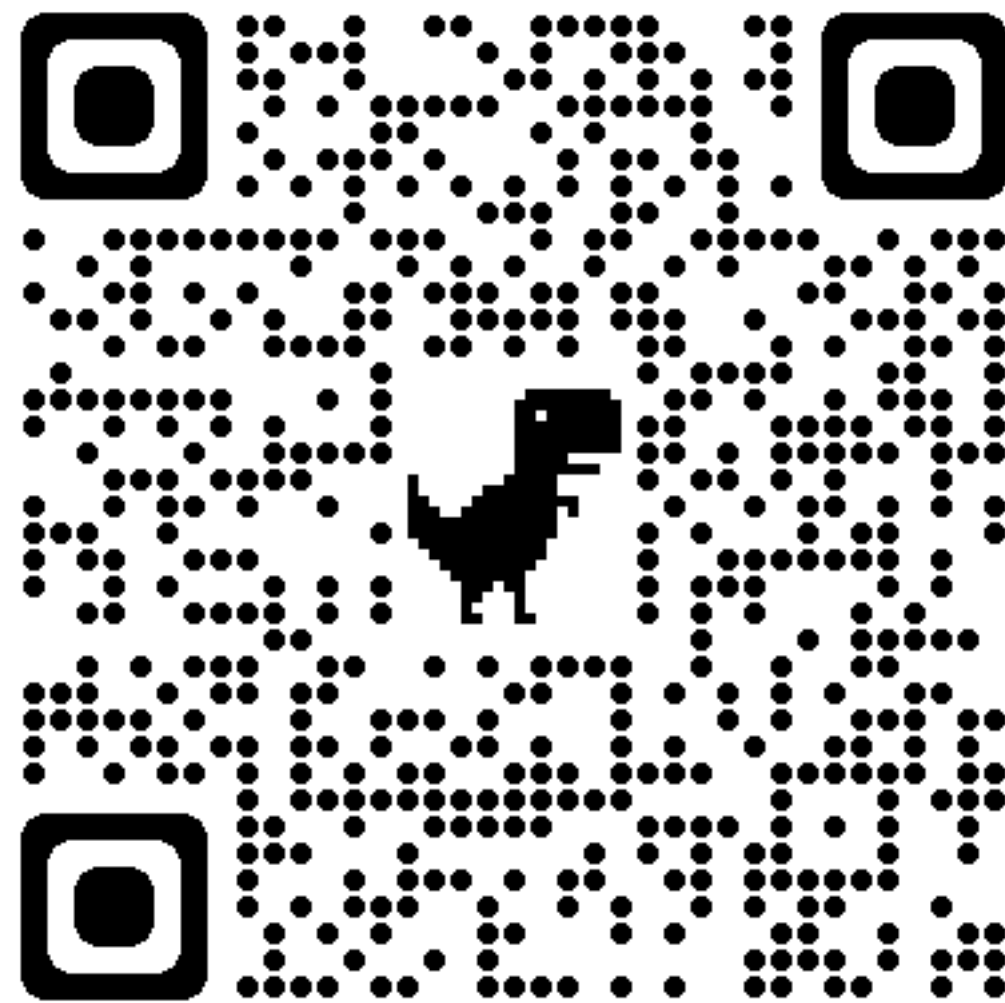
0 references

+ add reference

+ add value

Biocuration 2023 (Scholia)

<https://scholia.toolforge.org/event/Q111430238>



The screenshot shows the Scholia interface for the event Q111430238. The page title is "16th Annual International Biocuration Conference (2023) (Q111430238)". It includes social media links for @biocuration2023 and a search bar. A table lists key information:

Description	Value
Part of series	Annual International Biocuration Conference
Short name	biocuration2023
Organizers	Paola Roncaglia , Charles Tapley Hoyt , Ruth Lovering , Deepak R. Unni , Silvio C.E. Tosatto , Philippe Le Mercier , Federica Quaglia , Tiago Lubiana , Monica Munoz-Torres

Below the table, there is a "Table of Contents" section with links to People, Sponsors, Timeline, Topic scores, Uses, and Works. The Works section includes links for Recent publications, Proceedings publications, and Presentations. A Wikidata Query Service link is also present.

Task 1: Add yourself as participant to Biocuration 2023

<https://www.wikidata.org/wiki/Q111430238>

- Create a Wikidata account (optional)
- Create a wikidata item about yourself

The Gene Wiki project, circa 2008

Summarized knowledge via crowdsourcing

The screenshot shows a Wikipedia article for the gene **ITK (gene)**. The main text, enclosed in a green rounded rectangle, describes the gene as encoding an intracellular tyrosine kinase expressed in T-cells. It includes sections for Function, Structure, Interactions, and References. A sidebar on the right, enclosed in a red rounded rectangle, provides detailed protein information for **IL2-inducible T-cell kinase**, including a 3D ribbon structure, available structures (1LUI), identifiers, symbols, external IDs, Gene Ontology, RNA expression pattern, protein domains, and orthologs in Human and Mouse.

Data imported from structured databases

Wikipedia: Maintained independently by >300 language communities

Dutch

nl.m.wikipedia.org

Malaria



Rode bloedcel geïnfecteerd met *P. vivax*


Coderingen	
ICD-10	B50 ↗
ICD-9	084 ↗
OMIM	248310 ↗

Greek

el.m.wikipedia.org

Ελονοσία

Ταξινόμηση και εξωτερικές πηγές

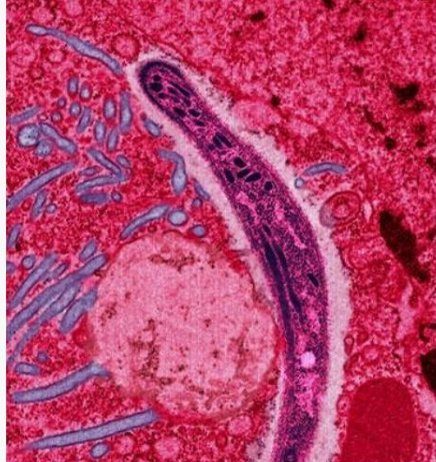


Ταξινόμηση ICD-10	B50 ↗
Ταξινόμηση ICD-9	084 ↗
OMIM	248310 ↗
DiseasesDB	7728 ↗
MedlinePlus	000621 ↗
eMedicine	med/1385 ↗ emerg/305 ↗ ped/1357 ↗

English

en.m.wikipedia.org

Malaria



A *Plasmodium* from the saliva of a female mosquito moving across a mosquito cell

Classification and external resources	
Specialty	Infectious disease ↗
ICD-10	B50 ↗ -B54 ↗
ICD-9-CM	084 ↗



Dutch

nl.m.wikipedia.org

Staat

Hoofdstad	Papiaments
Regeringsvorm	Constitutionele monarchie
Staatshoofd	Koning Willem-Alexander
Regeringsleider	Mike Eman (Arubaanse Volkspartij)
Religie	Katholiek 82%, protestant 8%

103,400 ^[2] (197th)

• Εκτίμηση 2014

Greek

el.m.wikipedia.org

Πολίτευμα

Μονάρχης Γουλιέλμος-Κυβερνήτης Αλέξανδρος
Πρωθυπουργός Φρέντις Ρεφουνιόλ
Μάικ Έμαν

Πλήρης αυτονομία από το Βασίλειο των Κάτω Χωρών
Σύνταγμα

Έκταση	180 km ² (213η)
Ακτογραμμή	68,5 km
Πληθυσμός	• Εκτίμηση 2014 107.394 ^[1] (196η) • Απογραφή 2000 103.065 • Πυκνότητα 556,4 κατ./km ² (21η)
A.E.Π. (PPP)	• Ολικό (2005) 2,258 δις. \$ ^[2]

107.394^[1] (196η)

English

pap.m.wikipedia.org

Forma di gobernacion

Democracia p
Monarkia cons

- Rei Willem-Alexan
- Gobernador Fredis Refunjo
- Prome Minister Mike Eman

Pais den Reino di Hulanda

Status aparte 1 januari di 19

Area

- Total 193 km² (n/a)

101.484 (2010)^[2]

110.663 (2014)^[3]

(614,8/km² (2014))

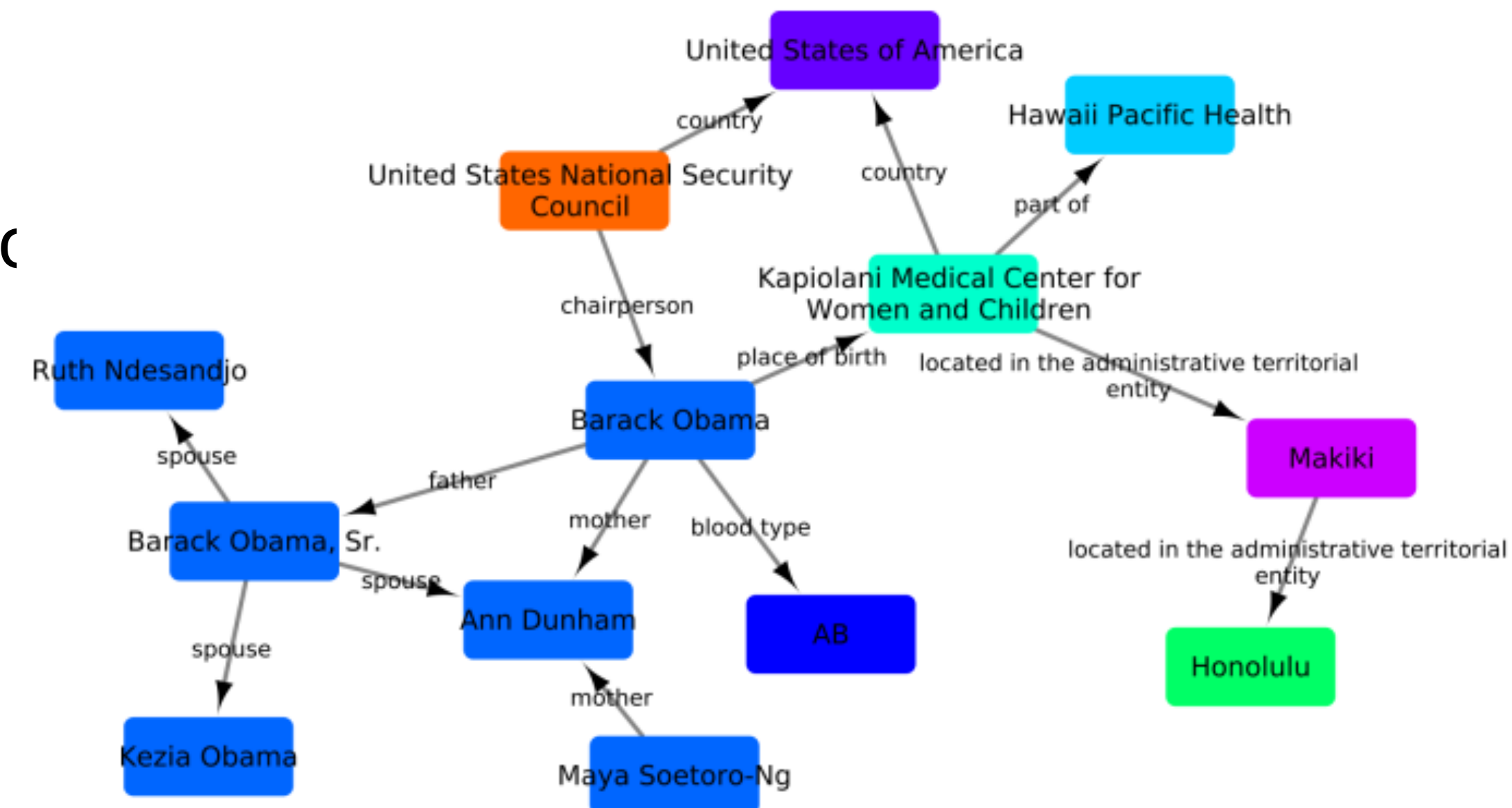
Wikidata is to data as Wikipedia is to text

Wikidata is a collaboratively edited knowledge base operated by the Wikimedia Foundation

- Completely free, even for commercial usage (CC0)
- Anybody can contribute
- Covers all domains of knowledge
- Extensive item history, talk pages, projects, users
- Integration with the semantic web
- High performance query engine (SPARQL)
- Stable! Long term support not dictated by funding cycle
- Actively developed
- Already has large number of active users, editors, contributors!



A giant graph of knowledge!





- Main page
- Contents
- Featured content
- Current events
- Random article
- Donate to Wikipedia
- Wikipedia store
- Interaction
- Help
- About Wikipedia
- Community portal
- Recent changes
- Contact page
- Tools
- What links here
- Related changes
- Upload file
- Special pages
- Permanent link
- Page information
- Wikidata item
- Cite this page
- Print/export
- Create a book
- Download as PDF
- Printable version

Article **Talk**

Andrawaag 21 99+ Talk Sandbox Preferences Beta Watchlist Contributions Log out
Read Edit View history More Search Wikipedia

Reelin

From Wikipedia, the free encyclopedia

Reelin (RELN)^[5] is a large secreted **extracellular matrix glycoprotein** that helps regulate processes of **neuronal migration** and positioning in the developing brain by controlling **cell-cell interactions**. Besides this important role in early **development**, reelin continues to work in the adult brain. It modulates **synaptic plasticity** by enhancing the induction and maintenance of **long-term potentiation**.^{[6][7]} It also stimulates dendrite^[8] and **dendritic spine**^[9] development and regulates the continuing migration of **neuroblasts** generated in **adult neurogenesis** sites like **subventricular** and **subgranular zones**. It is found not only in the **brain**, but also in the **spinal cord**, **blood**, and other body organs and tissues.^[citation needed]

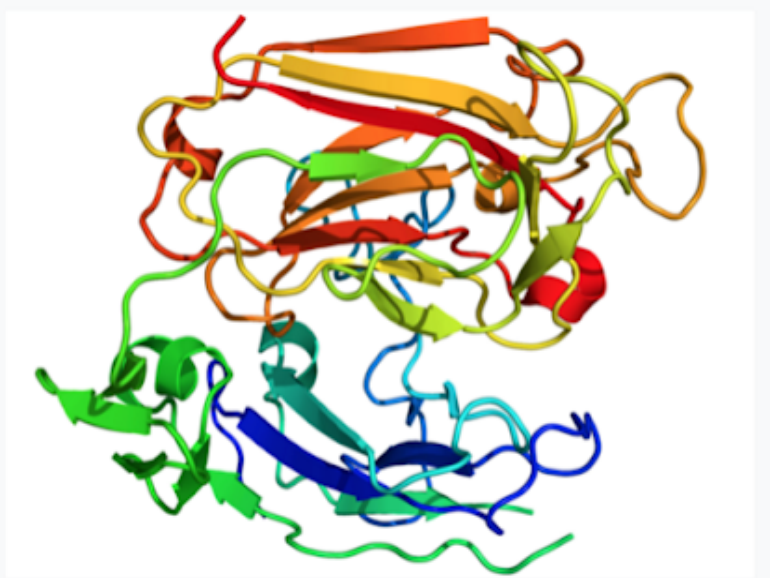
Reelin has been suggested to be implicated in pathogenesis of several brain diseases. The expression of the protein has been found to be significantly lower in **schizophrenia** and psychotic **bipolar disorder**,^[10] but the cause of this observation remains uncertain as studies show that **psychotropic medication itself affects reelin expression**. Moreover, epigenetic hypotheses aimed at explaining the changed levels of reelin expression^[11] are controversial.^{[12][13]} Total lack of reelin causes a form of **lissencephaly**. Reelin may also play a role in **Alzheimer's disease**, **temporal lobe epilepsy** and **autism**.^[citation needed]

Reelin's name comes from the abnormal reeling **gait** of **reeler** mice,^[14] which were later found to have a deficiency of this brain **protein** and were **homozygous** for mutation of the RELN gene. The primary phenotype associated with loss of reelin function is a failure of neuronal positioning throughout the developing **central nervous system** (CNS). The mice **heterozygous** for the reelin gene, while having little neuroanatomical defects, display the **endophenotypic** traits linked to psychotic disorders.^[15]

Contents [hide]

- 1 Discovery
- 2 Tissue distribution and secretion
- 3 Structure
- 4 Function
 - 4.1 During development
 - 4.2 In adults
- 5 Evolutionary significance
- 6 Mechanism of action

RELN



Available structures

PDB Ortholog search: [PDBe](#) [RCSB](#)

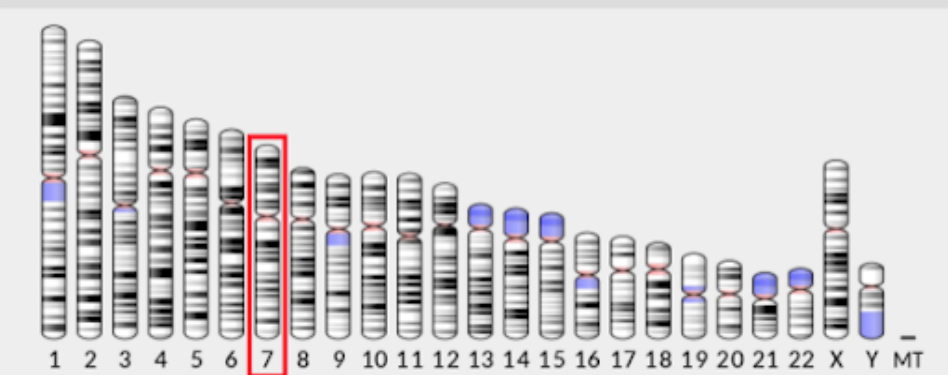
List of PDB id codes [show]

Identifiers

Aliases RELN, LIS2, PRO1598, RL, reelin, ETL7

External IDs OMIM: 600514 MGI: 103022 HomoloGene: 3699 GeneCards: RELN

Gene location (Human) [hide]



Chr. [Chromosome 7 \(human\)](#)^[1]



Item [Discussion](#)

Read [View history](#) [☆](#) [More](#)

Reelin (Q13561329)

mammalian protein found in Homo sapiens
RELN | reelin | uniprot:P78509

[edit](#)

[In more languages](#)

Statements

instance of	protein ▶ 1 reference	edit
		+ add value

subclass of	protein ▶ 1 reference	edit
	Reelin ▶ 1 reference	edit
		+ add value

image	2DDU.png	edit
		▶ 1 reference

- Main page
- Community portal
- Project chat
- Create a new item
- Recent changes
- Random item
- Query Service
- Nearby
- Help
- Donate
- Tools
- What links here
- Related changes
- Special pages
- Permanent link
- Page information
- Concept URI
- Cite this page
- Import interwiki

Retinoic acid receptor alpha (Q254943)

mammalian protein found in Homo sapiens

Nuclear receptor subfamily 1 group B member 1 | RARA

Statements

retinoic acid binding (Q14901431)

Interacting selectively and non-covalently with retinoic acid, 3,7
GO:0001972

Statements

subclass of retinoid binding

1 reference

IDA (Q23174122)

Gene Ontology evidence code
Inferred from Direct Assay

Statements

instance of Gene Ontology Evidence code

manual assertion

molecular function (P680)

represents gene ontology function annotations

Wikipedia (7 entries) [edit](#)

- ar مستقبل حمض الريتينويك ألفا
- en Retinoic acid receptor alpha
- es Receptor de ácido retinoico alfa
- sh Receptor retinoinske kiseline alfa
- sr Receptor retinoinske kiseline alfa
- uk RARA
- zh 视黄酸受体α

retinoic acid binding

IDA

determination method

1 reference

retrieved 3 January 2017

stated in **A human retinoic acid receptor which belongs to the family of nuclear receptors**

UniProt-GOA

curator **British Heart Foundation**

reference URL <http://www.ebi.ac.uk/QuickGO/GAnnotation?protein=P10276>

determination method IDA

+ add reference

A human retinoic acid receptor which belongs to the family of nuclear receptors (Q24339631)

Statements

instance of scientific article

Identifiers

PubMed ID 2825025

British Heart Foundation (Q4970039)

Statements

instance of organization

official website <http://www.bhf.org.uk/>

Identifiers

GRID ID grid.452924.c

transcription corepressor activity

determination method IDA

1 reference

[edit](#)



Revision history of "Retinoic acid receptor alpha" (Q254943)

[View logs for this item](#)

Search for revisions

From year (and earlier):

From month (and earlier):

Tag filter:

Diff selection: Mark the radio boxes of the revisions to compare and hit enter or the button at the bottom.

Legend: **(cur)** = difference with latest revision, **(prev)** = difference with preceding revision, **m** = minor edit.

Select: [All](#), [None](#), [Invert](#)

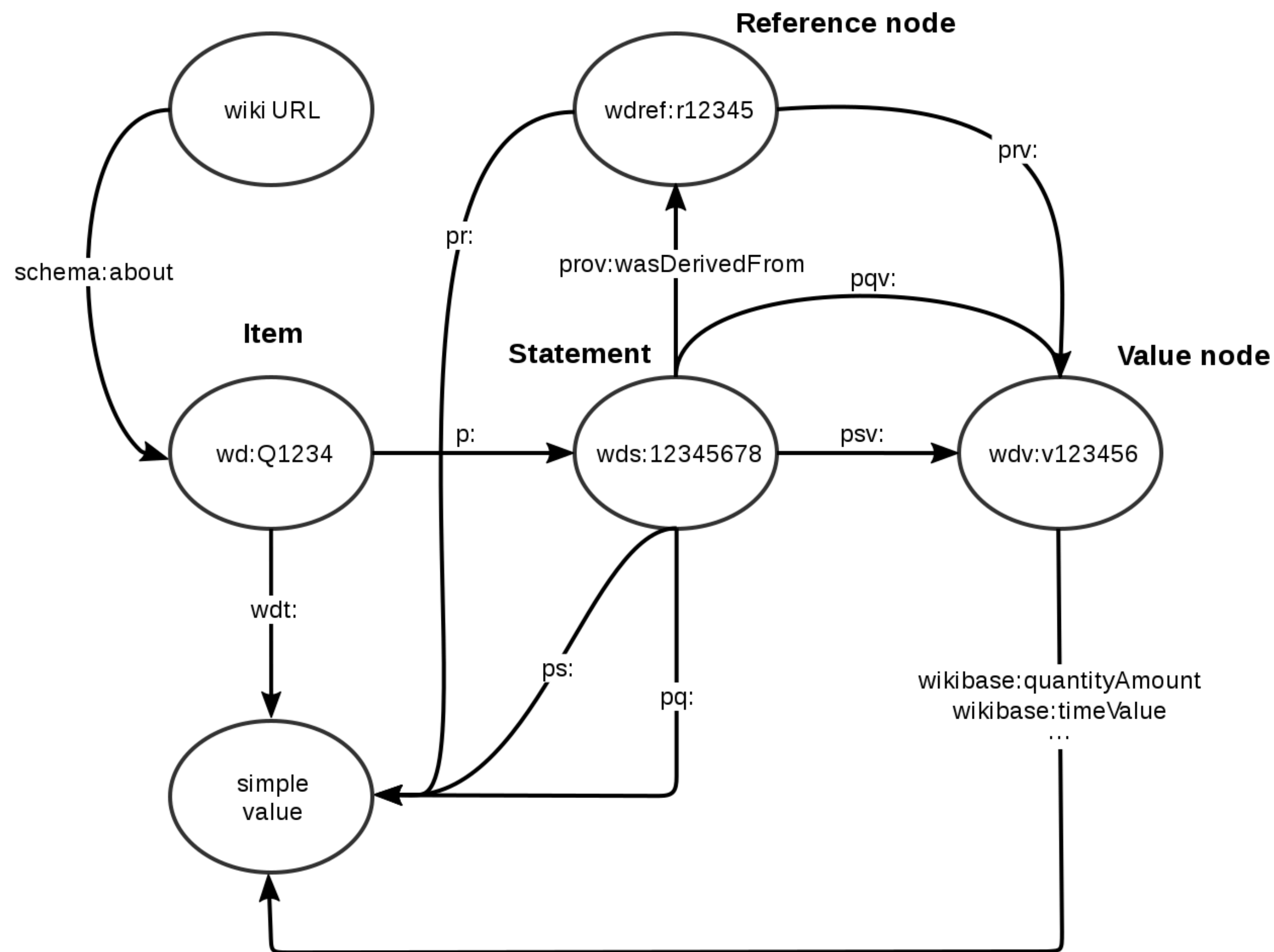
- [\(cur | prev\)](#) 20:13, 21 March 2017 ProteinBoxBot (talk | contribs) . . (454,236 bytes) (-440) . . *(Updated item: replace thumbnail gene atlas image with fs)* (undo)
- [\(cur | prev\)](#) 08:00, 28 January 2017 Edoderoobot (talk | contribs) . . (454,676 bytes) (+67) . . *(Updated item: #proteine)* (undo) (restore)
- [\(cur | prev\)](#) 12:06, 4 January 2017 ProteinBoxBot (talk | contribs) . . (454,609 bytes) (+165,607) . . *(Updated item: update GO terms)* (undo) (restore)
- [\(cur | prev\)](#) 03:57, 3 January 2017 ProteinBoxBot (talk | contribs) . . (289,002 bytes) (+1,584) . . *(Updated item)* (undo) (restore)
- [\(cur | prev\)](#) 09:07, 17 September 2016 Okkn (talk | contribs) . . (287,418 bytes) (-2) . . *(Changed claim: subclass of (P279): Retinoic acid receptor (Q2838685))* (undo | thank) (restore)
- [\(cur | prev\)](#) 15:18, 16 September 2016 ProteinBoxBot (talk | contribs) . . (287,420 bytes) (-292) . . *(Updated item)* (undo) (restore)
- [\(cur | prev\)](#) 12:03, 17 August 2016 ProteinBoxBot (talk | contribs) . . (287,712 bytes) (0) . . *(Updated item)* (undo) (restore)
- [\(cur | prev\)](#) 04:50, 9 August 2016 ProteinBoxBot (talk | contribs) . . (287,712 bytes) (+11,503) . . *(Updated item)* (undo) (restore)

Wikidata prefixes

- Qxx -> Items (e.g. biocuration 2023 ([Q111430238](#)))
- Lxx -> Lexemes (e.g. curation([L46106](#)))
- Pxx -> Properties (e.g. instance of ([P31](#)))
- Exx -> EntitySchemas (e.g. obo ontology in wikidata ([E368](#)))

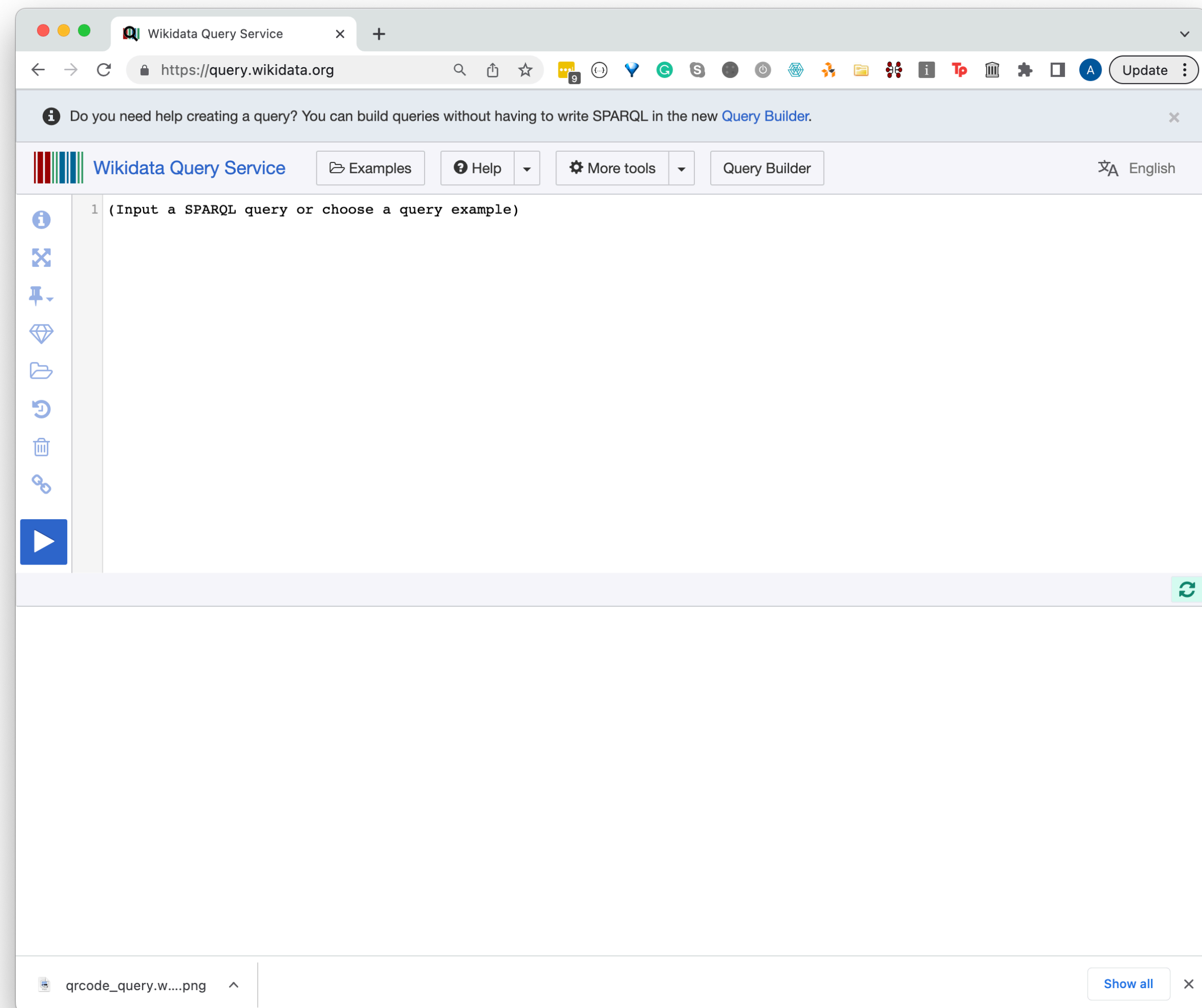
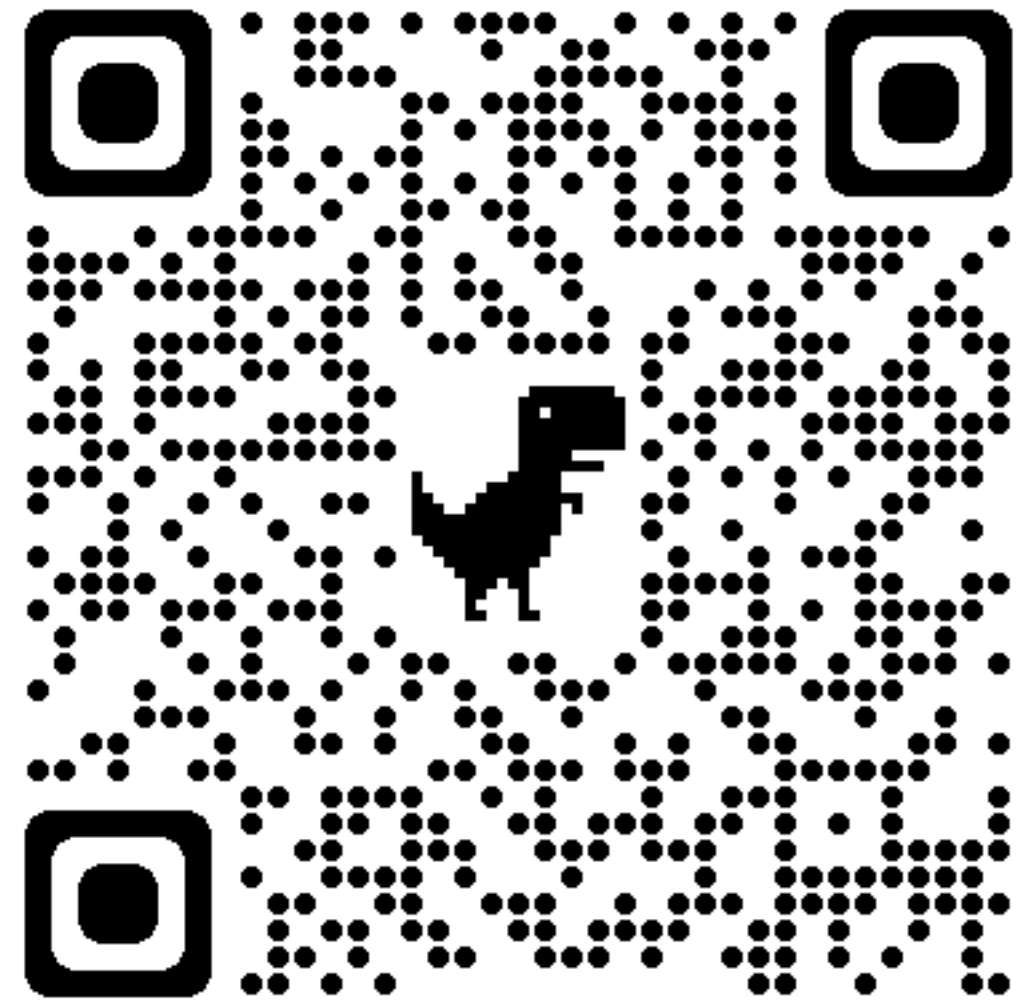
Wikidata and RDF

- Wikidata model



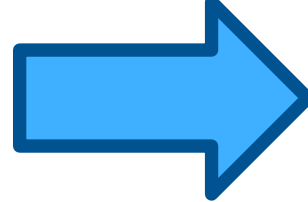
Wikidata Query Service (WDQS)

<https://query.wikidata.org/>



Simple data retrieval

“Retrieve genes with GWAS association with asthma”



39 genes

gene	geneLabel		gene	geneLabel		gene	geneLabel		gene	geneLabel
Q5013317	COL22A1		Q18027370	IGSF3		Q18053559	CDHR3		Q14903974	SMAD3
Q14912759	SLC22A5		Q18045382	HPSE2		Q18045669	ATG3		Q18033889	IL1RL1
Q14914243	PSAP		Q18048437	IL33		Q18035037	RAD50		Q17917202	ERBB4
Q14907990	SLC30A8		Q18051900	PYHIN1		Q18036984	FBXL7		Q18027836	IL6R
Q18025002	GAB1		Q17709208	ACO1		Q18033919	XPR1		Q18030185	NOTCH4
Q18035589	C6orf10		Q18027822	IL2RB		Q15326496	RORA		Q18030409	PDE4D
Q18054256	GSDMA		Q18030364	PBX2		Q18042132	GSDMB		Q18045645	IKZF4
Q18058487	C5orf56		Q18037773	ABI3BP		Q18029145	MKLN1		Q18039979	KLHL5
Q18030785	PRKG1		Q18039623	CTNNA3		Q18036729	RAP1GAP2		Q18026947	HLA-DQA1
Q18033424	IL18R1		Q18046350	ZNF665		Q14878303	IL13			

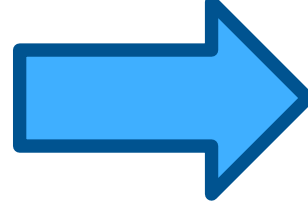
```

1 SELECT DISTINCT ?gene ?geneLabel where {
2   ?gene wdt:P2293 wd:Q35869 . # gene has genetic association to "asthma"
3   ?gene wdt:P31 wd:Q7187 . # gene is subclass of "gene"
4   SERVICE wikibase:label { bd:serviceParam wikibase:language "en". }
5 }

```


Data integration

“Retrieve genes with GWAS association with asthma and gene product is localized to membrane”



22 genes

gene	geneLabel	gene	geneLabel	gene	geneLabel	gene	geneLabel
Q14912759	SLC22A5	Q18027370	IGSF3	Q18035037	RAD50	Q18027836	IL6R
Q14914243	PSAP	Q18033424	IL18R1	Q18033919	XPR1	Q18030409	PDE4D
Q14907990	SLC30A8	Q18045382	HPSE2	Q18042132	GSDMB	Q18030185	NOTCH4
Q18035589	C6orf10	Q18027822	IL2RB	Q18036729	RAP1GAP2	Q18026947	HLA-DQA1
Q1805425		Q1805355		Q1803388			

```

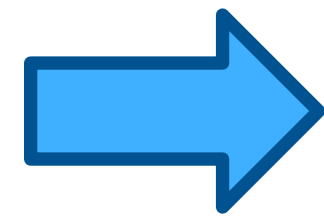
1 SELECT DISTINCT ?gene ?geneLabel where {
2   ?gene wdt:P2293 wd:Q35869 . # gene has genetic association to "asthma"
3
4   ?gene wdt:P31 wd:Q7187 . # gene is subclass of "gene"
5
6   ?gene wdt:P688 ?protein . # gene encodes a protein
7   ?protein wdt:P681 ?cc . # protein has a cellular component
8   ?cc wdt:P279*|wdt:P361* wd:Q14349455 . # cell component is 'part of' or 'subclass of' membrane
9
10 SERVICE wikibase:label { bd:serviceParam wikibase:language "en". }
11 }

```

Computing on provenance

15 genes

“Retrieve genes with GWAS association with asthma and gene product is localized to membrane (non-IEA)”



gene	geneLabel		gene	geneLabel		gene	geneLabel
Q14912759	SLC22A5		Q18045382	HPSE2		Q17917202	ERBB4
Q14914243	PSAP		Q18027822	IL2RB		Q18027836	IL6R
Q14907990	SLC30A8		Q14903974	SMAD3		Q18030409	PDE4D
Q18027370	IGSF3		Q18035037	RAD50		Q18030185	NOTCH4
Q18033424	IL18R1		Q18036729	RAP1GAP2		Q18026947	HLA-DQA1

```

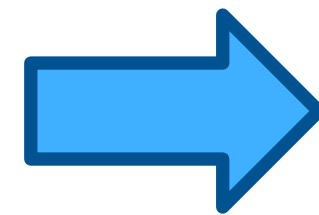
5
6   ?gene wdt:P31 wd:Q7187 ;      # gene is subclass of "gene"
7     wdt:P688 ?protein ;      # gene encodes a protein
8     rdfs:label ?geneLabel .
9   FILTER (lang(?geneLabel) = "en")
10  ?protein p:P681 ?s .        # protein's cell component statement
11    ?s ps:P681 ?cp .         # get statement value
12    FILTER NOT EXISTS {?s pq:P459 wd:Q23190881 .} # determination method is not IEA
13    ?cp wdt:P279*|wdt:P361* wd:Q14349455 . # statement value is 'part of' or 'subclass of' membrane
14

```


Leveraging the Disease Ontology structure

31 genes / 8 diseases

“Retrieve genes with GWAS association with any respiratory disease and gene product is localized to membrane (non-IEA)”



diseaseGALabel	gene_counts	geneList
asthma	15	SMAD3, RAP1GAP2, IL18R1, HPSE2, SLC30A8, SLC22A5, PSAP, ERBB4, HLA-DQA1, IGSF3, IL2RB, IL6R, NOTCH4, PDE4D, RAD50
chronic obstructive pulmonary disease	5	HLA-C, SFTPD, ANXA5, ANXA11, ATP2C2
lung cancer	3	TGM5, VTI1A, PHACTR2
interstitial lung disease	2	DSP, ATP11A
non-small-cell lung carcinoma	2	NALCN, DLST
nasopharynx carcinoma	2	ITGA9, TNFRSF19
adenocarcinoma of the lung	1	BTNL2
pulmonary emphysema	1	BICD1

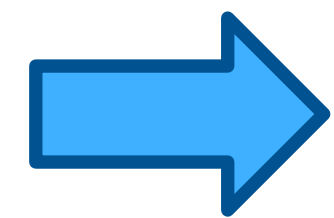
```

1 SELECT ?diseaseGALabel (count (DISTINCT ?gene
2 (group_concat(DISTINCT ?geneLabel; separator
3 ?gene wdt:P2293 ?diseaseGA . # gene has genetic association
4 ?diseaseGA wdt:P279* wd:Q3286546 . # to a type of respiratory system disease
5
6 ?gene wdt:P31 wd:Q7187 ; wdt:P688 ?protein ; # gene is subclass of "gene" and encodes protein
7 rdfs:label ?geneLabel .
8 FILTER (lang(?geneLabel) = "en")
9 ?protein p:P681 ?s . # protein's cell component statement
10 ?s ps:P681 ?cp . # get statement value
11 FILTER NOT EXISTS (

```

Opportunistic integration

“Retrieve genes with GWAS association with any respiratory disease and gene product is localized to membrane (non-IEA) **and show causative chemical hazards**”



4 diseases / 6 chemical hazards

diseaseGALabel	exposureLabel
lung cancer	arsenic pentoxide exposure
lung cancer	HN1 exposure
lung cancer	mechlorethamine exposure
lung cancer	HN3 exposure
asthma	Phenacyl chloride exposure
pulmonary emphysema	phosgene exposure

```

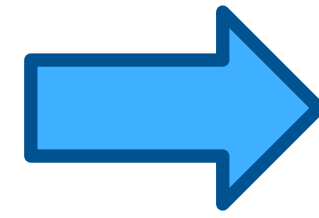
11 :cp wdt:P279 |wdt:P501 wd:Q14549455 . # statement value is part of or s
12
13 ?exposure wdt:P1542 ?diseaseGA . # something causes disease
14 ?exposure wdt:P279 wd:Q21167512 . # and that something is a chemical hazard
15
16 SERVICE wikibase:label { bd:serviceParam wikibase:language "en". }
17 }

```


... and show associated pathways

16 genes / 59 pathways

“Retrieve genes with GWAS association with any respiratory disease and gene product is localized to membrane (non-IEA), show causative chemical hazards and **show pathways where they have a role.**”



gene	pathway
SMAD3	Androgen receptor signaling pathway
SMAD3	TGF-beta Receptor Signaling
SMAD3	mechlorethamine exposure
HLA-C	Allograft Rejection
SFTPD	Regulation of toll-like receptor signaling pathway
....

```

11 :cp wdt:P279 |wdt:P501 wd:Q14549455 . # statement value is part of or s
12
13 ?pathway wdt:P31 wd:Q4915012 ; # instance of a biological pathway
14 wdt:P527 ?gene .
15
16 SERVICE wikibase:label { bd:serviceParam wikibase:language "en". }
17 }

```


PREFIX wp: <http://vocabularies.wikipathways.org/wp#>

PREFIX dcterms: <http://purl.org/dc/terms/>

PREFIX dc: <http://purl.org/dc/elements/1.1/>

SELECT DISTINCT ?metabolite1Label ?metabolite2Label ?mass1 ?mass2 WITH {

```
SELECT ?metabolite1 ?metabolite2 WHERE {  
  ?pathwayItem wdt:P2410 "WP706";  
  wdt:P2888 ?pwIri.
```

Wikidata

```
SERVICE <http://sparql.wikipathways.org/> {  
  ?pathway dc:identifier ?pwIri.  
  ?interaction rdf:type wp:Interaction;  
    wp:participants ?wpmb1, ?wpmb2;  
    dcterms:isPartOf ?pathway.  
  
  FILTER (?wpmb1 != ?wpmb2)  
  ?wpmb1 wp:bdbWikidata ?metabolite1.  
  ?wpmb2 wp:bdbWikidata ?metabolite2.  
}
```

Wikipathways

} AS %metabolites WHERE {

```
INCLUDE %metabolites.
```

```
?metabolite1 wdt:P2067 ?mass1.
```

```
?metabolite2 wdt:P2067 ?mass2.
```

```
SERVICE wikibase:label { bd:serviceParam wikibase:language "[AUTO_LANGUAGE],en". }
```

Wikidata

[Try me....](#)

From a remote SPARQL endpoint to Wikidata



Your query

Add common prefixes

```
20 SELECT DISTINCT ?wd_item ?physically_interacts_with ?interactswithLabel ?type ?iri ?uniprot ?text WHERE {
21   {SELECT * WHERE { ?iri a up:Protein ;
22     up:organism taxon:9606 ;
23     up:annotation ?annotation .
24     ?annotation a up:Natural_Variant_Annotation ;
25     rdfs:comment ?text .
26     FILTER (CONTAINS(?text, 'loss of function'))
27   }}
28   SERVICE <https://query.wikidata.org/bigdata/namespace/wdq/sparql> {
29     VALUES ?use {wd:Q427492}
30     ?wd_item wdt:P352 ?uniprot ;
31     wdt:P129 ?physically_interacts_with ;
32     wdt:P2888 ?iri ;
33     wdt:P703 wd:Q15978631 .
34     ?wd_item p:P129 ?phys_interacts_with_node .
35     ?phys_interacts_with_node ps:P129 ?physically_interacts_with ;
36     pq:P366 ?use .
37     ?physically_interacts_with wdt:P31 ?type ;
38     rdfs:label ?interactswithLabel .
39     FILTER (lang(?interactswithLabel) = "en")
40   }}
```

UniProt

Wikidata

Submit Query Cancel

The Wikimedia infrastructure

Infrastructure

Resource

Content

Where?



Data

<https://www.wikidata.org>
<https://www.wikibase.org>



Text

<https://<lang>.wikipedia.org>
<https://releases.wikimedia.org/mediawiki/>



Schema

<https://shex.io>

Entity schemas and Shape Expressions On Wikidata

RDF and knowledge graphs, the good parts

Data integration

- Merging RDF graphs automatically

- RDF as a basis for knowledge representation

Flexibility

- Data that can be adapted to multiple environments

- Reusable data by default

Tools

- Data stores and SPARQL endpoints

- Multiple serializations: Turtle, JSON-LD, RDF/XML,...

- Embeddable in HTML (Microdata/RDFa)



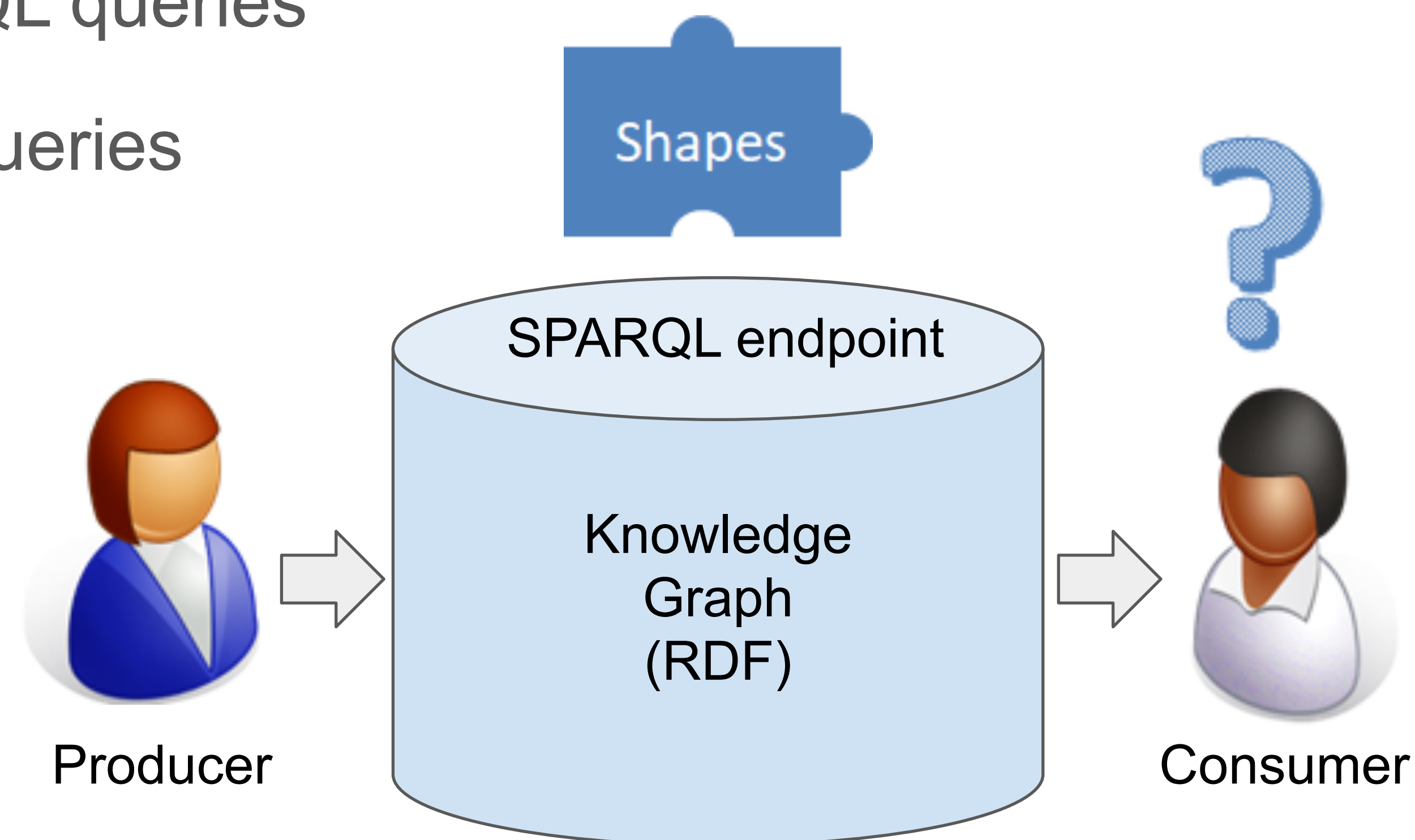
RDF and knowledge graphs, other parts...

Consuming & producing data from RDF

SPARQL endpoints are usually not well documented

Typical documentation = set of SPARQL queries

Difficult to know where to start doing queries



Why Shape Expressions?

For producers

Understand the contents they will produce

Ensure contents have the expected structure

Advertise and document the structure

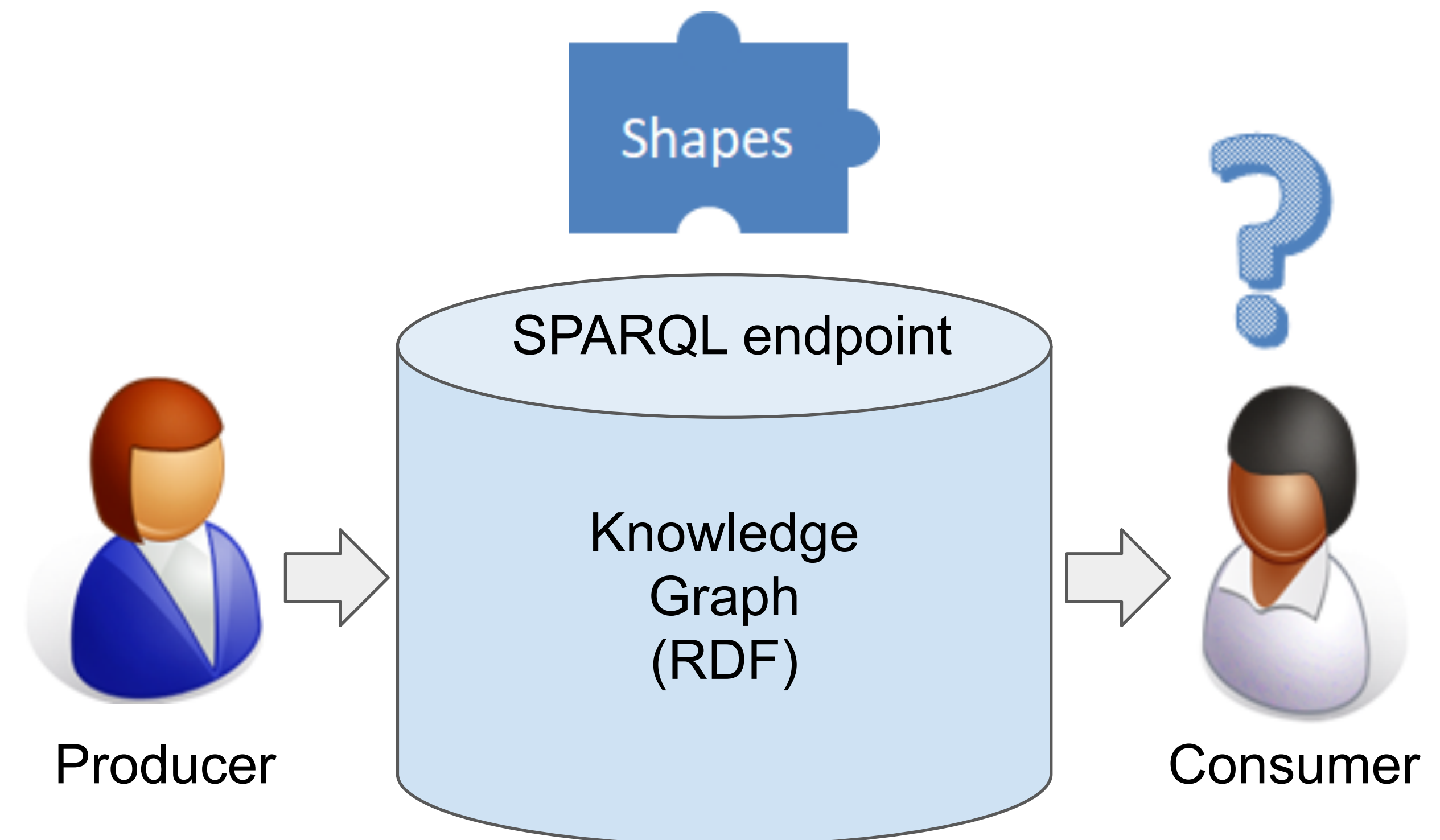
Generate user interfaces

For consumers

Understand content's structure

Validate before processing

Query generation & optimization



Shape Expressions

Language to describe and validate RDF data

Human readable

Intended audience: domain experts

Syntax inspired by Turtle and SPARQL

Machine processable

[Formal semantics](#)

Several syntaxes (Compact, RDF, JSON-LD)

Open source implementations:

[Javascript](#), [Scala](#), [Java](#), [Python](#), ...

Online demos: [RDFShape](#), [ShEx-simple](#)



ShEx
schema

```
prefix schema: <http://schema.org/>
prefix xsd:    <http://www.w3.org/2001/XMLSchema#>
prefix :      <http://example.org/>

:User IRI {
  schema:name xsd:string ;
  schema:knows @:User *
}
```


Shape Expressions example



RDF data

```
prefix schema: <http://schema.org/>
prefix xsd:    <http://www.w3.org/2001/XMLSchema#>
prefix :      <http://example.org/>

:alice schema:name "Alice" ;
        schema:knows :alice, : bob .
:bob   schema:name "Robert" .
```

ShEx
schema

```
prefix schema: <http://schema.org/>
prefix xsd:    <http://www.w3.org/2001/XMLSchema#>
prefix :      <http://example.org/>

:User IRI {
  schema:name xsd:string ;
  schema:knows @:User *
}
```

Input
shape map

```
:alice@:User
```

Validator

```
:alice@:User, :bob@:User
```

Result
shape map

More info about Shape Expressions













METHODOLOGY ARTICLE

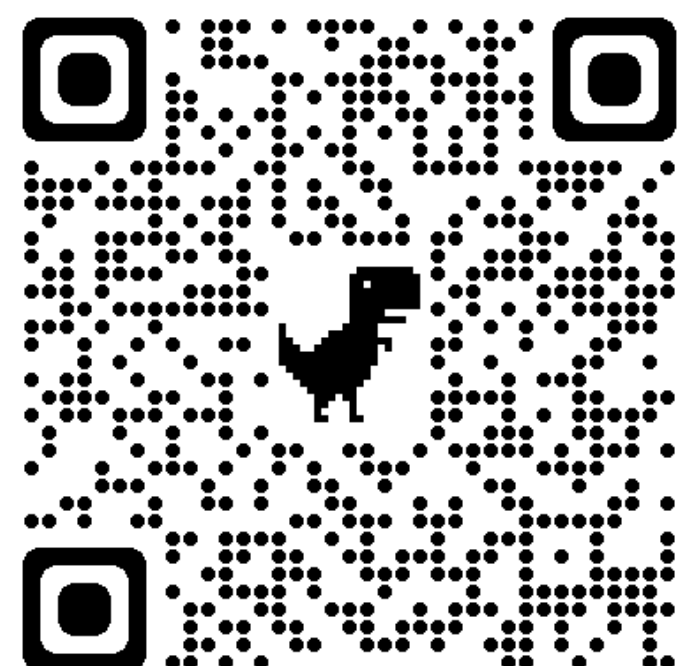
Open Access

A protocol for adding knowledge to Wikidata: aligning resources on human coronaviruses



Andra Waagmeester¹ , Egon L. Willighagen² , Andrew I. Su³ , Martina Kutmon^{2,4} , Jose Emilio Labra Gayo⁵ , Daniel Fernández-Álvarez⁵ , Quentin Groom⁶ , Peter J. Schaap⁷ , Lisa M. Verhagen⁸  and Jasper J. Koehorst^{7*} 

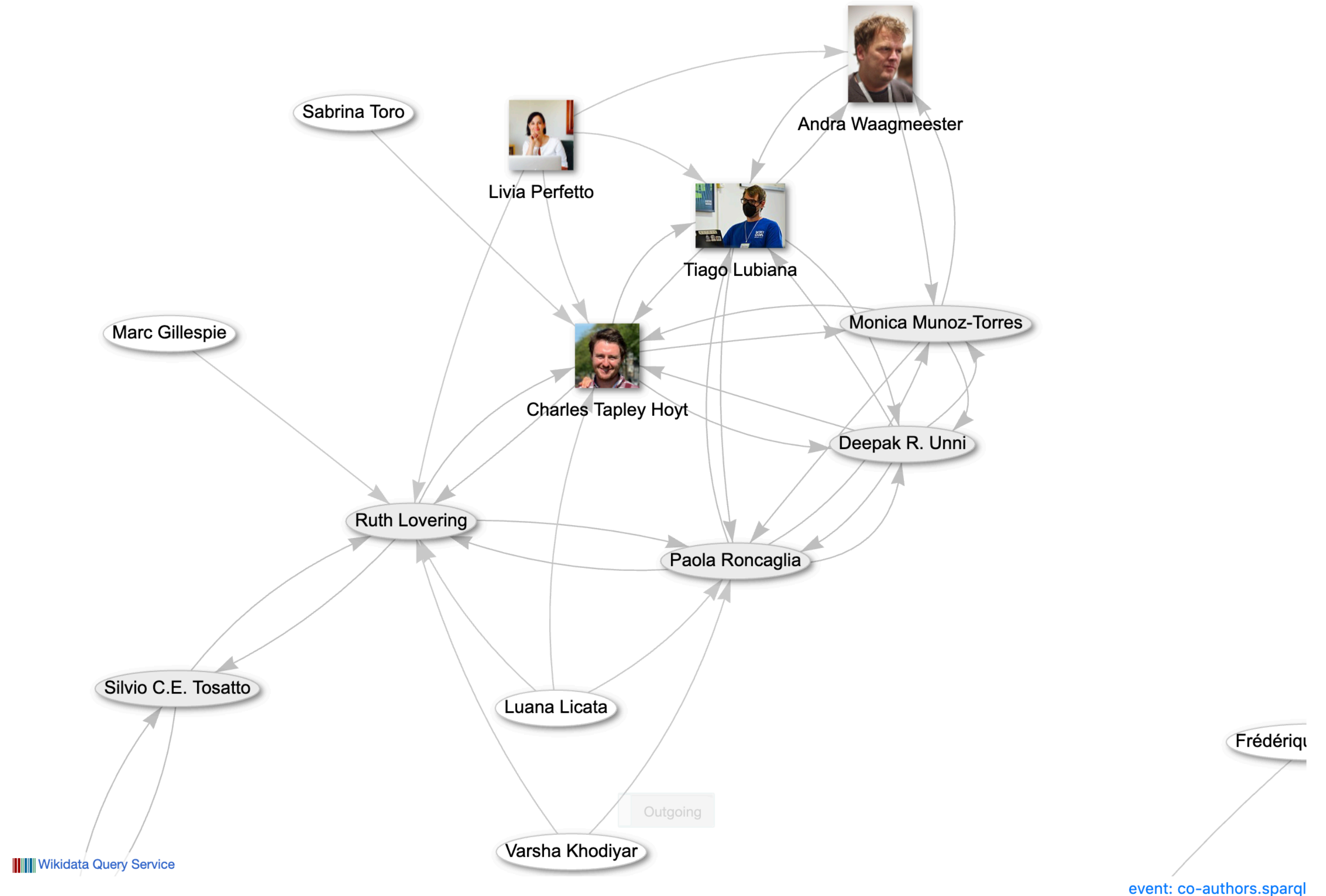
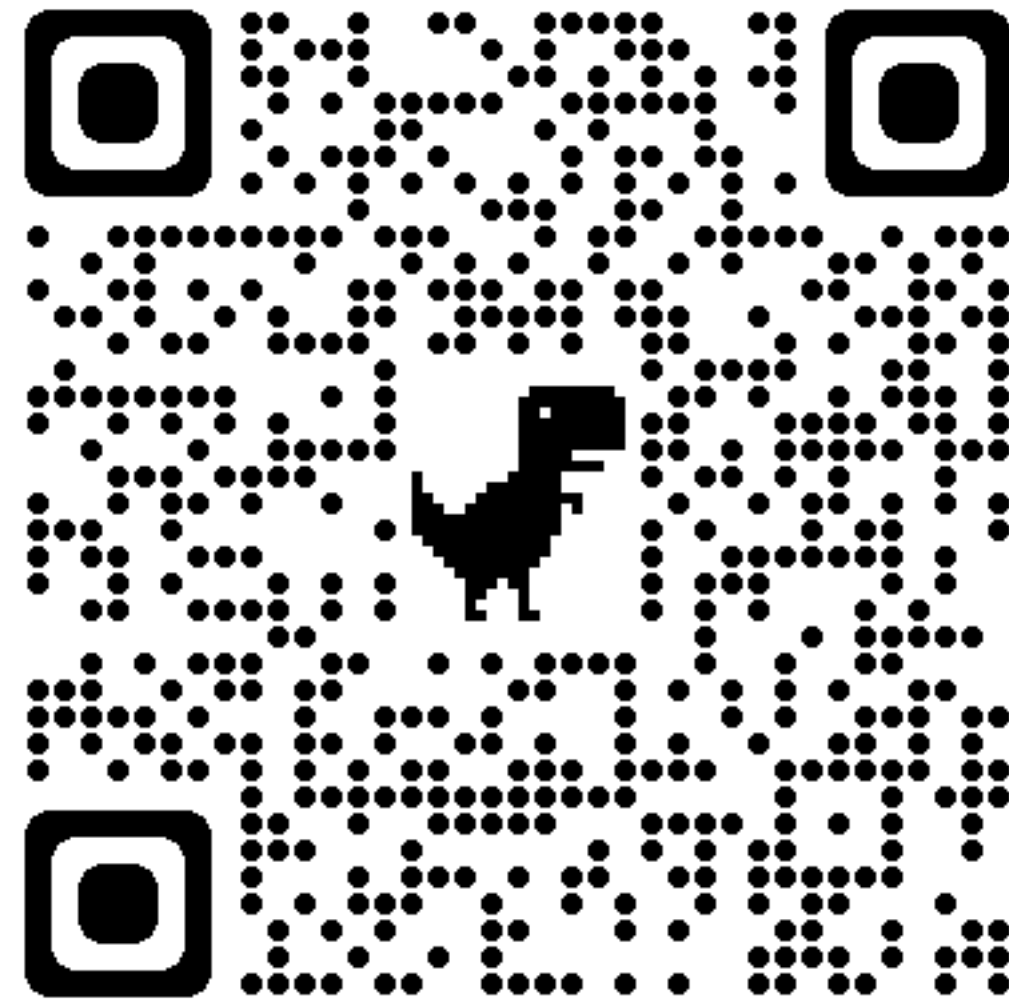
<https://doi.org/10.1186/s12915-020-00940-y>



Images (P18) On Wikidata

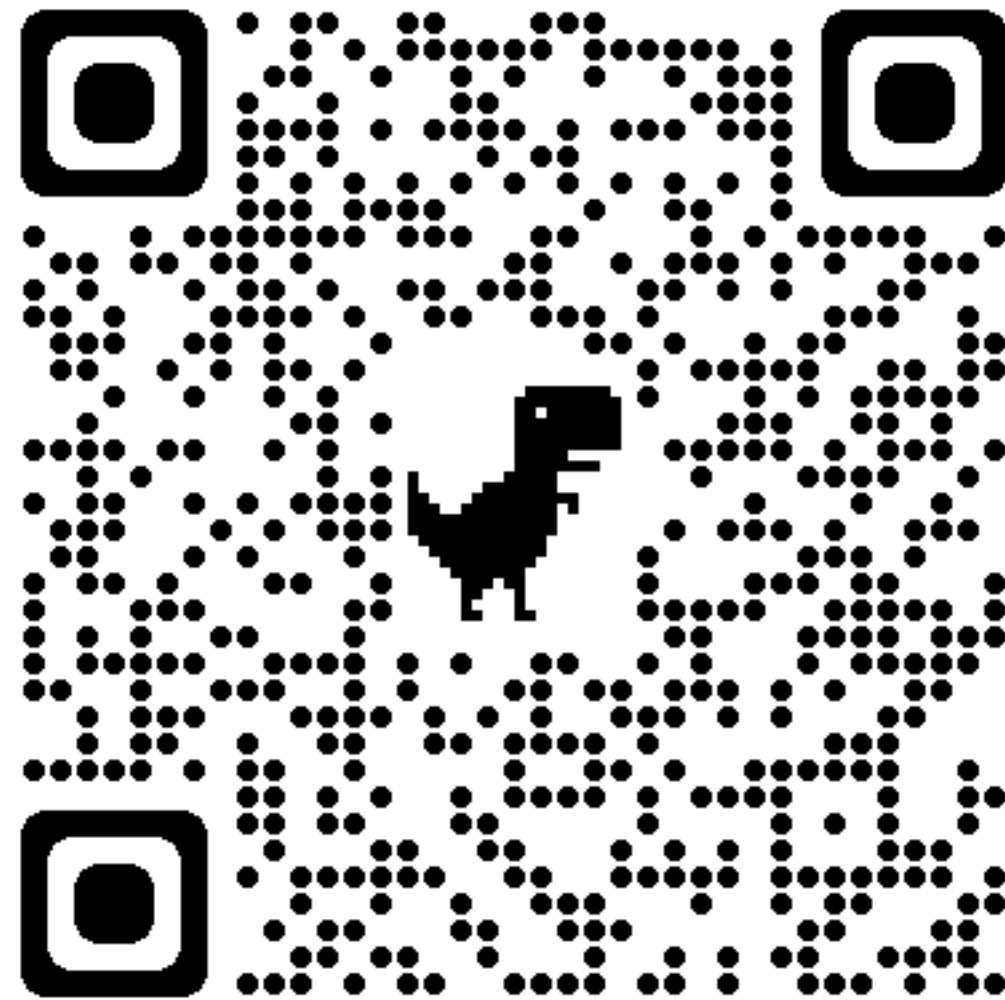
Biocuration 2023 (Scholia)

<https://scholia.toolforge.org/event/Q111430238>



Tiago Lubiana

<https://www.wikidata.org/wiki/Q90076935>



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Tiago Lubiana (Q90076935)

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researcher

[edit](#)


Tiago Lubiana Alves

[► Recoin: Most relevant properties which are absent](#)

[► In more languages](#)

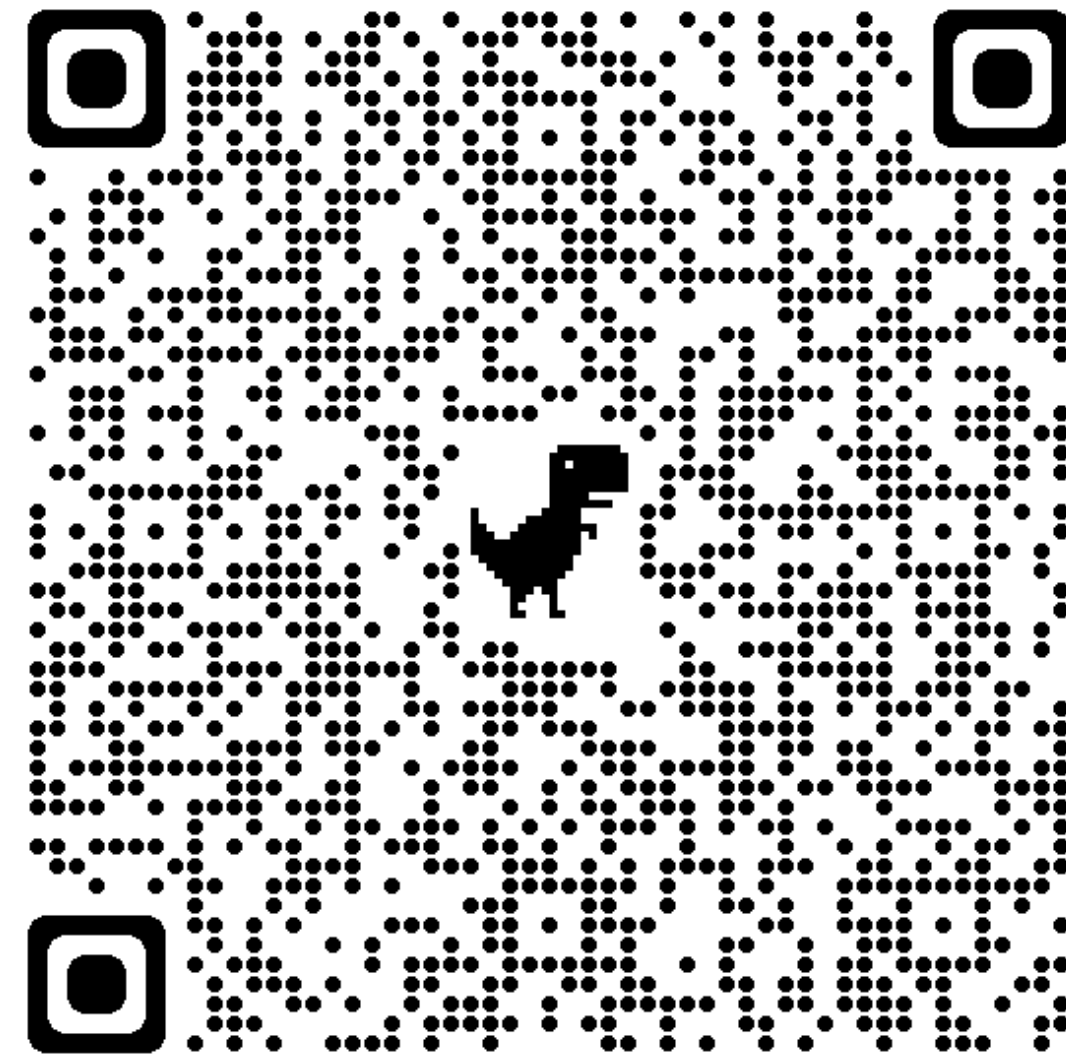
Statements

instance of [human](#) [edit](#)
by [LargeDatasetBot](#) and [TiagoLubiana](#) [► 1 reference](#)
[+ add value](#)

image [edit](#)
by [TiagoLubiana](#)
A photograph of Tiago Lubiana at a conference. He is wearing a blue t-shirt with 'WIKI CON BRASIL 2022' on it, glasses, and a black face mask. He is looking at a laptop screen.
[WikiCon Brasil 2022 - Ferramentas de contribuição em massa no Wikidata e Commons - Tiago Lubiana \(02\) \(cropped\).jpg](#)
3,868 × 2,790; 2.42 MB
[► 0 references](#)
[+ add reference](#)

Tiago Lubiana

[https://commons.wikimedia.org/wiki/File:WikiCon Brasil 2022 - Ferramentas de contribui%C3%A7%C3%A3o em massa no Wikidata](https://commons.wikimedia.org/wiki/File:WikiCon_Brasil_2022_-_Ferramentas_de_contribui%C3%A7%C3%A3o_em_massa_no_Wikidata)



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File Discussion View Edit History More Search Wikimedia Commons

File:WikiCon Brasil 2022 - Ferramentas de contribuição em massa no Wikidata e Commons - Tia Lubiana (02) (cropped).jpg

From Wikimedia Commons, the free media repository

Download Use this file Use this file Email a link Information



Task 2: Add an image of yourself to render in the scholia coparticipant network

- Upload image to commons
- Add the link to the uploaded photo to the relevant Wikidata item

Licenses

Wikidata license

“All structured data from the main, Property, Lexeme, and EntitySchema namespaces is available under the Creative Commons CC0 License; text in the other namespaces is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy.”



License stacking

<https://mozillascience.github.io/open-data-primers/5.3-license-stacking.html>

“The general rule, when combining or reusing data, is that derivative work must be licensed under the most restrictive license of all the contributing data sets.”



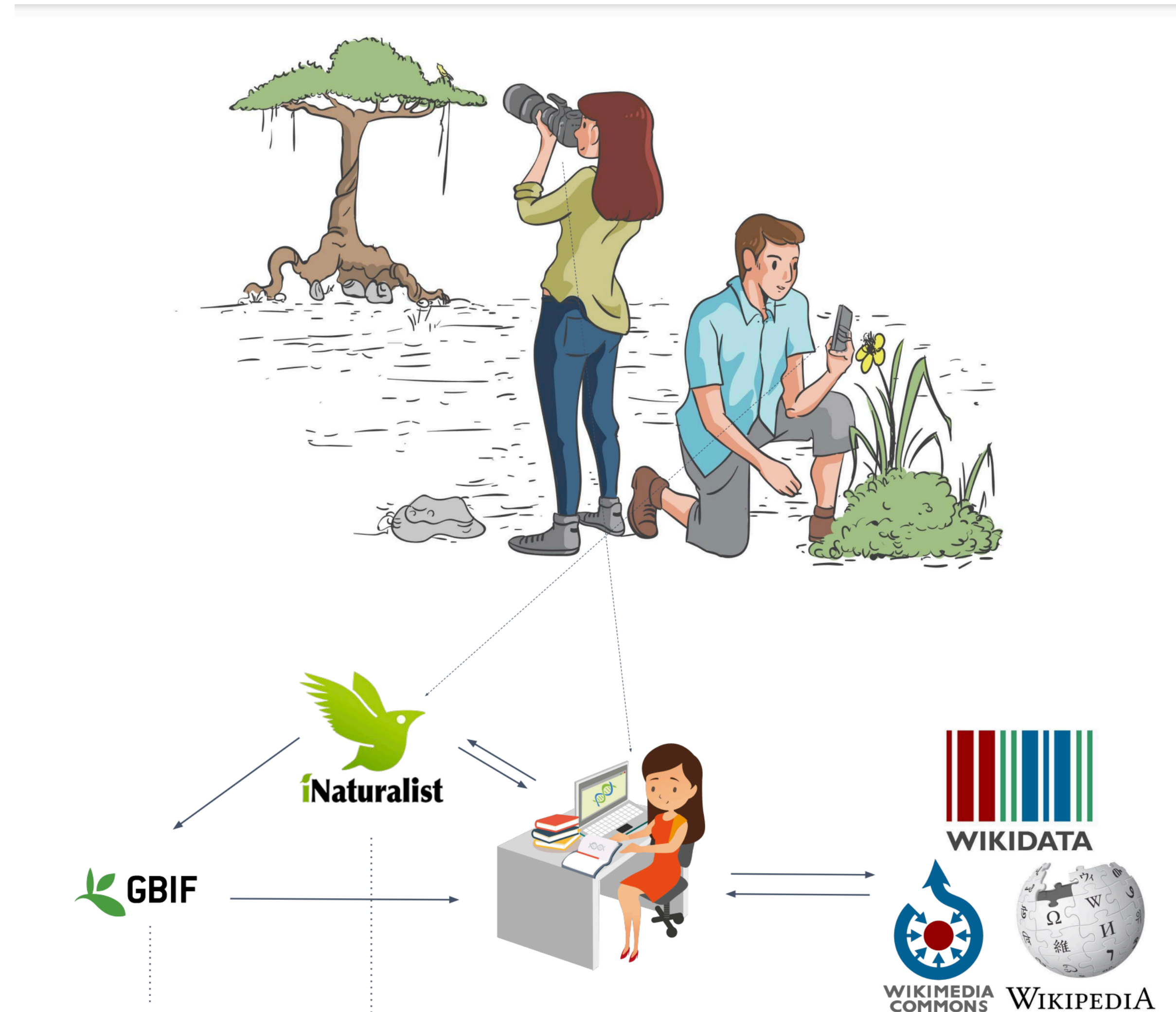
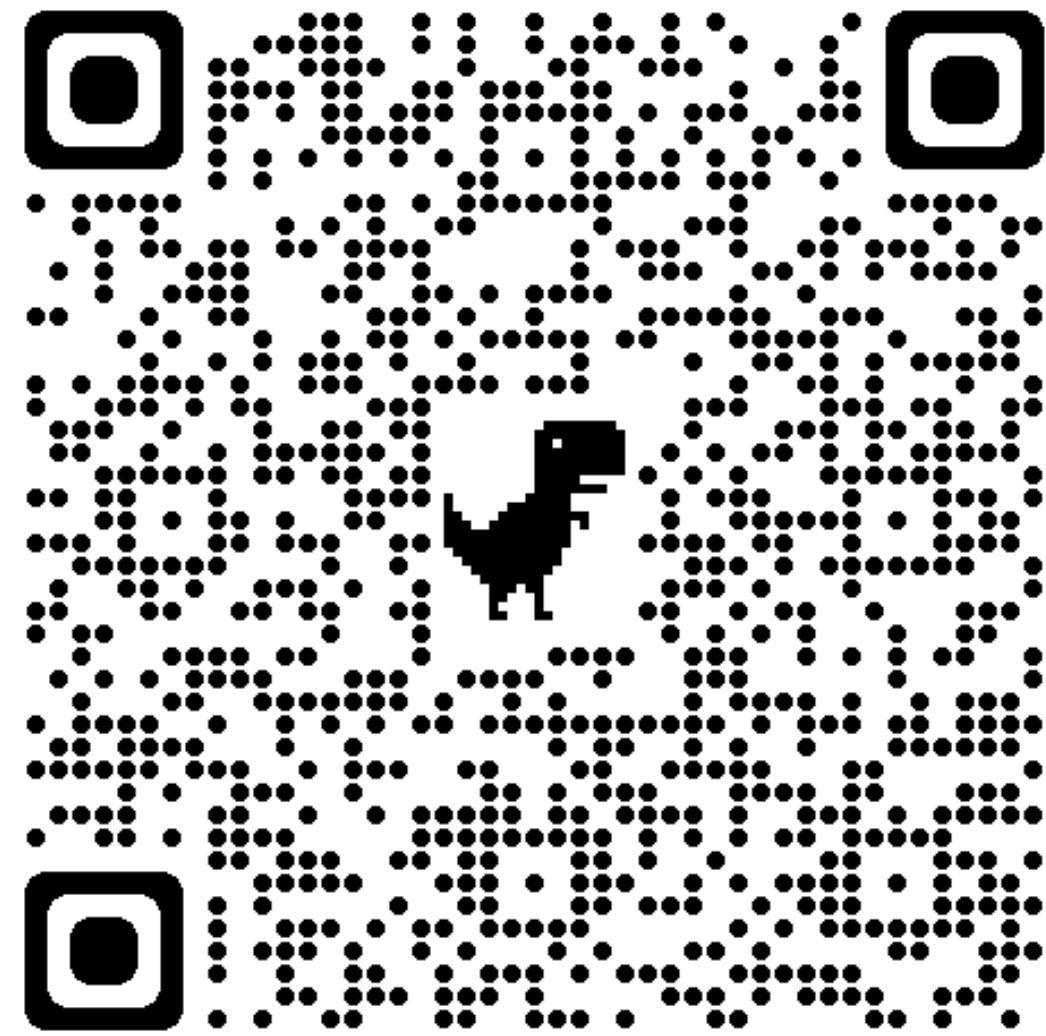
Task 3: Observe, curate and reuse through iNaturalist and Wikimedia

- Install the iNaturalist app
- Go outside and make

Reuse of iNaturalist on the Wikimedia ecosystem

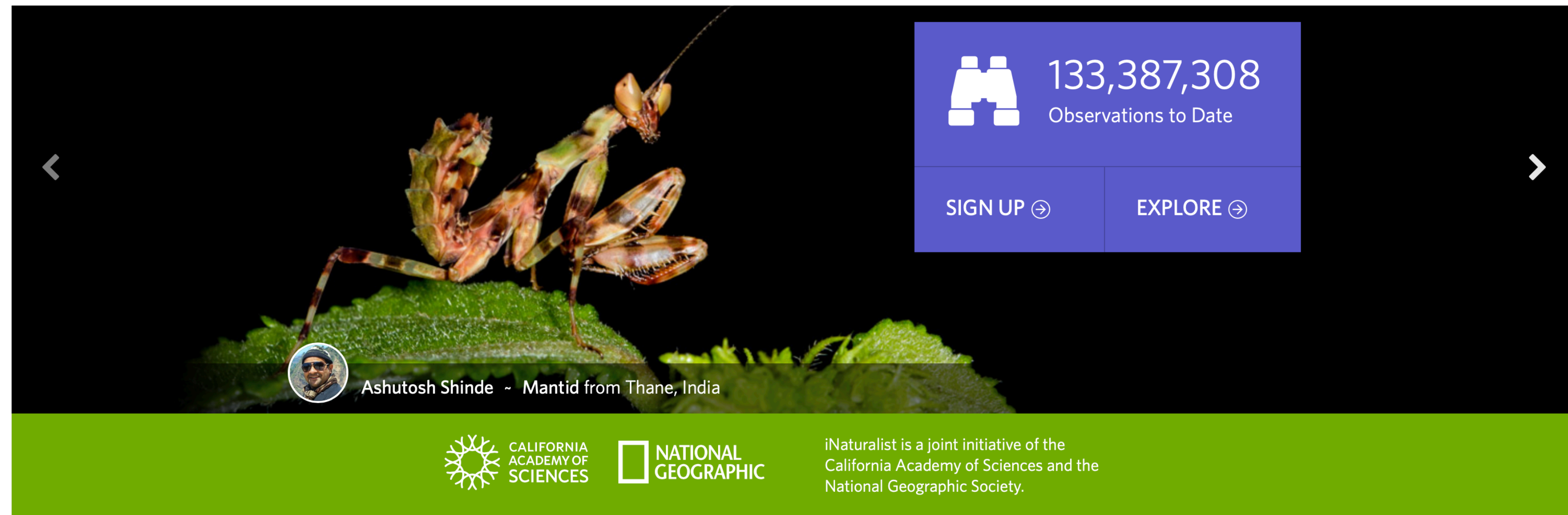
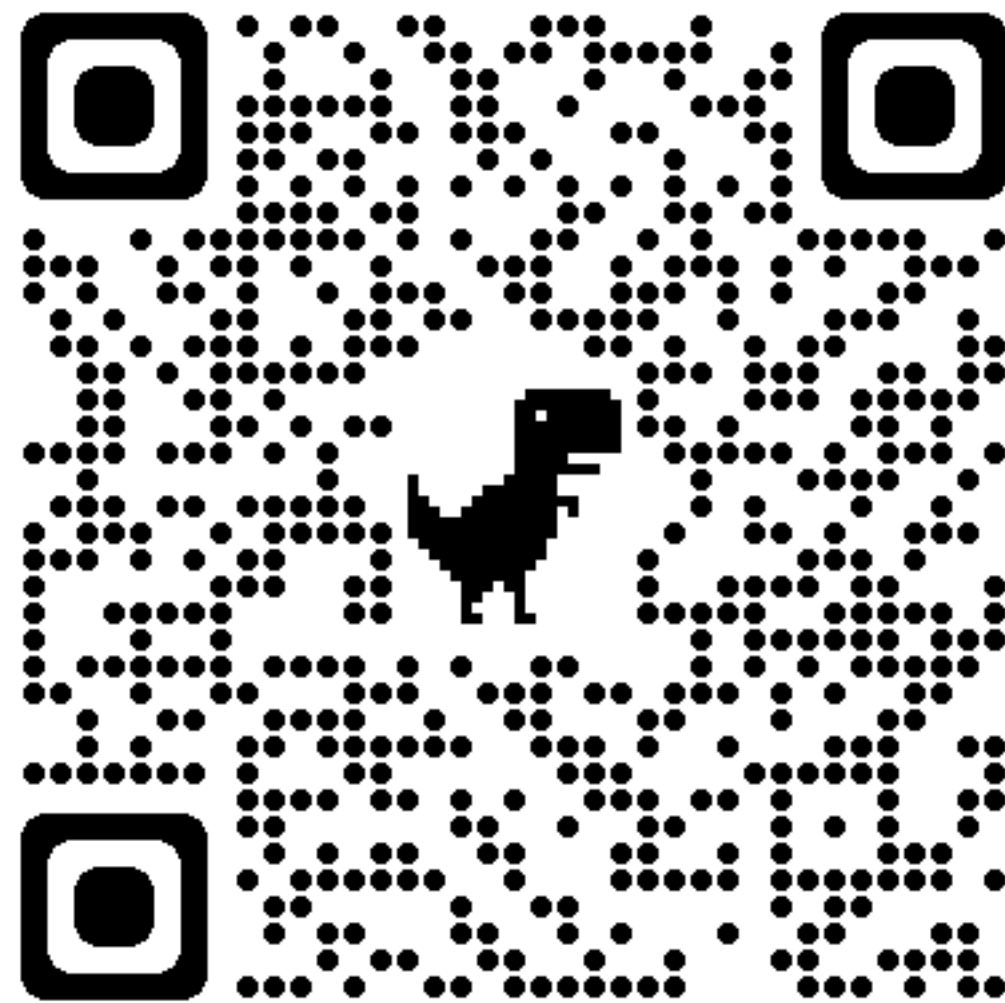
<https://upload.wikimedia.org/wikipedia/commons/4/4a/>

[Biodiversity Next conference poster on Wikimedia and iNaturalist.pdf](#)



iNaturalist

<https://www.inaturalist.org/signup>



How It Works



1



2



3

Record an observation

Share with fellow naturalists

Discuss your findings

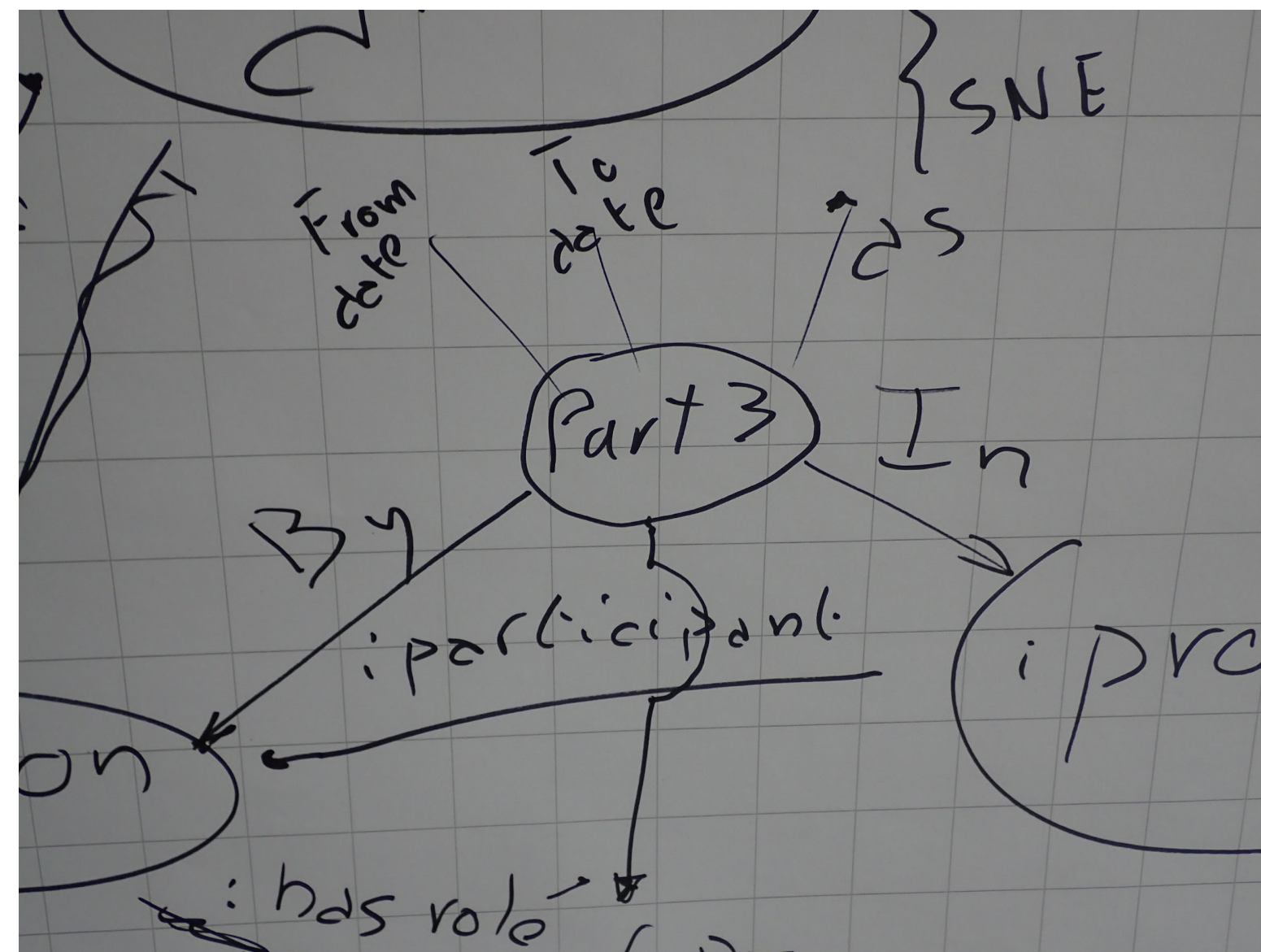
Break

Demo of reuse

Aligning OBO in Wikidata

Community engagement and model discussion

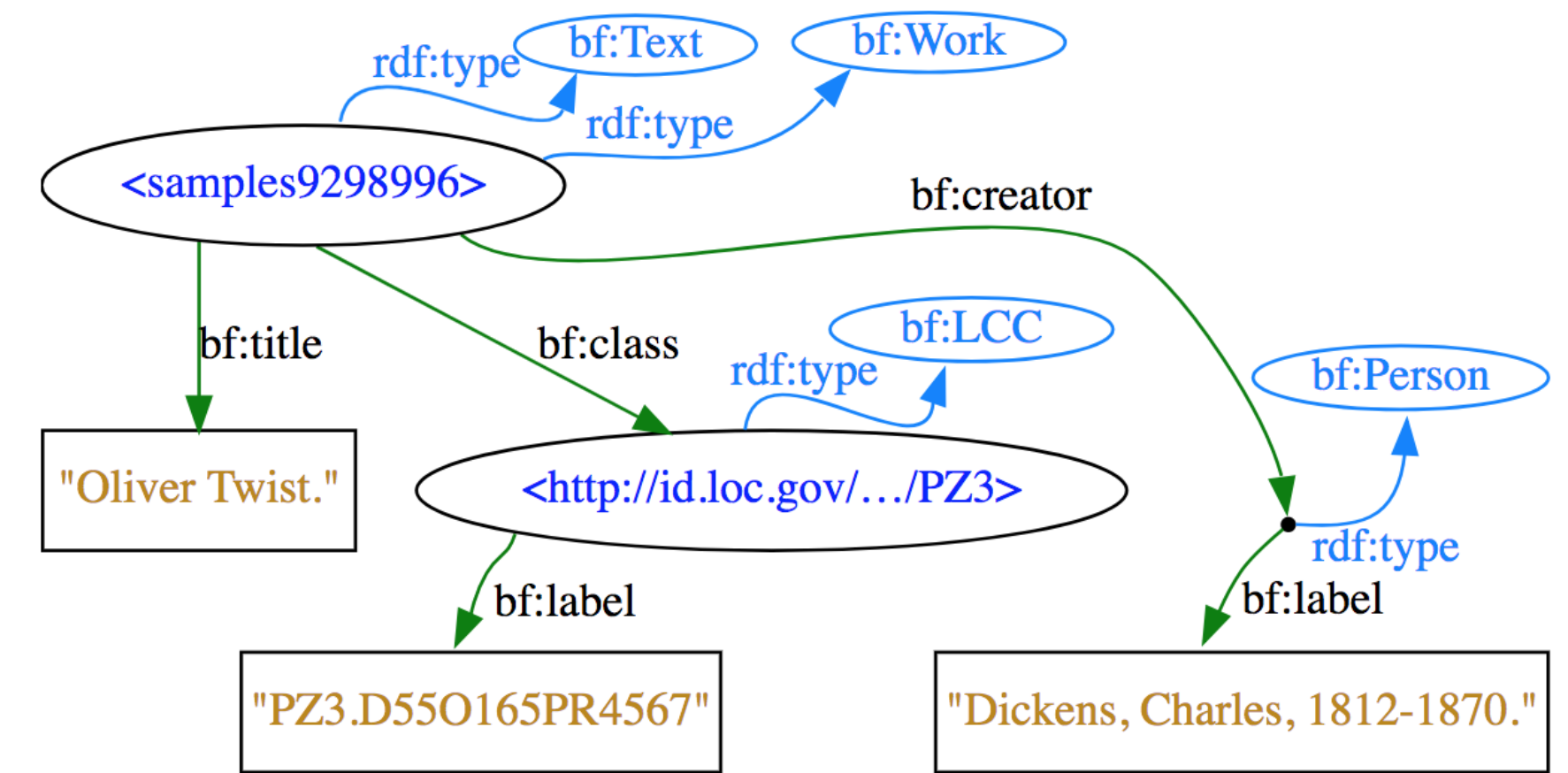
Data
Integration
Extension for
Grants
Ontology



Formally capture and describe model and community consensus

Model development

- Legacy review – develop punch lists for existing data issues that needs fixing
- Documentation – terse, human-readable representation helping contributors and maintainers quickly grok the model
- Client pre-submission – submitters test their data before submission to make sure they're saying what they want to say and that the receiving schema can accommodate all of their data
- Server pre-ingestion – submission process checks data as it comes in and either rejects or warns about non-conformant data



```
Data (Turtle)
<samples9298996>
  rdf:type bf:Text ;
  rdf:type bf:Work ;
  bf:title "Oliver Twist." ;
  bf:class <id.loc.gov/.../PZ3> ;
  bf:creator [
    rdf:type bf:Person ;
    bf:label "Dickens, Charles, 1812-1870." ;
  ] .

<id.loc.gov/.../PZ3>
  rdf:type bf:LCC ;
  bf:label "PZ3.D550165PR4567" .
```

ShEx2 — Simple Online Validator

```
# Shape Expression for Human genes in Wikidata
PREFIX wd: <http://www.wikidata.org/entity/>
PREFIX wdt: <http://www.wikidata.org/prop/direct/>
PREFIX p: <http://www.wikidata.org/prop/>
PREFIX prov: <http://www.w3.org/ns/prov#>
PREFIX pq: <http://www.wikidata.org/prop/qualifier/>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX prv: <http://www.wikidata.org/prop/reference/value/>
PREFIX pr: <http://www.wikidata.org/prop/reference/>
PREFIX ps: <http://www.wikidata.org/prop/statement/>

BASE <http://www.wikidata.org/entity/>

start = @<#wikidata-human-gene>

# Query with results
# SELECT * WHERE {?item wdt:P31 wd:Q7187 ; wdt:P703 wd:Q15978631 .} LIMIT 10

# Indicates which shape to use to start iterating over the graph if none is
provided.

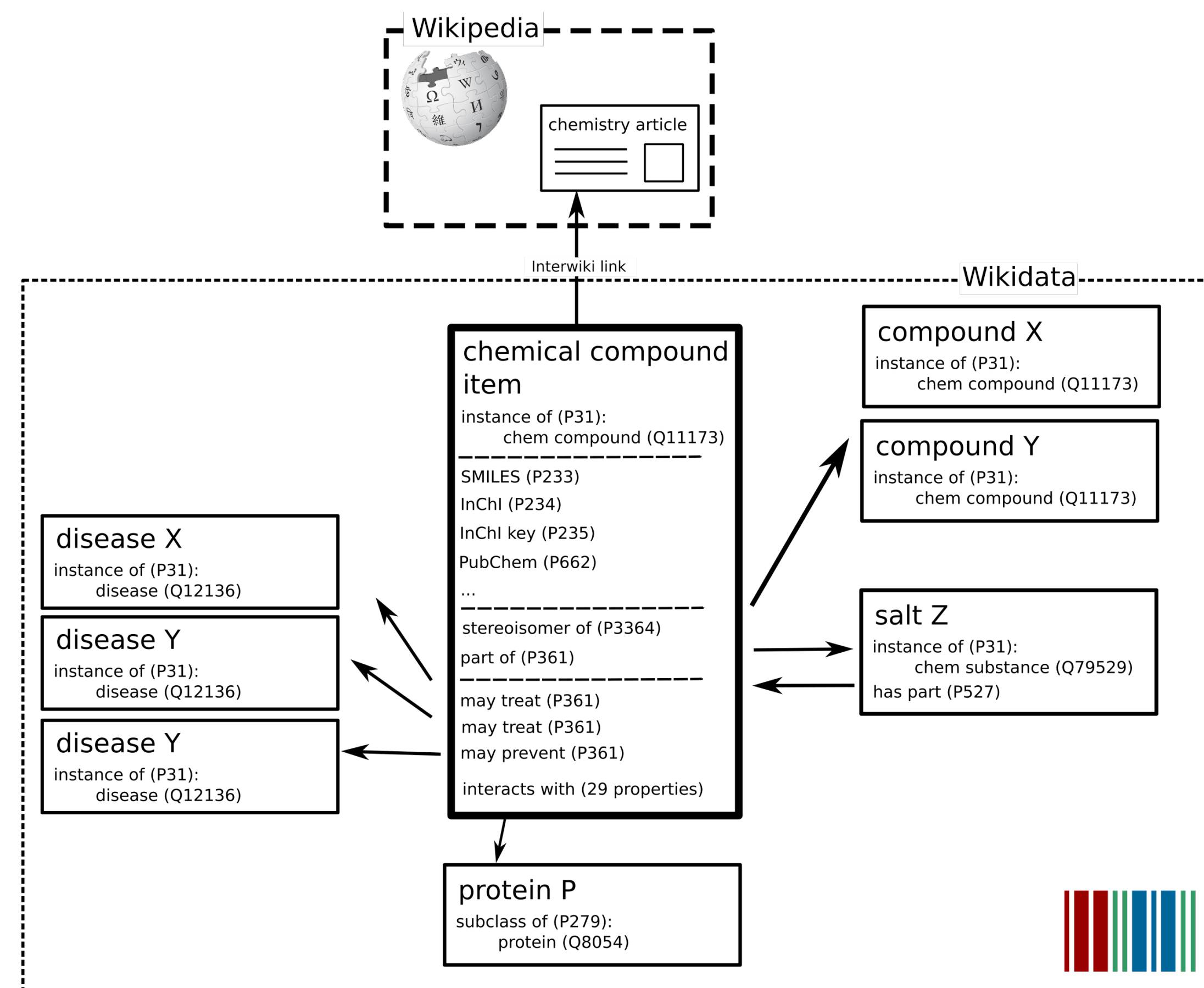
# wikidata-human gene is the main shape for a human gene data model in Wikidata.
Each line between the brackets
# represents the structure that can be enforced to validate human gene annotations
in Wikidata
```

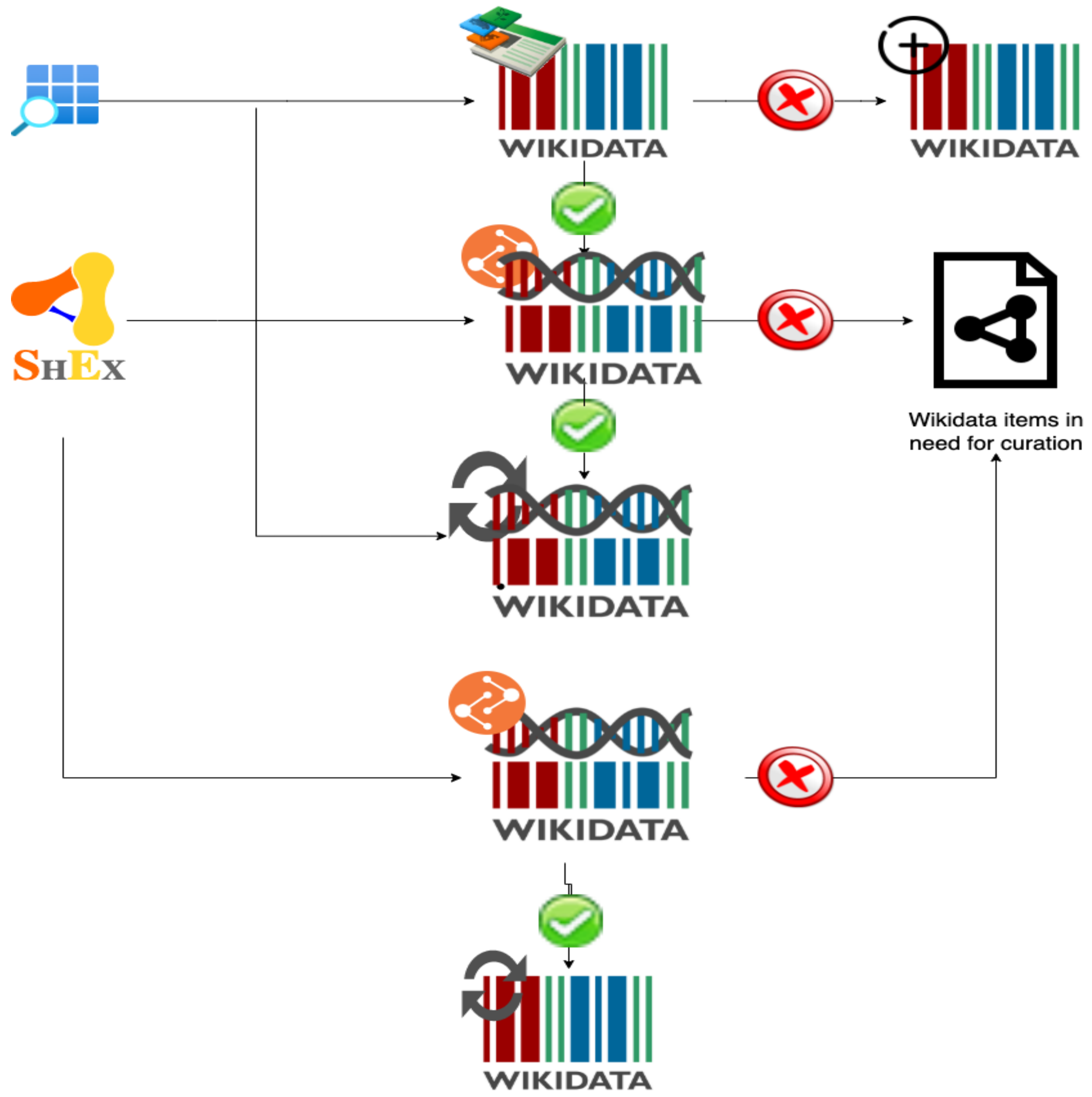
abort (ctl-enter)

Query	Entities to check
<http://www.wikidata.org/entity/Q414043>	@ START - ✓
<http://www.wikidata.org/entity/Q415594>	@ START - ✓
<http://www.wikidata.org/entity/Q416426>	@ START - ✓
<http://www.wikidata.org/entity/Q417169>	@ START - ✓
<http://www.wikidata.org/entity/Q417743>	@ START - ✓
<http://www.wikidata.org/entity/Q418553>	@ START - ✓

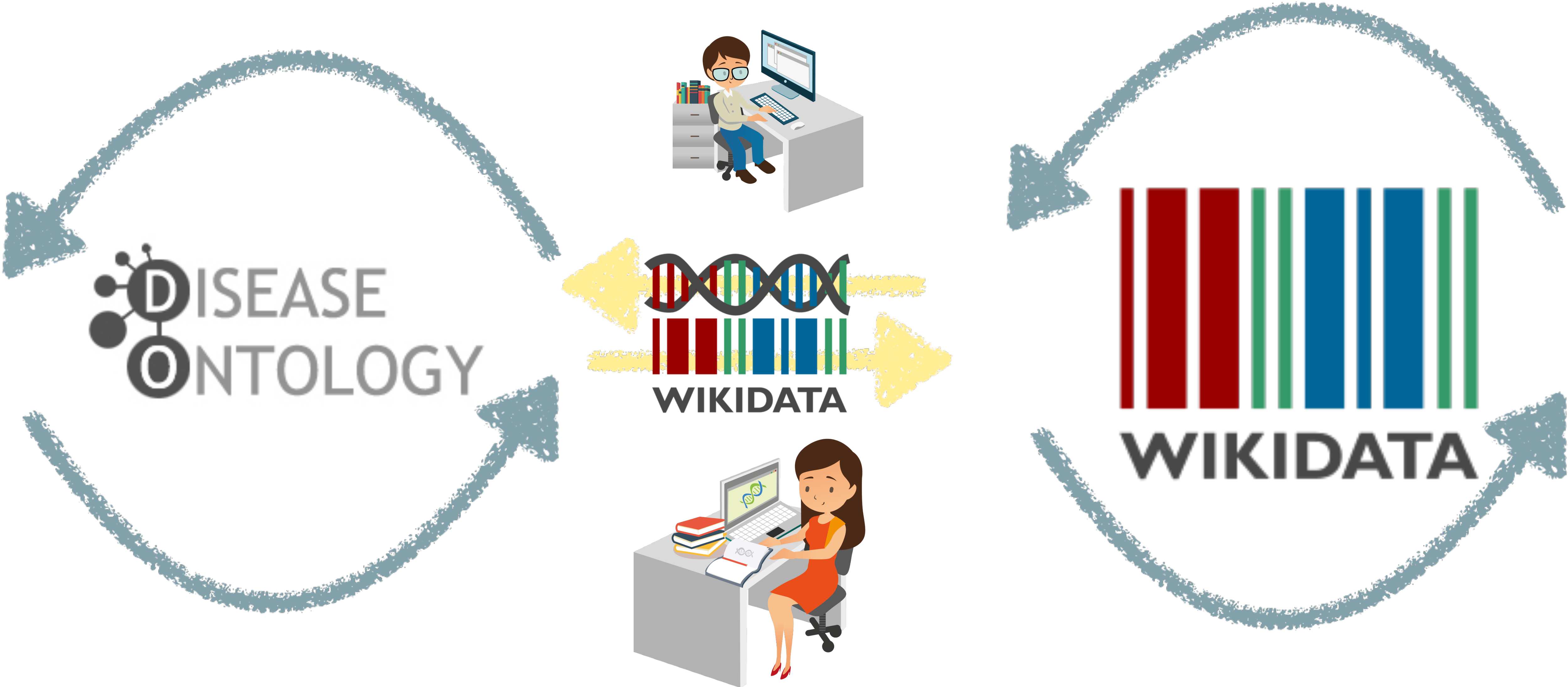
Seeding with data

- Model structure of items (genes, drugs, diseases, .. etc) & relationships between items
- Import data from many sources and ontologies
- Linked to many identifiers from external databases
- Architecture for maintaining data from external sources



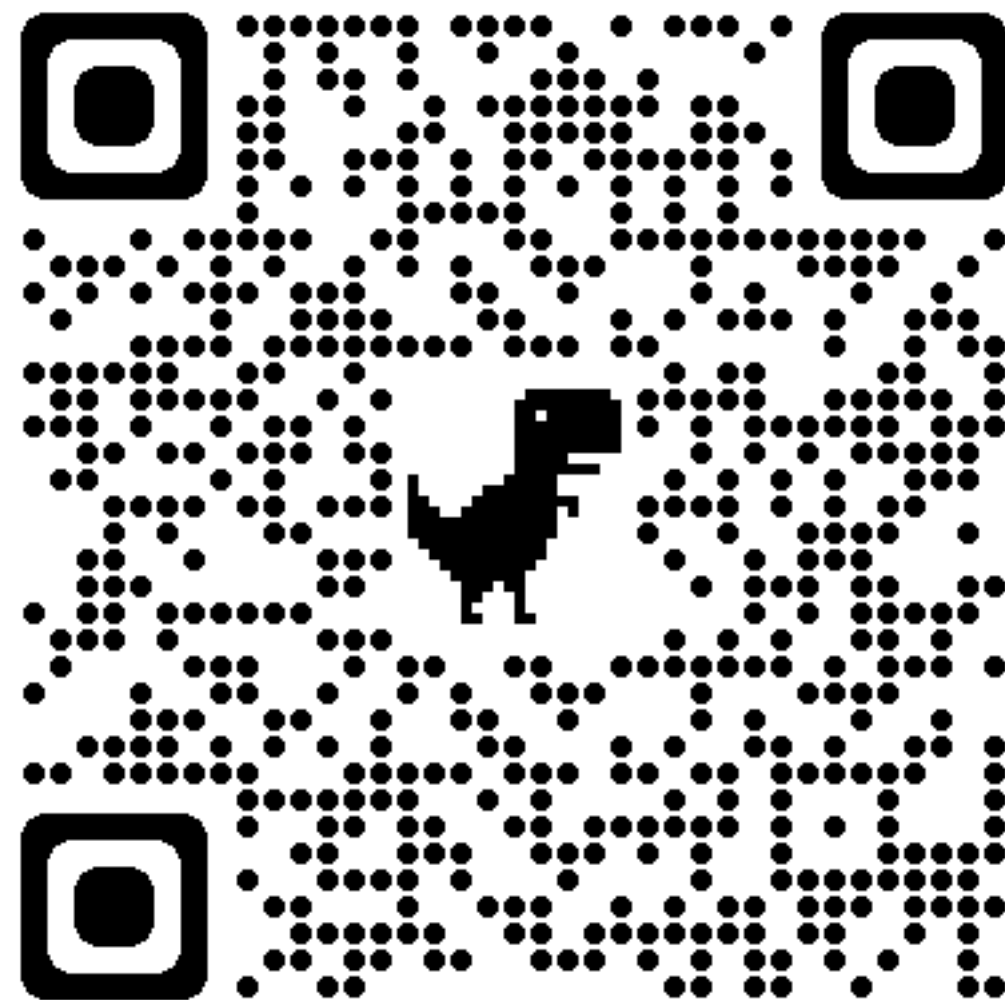


Feedback loop



OBO Coverage in Wikidata

<https://w.wiki/6cor>



Wikidata Query Service [Examples](#) [Help](#) [More tools](#) [Query Builder](#)

```
SELECT ?ontology ?ontologyLabel ?wdprop ?shortname ?license ?licenseLabel WHERE {
  ?ontology rdfs:label ?ontologyLabel ;
    wdt:P361 wd:Q4117183 ;
    wdt:P1687 ?wdprop .
  OPTIONAL {?ontology wdt:P1813 ?shortname .}
  OPTIONAL {?ontology wdt:P275 ?license .
    ?license rdfs:label ?licenseLabel .
    FILTER (lang(?licenseLabel) = "en")}
  OPTIONAL {?wdprop wdt:P1630 ?formatterURL .}
  FILTER (lang(?ontologyLabel) = "en")
}
```

24 results in 3

	ontologyLabel	wdprop	shortname	license	licenseLabel
9	Disease Ontology	wd:P699	doid	wd:Q6938433	CC0
20	Relations Ontology	wd:P3590	ro	wd:Q6938433	CC0
10	Evidence & Conclusion Ontology	wd:P3811	eco	wd:Q6938433	CC0
55	Environment Ontology	wd:P3859	envo	wd:Q6938433	CC0
10	Symptom Ontology	wd:P8656	symp	wd:Q6938433	CC0

Wikidata EntitySchema on OBO

EntitySchema:E368



Search Wikidata

English Andraw

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obo ontology in wikidata (E368)

EntitySchema [Discussion](#)

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language code	label	description	aliases	edit
en	obo ontology in wikidata	Schema on the metadata of an OBO ontology in Wikidata		edit
de	OBO-Ontologie	Schema für eine Ontologie in der OBO-Datenbank biologischer und biomedizinischer Ontologien		edit

```
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX wdt: <http://www.wikidata.org/prop/direct/>
PREFIX p: <http://www.wikidata.org/prop/>
PREFIX ps: <http://www.wikidata.org/prop/statement/>
PREFIX prov: <http://www.w3.org/ns/prov#>
PREFIX pr: <http://www.wikidata.org/prop/reference/>
PREFIX wd: <http://www.wikidata.org/entity/>
```

```
start = @<#obo>
```

```
# SPARQL example: https://w.wiki/5NZG
#
```

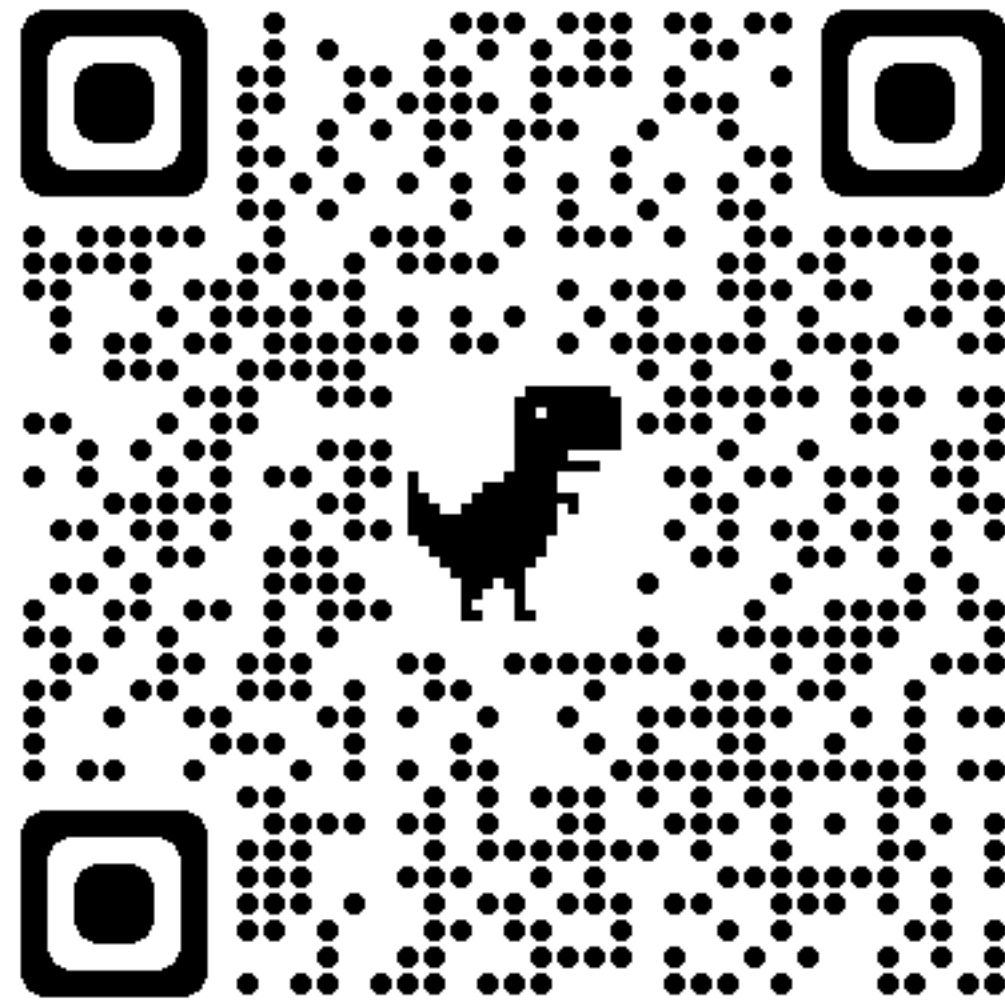
```
<#obo> {
  rdfs:label xsd:string;
  p:P1687 @<#P1687_wikidata_property?> ;
  p:P1830 @<#P1830_short_name> ;
  p:P275 @<#P275_license>+ ;
  wdt:P1630 IRI? ;
}
```

```
<#P275_license> {
  ps:P275 [
    wd:Q20007257 # CC BY 4.0
    wd:Q14847546 # CC BY 3.0
  ]
}
```

[check entities against this Schema](#) | [edit](#)

Ontology on Scholia

<https://scholia.toolforge.org/ontology/Q116446479>



SCHOLIA

Author Work Organization Location Event Project Award Topic Tools Help

Search...

ontology / Q116446479

Improve data

eNanoMapper ontology (Q116446479)

<https://jbiomedsem.biomedcentral.com/articles/10.1186/s13326-015-0005-5>

Search:

Description ↕	Value
Website	https://jbiomedsem.biomedcentral.com/articles/10.1186/s13326-015-0005-5
Contributors	Egon Willighagen , Nina Jeliazkova , Janna Hastings , Denise Slenter , Laurent Winckers , Javier Millán Acosta
Part of	EU NanoSafety Cluster , eNanoMapper - A Database and Ontology Framework for Nanomaterials Design and Safety Assessment
License	Creative Commons Attribution-ShareAlike

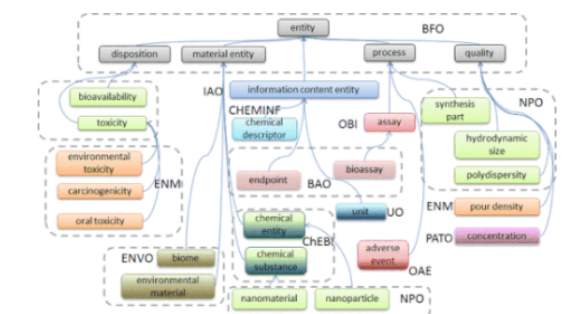
[Wikidata Query Service](#)

[ontology: data.sparql](#)

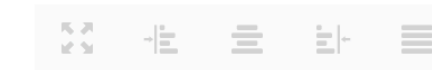
Showing 1 to 4 of 4 entries

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 - [Used by ontologies](#)
- [Recent work using the ontology](#)



Ontology reuse



Task 4: Add statements on an ontology from OBO Foundry to Wikidata

- Pick an ontology
- If not in Wikidata, create a wikidata for that ontology
- Add additional metadata statements on the selected ontology to Wikidata
- Reconciliate an ontology term with Wikidata
- Add SKOS mappings between Wikidata and the selected ontology
- If license permits add subclass (P279) statements to Wikidata

Bots

Bots

<https://www.wikidata.org/wiki/Wikidata:Bots>



English Andr

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Wikidata:Bots

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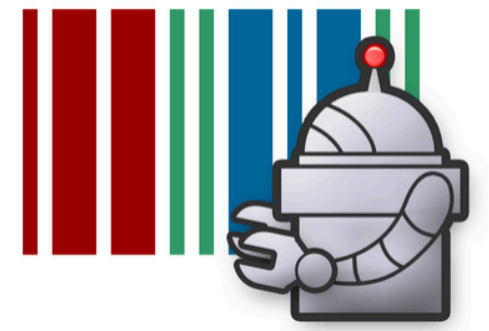
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 **This page documents a Wikidata policy.** It is a widely accepted standard that all editors should normally follow. All changes made to it (except for minor edits such as fixing typos) should reflect consensus. When in doubt, discuss your idea on the [project chat](#).

Bots (also known as **robots**) are tools used to make edits without the necessity of human decision-making. Bots can add [interwiki links](#), [labels](#), [descriptions](#), [statements](#), [sources](#), and can even create items, among other things. Bots have the ability to make edits very quickly and can disrupt Wikidata if they are incorrectly designed or operated. For these reasons a bot policy has been developed.



Bot accounts [edit]

Contributors must [create a separate account](#) in order to operate a bot. Bot accounts are generally named after either their operator or their function, combined with the word "bot" (see list of bots on the right side of this page). The bot account's user page should contain the template `{{bot}}` in order to further indicate the account's status as a bot. The contributions of a bot account remain the responsibility of its operator, who should be identified on its user page. Bots should not edit while logged out, and can use the `assert` parameter to ensure that.

In the case of any damage caused by a bot, the bot operator is asked to stop the bot. Depending on the scale of the damage, an administrator may block the bot. The bot operator is responsible for cleaning up any damage caused by the bot. It is suggested that bot operators add this page to their watchlists, as relevant notifications and discussions may take place on the [talk page](#).

Bot accounts should not be used for contributions that do not fall within the scope of the bot's designated tasks (see [#Approval process](#) for trials), and should never be used to make non-automated

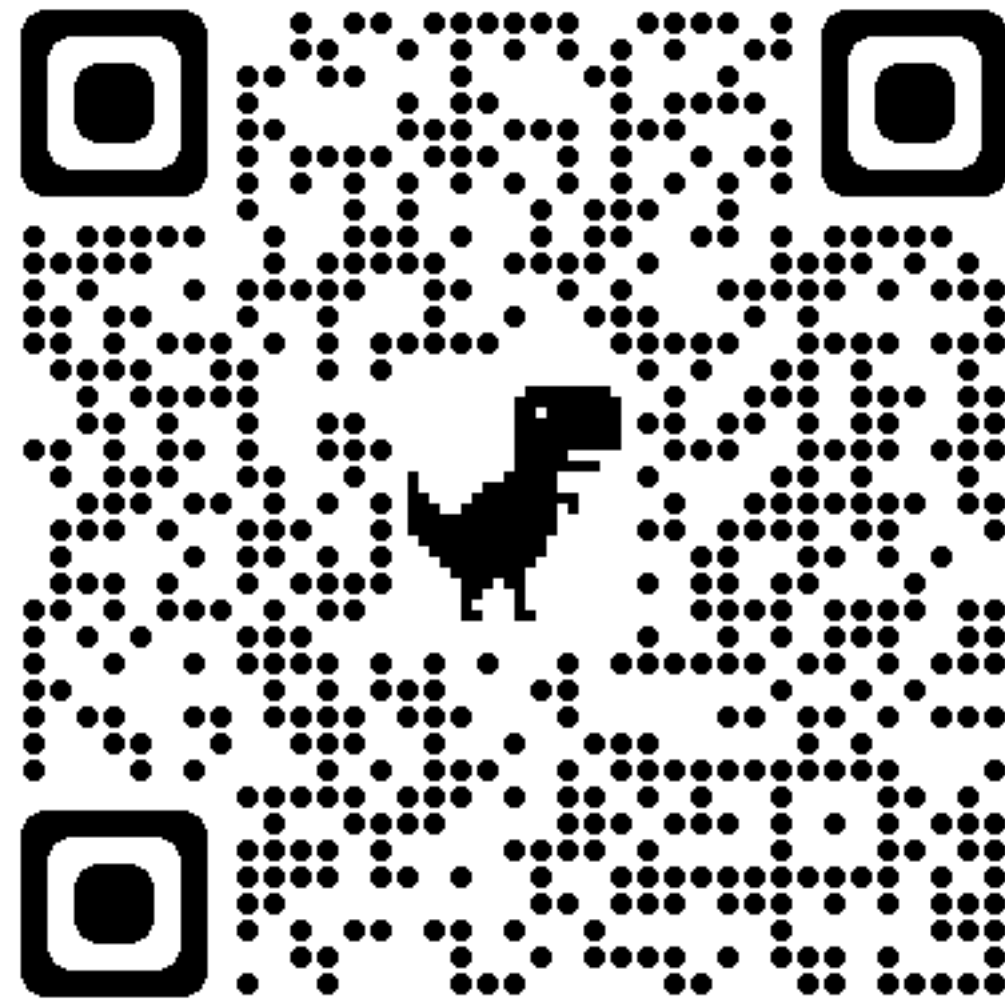
Bots with approved tasks

(Updated automatically)

- [62mkvLexemeBot](#) ([talk](#) | [contribs](#))
- [A-lú-mih-bot](#) ([talk](#) | [contribs](#))
- [ADSEnglishBot](#) ([talk](#) | [contribs](#)) (blocked)
- [AGbot](#) ([talk](#) | [contribs](#))
- [AHbot](#) ([talk](#) | [contribs](#))
- [APSbot](#) ([talk](#) | [contribs](#))
- [ASammourBot](#) ([talk](#) | [contribs](#))
- [AVMbot](#) ([talk](#) | [contribs](#))
- [AVSbot](#) ([talk](#) | [contribs](#))

OBO bot

https://www.wikidata.org/wiki/Wikidata:Requests_for_permissions/Bot/AndrawaagBot_1



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< [Wikidata:Requests for permissions I Bot](#)
(Redirected from [Wikidata:Requests for permissions/Bot/AndrawaagBot](#))

The following discussion is closed. **Please do not modify it.** Subsequent comments should be made in a new section. A summary of the conclusions reached follows.

 **Approved**--[Ymblanter \(A/B\)](#) (talk) 19:12, 9 October 2022 (UTC) [[reply](#)]

AndrawaagBot 1 [[edit](#)]

[AndrawaagBot](#) (talk • [contribs](#) • [new items](#) • [new lexemes](#) • [SUL](#) • [Block log](#) • [User rights log](#) • [User rights](#) • [xtools](#))

Operator: [Andrawaag](#) (talk • [contribs](#) • [logs](#))

Task/s:

- Complete the coverage of the metadata (see EntitySchema for details) about ontologies from [Obofoundry](#).

Code:

- [Botcode](#)
- [Notebook used to build bot](#)

EntitySchema:

- <https://www.wikidata.org/wiki/EntitySchema:E368>

Function details: The OBO Foundry develops and maintains a family of interoperable ontologies that are both logically well-formed and scientifically accurate [1]. Some of the (CC0 licensed) OBO ontologies are already aligned with wikidata. This bot parses the **metadata** and will align this with wikidata. This would allow navigating the relationships and reuse between the OBO Foundry ontologies, annotate them with **main subject (P921)** statements and (in the future) add mentions of OBO ontologies and their terms in in the scientific literature in Wikidata. The bot uses the Wikidata Integrator as framework.

--[Andrawaag](#) (talk) 12:02, 29 September 2022 (UTC) [[reply](#)]

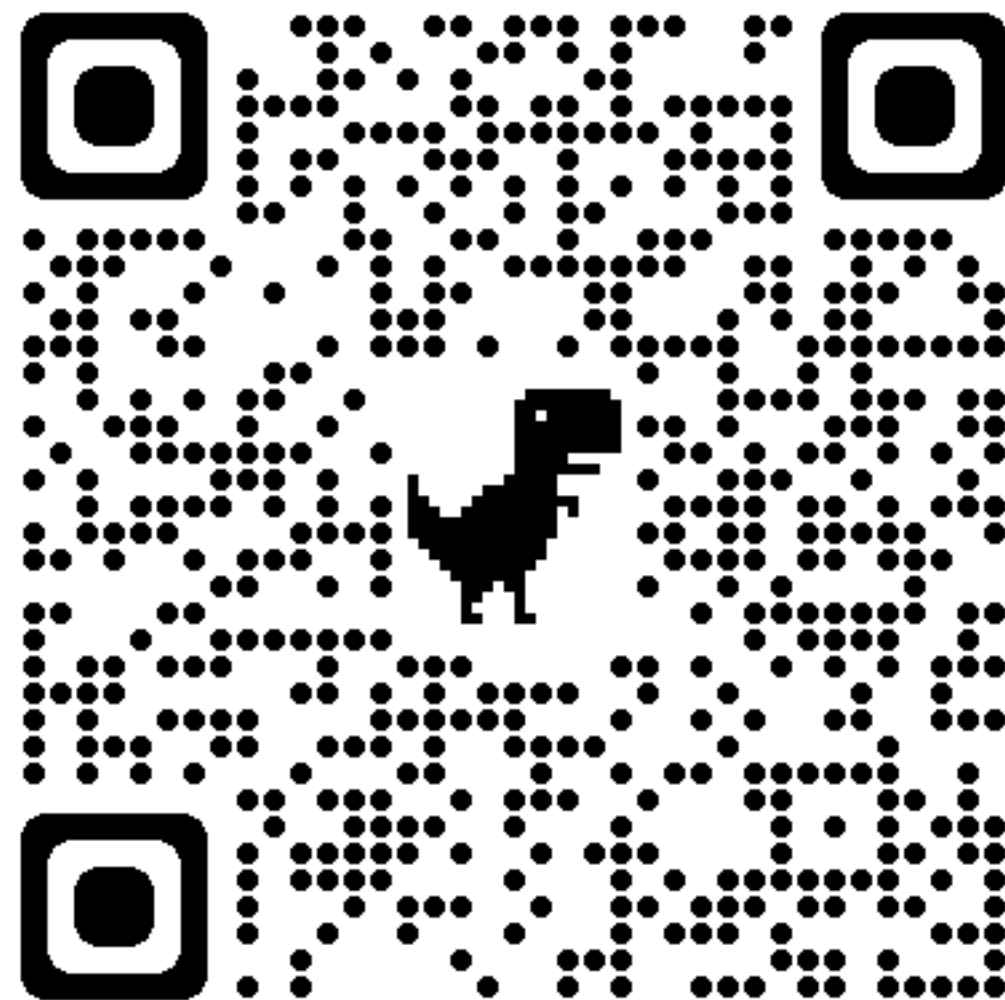
Discussion I tried to run a few bot runs to demonstrate the developed bot code, as requested to do for this request for permission. However, when I

Wikidata Integrator

- Python library
- Wikidata Integrator primarily caters Wikidata. Working on other Wikibases or Mediawiki's is possible, but:
 - Wikibase Integrator (<https://github.com/LeMyst/WikibaseIntegrator>)
 - PyWikibot (<https://www.mediawiki.org/wiki/Manual:Pywikibot>)
- MIT license
- Github: <https://github.com/SuLab/WikidataIntegrator>
- Pypi: <https://pypi.org/project/wikidataintegrator/>
- Community project (i.e. pull requests are welcome)

Example bot

<https://public-paws.wmcloud.org/User:Andrawaag/Single%20OBO%20Term%20bot.ipynb>



```
from wikidataintegrator import wdi_core, wdi_login
from datetime import datetime
import copy
import pandas as pd
import getpass
```

```
In [51]: print("username:")
username = input()
print("password:")
password = getpass.getpass()
login = wdi_login.WDLogin(user=username, pwd=password)
```

```
username:
Andrawaag
password:
.....
```

```
In [52]: # functions
def createOBOReference(doid):
    statedin = wdi_core.WDItemID(obowditem, prop_nr="P248", is_reference=True)
    retrieved = datetime.now()
    timeStringNow = retrieved.strftime("%Y-%m-%dT00:00:00Z")
    refRetrieved = wdi_core.WDTime(timeStringNow, prop_nr="P813", is_reference=True)
    id = wdi_core.WDEternalID(oboid, prop_nr=oboidwdprop, is_reference=True)
    return [statedin, refRetrieved, id]
```

```
In [58]: query = """
SELECT * WHERE {
  ?ontology rdfs:label ?ontologyLabel ;
    wdt:P361 wd:Q4117183 ;
    wdt:P1687 ?wdprop .
  OPTIONAL {?ontology          wdt:P1813 ?shortname .}

  OPTIONAL {?wdprop wdt:P1630 ?formatterURL .}
  FILTER (lang(?ontologyLabel) = "en")
}
"""
wdmappings = wdi_core.WDFunctionsEngine.execute_sparql_query(query, as_dataframe=True)
```


Encore: Entity Explosion

https://www.wikidata.org/wiki/Wikidata:Entity_Explosion



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Wikidata:Entity Explosion

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Entity Explosion (Q98398855) is a Chrome and Firefox browser extension by Toby Hudson (99of9) which uses API calls to the Wikidata Query Service to match the URL you are browsing on to a Wikidata item, and then display Wikidata data and links.

Links and Other Resources [edit]

- Available in the Chrome Store: https://chrome.google.com/webstore/detail/entity-explosion/bbcffeccligkmioca_nodamdjclgejcn (516 users as of April '21; seems to work also for Opera)
- Available as a Firefox Browser Add-On: <https://addons.mozilla.org/en-US/firefox/addon/entity-explosion/> (90 users as of April '21)
- Open-source code: <https://github.com/99of9/Entity-Explosion>
- Introduction videos: [short](#) [long](#) [Wikimania21](#)
- Twitter feed: <https://twitter.com/EntityExplosion>
- Facebook page: <https://www.facebook.com/EntityExplosion>
- Phabricator task: <https://phabricator.wikimedia.org/T253201>

The Discussion page can be used for a centralised on-Wiki discussion of this tool.

Use [edit]

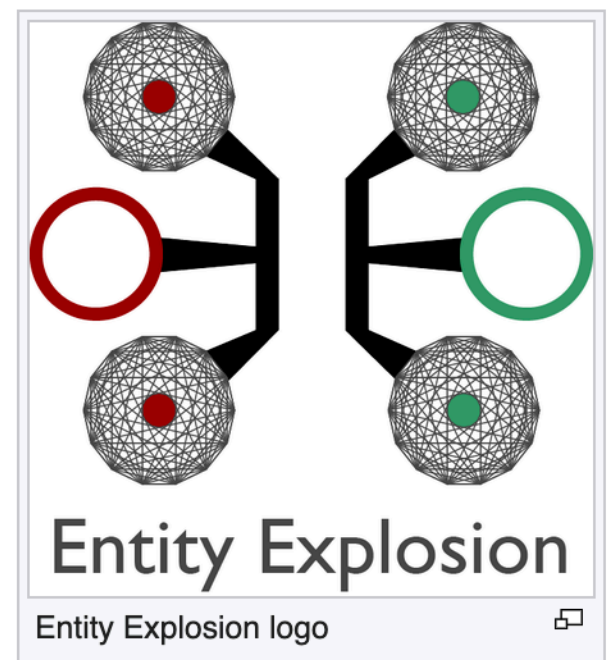
The extension icon toggles between the following images, depending on the status of the URL:



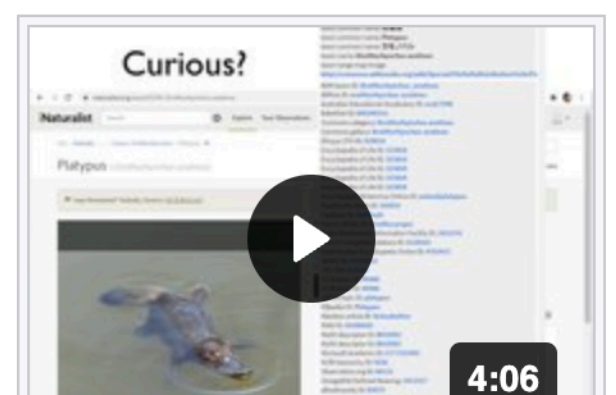
no potential match to this URL (default icon status)



a potential match according to the URL matching a formatter/regex pair

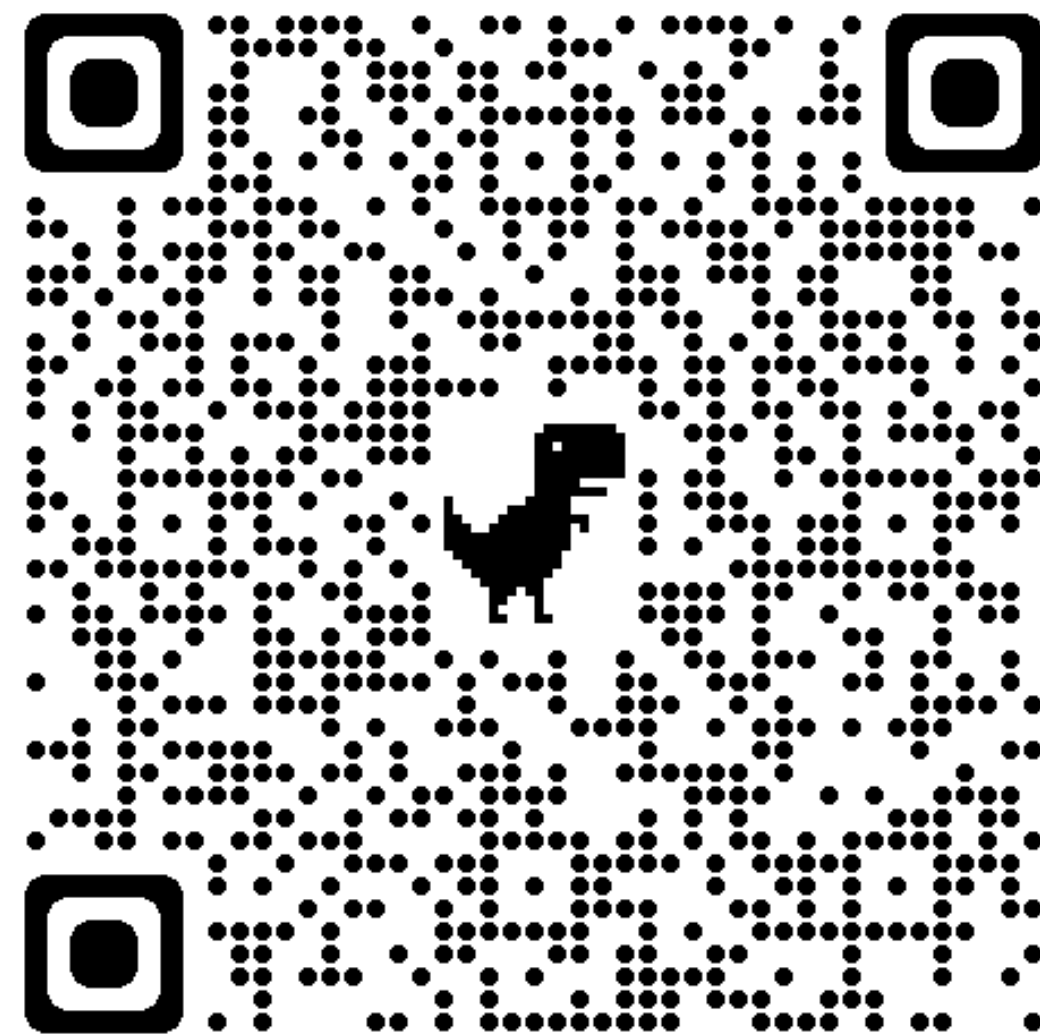


Entity Explosion logo



Encore: Entity Explosion

https://www.ebi.ac.uk/ols/ontologies/envo/terms?iri=http://purl.obolibrary.org/obo/ENVO_00000275



EMBL-EBI

OLS
ONTOLOGY SEARCH

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us test the new version of OLS, with updated versions of ontologies and lo
s://www.ebi.ac.uk/ols4

OLS / The Environment Ontology **ENVO** / **ENVO:00000275** Copy

ocean trench

http://purl.obolibrary.org/obo/ENVO_00000275 Copy

Hemispheric-scale long but narrow topographic depressions of the sea floor. They are the d

Synonyms: Trench | deep sea trench | ocean trench

Tree view | Term mappings

- entity
 - continuant
 - independent continuant
 - material entity
 - fiat object
 - astronomical body part

Graph view | Reset tree | Show all siblings

language: [en] English

entity: oceanic trench (Q119253)

oceanic trench
depressions of the sea floor

Wikidata: [Q119253](#)
Wikipedia: [Oceanic trench](#)

described by source: **Armenian Soviet Encyclopedia**
on focus list of Wikimedia project: **Wikipedia:Vital articles/Level/4**
subclass of: **depression**
subclass of: **undersea landform**
topic's main category: **Category:Oceanic trenches**

GeoNames feature code: **U.TRNU**
bathymetry image:
<http://commons.wikimedia.org/wiki/Special:FilePath/Pacific%20elevation2>

Commons category [mul]: [Oceanic trenches](#)

Encyclopedia of China (Third Edition) ID [zh]: [85095](#)
Encyclopædia Britannica Online ID: [science/deep-sea-trench](#)

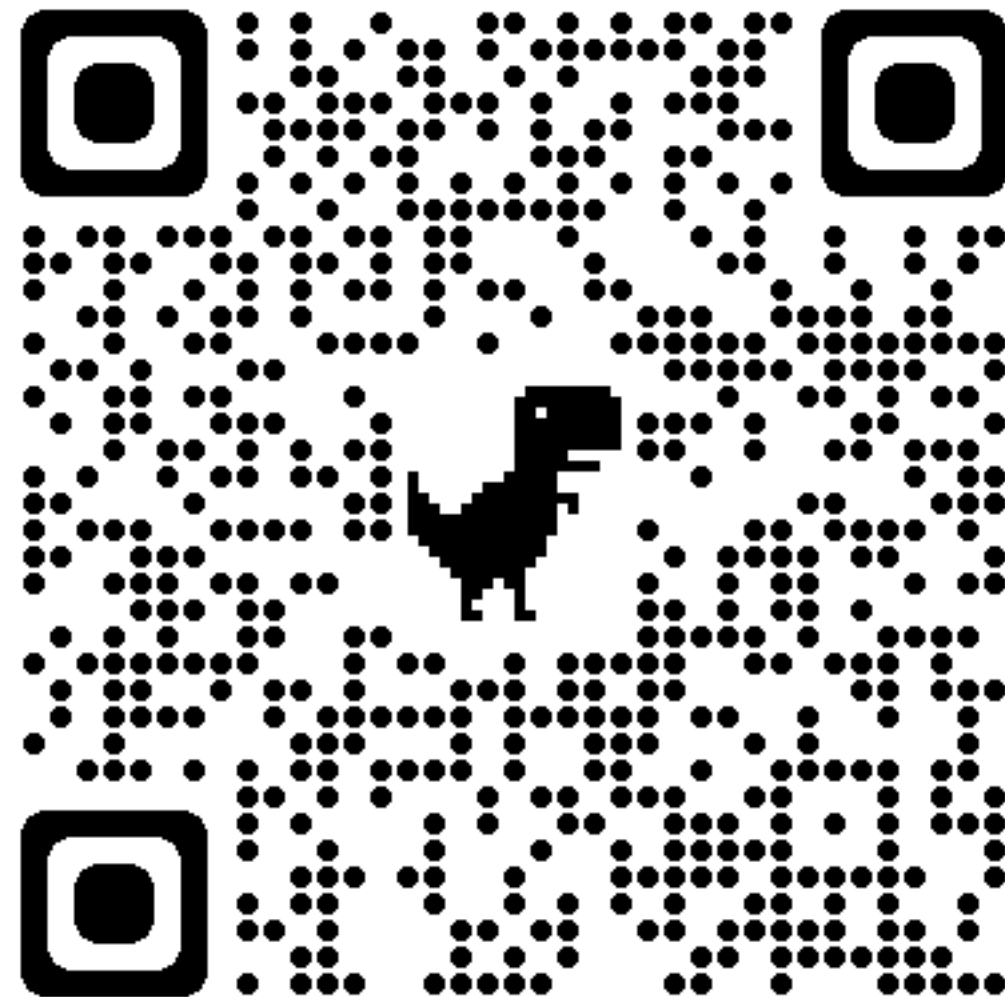
Term information

database cross reference

- FTT:1021
- FTT:610
- [null:https://en.wikipedia.org/wiki/Ocean_trench](https://en.wikipedia.org/wiki/Ocean_trench)
- TGN:23464
- Geonames:U.TRNU
- EcoLexicon:deep_sea_trench

Wikiproject OBO?

<https://www.wikidata.org/wiki/Wikidata:WikiProjects>



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What is a WikiProject? [\[edit\]](#)

A WikiProject is a group of contributors who want to work together as a team to improve Wikidata. These groups often focus on a specific topic area (for example, [astronomy](#)) or a specific kind of task (for example, [solving problems related to disambiguation pages](#)).

Current WikiProjects on Wikidata [\[edit\]](#)

Several [WikiProjects](#) have been created, here is the top level list that branches down to individual projects:

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