

Hocus pocus: Mixing open identifiers into metadata makes connections between research work

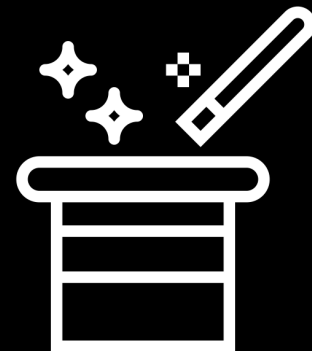
Making the magic happen:

Helena Cousijn, DataCite: <https://orcid.org/0000-0001-6660-6214>

Maria Gould, ROR: <https://orcid.org/0000-0002-2916-3423>

Gabriela Mejias, ORCID: <https://orcid.org/0000-0002-1598-7181>

Rachael Lammey, Crossref: <https://orcid.org/0000-0001-5800-1434>



Created by Smalllike
from Noun Project

PIDs for people, places, and things in the research community

PIDs for people (researchers) include ISNIs and ORCID iDs

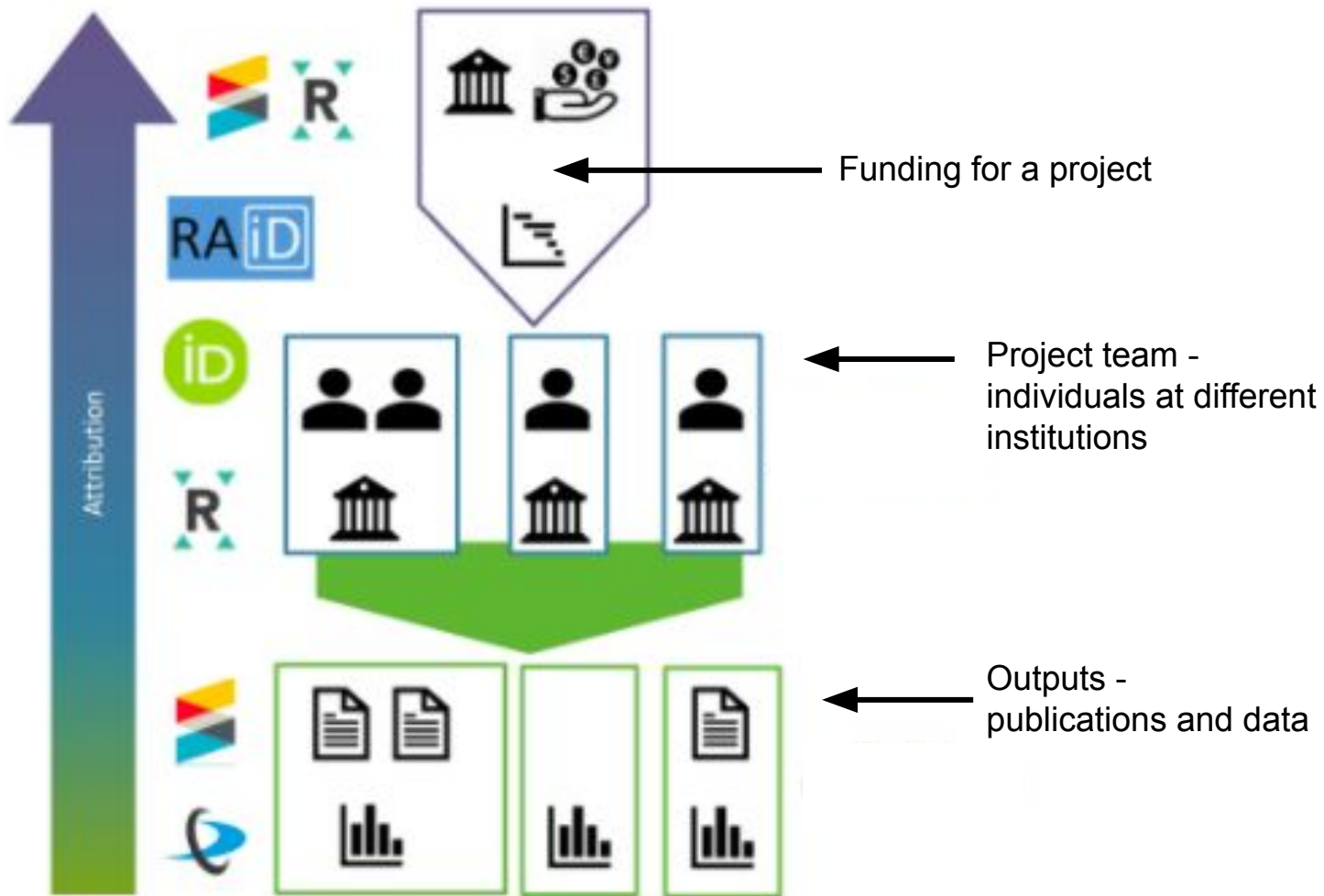


PIDs for places (research organizations) include GRID and ROR



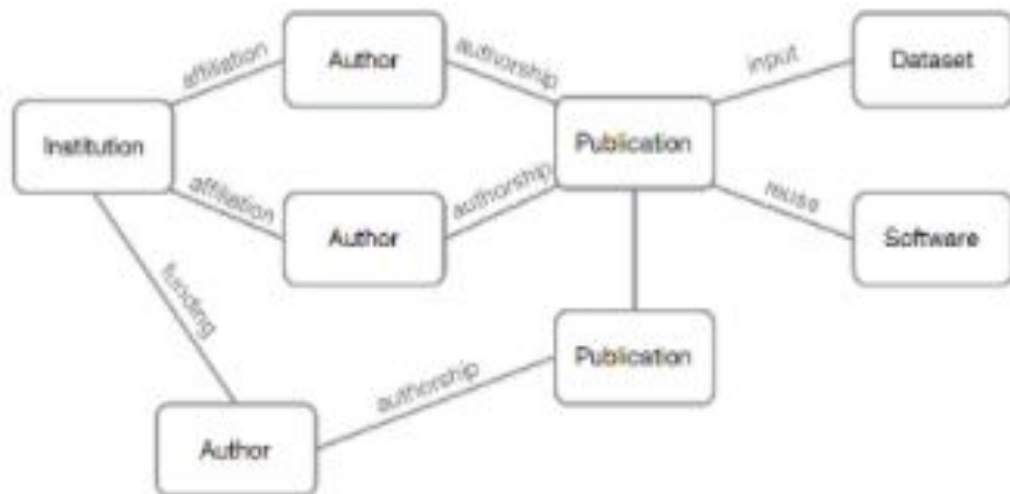
PIDs for things (research outputs/inputs like grants, reviews, preprints, projects, etc.) include Crossref and DataCite DOIs, IGSNs, RAiDs, and more





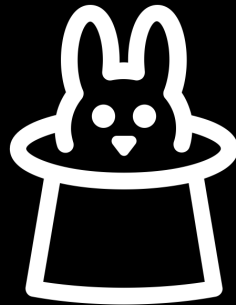
Good start, but we want more

Connecting everything
reveals the true power of
PIDs



<https://doi.org/10.1016/j.patter.2020.100180>

Connecting stuff up relies on
community-driven open identifiers
and metadata!



Created by Adrien Coquet
from Noun Project



Crossref

- Over 12,000 member organizations
- 16 member board, cross section of our international members
- Metadata store of over 121 million scholarly content items
- We offer a wide array of services to ensure that scholarly research metadata is registered, linked, and distributed.
- We preserve the metadata we receive and make it available via our open APIs and Search
- Committed to the [Principles of Open Scholarly Infrastructure](#)





Members —> Crossref

Basic metadata: titles; author names & **ORCID iDs**; ISSN/ISBNs, abstracts, references

Funding Information, Funder identifiers, award numbers

License Information, License URIs

Full-text URIs (e.g. for text mining and Similarity Check)

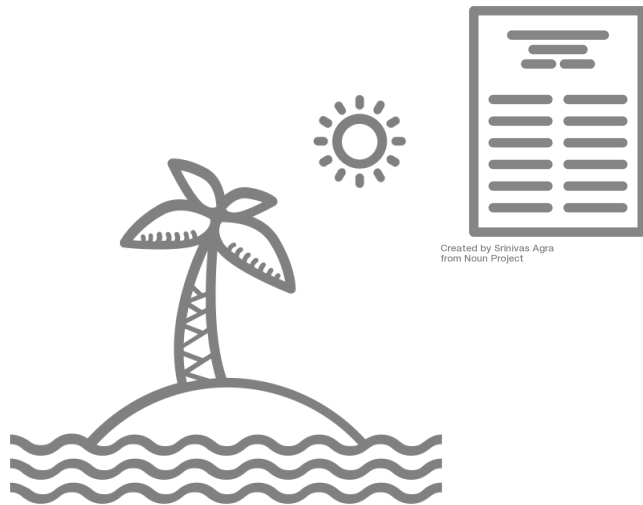
Crossmark: updates, retractions, corrections
ORCID iDs

Recently: Peer Review reports, relations. **links to data**, Grant IDs

Soon... **ROR IDs**, CRediT



Identifier-free Crossref metadata =



Created by Srinivas Agra
from Noun Project

Created by AB
from Noun Project



Crossref open metadata + identifiers =

Updates and ORCID records

Document is current

Any future updates will be listed below

Connected Research: The Potential of the PID Graph
Crossref DOI link: <https://doi.org/10.1016/j.PATTER.2020.100180>
Published: 2021-01
Update policy: <https://doi.org/10.1016/j.PATTER.2020.100180>

Authors

Covall, Helena <https://orcid.org/0000-0001-8886-8214>
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Acknowledgments

The authors thank the patient described in this report and his relatives for being very open, helpful and cooperative in all stages of this study. The authors also thank Eva Klimars for her professional help during the measurements. Rob M.A. de Bie received research grants from ZonMw, Parkinson Vereniging and Stichting Parkinson Nederland, and received unrestricted research grants from GE Health (paid to the institution) and Lysosomal Therapeutics (paid to the institution). Rick Helmich received funding from NWO (VENI grant, #91617077) and the Michael J Fox Foundation. The Center of Expertise for Parkinson & Movement Disorders was supported by a center of excellence grant by the Parkinson Foundation.

Preprints & other related work

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Effects of COVID-19 home confinement on physical activity and eating behaviour Preliminary results of the ECLB-COVID19 international online-survey

Comments (1)

Achraf Ammar, Michael Brach, Khaled Trabelsi, Hamdi Chouros, Omar Boukhris, Liwa Masmoudi, Bassem Bouazzi, Ellen Bendage, Daniella How, Mona Ahmed, Patrick Mueller, Notger Mueller, Asma Aloui, Omar Hammouda, Laia Liane Paineiras-Domingos, Annemarie Brakman-jansen, Christian Wyder, Sophia Bastoni, Carlos Soares Pernambuco, Leonardo Matarna, Morteza Taheri, Khadijeh Irandoust, Aimen Khacharem, Nicola L. Bragazzi, Karim Chamari, Jordan M. Glenn, Nicholas T. Bott, Faiez Gargouri, Lotfi Chaari, Hadji Batatia, Gamal Mohamed Ali, Osama Abdelkarim, Mohamed Jarraya, Kais El Abed, Nizar Souissi, Lisette Van Gemert-Pijnen, Bryan L. Riemann, Laurel Riemann, Wassim Moalla, Jonathan Gomez-Raja, Monique Epstein, Robert Sanderman, Sebastian Schulz, Achim Jerg, Ramzi Al-Horani, Tayyar Mansi, Mohamed Jmail, Fernando Barbosa, Fernando Santos, Bojan Simunk, Rado Pilot, Donald Cowan, Andrea Gaggioli, Stephen J. Bailey, Jürgen Steinacker, Tarak Driss, Anita Hoekelmann

doi: <https://doi.org/10.1101/2020.05.04.20072447>

Now published in Nutrients doi: [10.3390/nu12061583](https://doi.org/10.3390/nu12061583)

Links to data (& code)

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<?xml version="1.0" encoding="UTF-8"?>
<citation key="10.1111/pala.12283-BIB0019|pala12283-cit-0019">
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  <Year>2017</Year>
  <volume_title>Data from: Mass extinctions over the last 500 myr: an astronomical cause</volume_title>
  <doi>10.5061/dryad.dk385</doi>
</citation>
```

DRYAD

Explore Data | About | Help | Login

Data from: Mass extinctions over the last 500 myr: an astronomical cause?

Erlykin, Anatoly D., Durham University
Harper, David A. T., Lund University, Durham University
Sloan, Terry, Lancaster University
Wolfe, Arnold W., Durham University
Publication date: January 25, 2018
Publisher: Dryad
<https://doi.org/10.5061/dryad.dk385>

Citation

Erlykin, Anatoly D.; Harper, David A. T.; Sloan, Terry; Wolfe, Arnold W. (2018). Data from: Mass extinctions over the last 500 myr: an astronomical cause?, Dryad, Dataset, <https://doi.org/10.5061/dryad.dk385>

Abstract

A Fourier analysis of the magnitudes and timing of the Phanerozoic mass extinctions (MEs) demonstrates that many of the periodicities claimed in other analyses are not statistically significant. Moreover we show that the periodicities

Data Files

Download dataset

January 25, 2018

Related Works

Article
<https://doi.org/10.1111/pala.12283>

Metrics

111 views

60 downloads

1 citations



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Peer reviews

Reviewer 1 • Dec 28, 2012

Basic reporting
See below.

Experimental design
See below.

Validity of the findings
See below.

Cite this review as

Anonymous Reviewer (2013) Peer Review #1 of "SUMOylation in Trypanosoma brucei (v0.1)". *PeerJ* <https://doi.org/10.7287/peerj.180v0.1/reviews/1>

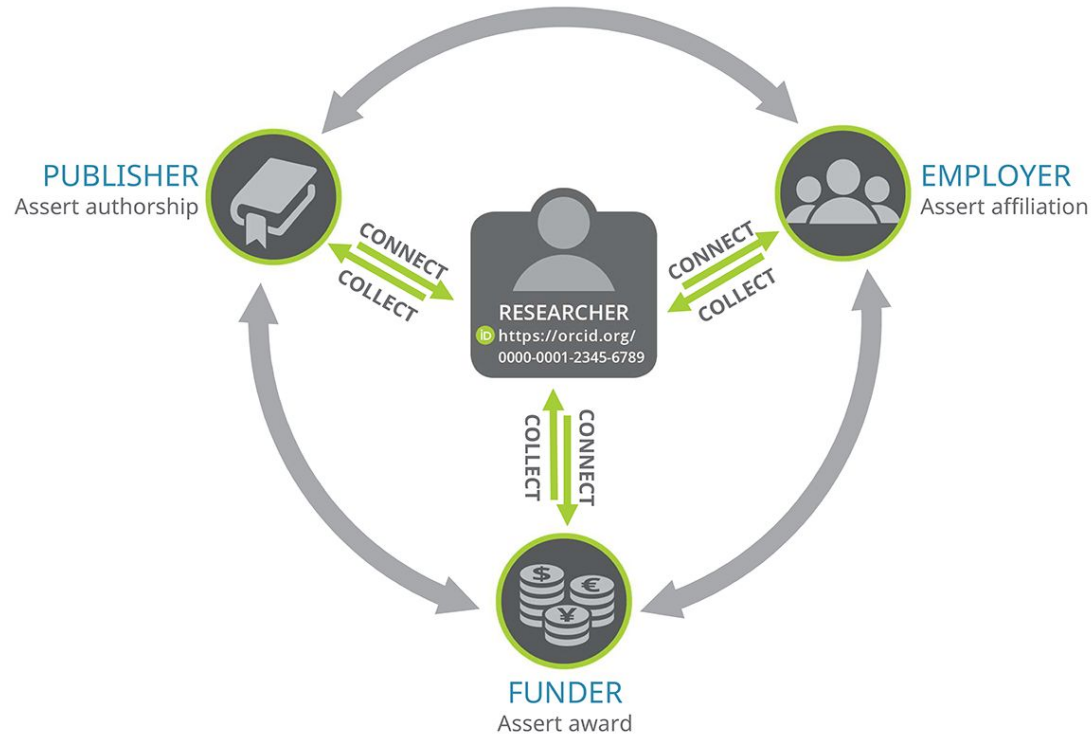
particularly concerning detection, identification, and validation of the potential SUMOylated proteins, and the role of SUMOylation in oxidative stress.

ORCID

- An identifier for individuals (10M+ registered) connected to a **record** (affiliations, works, funding metadata)
- A Registry / Hub to synchronize data
- APIs for connecting researchers with other identifiers for their contributions, affiliations, activities, and more!
- A community of practice building connections and tools (1100+ members, 24 regional consortia, 3000+ Public API integrators)
- An international scale open research effort

INTEROPERABILITY

ENTER ONCE
REUSE OFTEN



Open metadata in action

▼ Funding (4)

↑ Sort

Evaluation of metabotropic glutamate receptor 3 as a therapeutic target in breast cancer

Breast Cancer Now (London)

2019-08-01 to 2022-07-31 | Grant

GRANT_NUMBER: 2018NovPR1268

URL: <https://app.dimensions.ai/details/grant/grant...>

Source: Leo M. Carlin via DimensionsWizard ★ Preferred source

Actionable druggable genome-wide Mendelian randomization identifies repurposing opportunities for COVID-19

2020-11 | preprint

OTHER-ID: PPR241902

DOI: [10.1101/2020.11.19.20234120](https://doi.org/10.1101/2020.11.19.20234120)

Source: Anna Gaulton via Europe PubMed Central

★ Preferred source

▼ Employment (6)

↑ Sort

Tel Aviv University: Tel Aviv, IL

2017-12-05 to present | (Information Technology and Computing Division)

Employment

Organization Identifiers

GRID: [grid:12136.37](https://grid.ac/institutes/gr12136.37)

Tel Aviv University: Tel Aviv, IL

<http://english.tau.ac.il/>

Other organization identifiers provided by GRID

FUNDRF: 501100004375 (preferred), 501100004237, 501100005310, 501100006099, 501100007539

ISN: 0000 0004 1937 0546

ORGRF: 161402

ROR: <https://ror.org/04mhgx49>

WIKIDATA: Q319239 (preferred), Q5661285

WIKIPEDIA_URL: http://en.wikipedia.org/wiki/Tel_Aviv_University (preferred)

Added

2019-06-19

Last modified

2019-06-19

Source: Tel Aviv University ★ Preferred source

▼ review activity for F1000Research.(4)

Journal, F1000Research

ISSN : 2046-1402

| Review date | Type | Role | Added | Last modified | Actions |
|--|-------------------------------|--|--------------|----------------------|---|
| 2020-02-14 | review | reviewer | | | hide details view |
| Review identifier(s) | Convening organization | Review subject | Added | Last modified | |
| DOI: 10.5256/f1000research.24613.r59 | F1000Research (London, GB) | National culture as a correlate of research output and impact [version 3; peer review: 2 approved] (journal-article) | 2019-04-15 | 2020-02-17 | |
| 688 | | F1000Research. | | | |
| | | DOI: 10.12688/f1000research.18283.3 | | | |

Source: F1000 ★ Preferred source

▼ Research resources (1 of 1)

↑ Sort

Collaborative Access Team: Pacific Northwest Cryo-EM Center (PNCC)

2018-07-01 to 2020-09-30

DOI: [10.25902/401.png.2018.59414](https://doi.org/10.25902/401.png.2018.59414)

Environmental Molecular Sciences Laboratory (Richland, WA, US)

Organization Identifiers

GRID: [grid:1436923.9](https://grid.ac/institutes/gr1436923.9)

Environmental Molecular Sciences Laboratory: Richland, Washington, US

<http://www.emsl.gov/emslweb/>

Other organization identifiers provided by GRID

ISN: 0000 0004 0373 6223

ORGRF: 19642725

ROR: <https://ror.org/04rcb13>

WIKIDATA: Q5281141

WIKIPEDIA_URL: https://en.wikipedia.org/wiki/Environmental_Molecular_Sciences_Laboratory (preferred)

Added

2019-04-16

Last modified

2019-04-16

| Resource item | Type | Actions |
|--|-----------------|---|
| EMSL Facility | infrastructures | hide details view |
| Environmental FIB/SEM (Quanta) | equipment | hide details view |
| Computing: Cascade (1440 Node Linux Cluster) | equipment | hide details view |

Source: Environmental Molecular Sciences Laboratory (EMSL) ★ Preferred source



The O in ORCID

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```

- Public Data File
 - released annually during OA Week
 - public record data in XML
 - CC0
 - 2020 dump: 3000+ downloads
- Public API
 - + 2000 registered users
 - Read public data



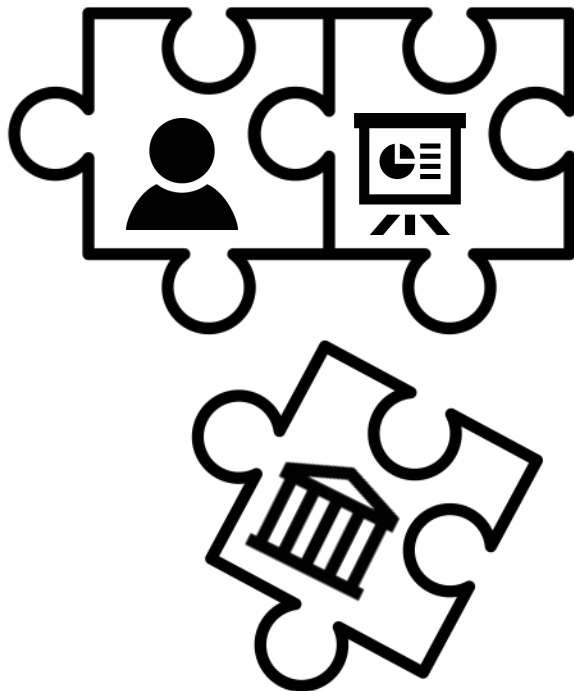
The road to open

- Add support for CRediT
- Funded by relationship
- Add support for ROR

is never complete...



Research Organization Registry (ROR)





Articles by UCSF researchers

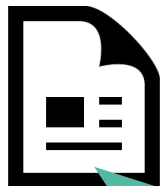
Robin Researcher,
University of California San Francisco



Steph Scientist,
University of California-San Francisco

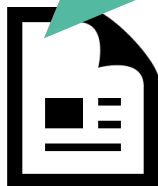


Articles by UCSF researchers



Barbara Biologist,
UCSF

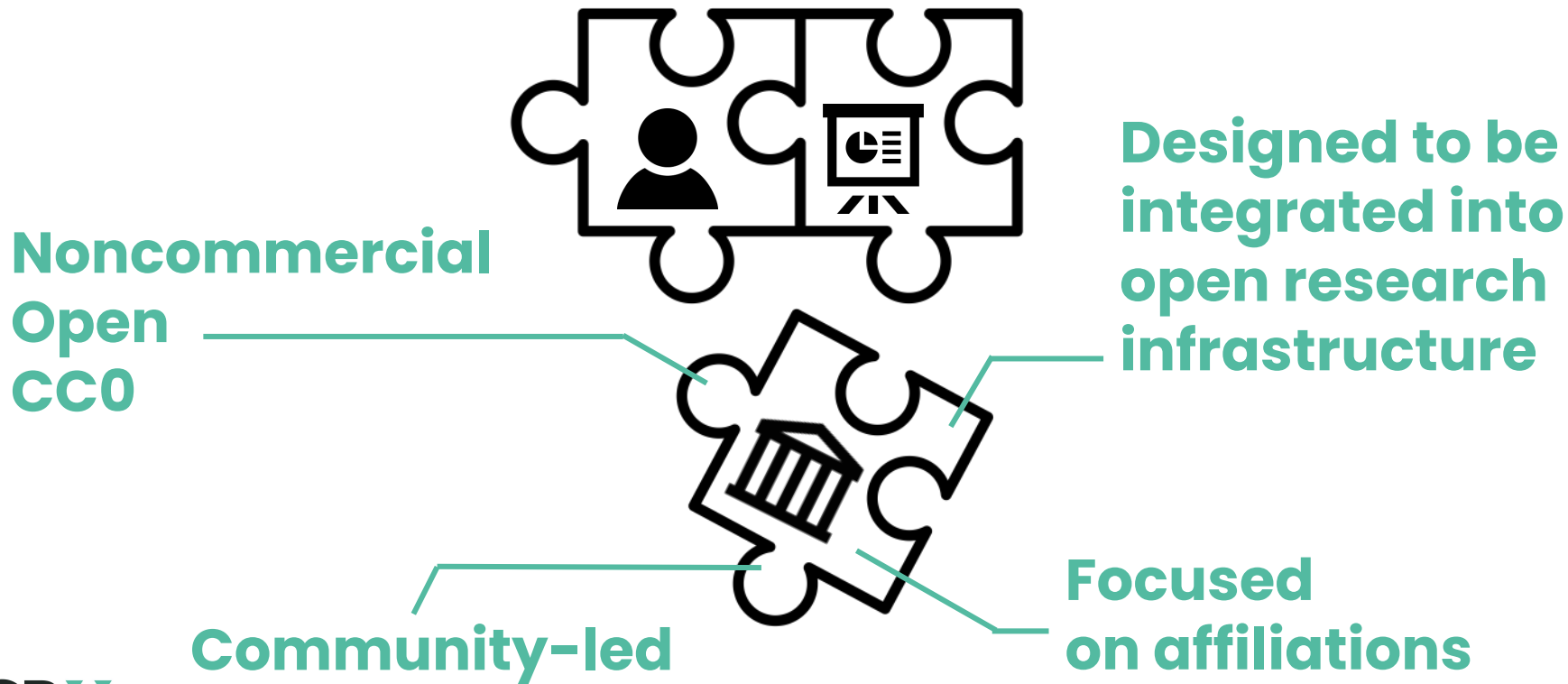
Val Virologist,
UC San Francisco



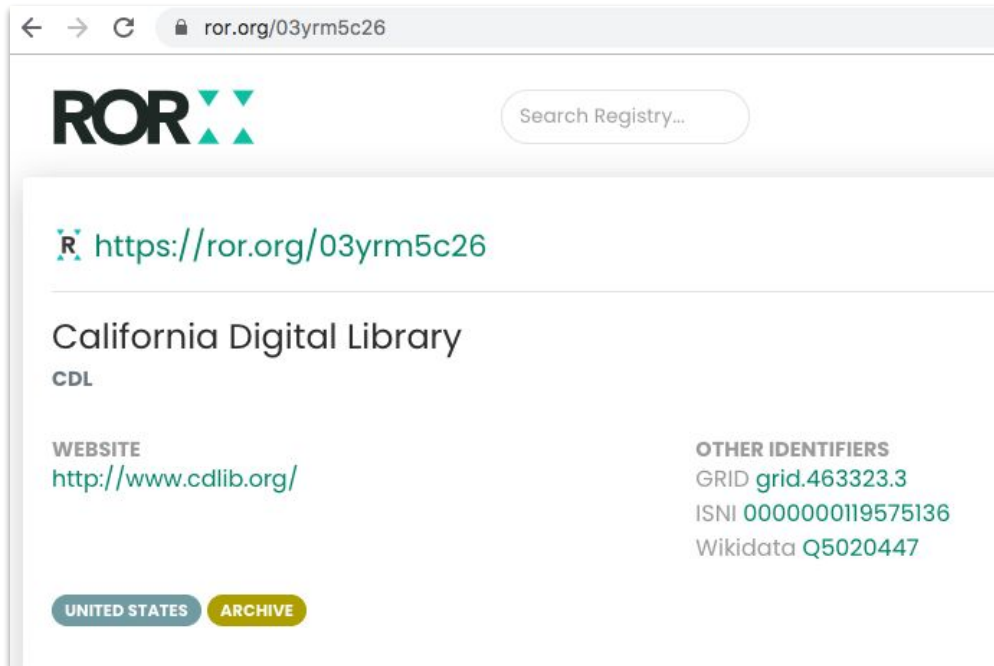
Lou Labtech,
**Department of Laboratory
Medicine, UCSF,
San Francisco CA**



Research Organization Registry (ROR)




Research Organization Registry (ROR)



← → ↻ ror.org/03yrm5c26

ROR

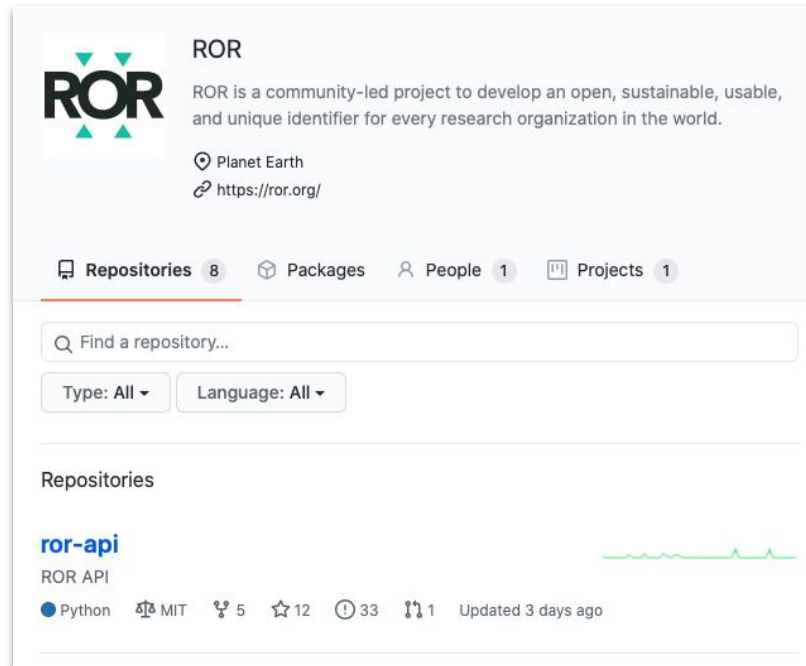
 <https://ror.org/03yrm5c26>

California Digital Library
CDL

WEBSITE
<http://www.cdlib.org/>





OTHER IDENTIFIERS
GRID [grid.463323.3](#)
ISNI [0000000119575136](#)
Wikidata [Q5020447](#)

UNITED STATES **ARCHIVE**



ROR
ROR is a community-led project to develop an open, sustainable, usable, and unique identifier for every research organization in the world.

📍 Planet Earth
<https://ror.org/>

 **Repositories** 8  **Packages**  **People** 1  **Projects** 1

Type: All ▾ Language: All ▾

Repositories

[ror-api](#)
ROR API
Python MIT 5 12 33 1 Updated 3 days ago



Articles where affiliation=<https://ror.org/043mz5j54>



doi:10.1234/metadatawithror01



doi:10.5678/metadatawithror02



doi:10.9109/metadatawithror03



doi:10.8765/metadatawithror04



doi:10.4321/metadatawithror05

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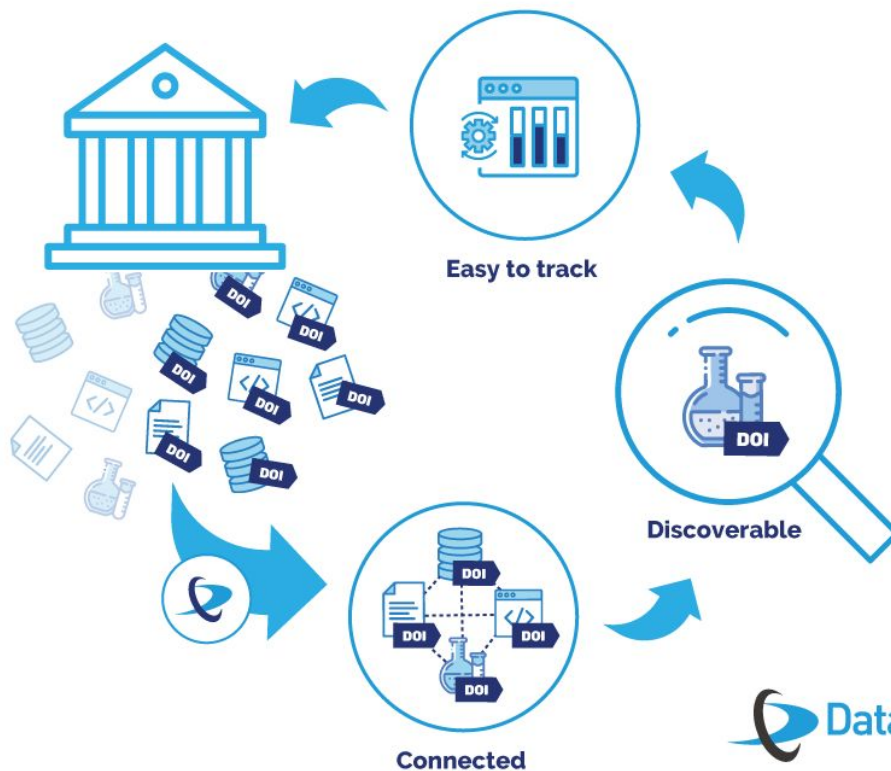
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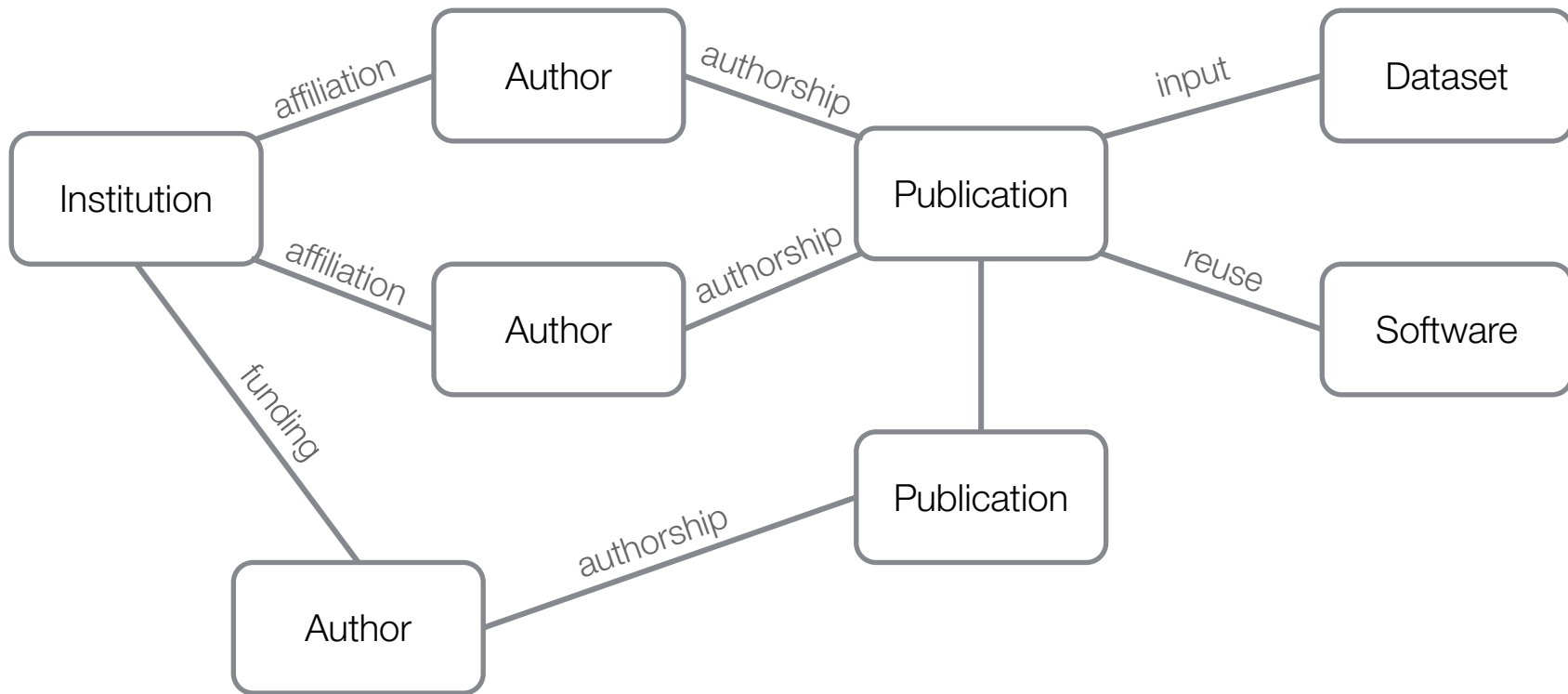
A close-up, blue-tinted image of a microscope's objective lens and eyepiece, serving as a background for the text.

**Connecting research,
identifying knowledge**

How we do that

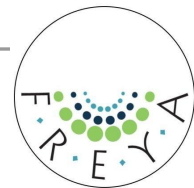


Research is already connected

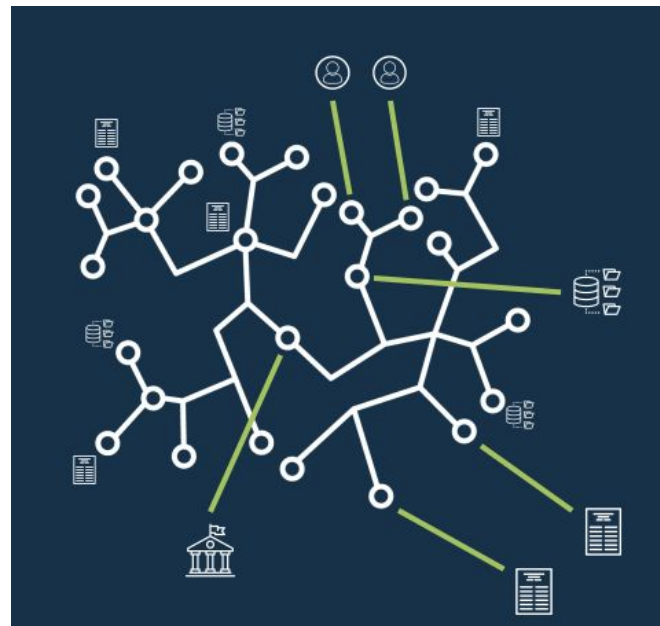
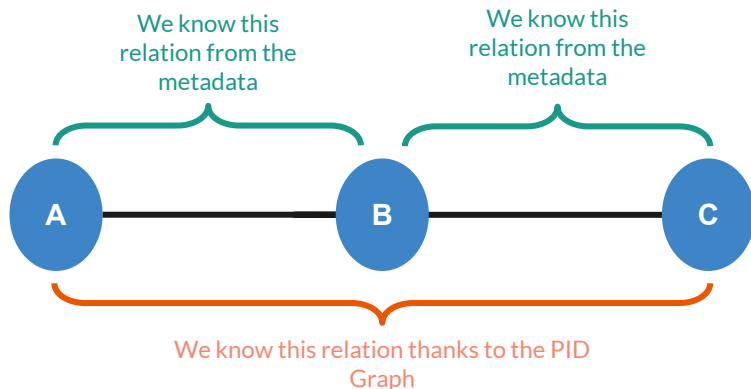


PID Graph

The PID Graph was developed within EC project FREYA (<https://www.project-freya.eu>).



The basic idea is to link PIDs for different entities together via relations in their metadata to enable the discovery of connections at least two steps away.



Find and Connect Research

with existing infrastructure



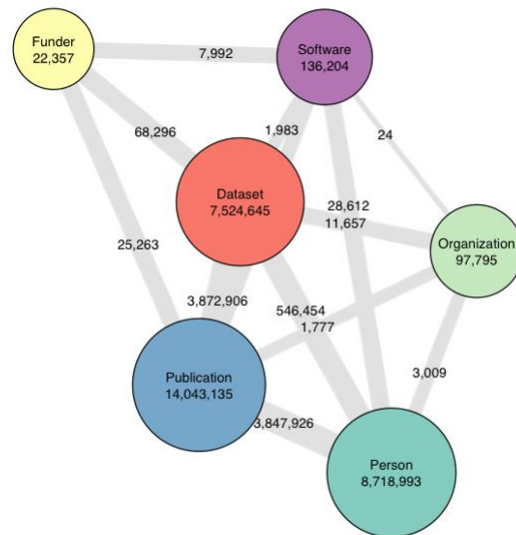
Find Research with DataCite Commons

Type to search...

☐ Works ☐ People ☐ Organizations

PID Graph

Number of nodes and connections (May 2020)



Data from: Impact of negative frequency-dependent selection on mating pattern and genetic structure: a comparative analysis of the S-locus and nuclear SSR loci in *Prunus lannesiana* var. *speciosa*

Kato Shuri, Teruyoshi Nagamitsu, Hiroyoshi Iwata, Yoshihiko Tsumura, Yuzuru Mukai, K Michiharu, K Saika & K Junko

Version 1 of Dataset published 2012 in [DRYAD](#)

Mating processes of local demes and spatial genetic structure of island populations at the self-incompatibility (S-) locus under negative frequency-dependent selection (NFDS) were evaluated in *Prunus lannesiana* var. *speciosa* in comparison with nuclear simple sequence repeat (SSR) loci that seemed to be evolutionarily neutral. Our observations of local mating patterns indicated that male-female pair fecundity was influenced by not only self-incompatibility, but also various factors such as kinship, pollen production and flowering synchrony. In spite of the mating bias caused by these factors, the NFDS effect on changes in allele frequencies from potential mates to mating pollen was detected at the S-locus but not at the SSR loci although the changes from adult to juvenile cohorts were not apparent at any loci. Genetic differentiation and isolation-by-distance over various spatial scales were smaller at the S-locus than at the SSR loci, as expected under the NFDS. All allele sharing distributions among the populations also had a unimodal pattern at the S-locus, indicating the NFDS effect except for alleles unique to individual populations probably due to isolation among islands, although this pattern was not exhibited by the SSR loci. Our results suggest that the NFDS at the S-locus has an impact on both the mating patterns and the genetic structure in the *P. lannesiana* populations studied.

DOI registered April 17, 2012 via DataCite.



 1 Citation  99 Views  16 Downloads

Dataset

English

Supporting recognition

Creators

Kato Shuri

Forestry and Forest Products Research
Institute

Yoshihiko Tsumura

Forestry and Forest Products Research
Institute

K Saika

Tokyo Institute of Technology

Teruyoshi Nagamitsu

Forestry and Forest Products Research
Institute

Yuzuru Mukai

Gifu University

K Junko

Gunma University

Hiroyoshi Iwata

University of Tokyo

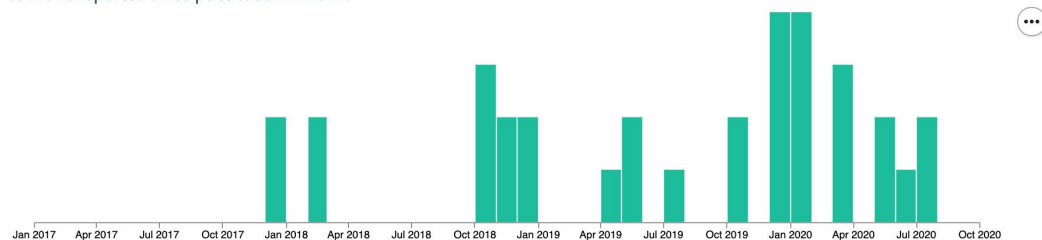
K Michiharu

Kyoto University

99 Views

16 Views

99 views reported since publication in 2012.



Leveraging ORCID iDs



DataCite Commons

Type to search...



Pages -

Support

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This Page Works People Organizations

<https://orcid.org/0000-0003-2926-8353>

Shelley Stall

Shelley Stall is the Senior Director for the American Geophysical Union's Data Leadership Program. She works with AGU's members, their organizations, and the broader research community to improve data and digital object practices with the ultimate goal of elevating how research data is managed and valued. Better data management results in better science. Shelley's diverse experience working as a program and project manager, software architect, database architect, performance and optimization analyst, data product provider, and data integration architect for international communities, both nonprofit and commercial, provides her with a core capability to guide development of practical and sustainable data policies and practices ready for adoption and adapting by the broad research community. Shelley's recent work includes the Enabling FAIR Data project (<https://copdess.org/enabling-fair-data-project/>) engaging over 300 stakeholders in the Earth, space, and environmental sciences to make data open and FAIR targeting the publishing and repository communities to change practices by no longer archiving data in the supplemental information of a paper but instead depositing the data supporting the research into a trusted repository where it can be discovered, managed, and preserved.

Links

[AGU Data Leadership](#)

Other Profiles

[ORCID](#)

[Impactstory](#)

[Europe PMC](#)

<https://orcid.org/0000-0003-2926-8353>

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Employment

American Geophysical Union

Senior Director

Since June 2015

Aggregated Citations, Views and Downloads

5 Citations

92 Views

67 Works

Publication Year

2020 39
2019 28

Work Type

Publication Year



Work Type



License



Leveraging citations & usage



DataCite Commons

fundingReferences.awardNumber:777523

Pages - Support Sign In

This Page Works People Organizations

<https://ror.org/00k4n6c32>

European Commission

EC

Founded 1958

Links

Homepage

Wikipedia

Twitter

Other Identifiers

GRID [grid.270680.b](#)

Crossref Funder ID [10.13039/501100000780](#)

Crossref Funder ID [10.13039/501100000893](#)

Crossref Funder ID [10.13039/501100000891](#)

Crossref Funder ID [10.13039/501100000894](#)

Crossref Funder ID [10.13039/501100000887](#)

Wikidata [Q8880](#)

Wikidata [Q20855594](#)

Geolocation

50° 50' 37" N, 4° 22' 58" W

[Belgium](#) [Government](#)

<https://ror.org/00k4n6c32>

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Facebook

Aggregated Citations, Views and Downloads

65,918 Citations

30,215 Views

169 Downloads

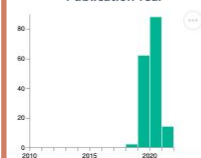
167 Works

Publication Year

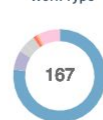
☐ 2021 14
☐ 2020 88
☐ 2019 62
☐ 2018 2
☐ 2005 1

Work Type

Publication Year



Work Type



License



Connecting open metadata helps you
with:

Discovery

Improved workflows

Global collaborations

Analytics

Knowledge

What can you do?



1. Use PIDs for All Entities

- Researchers should use a researcher ID in their workflows and deposit all research outputs
- Institutions should verify and use their institution ID and assist researchers with data deposition
- Funders should use a funder IDs and register DOIs and metadata for grants.
- Repositories and publishers should assign PIDs to data and other outputs.

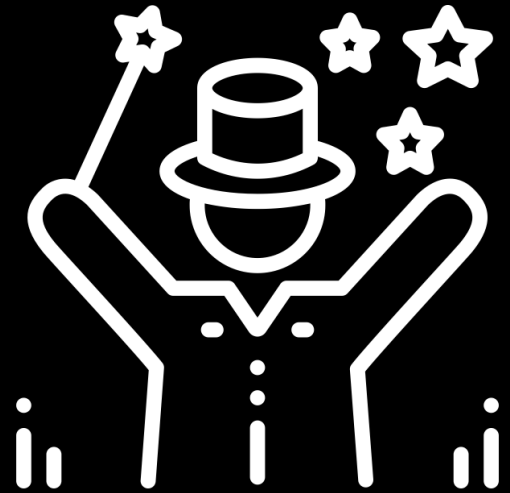
2. Track and Record Connections between PIDs

- Infrastructure providers should provide a relevant metadata schema.
- Repositories and publishers should ask for information about connections between entities, such as data citations.
- Researchers and institutions should include and update the information about relations wherever possible.

3. Make Connections Openly Available

- Infrastructure providers should aggregate the information and make it openly available.
- Publishers and repositories should ensure the information is included in the metadata they share.

Thank you!



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