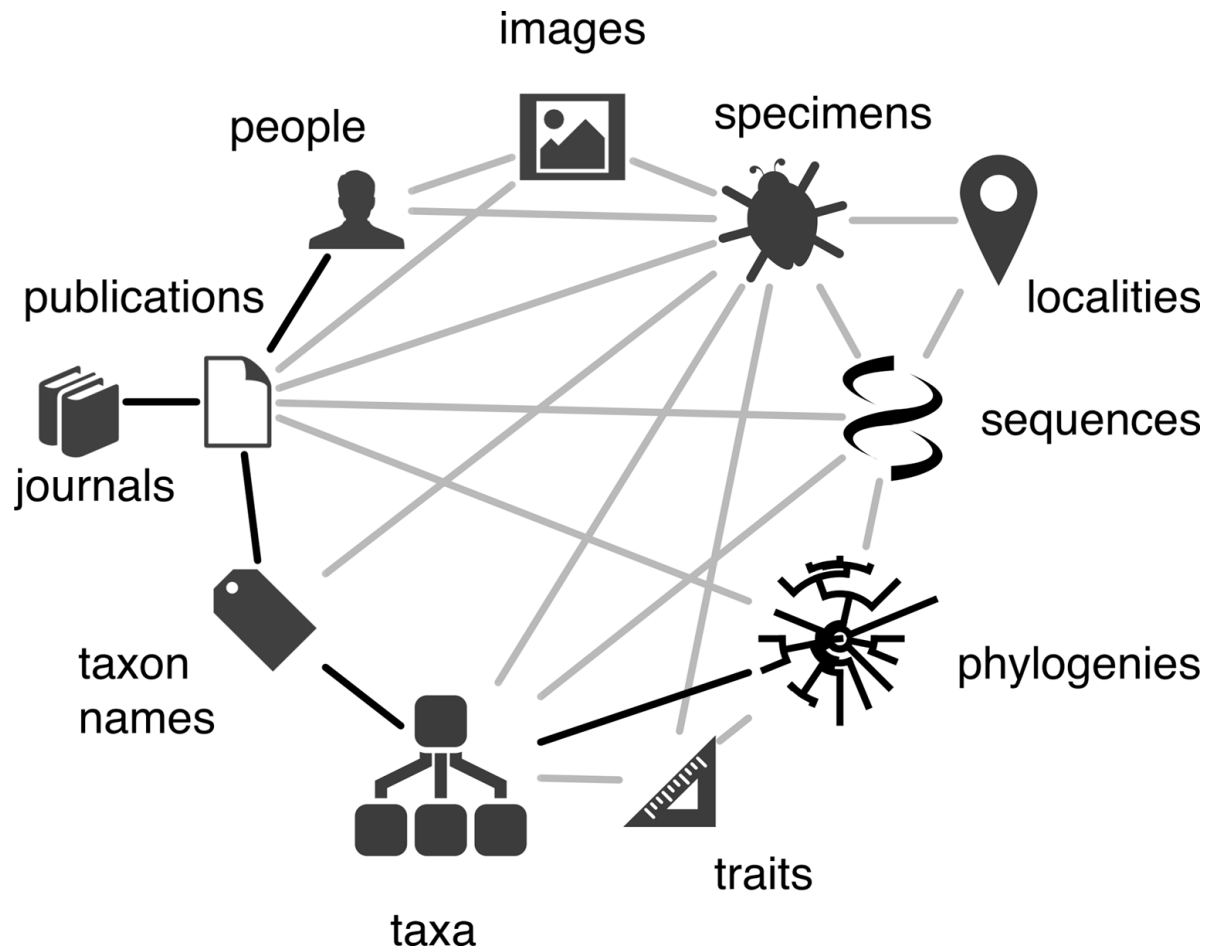
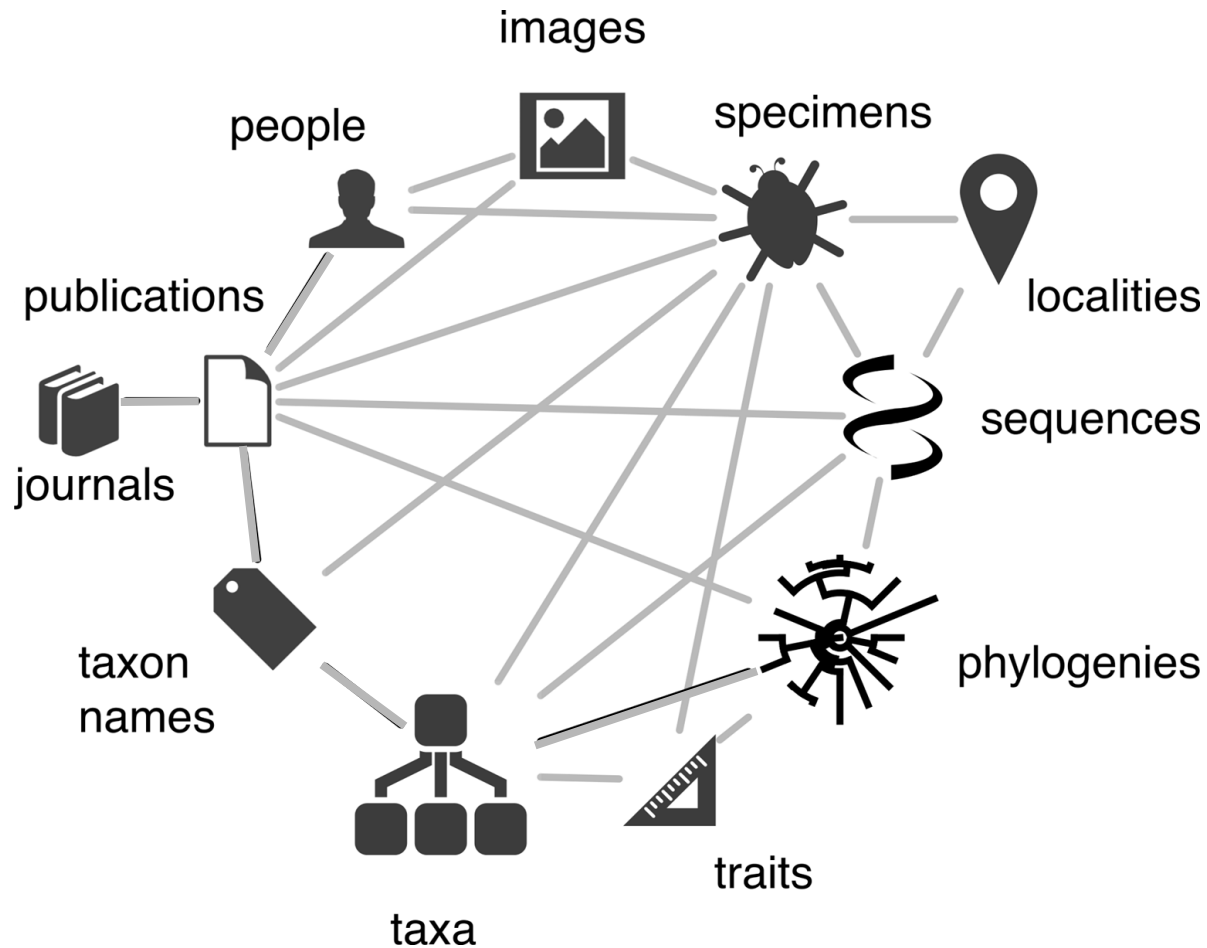


The Encyclopedia of Life v3: constructing a linked data model

Jen Hammock, Encyclopedia of Life, Smithsonian

<https://www.slideshare.net/hammockj/encyclopedia-of-life-v3-constructing-a-linked-data-model>





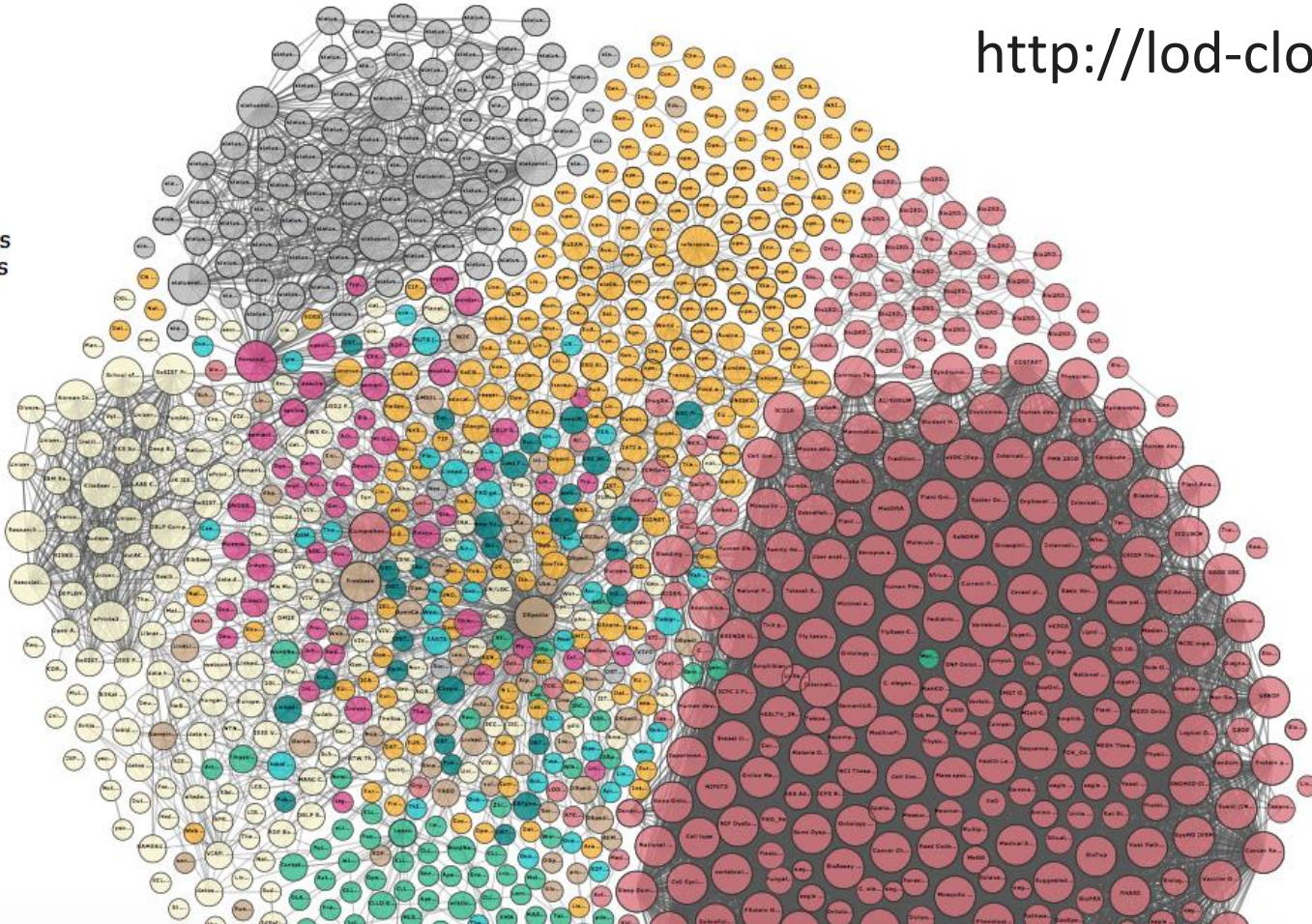
Taxonomy data model.

Simplified diagram of the **relationships** between the core **entities** that make up taxonomy, such as authors, publications, taxon names, and taxa.

Legend



<http://lod-cloud.net/>



gODAN

Global Open Data
for Agriculture & Nutrition

PENN HUMANITIES FORUM



DIGITAL HUMANITIES FORUM

Friday, 11 April 2014 - 9:00am—12:00pm

Class of 1978 Pavillion, 6th floor, Penn Library, 3420 Walnut Street

Research on a Global Scale

The Radical Potential of Linked Open Data

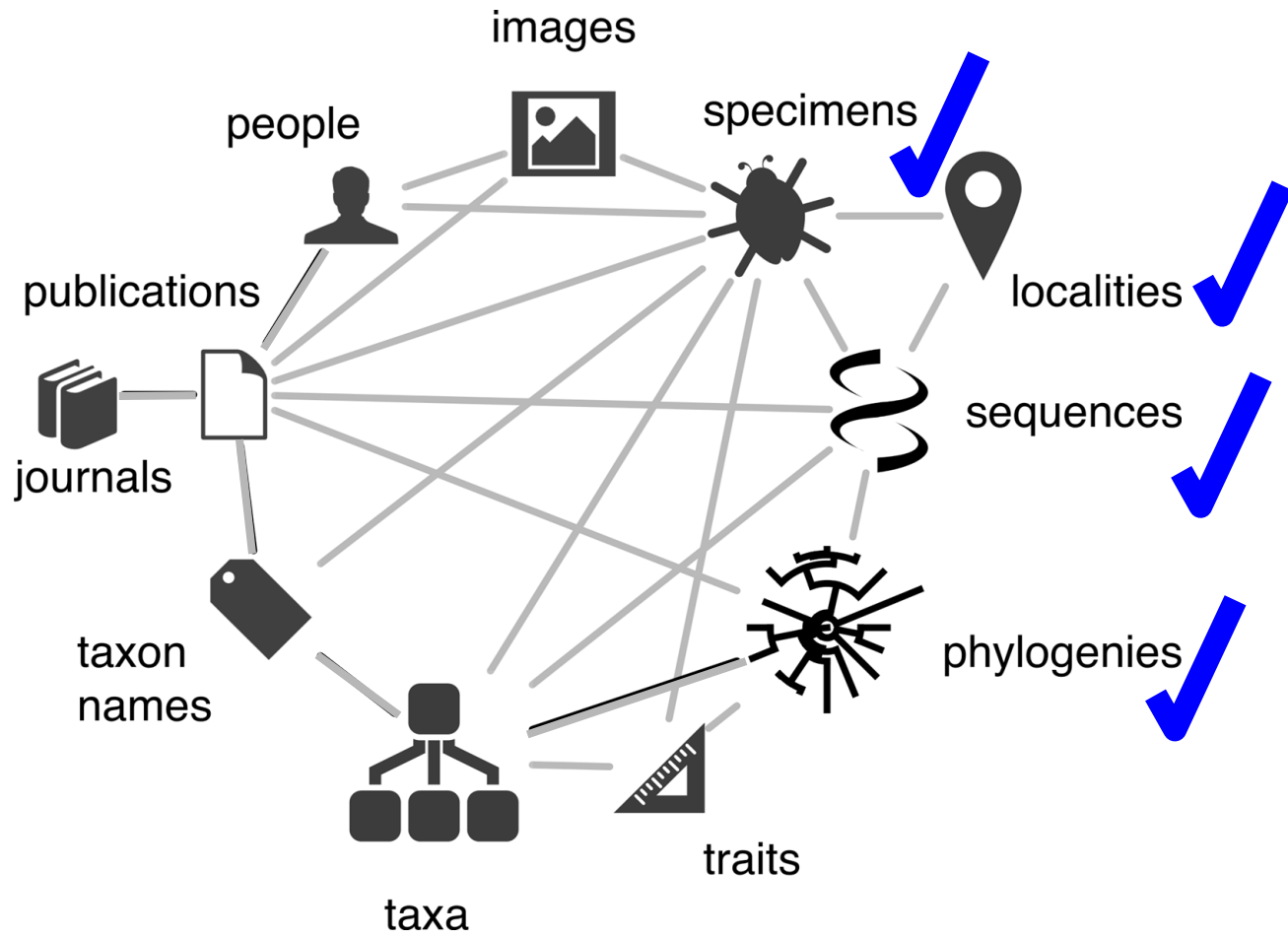


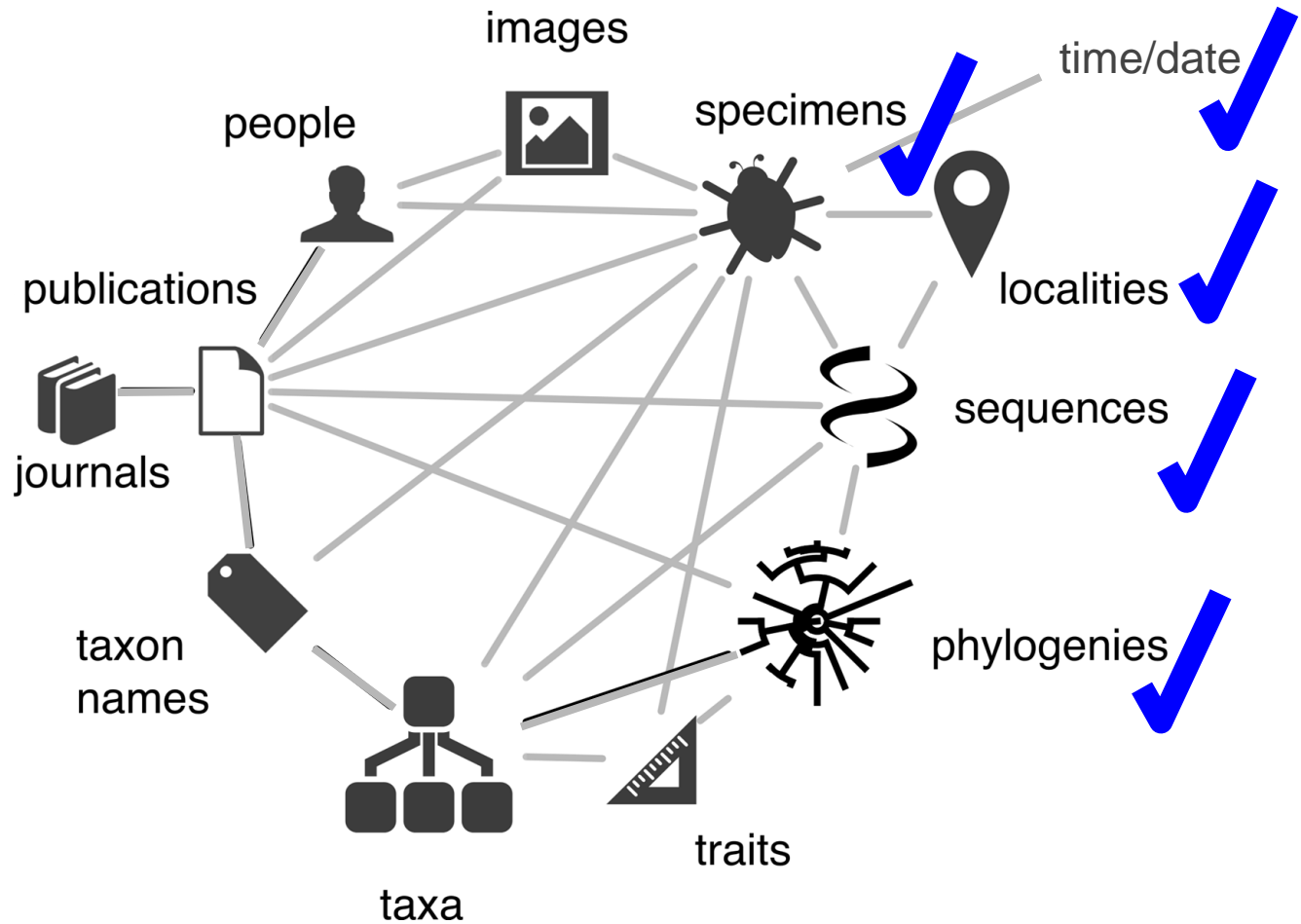
CODATA

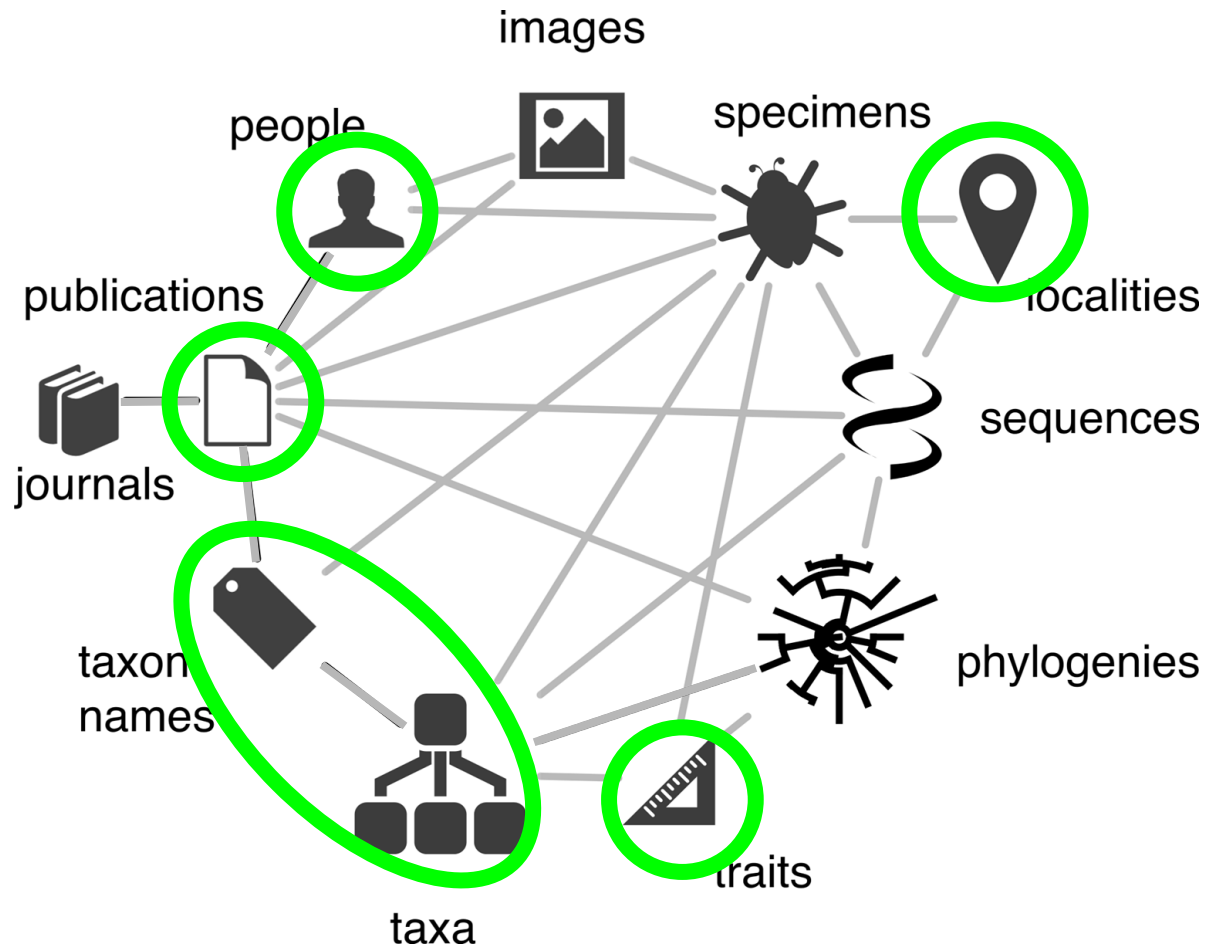
International Council for Science : Committee on Data for Science and

Linked Open Data for Global Disaster Risk Research

Although large amounts of disaster-related scientific data exist today, they are typically dispersed geographically and owned by various entities including government agencies, research centers,







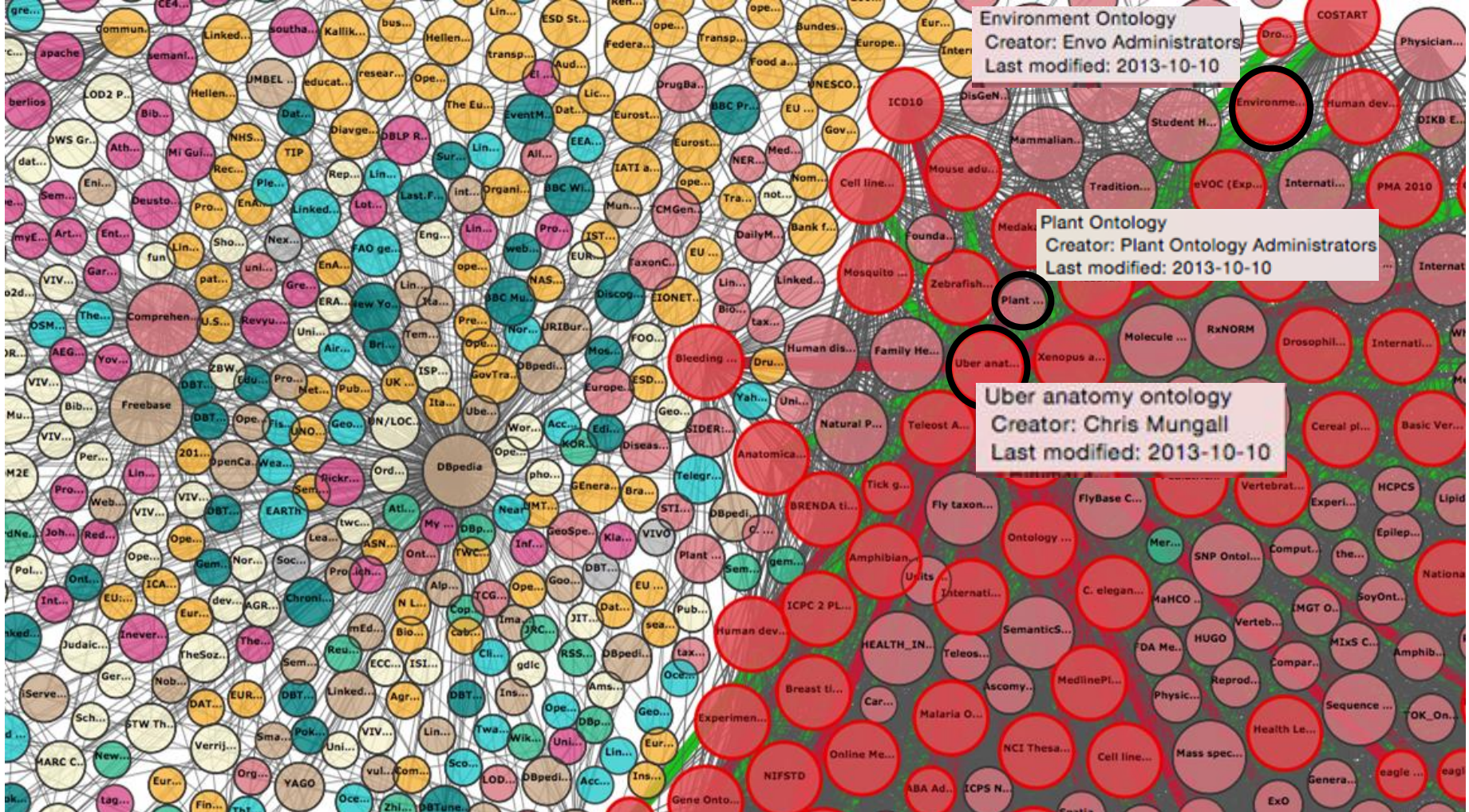
Plant Ontology

Summary Classes Properties Notes Mappings Widgets

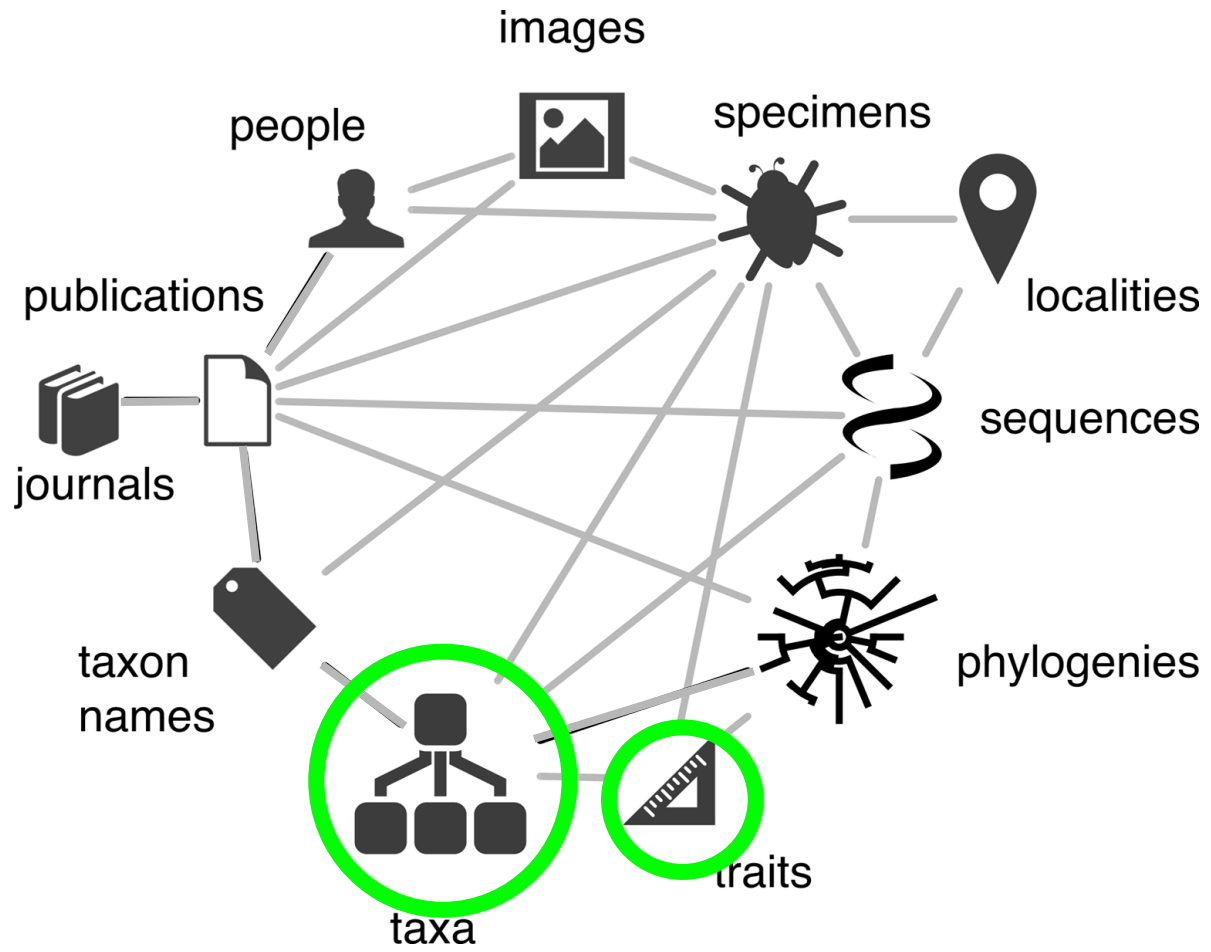
Jump To:

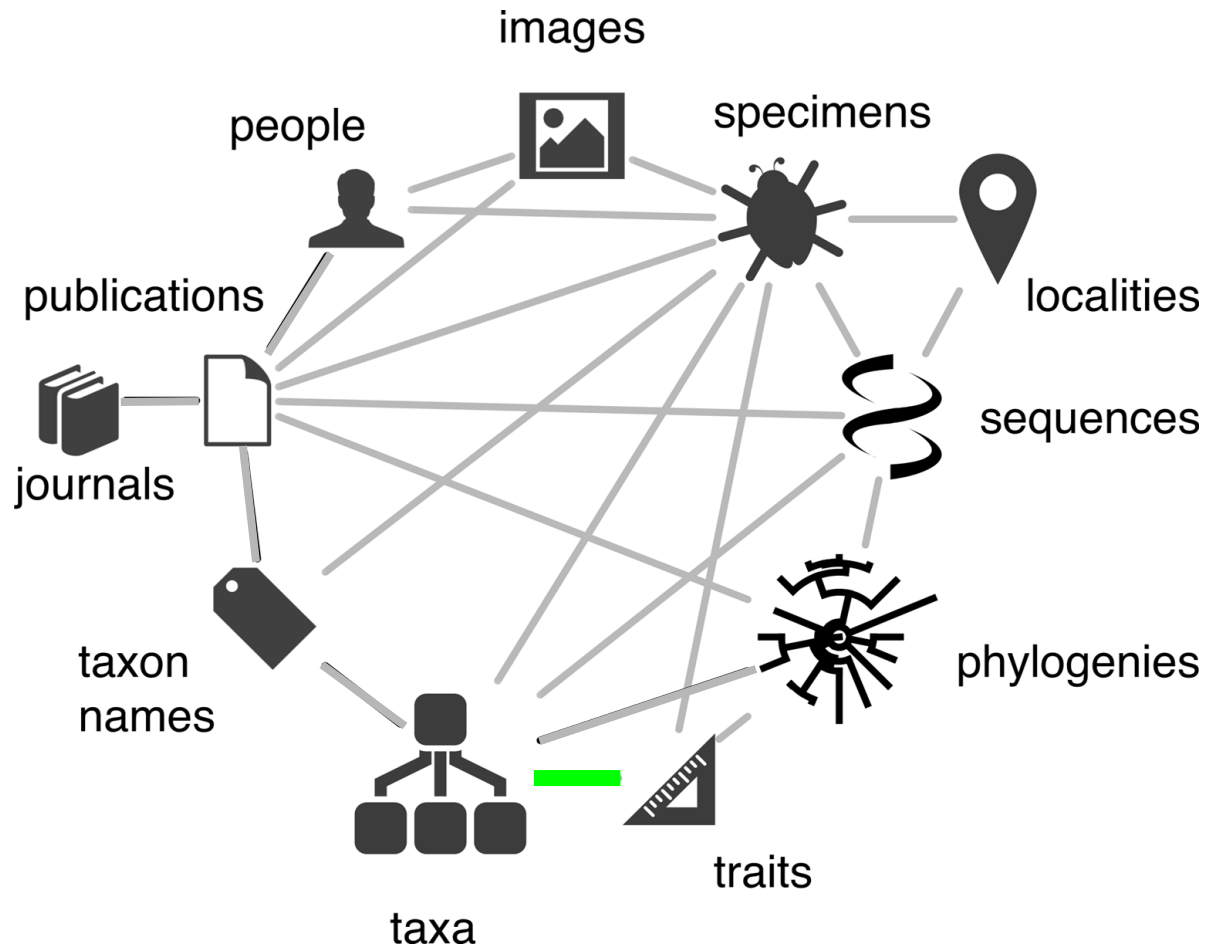
- plant anatomical entity
- plant structure development stage
 - collective plant organ structure development stage
 - collective phyllome structure development stage
 - shoot system development stage
 - bud burst stage**
 - bud development stage
 - phyllome development stage i
 - reproductive shoot system development stage
- multi-tissue plant structure development stage
- plant tissue development stage
- trichome development stage
- whole plant development stage

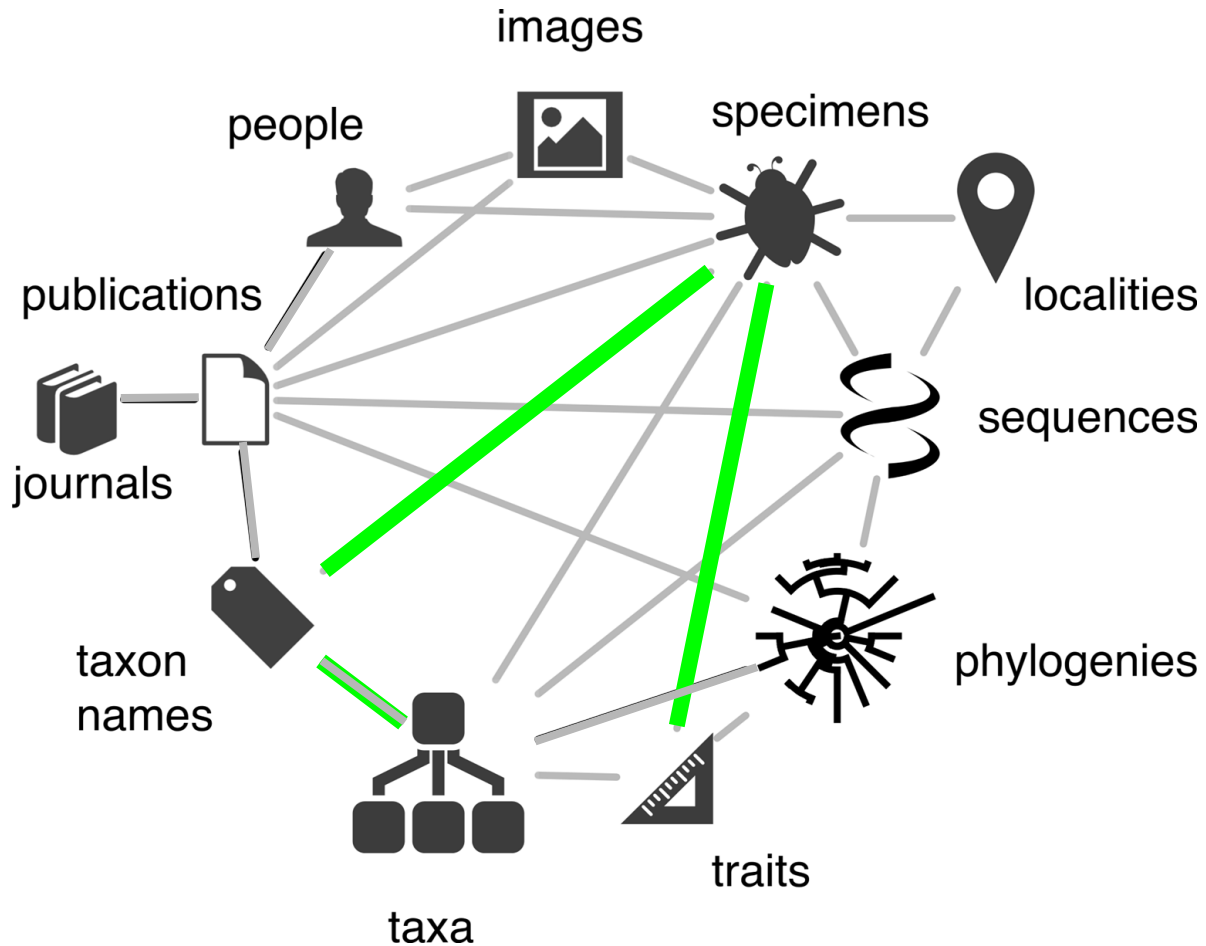
Details	Visualization	Notes (0)	Class Mappings (4)
Preferred Name		bud burst stage	
Synonyms		E-L 4 (exact)	
Definitions		A shoot system development stage (PO:0025527) during which a shoot system (PO:0009006) emerges from the bud (PO:0009006).	
ID		http://purl.obolibrary.org/obo/PO_0025532	
created_by		Laurel_Cooper	
creation_date		2012-12-14T11:55:04Z	
database_cross_reference		PO_GIT:517	
definition		A shoot system development stage (PO:0025527) during which a shoot system (PO:0009006) emerges from the bud (PO:0009006).	
has_exact_synonym		E-L 4 (exact)	
has_obo_namespace		plant_structure_development_stage	

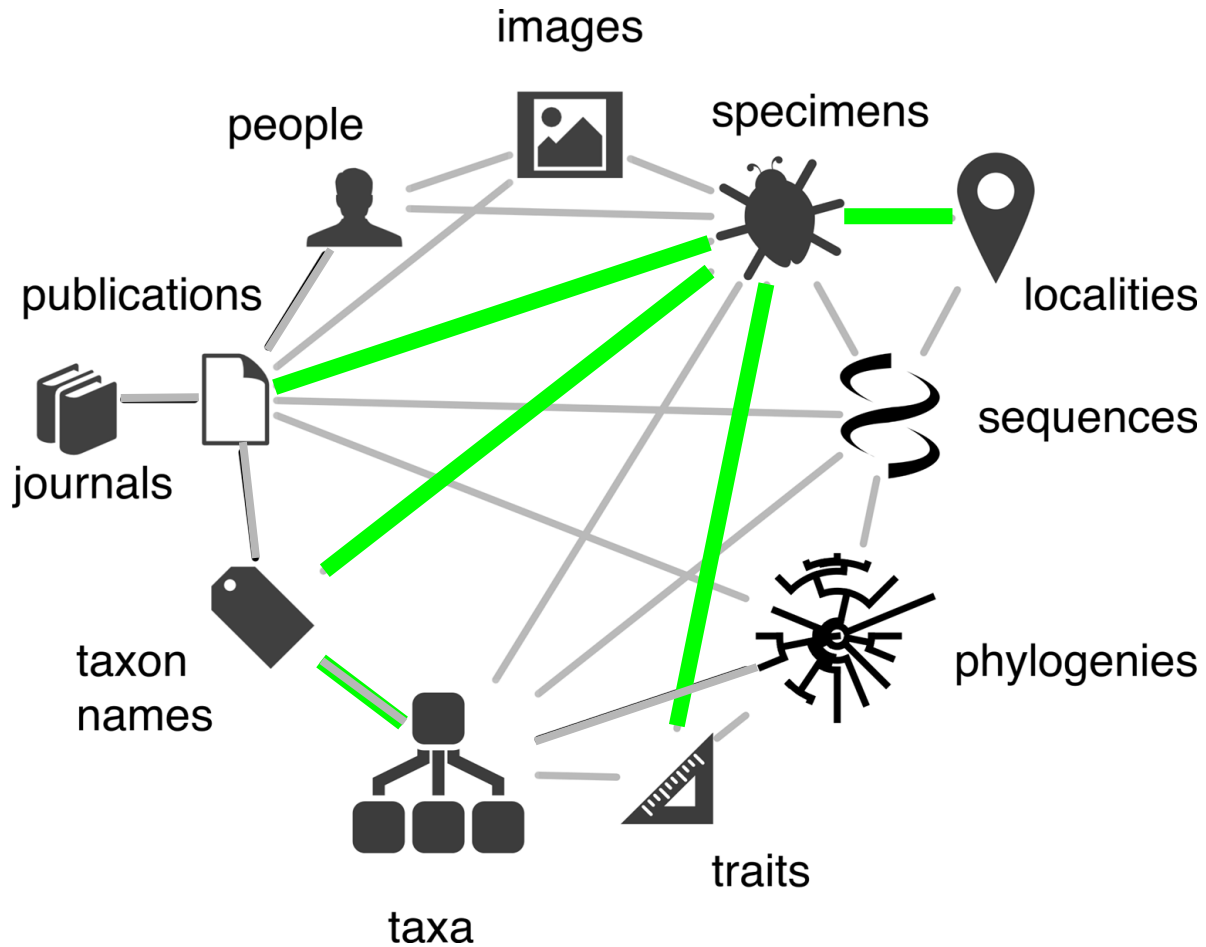


Linking Open Data cloud diagram 2017, by Andrejs Abele, John P. McCrae, Paul Buitelaar, Anja Jentzsch and Richard Cyganiak. <http://lod-cloud.net/> CC-BY-SA









Amphidinium operculatum

cell mass

0.00216 μg


[Biological Atlas ...](#)

Data about this record

sampling effort	158 cruises
source	http://www.nodc.noaa.gov/OC5/BARPLANK/WWW/HTML/database.html
measurement unit	μg
locality	the Barents Sea, the Kara Sea, and the White Sea
measurement method	see http://www.nodc.noaa.gov/OC5/BARPLANK/WWW/HTML/doc_en04.html#4.2
measurement remarks	calculated from cell volume using tables of average cell volumes and weights compiled for the Barents Sea
citation	Matishov, G., P. Makarevich, S. Timofeev, L. Kuznetsov, N. Druzhkov, V. Larionov, V. Golubev, A. Zuyev, N. Adrov, V. Denisov, G. Iliyn, A. Kuznetsov, S. Denisenko, V. Savinov, A. Shavikyn (Murmansk Marine Biological Institute, Russia), I. Smolyar, S. Levitus, T. O'Brien, O. Baranova (World Data Center for Oceanography, Silver Spring Ocean Climate Laboratory, National Oceanographic Data Center/NOAA, USA). Biological Atlas of the Arctic Biological Atlas of the Arctic Seas 2000: Plankton of the Barents and Kara Seas. International Ocean Atlas Series, Volume 2. http://www.nodc.noaa.gov/OC5/BARPLANK/WWW/HTML/bioatlas.html
scientific name	AMPHIDINIUM OPERCULATUM
event date	1913-1999
Link to this record	http://eol.org/pages/900696/data#data_point_20531008



Amphidinium operculatum **TRUSTED**

 David Patterson and Bob Andersen

Source: [microscope](#)

Amphidinium operculatum

cell mass 0.00216 μg

[Biological Atlas ...](#)

cell mass

Mass of one cell.

http://purl.obolibrary.org/obo/OBA_1000036

[see all taxa with this attribute](#) · [explore full data glossary](#)

sampling effort 15

source [ht](#)

measurement unit μg

locality

the Barents Sea, the Kara Sea, and the White Sea

measurement method

see

http://www.nodc.noaa.gov/OC5/BARPLANK/WWW/HTML/doc_en04.html#4.2

measurement remarks

calculated from cell volume using tables of average cell volumes and weights compiled for the Barents Sea

citation

Matishov, G., P. Makarevich, S. Timofeev, L. Kuznetsov, N. Druzhkov, V. Larionov, V. Golubev, A. Zuyev, N. Adrov, V. Denisov, G. Iliyn, A. Kuznetsov, S. Denisenko, V. Savinov, A. Shavikyn (Murmansk Marine Biological Institute, Russia), I. Smolyar, S. Levitus, T. O'Brien, O. Baranova (World Data Center for Oceanography, Silver Spring Ocean Climate Laboratory, National Oceanographic Data Center/NOAA, USA). Biological Atlas of the Arctic Biological Atlas of the Arctic Seas 2000: Plankton of the Barents and Kara Seas. International Ocean Atlas Series, Volume 2.

<http://www.nodc.noaa.gov/OC5/BARPLANK/WWW/HTML/bioatlas.html>

scientific name

AMPHIDINIUM OPERCULATUM

event date

1913-1999

Link to this record

http://eol.org/pages/900696/data#data_point_20531008



Amphidinium operculatum **TRUSTED**

David Patterson and Bob Andersen

Source: [microscope](#)

Ontology of Biological Attributes

Keywords:

Search terms

Class: cell mass

Term IRI: http://purl.obolibrary.org/obo/OBA_1000036

Definition: The mass of a cell.

Annotations

- **created_by:** jen.hammock
- **creation_date:** 2013-09-30T20:01:39Z
- **has_exact_synonym:** mass of cell; cell mass trait
- **has_obo_namespace:** oba
- **id:** OBA:1000036
- **provided by:** eol.org

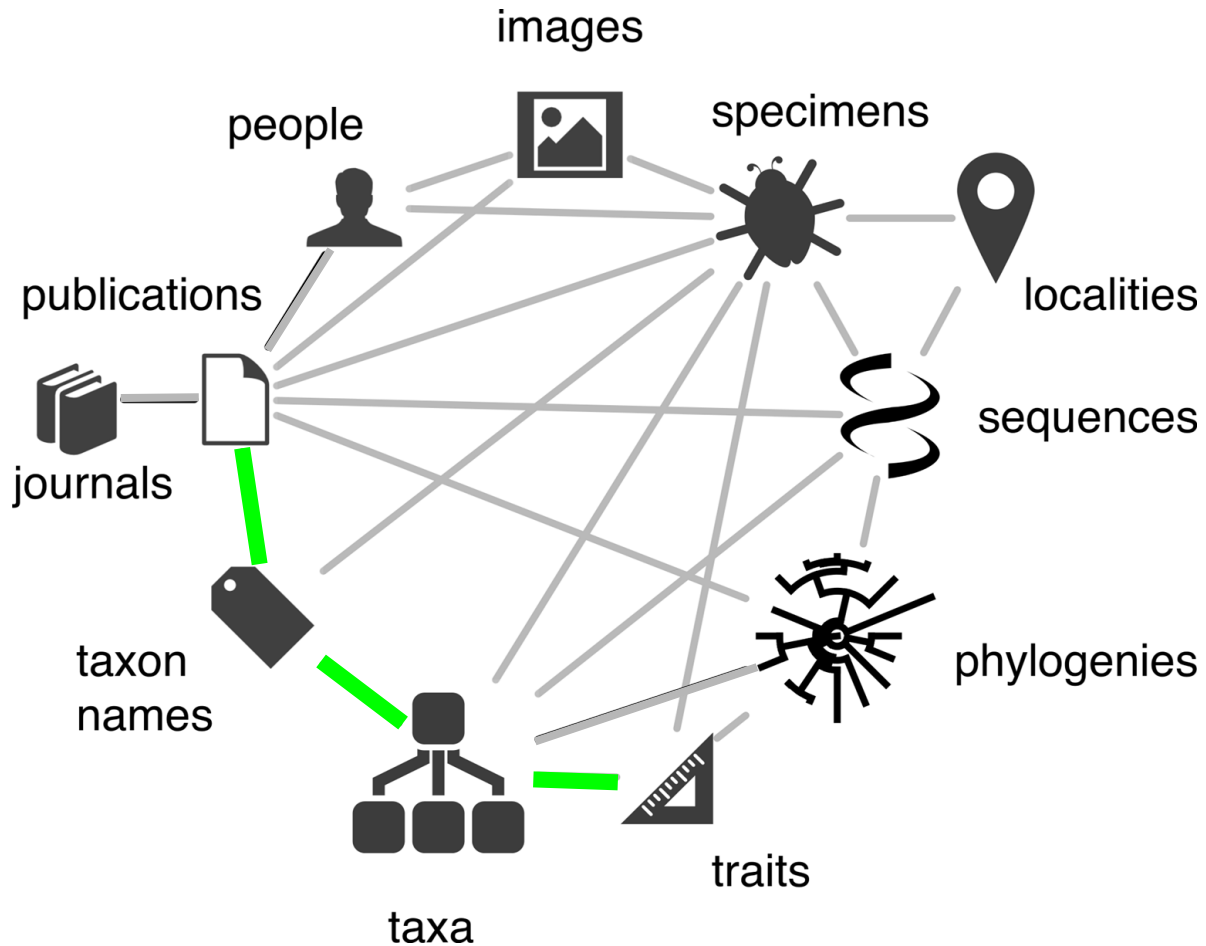
Equivalents

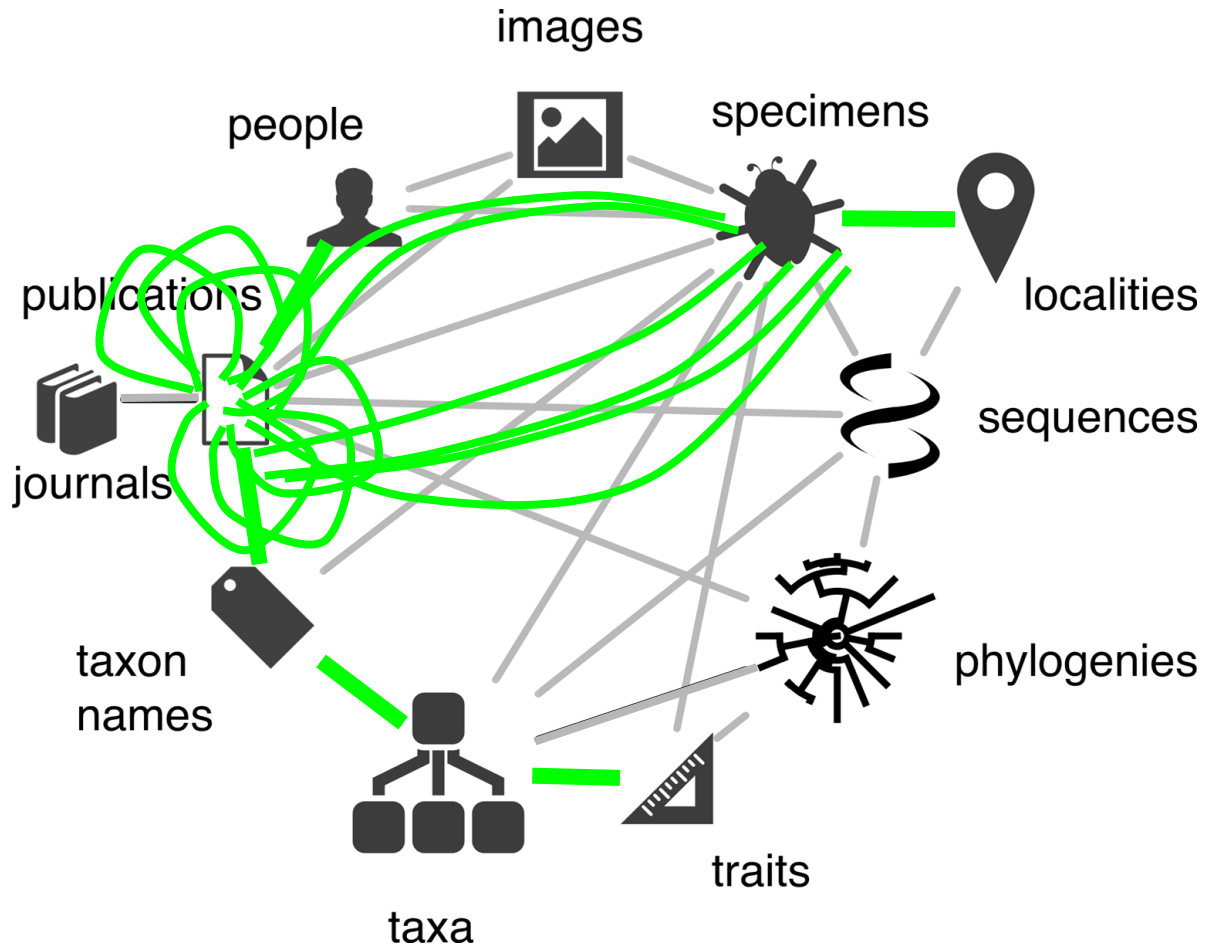
- [mass](#) and ([inheres in](#) some [cell](#))

Class Hierarchy

Thing

- + [quality](#)
 - + [physical object quality](#)
 - + [physical quality](#)
 - + [mass](#)
 - [cell mass](#)
 - [erythroid lineage cell mass](#)
 - [type B pancreatic cell mass](#)





Dasypodidae

Long-nosed Armadillos



Dasypus novemcinctus **TRUSTED** • *Dasypus novemcinctus* **TRUSTED** ... more

 <http://www.birdphotos.com>

Source: [Wikimedia Commons](#)

testis location

▼ testicond

[Lovegrove 2014](#)

Data about this record

body temperature 34.34 degrees Celsius

standard deviation 0.84 degrees Celsius

0.5 log₁₀ grams

body mass 3.566 log₁₀ grams

source Lovegrove BG (2014) Data from: Cool sperm: why some placental mammals have a scrotum. Dryad Digital Repository. [doi:10.5061/dryad.s5k0t](https://doi.org/10.5061/dryad.s5k0t)

References Freeman, S. 1990. The evolution of the scrotum – a new hypothesis. *J. Theor. Biol.* 145: 429–445.
Lunn, H.F. 1948. The comparative anatomy of the inguinal ligament. *J. Anat.* 82: 58–67.
Kleisner, K., Ivell, R. & Flegr, J. 2010. The evolutionary history of testicular externalization and the origin of the scrotum. *J. Biosci.* 35: 27–37.

citation Lovegrove BG (2014) Cool sperm: why some placental mammals have a scrotum. *Journal of Evolutionary Biology*, online in advance of print. [doi:10.1111/jeb.12373](https://doi.org/10.1111/jeb.12373)

scientific name Dasypodidae

sample size 9 species

Link to this record http://eol.org/pages/7630/data#data_point_6115473

Dasypodidae

Long-nosed Armadillos



Dasypus novemcinctus **TRUSTED** • *Dasypus novemcinctus* **TRUSTED** ... more

 <http://www.birdphotos.com>

Source: [Wikimedia Commons](#)

testis location

▼ testicond

[Lovegrove 2014](#)

Data about this record

body temperature 34.34 degrees Celsius

standard deviation 0.84 degrees Celsius

0.5 log10 grams

body mass 3.566 log10 grams

source Lovegrove BG (2014) Data from: Cool sperm: why some

placental mammals have a scrotum. Dryad Digital

Repository. [doi:10.5061/dryad.s5k0t](https://doi.org/10.5061/dryad.s5k0t)

References Freeman, S. 1990. The evolution of the scrotum – a new

hypothesis. *J. Theor. Biol.* 145: 429–445.

Lunn, H.F. 1948. The comparative anatomy of the inguinal ligament. *J. Anat.* 82: 58–67.

Kleisner, K., Ivell, R. & Flegr, J. 2010. The evolutionary history of testicular externalization and the origin of the scrotum. *J. Biosci.* 35: 27–37.

citatio Lovegrove BG (2014) Cool sperm: why some placental mammals have a scrotum. *Journal of Evolutionary Biology*, online in advance of print. [doi:10.1111/jeb.12373](https://doi.org/10.1111/jeb.12373)

scientific name Dasypodidae

sample size 9 species

Link to this record http://eol.org/pages/7630/data#data_point_6115473



doi:10.1111/jeb.12373



Scholar

1 result (0.09 sec)

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My library

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[BG Lovegrove](#) - [Journal of evolutionary biology, 2014 - Wiley Online Library](#)

... BG Lovegrove *. Article first published online: 15 APR 2014. DOI: **10.1111/jeb.12373**. © 2014

The Author. Journal of Evolutionary Biology © 2014 European Society For Evolutionary Biology.

Issue. Journal of Evolutionary Biology. Volume 27, Issue 5, pages 801–814, May 2014. ...

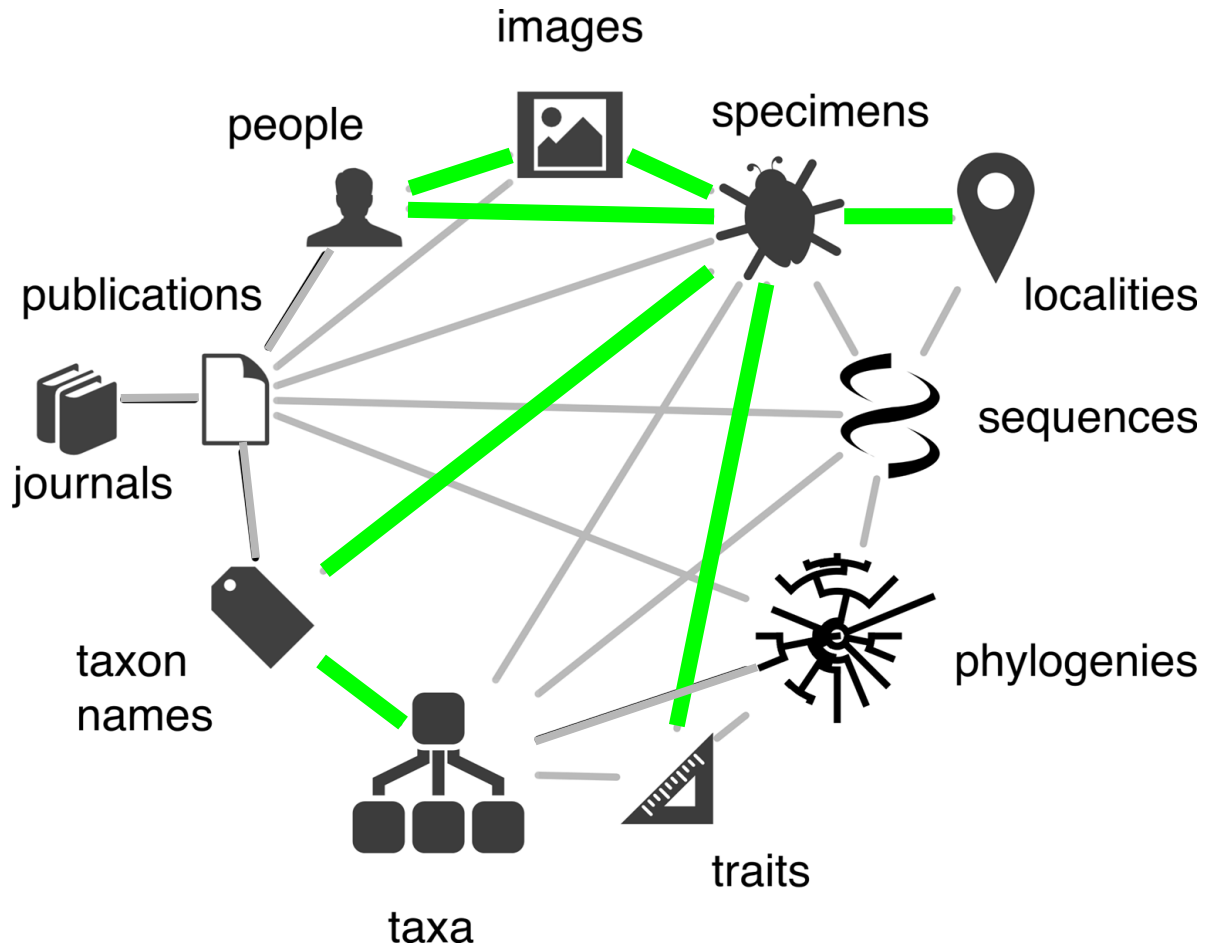
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body length (VT) ▾ 1,207 mm (female)

[National Museum of Natural His...](#)

Data about this record

source <http://collections.mnh.si.edu/search/mammals/?nb=63345>

citation Smithsonian Institution, National Museum of Natural History,
Department of Vertebrate Zoology, Division of Mammals.
Data for specimen 63345.

<http://collections.mnh.si.edu/search/mammals/>

measurement unit mm

scientific name *Varecia variegata*

sex female

catalog number 63345

institution code USNM

locality Precise Locality: Faraony River Valley; Province/State:

Fianarantsoa; Country: Madagascar; Ocean: Indian Ocean

occurrence remarks Notes: tissue taken: hair sample, San Jose State University,
12 Sep 2006, ref. TM #2041900.;

measurement remarks Verbatim measurements: Specimen Weight: 3.3kg; ; Total
Length: 1207mm; ; Tail Length: 661mm; ; Head - body
Length: 546mm:

recorded by Abbott, W. L.

preparations Skin: ; Skull:

Link to this record http://eol.org/pages/326534/data#data_point_3008043



Varecia variegata **TRUSTED**

 Frank Vassen

Source: [Wikimedia Commons](#)

Supplier: [National Museum of Natural History Collections](#)

body length (VT) ▾ 1,207 mm (female)

[National Museum of Natural His...](#)

Data about this record

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citation Smithsonian Institution, National Museum of Natural History,
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Fianarantsoa; Country: Madagascar; Ocean: Indian Ocean

occurrence remarks Not taken: hair sample, San Jose State University,
12 Sep 2006, ref. TM #2041900.;

measurement remarks Verbatim measurements: Specimen Weight: 3.3kg; ; Total
Length: 1207mm; ; Tail Length: 661mm; ; Head - body
Length: 546mm:

recorded by Abbott, W. L.

preparations Skin; ; Skull:

Link to this record http://eol.org/pages/326534/data#data_point_3008043



Varecia variegata **TRUSTED**

 Frank Vassen

Source: [Wikimedia Commons](#)

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Map Satellite

Layers



Fianarantsoa ca. 1193 m ✕

[Fianarantsoa](#), [Fianarantsoa](#), [WFI](#), [Φιανραντσοά](#), [Фианаранцуа](#), [Фианар...](#)

P PPLA seat of a first-order administrative division **1064890**

[Madagascar](#) ^{MG} » [Upper Matsiatra](#) 7670905

population : 167227

-21.45267, 47.08569 S 21°27'10" E 47°05'08"

[geotree](#)
[.kml](#)
[.rdf](#)

Tools

Fianarantsoa Province (Q841197)

province of Madagascar



[edit](#)

[In more languages](#) Configure

Language	Label	Description	Also known as
English	Fianarantsoa Province	province of Madagascar	
Spanish	Provincia de Fianarantsoa	No description defined	
Traditional Chinese	菲亞納蘭楚阿省	No description defined	
Chinese	菲亞納蘭楚阿省	No description defined	

All entered languages

Statements

instance of	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">  </div> <div> <p>province of Madagascar</p> <p>edit</p> </div> </div>
	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">  </div> <div> <p>0 references</p> </div> </div>
	<p>+ add reference</p>
	<p>+ add</p>

shares border with

Toliara Province

▼ 0 references

located in the administrative territorial entity

Madagascar

► 1 reference

Antananarivo Province

▼ 0 references

coordinate location

21°30'S, 47°0'E 

► 1 reference

Toamasina Province

▼ 0 references

area

103,272±0 square kilometre

► 1 reference

Identifiers

ISO 3166-2 code



MG-F

edit

[▶ 1 reference](#)

[+ add](#)

Freebase ID



/m/029t0t

edit

[▶ 1 reference](#)

[+ add](#)

FIPS 10-4 (countries and regions)



MA02

edit

[▶ 1 reference](#)

[+ add](#)

MusicBrainz area ID



de86687f-9d8b-4cd6-9db6-f06fe7620cd5

edit

[▶ 1 reference](#)

[+ add](#)

property



GeoNames ID

identifier in the GeoNames geographical database

population

number of people inhabiting the place; number of people of subject

postal code

save cancel ?

[+ add qualifier](#)

[+ add reference](#)

body length (VT) ▾ 1,207 mm (female)

[National Museum of Natural His...](#)

Data about this record

source <http://collections.mnh.si.edu/search/mammals/?nb=63345>

citation Smithsonian Institution, National Museum of Natural History,
Department of Vertebrate Zoology, Division of Mammals.
Data for specimen 63345.

<http://collections.mnh.si.edu/search/mammals/>

measurement unit mm

scientific name *Varecia variegata*

sex female

catalog number 63345

institution code USNM

locality Precise Locality: Faraony River Valley; Province/State:

Fianarantsoa; Country: Madagascar; Ocean: Indian Ocean

occurrence remarks Notes: tissue taken: hair sample, San Jose State University,
12 Sep 2006, ref. TM #2041900.;

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Length: 1207mm; ; Tail Length: 661mm; ; Head - body

Length: 546mm;

recorded by Abbott, W. L.

preparations

Link to this record http://eol.org/pages/326534/data#data_point_3008043

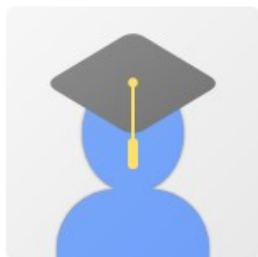


Varecia variegata **TRUSTED**

 Frank Vassen

Source: [Wikimedia Commons](#)

Supplier: [National Museum of Natural History Collections](#)



William Louis Abbott (1860-1936)

Follow

Dept. Vertebrate Zoology, National Museum of Natural History, [Smithsonian Institution](#)

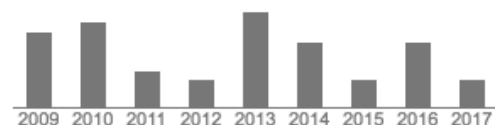
[ornithology](#), [natural history](#), [exploration](#)

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Google Scholar



Citation indices	All	Since 2012
Citations	253	33
h-index	9	3
i10-index	9	0



Title 1-20

Cited by

Year

[Birds from Siam and the Malay Peninsula in the United States National Museum collected by Drs. Hugh M. Smith and William L. Abbott](#)

JH Riley

US Government Printing Office

40

1938

[On Birds: Collected by WL Abbott in the Seychelles, Amirantes, Gloriosa, Assumption, Aldabra, and Adjacent Islands, with Notes on Habits, Etc., by the Collector](#)

R Ridgway, WL Abbott

US Government Printing Office

29

1896

[Mammals collected in eastern Sumatra by Dr. WL Abbott during 1903, 1906, and 1907, with descriptions of new species and subspecies](#)

MW Lyon, WL Abbott

US Government Printing Office

26

1908

William Louis Abbott (Q635604)

American naturalist

 [edit](#)

[In more languages](#) Configure

Language	Label	Description	Also known as
English	William Louis Abbott	American naturalist	
Spanish	William Louis Abbott	No description defined	
Traditional Chinese	No label defined	No description defined	
Chinese	No label defined	No description defined	

[All entered languages](#)

Statements

instance of



human

 [edit](#)

[▶ 1 reference](#)

[+ add](#)

sex or gender



male

 [edit](#)

[▶ 1 reference](#)

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3,448,951 ORCID IDs and counting. [See more...](#)**Jennifer Hammock****ORCID ID** orcid.org/0000-0002-9943-2342**Education (2)**

↑↓ Sort

Woods Hole Oceanographic Institution: Woods Hole, MA, United States

1998 to 2005

Ph.D. (Biology)

Source: Jennifer Hammock

Created: 2017-02-27

Massachusetts Institute of Technology: Cambridge, MA, United States

1994 to 1998

B.Sc. (Chemistry)

Source: Jennifer Hammock

Created: 2017-02-27

Employment (1)

↑↓ Sort

Smithsonian Institution: Washington, DC, United States

2009 to present

Project manager (Encyclopedia of Life)

Source: Jennifer Hammock

Created: 2017-02-27

body length (VT) ▾ 1,207 mm (female)

[National Museum of Natural His...](#)

Data about this record

source <http://collections.mnh.si.edu/search/mammals/111-63345>

citation Smithsonian Institution, National Museum of Natural History,

Department of Vertebrate Zoology, Division of Mammals.

Data for specimen 63345.

<http://collections.mnh.si.edu/search/mammals/111-63345>

measurement unit mm

scientific name *Varecia variegata*

sex female

catalog number 63345

institution code USNM

locality Precise Locality: Faraony River Valley; Province/State:

Fianarantsoa; Country: Madagascar; Ocean: Indian Ocean

occurrence remarks Notes: tissue taken: hair sample, San Jose State University,

12 Sep 2006, ref. TM #2041900.;

measurement remarks Verbatim measurements: Specimen Weight: 3.3kg; ; Total

Length: 1207mm; ; Tail Length: 661mm; ; Head - body

Length: 546mm:

recorded by Abbott, W. L.

preparations Skin: ; Skull:

Link to this record http://eol.org/pages/326534/data#data_point_3008043



Varecia variegata **TRUSTED**

 Frank Vassen

Source: [Wikimedia Commons](#)

Supplier: [National Museum of Natural History Collections](#)



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[Institutional/Project Collections](#)

[Personal Collections](#)

[Staff Members](#)

Institutional Collection: Division of Mammals

[View Record](#)

[Edit Record](#)

Collection Information

Institution Name:

[Smithsonian Institution, National Museum of Natural History](#)

CollectionCode:

MAMM

Status of Collection:

Active

Accession Status:

Institutional

Collection Description:

Roughly 590,000 preserved specimens. Collection supports a wide range of scientific research by resident staff and associates, as well as numerous visiting scientists.

Collection Content Type:

Biological: Other or Undefined

Preservation Type:

Storage Environment: Other (please define)

URL for Collection:

<http://vertebrates.si.edu/mammals/>

URL for Collection's Web Services:

(empty)

URL for Collection's Specimen

(empty)

body length (VT) ▾ 1,207 mm (female)

[National Museum of Natural His...](#)

Data about this record

source <http://collections.mnh.si.edu/search/mammals/?nb=63345>

citation Smithsonian Institution, National Museum of Natural History,
Department of Vertebrate Zoology, Division of Mammals.
Data for specimen 63345.

<http://collections.mnh.si.edu/search/mammals/>

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scientific name *Varecia variegata*

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recorded by Abbott, W. L.

preparations Skin; ; Skull:

Link to this record http://eol.org/pages/326534/data#data_point_3008043



Varecia variegata **TRUSTED**

 Frank Vassen

Source: [Wikimedia Commons](#)

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river valley



Dim Node

[Open concept homepage in tab](#)

Ontology: [ENVO](#)

Concept ID: http://purl.obolibrary.org/obo/ENVO_00000171

Synonyms:

Definition: A valley that contains, and has been formed by, a river.

river valley

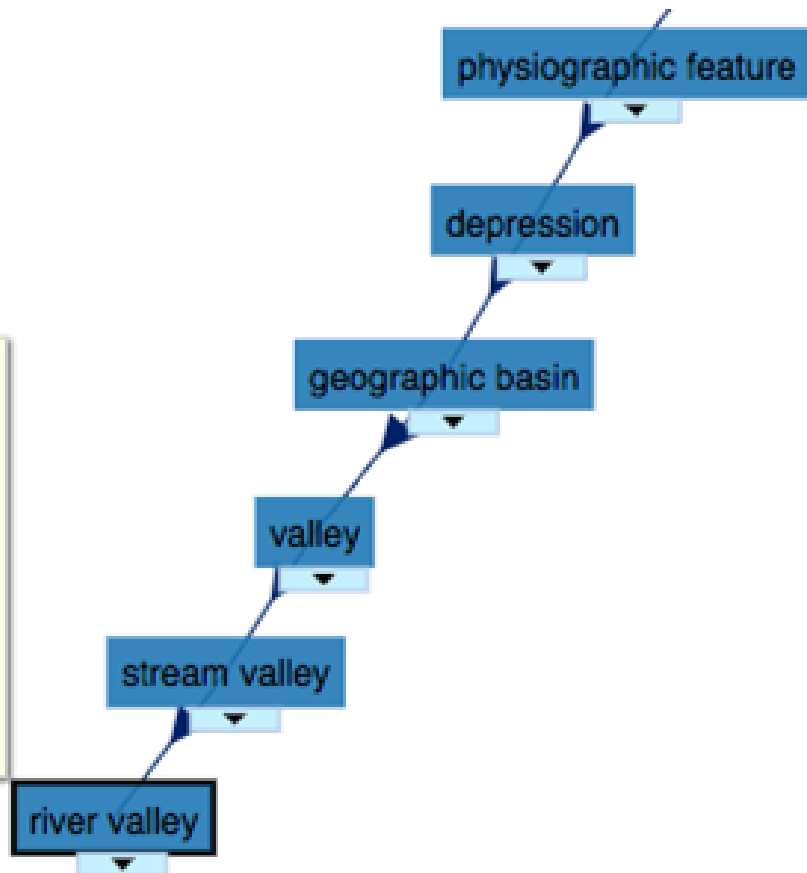
stream valley

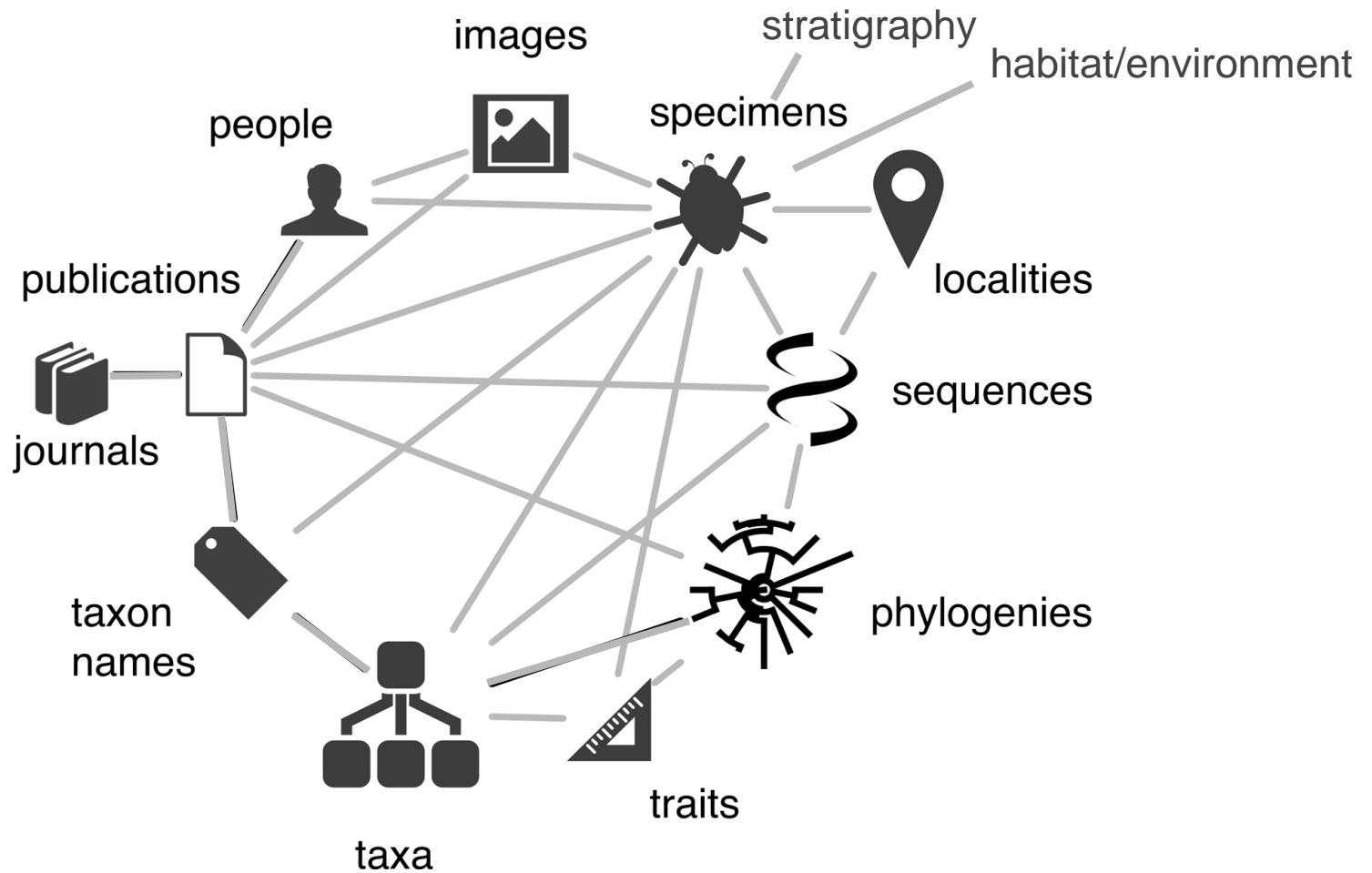
valley

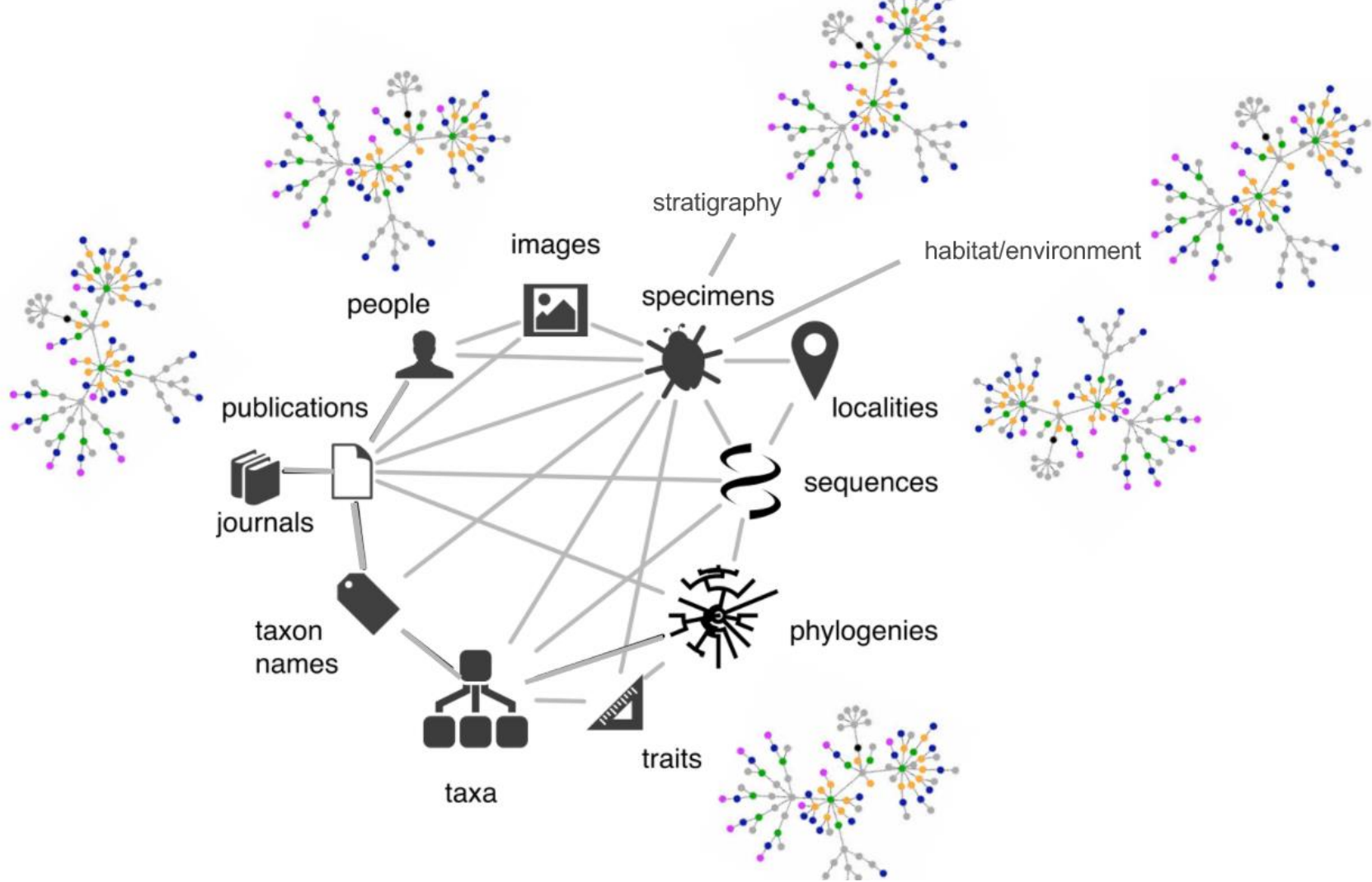
geographic basin

depression

physiographic feature









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