Data Sharing: Best Practices and Measuring Impact

September 7th 2023

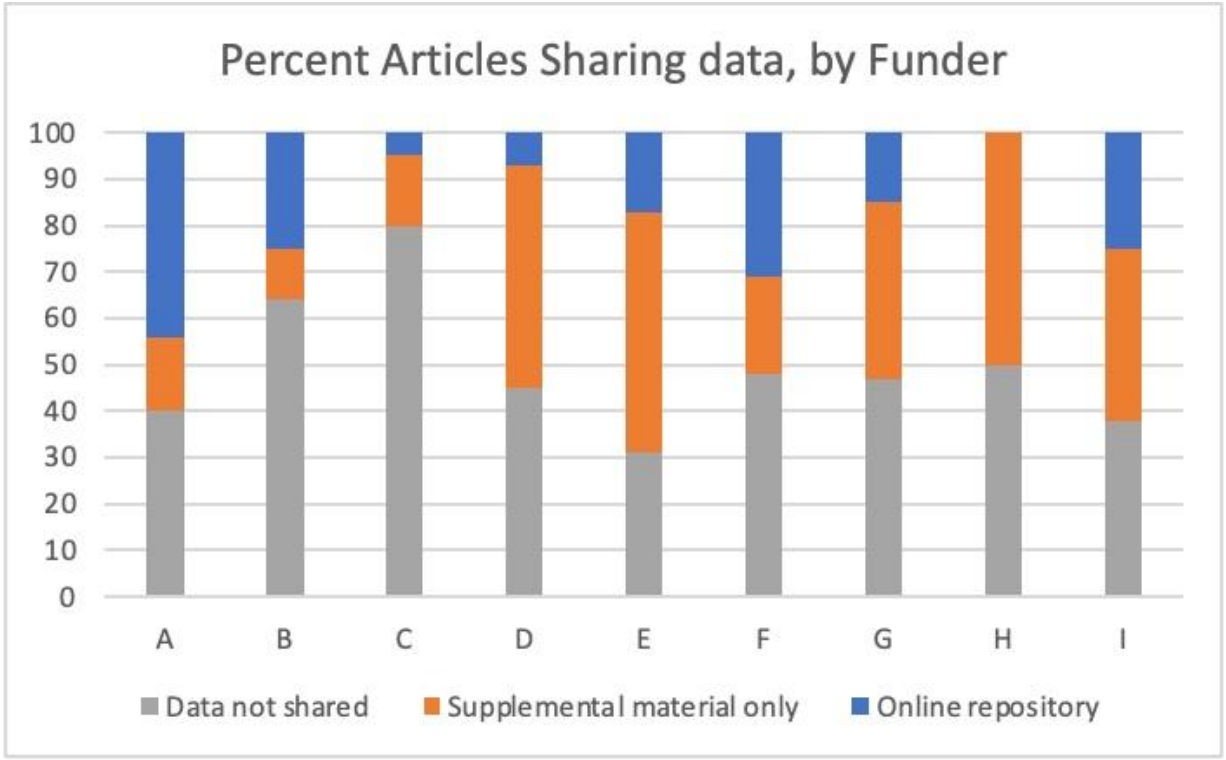
Agenda

- **Introduction and Data Sharing BOF report** - Kristen Ratan, Stratos
- **Data sharing workflow overview** - Jennifer Kemp, Stratos
- **Dryad** - Jess Herzog, Dryad
- **DataCite** - Xiaoli Chen, DataCite
- **Make Data Count** - Iratxe Puebla, Make Data Count Initiative
- **Wrap up** - Kristen Ratan, Stratos

Spring: Data Sharing Birds of a Feather (BOF)

- 9 HRA members participated
- Three main topics covered
  - Policy-making - What to prioritize, consequences of policy choices, how to create and communicate policies
  - Best Practices and Implementation - Grantee guidance and support, Infrastructures, tools, and partners, post-grant period
  - Compliance and Impact Tracking - How to measure data sharing, compliance, what tool chain to use, what are the metrics
- Actions:
  - Updated the Policy Worksheet to include OSTP and NIH info
  - Cohort analysis of current compliance with Nelson, open access and data sharing

DataSeer Report on BOF Cohort Data Sharing



- 99% generated data
- 60% overall shared data

Of these:

- 30% of authors shared their data only as supplemental files
- 3% shared some portion of their data as supplemental files and shared other datasets on an online repository.
- 6% of authors put all of their dataset in a repository

And

- 41% shared no data at all

Coming Next:

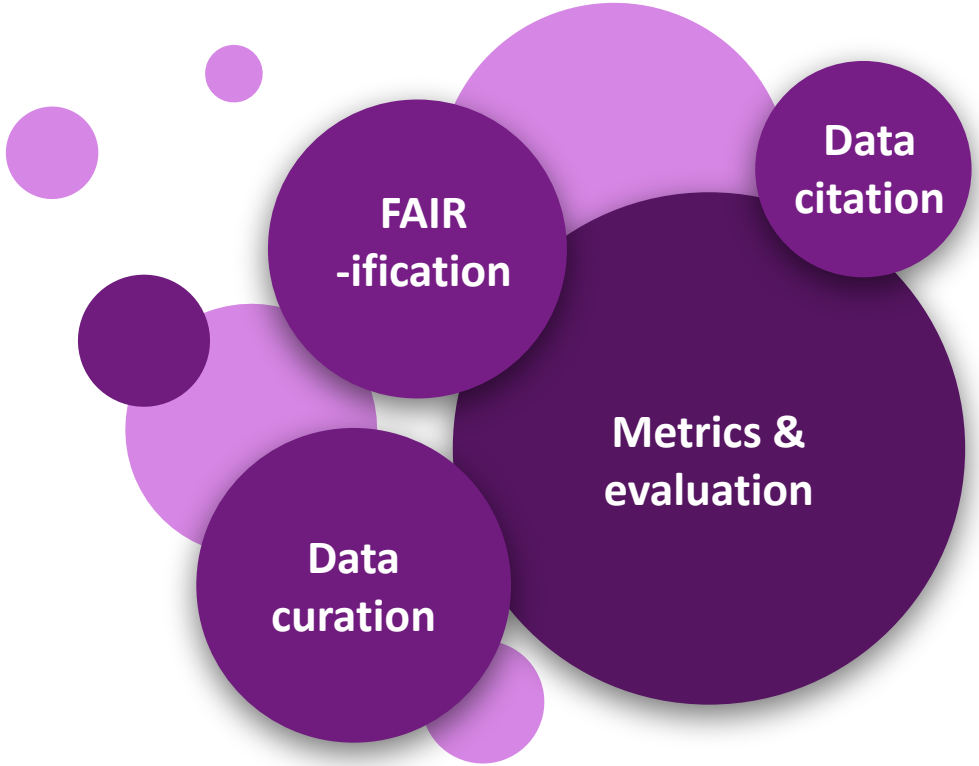
Fall Data Sharing BOF

Data sharing workflow

Funding	Research	Analysis & Writing	Publishing/ Sharing	Post-Publication
• Preliminary data • Data sharing plan	• Dataset creation & collection • Data storage	• Preparing to share findings • Data curation	• Dataset in a FAIR repository • Data citation	• Data citation • Re/use metrics
Funders, Grantees	Researchers, Institutions	Co-/Authors, Data helpers	Publishers, Infrastructures	Many stakeholders

For discussion: What are the needs/gaps?

Stratos



A little bit about Dryad

+**46k datasets** have been curated and published by Dryad

Datasets deposited by +**193k researchers** worldwide

Submissions from +**69k** international **institutions**

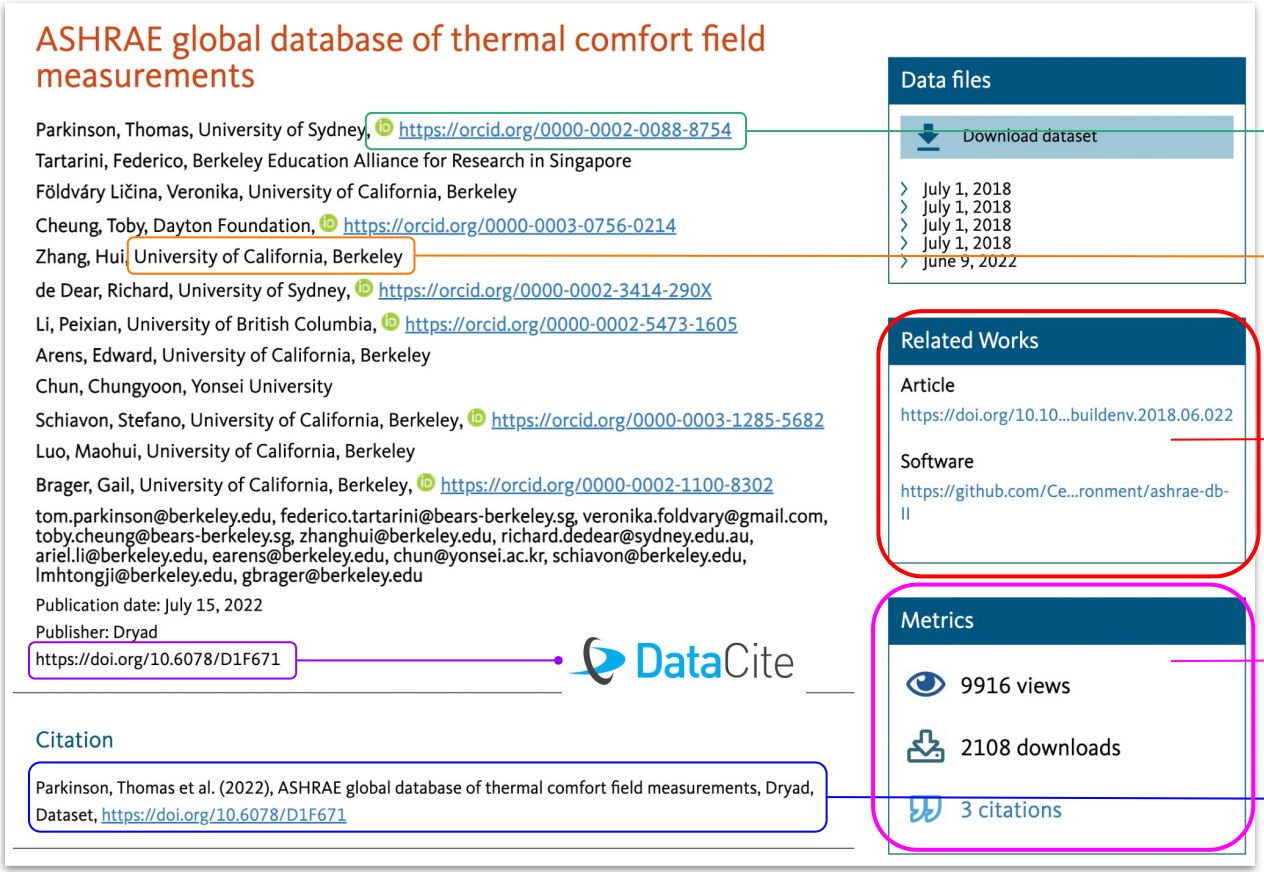
Datasets associated with +**1,200 academic journals**

- Open research data platform
- Community-driven effort to make research data discoverable, freely reusable, and citable
- Non-profit committed to the values of open science: infrastructure and research data is open source and open access
- Data is curated, protected, and perpetually preserved
- Published datasets with no barriers for reuse (CC0 license waiver)

DRYAD

Dryad's mission is to enable and promote the re-use of research data

Dryad creates trusted connections to research data



ORCID

ROR

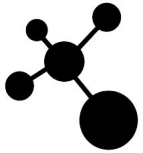
Connecting related works like: DMPs, preprints, supplemental info, other data, etc.

MAKE DATA COUNT

DC1 Data Citation Principles

DRYAD

Data connected



- Dryad requires the submitting author to log in using their ORCID iD and invites co-authors to also attach their iDs
- Curators match institutional affiliations to ROR IDs
- Curators connect funder info to Crossref's Funder Registry (FundRef)
- Published datasets are indexed by search engines including Scopus, the Thomson-Reuters Data Citation Index, and Google Dataset Search
- Related works can be linked from the dataset landing page to the article DOI, Data Management Plans (DMPs), preprints, software, scripts, code, supplementary material and other related research objects

DRYAD

Dryad curators

Idea-generators, skilled communicators, natural helpers, proactive, dedicated, diverse, adaptable, supportive, and motivated team members

Experience and/or advanced degrees in:

- Information Technology
- Teaching/training
- Chemistry
- Biochemistry
- Geology
- Ecology & Evolutionary Biology
- Accounting
- MLIS
- Civil & Environmental Engineering

Ensure data is organized, formatted, appropriate, and properly licensed for sharing

Verify that data files are accessible, explained, and usable

Offer personalized, knowledgeable support and guidance to authors

Link metadata to trusted PIDs to promote discoverability and connectivity

Evaluate submissions beyond a checklist
Identify and report issues for investigation; suggest improvements to optimize process for authors and curation team

https://datadryad.org/stash/about#our-staff

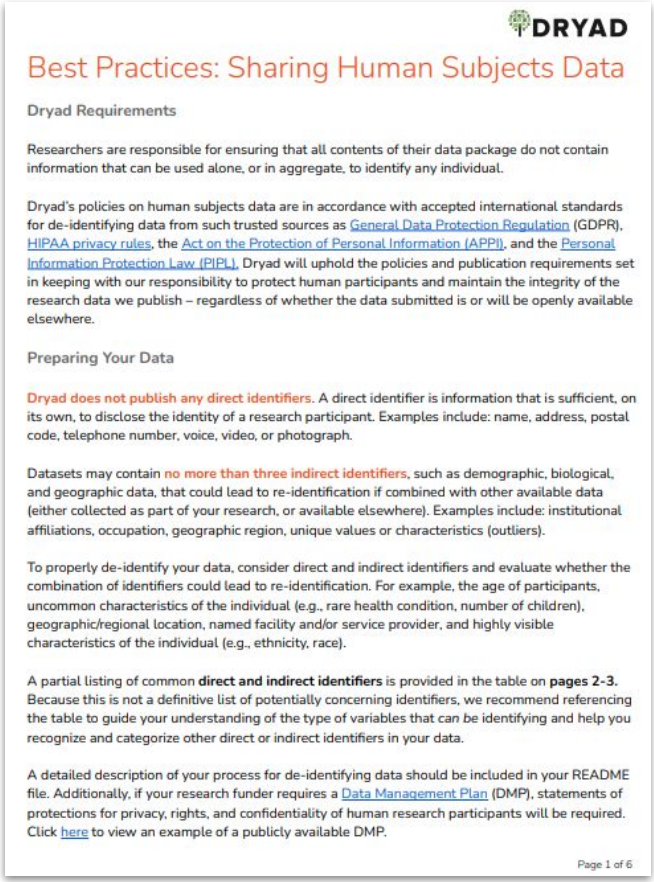
Human subjects data

Human subjects data must be properly anonymized and prepared under applicable legal and ethical guidelines in order to publish in Dryad

This can be challenging in scenarios when identifiers included in a dataset are essential to data reuse

Curators work with authors to ensure their data meet Dryad's HSI guidelines — with the goal of maximizing reusability without reducing its intended value to the research community

AUTHOR RESOURCES



DRYAD

Best Practices: Sharing Human Subjects Data

Dryad Requirements

Researchers are responsible for ensuring that all contents of their data package do not contain information that can be used alone, or in aggregate, to identify any individual.

Dryad's policies on human subjects data are in accordance with accepted international standards for de-identifying data from such trusted sources as General Data Protection Regulation (GDPR), HIPAA privacy rules, the Act on the Protection of Personal Information (APPI), and the Personal Information Protection Law (PIPL). Dryad will uphold the policies and publication requirements set in keeping with our responsibility to protect human participants and maintain the integrity of the research data we publish – regardless of whether the data submitted is or will be openly available elsewhere.

Preparing Your Data

Dryad does not publish any direct identifiers. A direct identifier is information that is sufficient, on its own, to disclose the identity of a research participant. Examples include: name, address, postal code, telephone number, voice, video, or photograph.

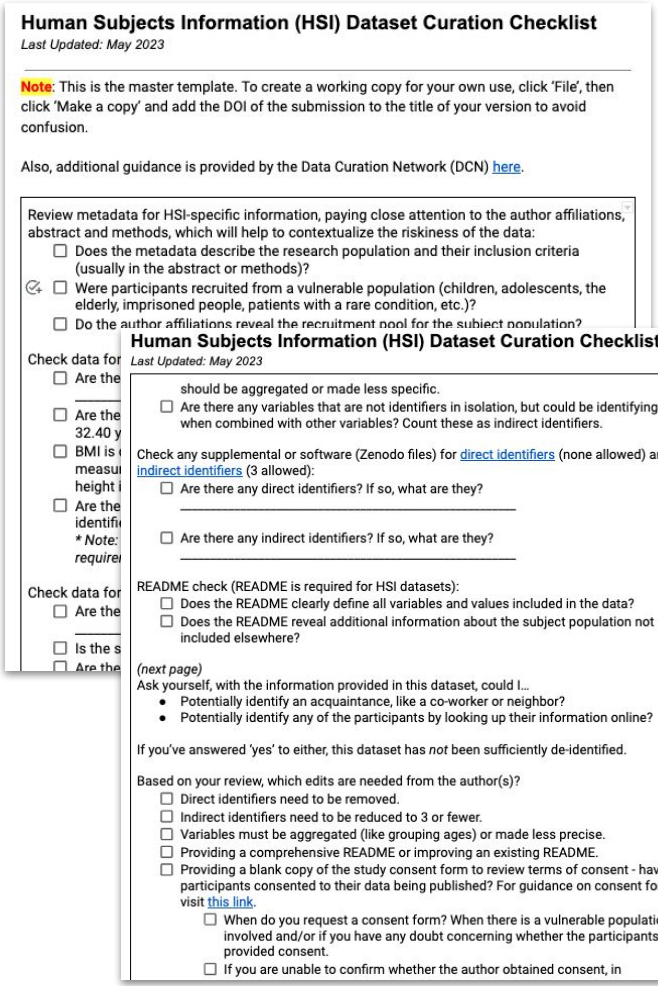
Datasets may contain no more than three indirect identifiers, such as demographic, biological, and geographic data, that could lead to re-identification if combined with other available data (either collected as part of your research, or available elsewhere). Examples include: institutional affiliations, occupation, geographic region, unique values or characteristics (outliers).

To properly de-identify your data, consider direct and indirect identifiers and evaluate whether the combination of identifiers could lead to re-identification. For example, the age of participants, uncommon characteristics of the individual (e.g., rare health condition, number of children), geographic/regional location, named facility and/or service provider, and highly visible characteristics of the individual (e.g., ethnicity, race).

A partial listing of common **direct and indirect identifiers** is provided in the table on **pages 2-3.** Because this is not a definitive list of potentially concerning identifiers, we recommend referencing the table to guide your understanding of the type of variables that *can be* identifying and help you recognize and categorize other direct or indirect identifiers in your data.

A detailed description of your process for de-identifying data should be included in your README file. Additionally, if your research funder requires a Data Management Plan (DMP), statements of protections for privacy, rights, and confidentiality of human research participants will be required. Click here to view an example of a publicly available DMP.

CURATOR RESOURCES



Human Subjects Information (HSI) Dataset Curation Checklist

Last Updated: May 2023

Note: This is the master template. To create a working copy for your own use, click 'File', then click 'Make a copy' and add the DOI of the submission to the title of your version to avoid confusion.

Also, additional guidance is provided by the Data Curation Network (DCN) here.

Review metadata for HSI-specific information, paying close attention to the author affiliations, abstract and methods, which will help to contextualize the riskiness of the data:

- ☐ Does the metadata describe the research population and their inclusion criteria (usually in the abstract or methods)?
- ☐ Were participants recruited from a vulnerable population (children, adolescents, the elderly, imprisoned people, patients with a rare condition, etc.)?
- ☐ Do the author affiliations reveal the recruitment pool for the subject population?

Check data for

- ☐ Are the

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Check data for

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Human Subjects Information (HSI) Dataset Curation Checklist

Last Updated: May 2023

should be aggregated or made less specific.

- ☐ Are there any variables that are not identifiers in isolation, but could be identifying when combined with other variables? Count these as indirect identifiers.

Check any supplemental or software (Zenodo files) for direct identifiers (none allowed) and indirect identifiers (3 allowed):

- ☐ Are there any direct identifiers? If so, what are they?

  _____

- ☐ Are there any indirect identifiers? If so, what are they?

  _____

README check (README is required for HSI datasets):

- ☐ Does the README clearly define all variables and values included in the data?
- ☐ Does the README reveal additional information about the subject population not included elsewhere?

(next page)

Ask yourself, with the information provided in this dataset, could I...

- Potentially identify an acquaintance, like a co-worker or neighbor?
- Potentially identify any of the participants by looking up their information online?

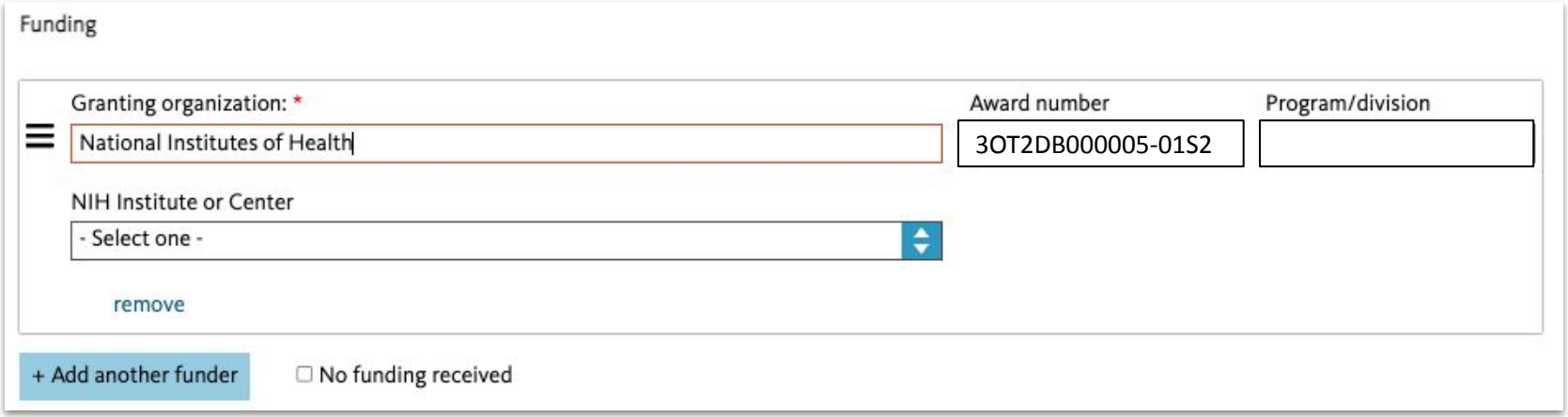
If you've answered 'yes' to either, this dataset has *not* been sufficiently de-identified.

Based on your review, which edits are needed from the author(s)?

- ☐ Direct identifiers need to be removed.
- ☐ Indirect identifiers need to be reduced to 3 or fewer.
- ☐ Variables must be aggregated (like grouping ages) or made less precise.
- ☐ Providing a comprehensive README or improving an existing README.
- ☐ Providing a blank copy of the study consent form to review terms of consent - have the participants consented to their data being published? For guidance on consent forms, visit this link.
  - ☐ When do you request a consent form? When there is a vulnerable population involved and/or if you have any doubt concerning whether the participants provided consent.
  - ☐ If you are unable to confirm whether the author obtained consent, in

Dryad for funders

Capturing metadata: funding



Depending on the funder information input into the “granting organization” field, a second drop-down menu will appear to collect more precise information.

If no funding was secured, a checkbox is available to bypass the required metadata field.

Capturing metadata: funding

Citation

Cao, Shutian et al. (2023), Data from: Effects of temperature and obsidian content on the friction and stability of simulated basalt gouges: Implications for shallow moonquakes, Dryad, Dataset, https://doi.org/10.5061/dryad.bvq83bkfn

Abstract

Basalt is a major component of crust on both the Earth and Moon. Mineral composition and temperature influence frictional instability and thus the potential for seismicity on basaltic faults. We performed velocity-stepping shear experiments on basalt gouges at a confining pressure of 100 MPa, temperatures in the range 100-400°C and with varied obsidian contents of 0-100 wt.% under wet/dry conditions to investigate the frictional strength and stability of basaltic faults. We observe a transition from velocity-neutral to velocity-weakening behaviors with increasing obsidian content. The frictional stability response of the mixed obsidian/basalt gouges is characterized by a transition from velocity-strengthening to velocity-weakening at 200°C and another transition to velocity-strengthening at >300°C. Conversely, frictional strengths of the obsidian-bearing gouges are insensitive to temperature and wet/dry conditions. These results suggest that obsidian content dominates the potential seismic response of basaltic faults with the effect of temperature controlling the range of seismogenic depths. These observations contribute to a better understanding of the nucleation mechanism of shallow moonquakes and also seismicity on terrestrial faults in basalt.

Subject keywords

Earth and related environmental sciences

basaltic faults

Frictional stability

Mineral components

shallow moonquakes

temperature effect

License

Funding

National Natural Science Foundation of China, Award: 42077247

Fundamental Research Funds for the Central Universities

G. Albert Shoemaker endowment*

National Natural Science Foundation of China, Award: 42107163

Published datasets will display funders and award numbers; unique entries not matched to ROR are denoted by an asterisk

Capturing metadata: funding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      "funderIdentifier": "https://doi.org/10.13039/501100012226 ",
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]
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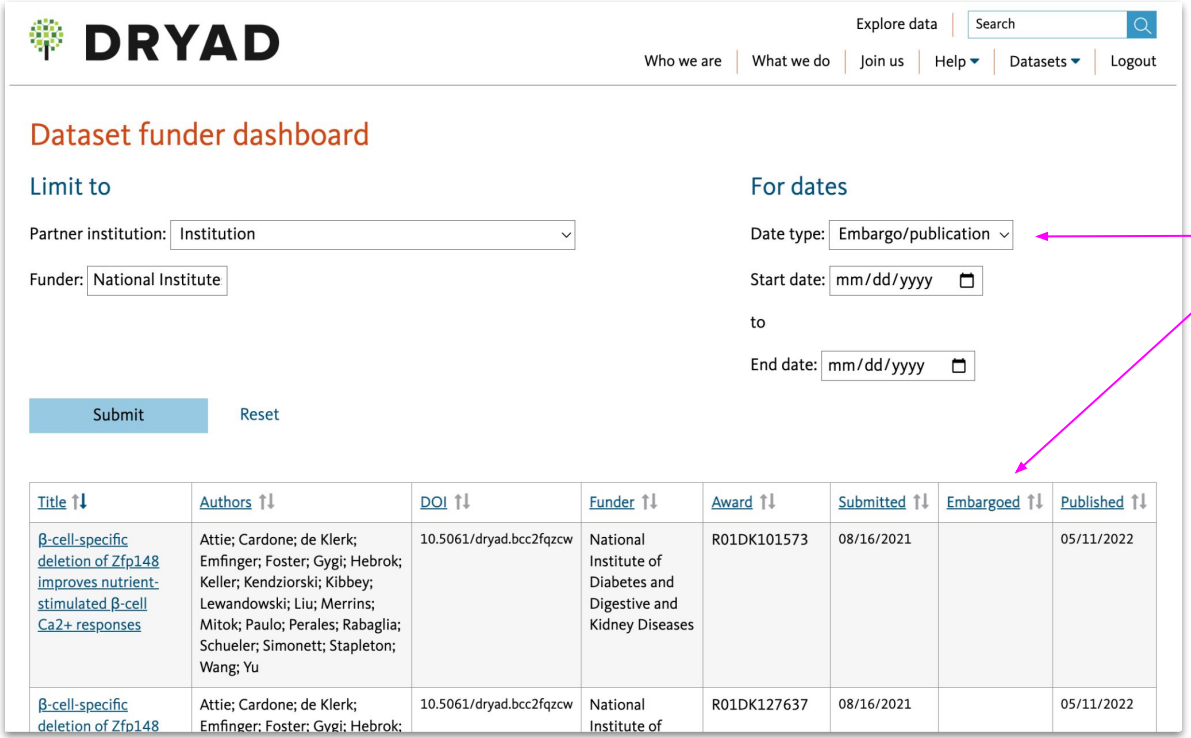
Funder facet: via Explore data

Introduced new option to **search** for and **filter** on **Funder**

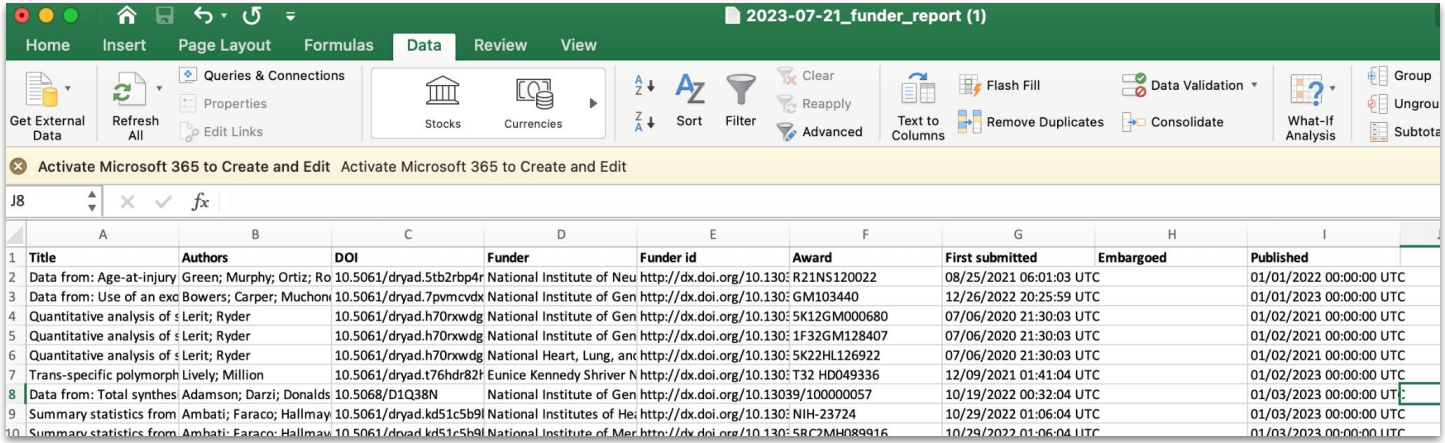
new! Funder dashboard: search & find



Options to focus search and sort on columns

Funder dashboard: export data

Search results can be exported in CSV format



	A	B	C	D	E	F	G	H	I
1	Title	Authors	DOI	Funder	Funder id	Award	First submitted	Embargoed	Published
2	Data from: Age-at-injury	Green; Murphy; Ortiz; Ro	10.5061/dryad.5tb2rbp4r	National Institute of Neu	http://dx.doi.org/10.130	R21NS120022	08/25/2021 06:01:03 UTC		01/01/2022 00:00:00 UTC
3	Data from: Use of an exc	Bowers; Carper; Muchon	10.5061/dryad.7pvmcvdx	National Institute of Gen	http://dx.doi.org/10.130	GM103440	12/26/2022 20:25:59 UTC		01/01/2023 00:00:00 UTC
4	Quantitative analysis of s	Lerit; Ryder	10.5061/dryad.h70rxwdg	National Institute of Gen	http://dx.doi.org/10.130	5K12GM000680	07/06/2020 21:30:03 UTC		01/02/2021 00:00:00 UTC
5	Quantitative analysis of s	Lerit; Ryder	10.5061/dryad.h70rxwdg	National Institute of Gen	http://dx.doi.org/10.130	1F32GM128407	07/06/2020 21:30:03 UTC		01/02/2021 00:00:00 UTC
6	Quantitative analysis of s	Lerit; Ryder	10.5061/dryad.h70rxwdg	National Heart, Lung, an	http://dx.doi.org/10.130	5K22HL126922	07/06/2020 21:30:03 UTC		01/02/2021 00:00:00 UTC
7	Trans-specific polymorph	Lively; Million	10.5061/dryad.t76hdr82f	Eunice Kennedy Shriver N	http://dx.doi.org/10.130	T32 HD049336	12/09/2021 01:41:04 UTC		01/02/2023 00:00:00 UTC
8	Data from: Total synthes	Adamson; Darzi; Donalds	10.5068/D1Q38N	National Institute of Gen	http://dx.doi.org/10.13039/100000057		10/19/2022 00:32:04 UTC		01/03/2023 00:00:00 UTC
9	Summary statistics from	Ambati; Faraco; Hallmay	10.5061/dryad.kd51c5b9l	National Institutes of He	http://dx.doi.org/10.130	NIH-23724	10/29/2022 01:06:04 UTC		01/03/2023 00:00:00 UTC
10	Summary statistics from	Ambati; Faraco; Hallmay	10.5061/dryad.kd51c5b9l	National Institute of Mer	http://dx.doi.org/10.130	5RC2MH089916	10/29/2022 01:06:04 UTC		01/03/2023 00:00:00 UTC

- Title
- Authors
- DOI
- Funder
- Funder iD
- Award
- Date submitted
- Date embargoed
- Date published

Dryad funder-focused use cases

Use cases designed for **NIH funders** and **NIH-funded** researchers

Hey, funders!

Tell us more about:

1. Your workflow process
2. Who the key administrative stakeholders are within your organization
3. What features or functions you'd like to see in a funder dashboard

DRYAD

Thanks for listening.

hello@datadryad.org

DRYAD

https://blog.datadryad.org/about/subscribe/

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Subscribe to the Dryad newsletter and Open Data Digest to get compelling data publications, tips and resources, event invitations, and more delivered straight to your inbox.

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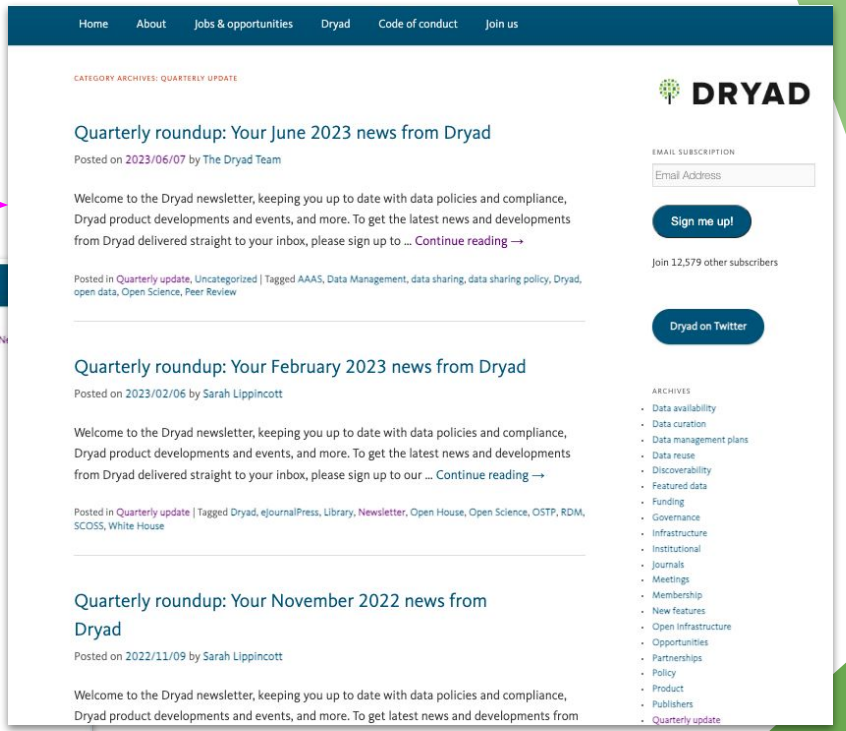
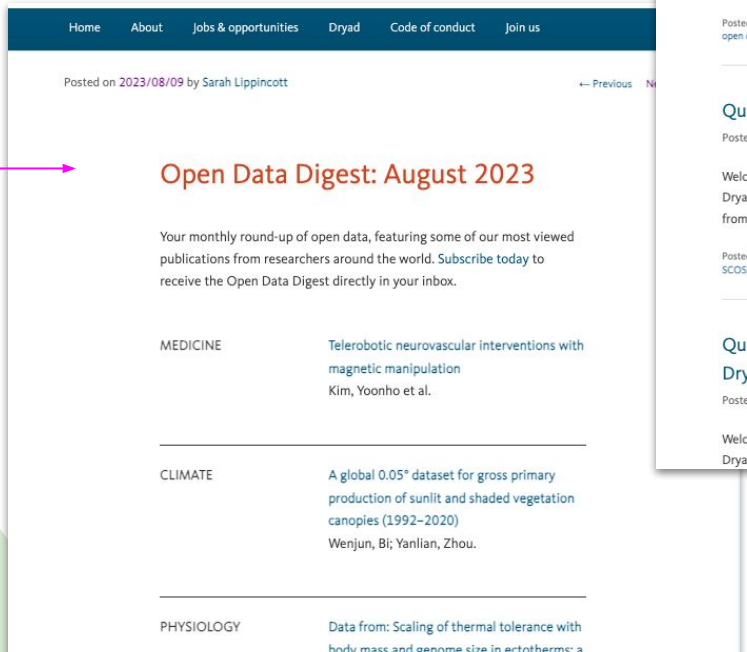




DRYAD

DataCite

CONNECTING RESEARCH,
IDENTIFYING KNOWLEDGE

Guide for funding organizations

To support FAIR Workflows and enable output tracking

Xiaoli Chen

2023 September 7

Measuring the Impact of Data Sharing - HRA Webinar

@datacite

@datacite@openbiblio.social

About DataCite and community

DataCite

Global non-profit membership organization working with 2700+ repositories in the world to provide DOIs for research outputs and resources.

2800+

Repositories

280+

Members

51

Countries

52m+

DOIs

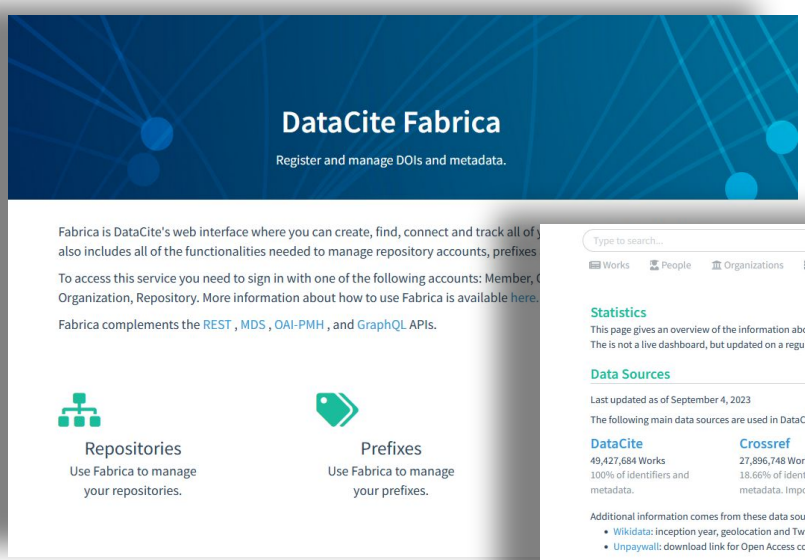
1200+

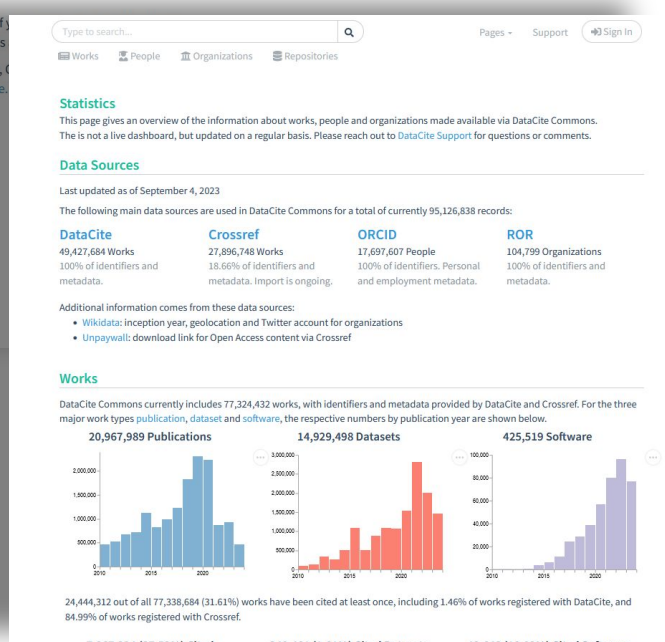
Organizations

DataCite Services
Create, manage, and discover DOIs

DataCite makes research more effective by connecting research outputs and resources–from data and preprints to images and samples.

We support the **creation and management of DOIs** and **metadata records**, enhance research workflows with **service integration**, and **enable the discovery** and reuse of research outputs and resources.





Resource types supported
By the DataCite metadata schema

The DataCite Metadata Schema accommodates many different types of scholarly resources.

For any of these resource types, a funding reference can be added to its metadata record, when registering a DOI.

- Audiovisual
- Book
- BookChapter
- Collection
- ComputationalNotebook
- ConferencePaper
- ConferenceProceeding
- DataPaper
- Dataset
- Dissertation
- Event
- Image
- InteractiveResource
- Journal
- JournalArticle
- Model
- OutputManagementPlan
- PeerReview
- PhysicalObject
- Preprint
- Report
- Service
- Software
- Sound
- Standard
- Text
- Workflow
- Other

Funding reference in DataCite Schema

1. Identifier
2. Creator
3. Title
4. Publisher
5. PublicationYear
6. Subject
7. Contributor
8. Date
9. Language
10. ResourceType
11. AlternateIdentifier
12. RelatedIdentifier
13. Size
14. Format
15. Version
16. Rights
17. Description
18. GeoLocation
19. FundingReference
20. RelatedItem

19. FundingReference

- Definition: Information about financial support (funding) for the resource being registered.
- It is a best practice to supply funding information when financial support has been received.

Sub-properties:

19.1 funderName
19.2 funderIdentifier
19.2.a funderIdentifierType
19.2.b schemeURI
19.3 awardNumber
19.3.a awardURI
19.4 awardTitle

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>
    <awardNumber
awardURI="https://cordis.europa.eu/project/rcn/100180_en.ht
ml">282625</awardNumber>
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and alternative ways to express the value of
BIOdiversity</awardTitle>
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commons. Global Strategies for accessing and using
essential public knowledge assets in the life
sciences</awardTitle>
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```

Implementing FAIR Workflows

A Proof of Concept Study in the Field of Consciousness

DataCite

FAIR WORKFLOWS

TEMPLETON WORLD CHARITY FOUNDATION

DataCite CONNECTING RESEARCH, IDENTIFYING KNOWLEDGE

Max-Planck-Institut für empirische Ästhetik

University of California CDL California Digital Library

ARDC Australian Research Data Commons

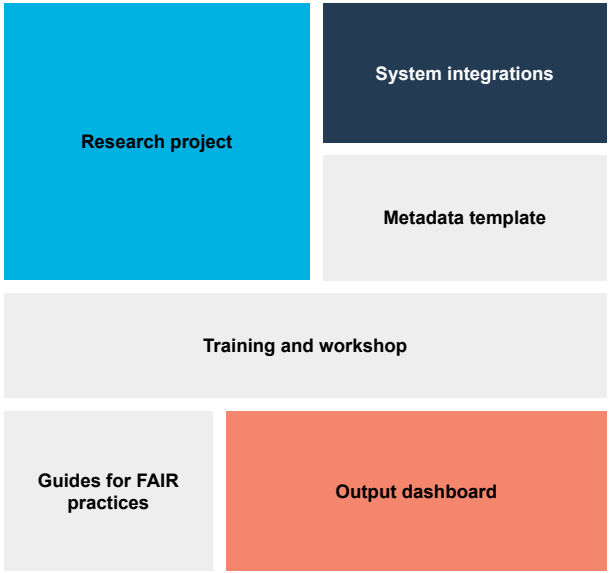
DRYAD

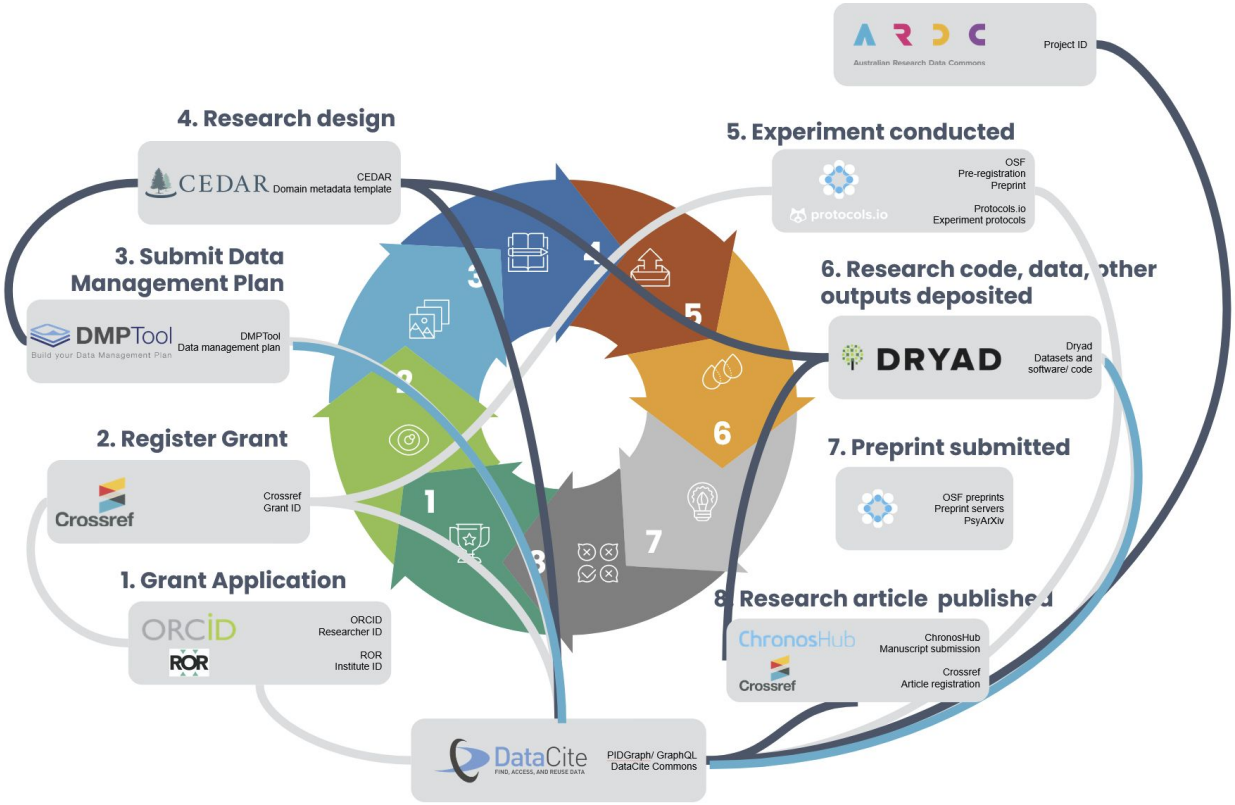
ChronosHub

CEDAR

Crossref

COS CENTER FOR OPEN SCIENCE




4. Research design
CEDAR
CEDAR
Domain metadata template
3. Submit Data Management Plan
DMPTool
Build your Data Management Plan
DMPTool
Data management plan
2. Register Grant
Crossref
Crossref
Grant ID
1. Grant Application
ORCID
ORCID
Researcher ID
ROR
ROR
Institute ID
DataCite
FIND, ACCESS, AND REUSE DATA
PIDGraph/ GraphQL
DataCite Commons
8. Research article published
ChronosHub
ChronosHub
Manuscript submission
Crossref
Crossref
Article registration
7. Preprint submitted
OSF preprints
Preprint servers
PsyArXiv
6. Research code, data, other outputs deposited
DRYAD
Dryad
Datasets and software/ code
5. Experiment conducted
protocols.io
OSF
Pre-registration
Preprint
Protocols.io
Experiment protocols
ARDC
Australian Research Data Commons
Project ID

Guide for Funders to Support
FAIR Workflows and Enable Output Tracking

DataCite

ORCID

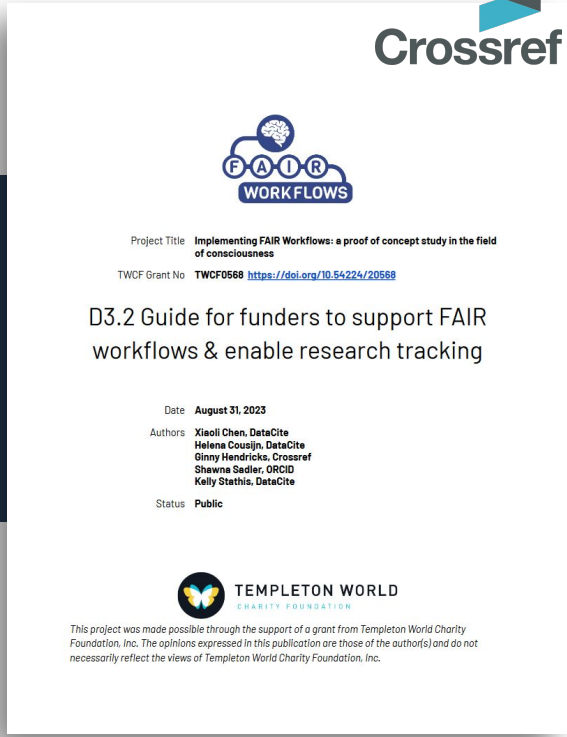
Crossref

URL form

Prefix

https://doi.org/10.5281/zenodo.8289142

Suffix



FAIR WORKFLOWS

Project Title **Implementing FAIR Workflows: a proof of concept study in the field of consciousness**

TWCF Grant No **TWCF0568** https://doi.org/10.54224/20568

D3.2 Guide for funders to support FAIR workflows & enable research tracking

Date **August 31, 2023**

Authors **Xiaoli Chen, DataCite**
Helena Cousijn, DataCite
Ginny Hendricks, Crossref
Shawna Sadler, ORCID
Kelly Stathis, DataCite

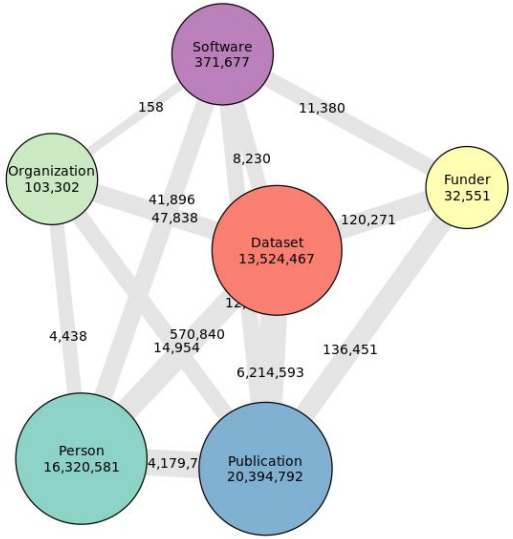
Status **Public**

TEMPLETON WORLD CHARITY FOUNDATION

This project was made possible through the support of a grant from Templeton World Charity Foundation, Inc. The opinions expressed in this publication are those of the author(s) and do not necessarily reflect the views of Templeton World Charity Foundation, Inc.

The recommendations in a nutshell

“Registering PIDs for outputs, and associating them on the metadata level with the PIDs of the grant, the funding organization and the fundees is the basic logic behind a robust and automated output tracking mechanism.”



Know and maintain funder IDs

Create and manage grant IDs

Provide guidance for researchers and other stakeholders

Know and maintain funder identifiers

DataCite

Knowing the funder ID

- Crossref Open Funder Registry (OFR) ID
- Research Organization Registry (ROR) ID

Maintaining the funder ID

- Keep the metadata record up-to-date
  - Capture merging, combining, re-organising departments, or rebranding of the organization
- Update policies and requirement documents to communicate the existence and use case of funder ID to relevant parties

	Funder ID	Metadata via API
Crossref	https://doi.org/10.13039/501100011730	https://api.crossref.org/funders/501100011730
ROR	https://ror.org/00x0z1472	https://api.ror.org/organizations/00x0z1472

Create and manage grant identifiers

DataCite

Grant IDs are fully within the funder's control and responsibility.

- Create metadata record for grants, include information about:
  - Grant award
  - Funded project(s)
  - Funded investigator(s)
    - Role and affiliation
  - Publicly accessible landing page
- Integrate Grant ID management workflow based on output tracking needs
  - Create and maintain multilateral links

Funding types supported by Crossref grant ID schema

1. **award**: a prize, award, or other type of general funding
2. **contract**: agreement involving payment
3. **crowdfunding**: funding raised via multiple sources, typically small amounts raised online
4. **endowment**: gift of money that will provide an income
5. **equipment**: use of or gift of equipment
6. **facilities**: use of location, equipment, or other resources
7. **fellowship**: grant given for research or study
8. **grant**: a monetary award
9. **loan**: money or other resource given in anticipation of repayment
10. **other**: award of undefined type
11. **prize**: an award given for achievement
12. **salary-award**: an award given as salary, includes intramural research funding
13. **secondment**: detachment of a person or resource for temporary assignment elsewhere
14. **seed-funding**: an investor invests capital in exchange for equity
15. **training-grant**: grant given for training

Provide guidance for researchers

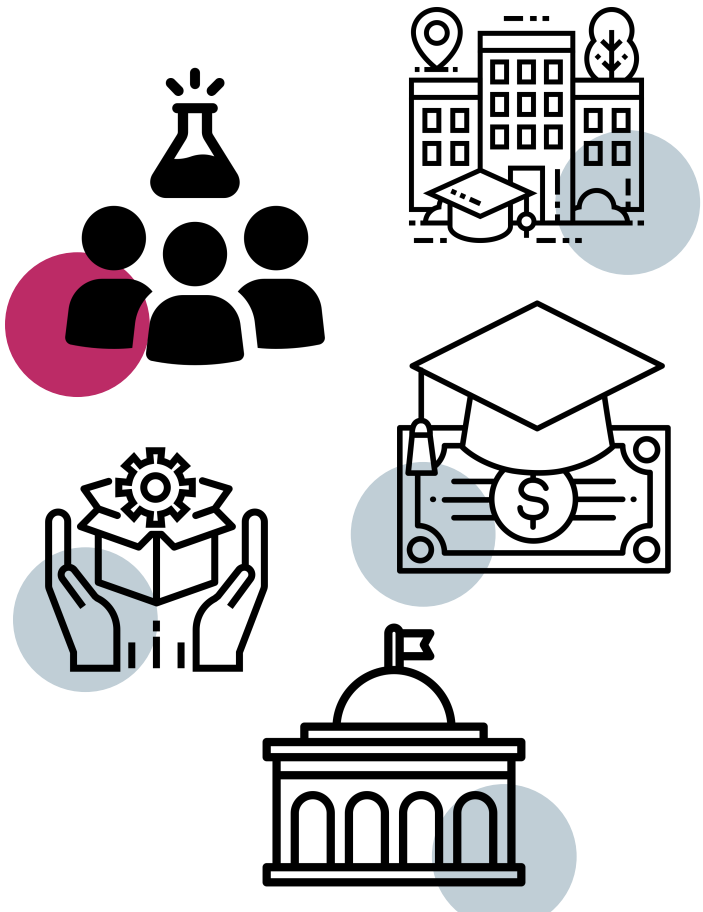
DataCite

Identifier for researchers ORCID

- Metadata of ORCID include information about researcher's employment, funding, and outputs
- Require grant applicants to create and use ORCID iDs

Incentivizing researchers

- Include the Open and FAIR sharing track record of applicants as part of evaluation criteria for grant project proposals
- Provide guidance for open sharing and request data management plan for grant applications
- Setting aside specific budget and allowing time in the project schedule to accommodate the incorporation of robust FAIR workflows
- Promoting reusable outputs to increase visibility of researchers and research teams that practice FAIR

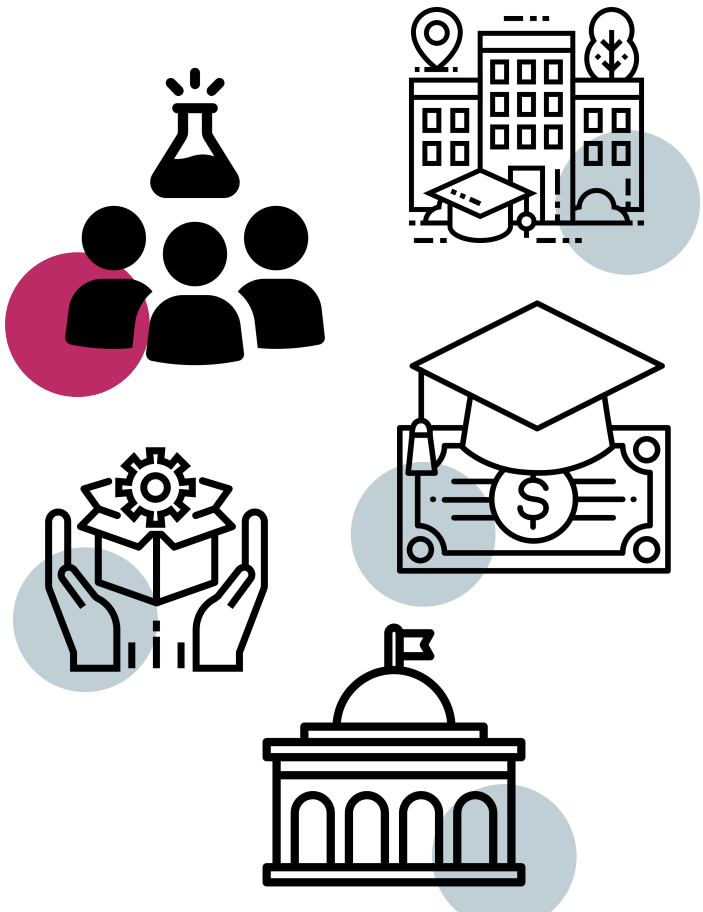


Provide guidance for researchers

DataCite

Data Management Planning

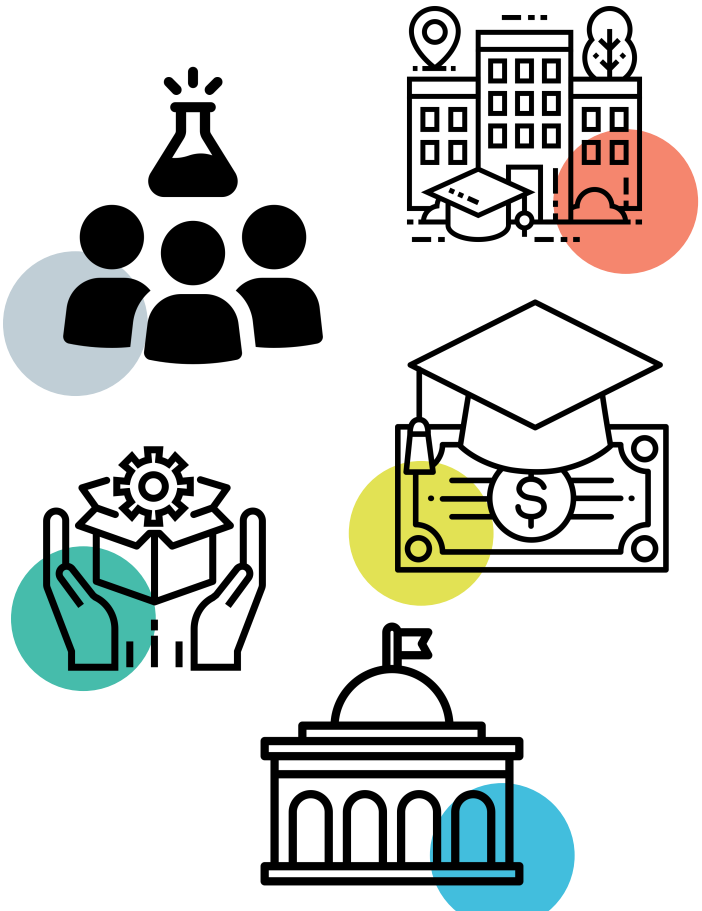
- Request or mandate data management plan as part of the grant application portfolio
- Incorporate data management planning policy into grant agreement
- If mandating a DMP, consider providing a DMP template based on output tracking needs.
- Include compliance monitoring mechanism in the DMP policy.
- Instruct researchers to include ORCID, ROR ID, grant ID, and funder ID in the DMP metadata.
- Recommend researcher to use DMP platform that supports machine readable DMP format and registers PIDs for DMPs.



Engaging with other stakeholders

Create the condition for the various PID and metadata workflows that can be adopted by publishers, institutes, policy makers, and other funding organizations.

- Encourage technology providers to integrate open scholarly infrastructure
- Align with other funding organizations on best practices around PIDs and metadata
- Work with publishers to enhance their PID workflows to include grant and funder metadata
- Engage with government agencies to steer policy making



Please share your thoughts!

Open for comments (*September 1 – October 15*)

DataCite

CONNECTING RESEARCH,
IDENTIFYING KNOWLEDGE

info@datacite.org

pidforum.org

datacite.org
blog.datacite.org

support.datacite.org
support@datacite.org

@datacite

DataCite

@datacite

It's time to Make Data Count

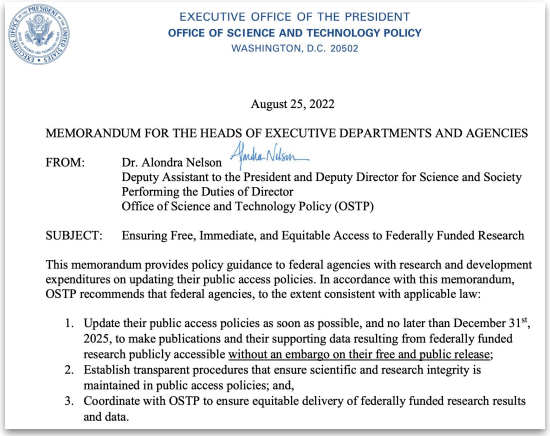
Iratxe Puebla
Director, Make Data Count

7 September 2023
Measuring the Impact of Data Sharing - HRA Webinar

@datacite
@makedatacount

@datacite@openbiblio.social
@makedatacount@openbiblio.social

Data sharing is valuable, but do we understand the value of data sharing?



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20502

August 25, 2022

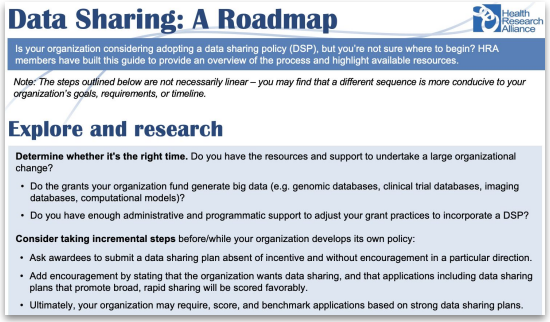
MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: Dr. Alondra Nelson
Deputy Assistant to the President and Deputy Director for Science and Society
Performing the Duties of Director
Office of Science and Technology Policy (OSTP)

SUBJECT: Ensuring Free, Immediate, and Equitable Access to Federally Funded Research

This memorandum provides policy guidance to federal agencies with research and development expenditures on updating their public access policies. In accordance with this memorandum, OSTP recommends that federal agencies, to the extent consistent with applicable law:

1. Update their public access policies as soon as possible, and no later than December 31st, 2025, to make publications and their supporting data resulting from federally funded research publicly accessible without an embargo on their free and public release;
2. Establish transparent procedures that ensure scientific and research integrity is maintained in public access policies; and,
3. Coordinate with OSTP to ensure equitable delivery of federally funded research results and data.



Data Sharing: A Roadmap

Health Research Alliance

Is your organization considering adopting a data sharing policy (DSP), but you're not sure where to begin? HRA members have built this guide to provide an overview of the process and highlight available resources.

Note: The steps outlined below are not necessarily linear – you may find that a different sequence is more conducive to your organization's goals, requirements, or timeline.

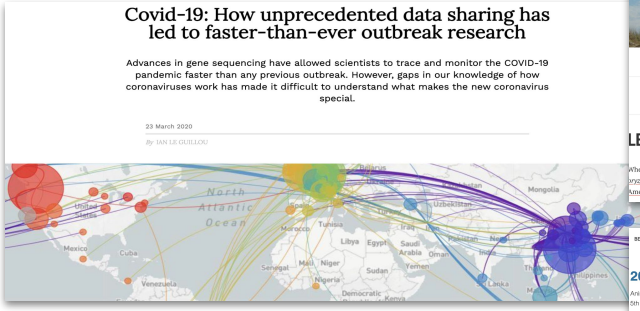
Explore and research

Determine whether it's the right time. Do you have the resources and support to undertake a large organizational change?

- Do the grants your organization fund generate big data (e.g. genomic databases, clinical trial databases, imaging databases, computational models)?
- Do you have enough administrative and programmatic support to adjust your grant practices to incorporate a DSP?

Consider taking incremental steps before/while your organization develops its own policy:

- Ask awardees to submit a data sharing plan absent of incentive and without encouragement in a particular direction.
- Add encouragement by stating that the organization wants data sharing, and that applications including data sharing plans that promote broad, rapid sharing will be scored favorably.
- Ultimately, your organization may require, score, and benchmark applications based on strong data sharing plans.

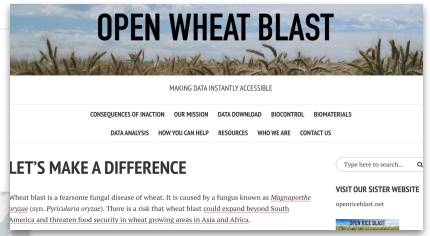


Covid-19: How unprecedented data sharing has led to faster-than-ever outbreak research

Advances in gene sequencing have allowed scientists to trace and monitor the COVID-19 pandemic faster than any previous outbreak. However, gaps in our knowledge of how coronaviruses work has made it difficult to understand what makes the new coronavirus special.

23 March 2020

By IAN LE GUILLOU



OPEN WHEAT BLAST

MAKING DATA INSTANTLY ACCESSIBLE

CONSEQUENCES OF INACTION OUR MISSION DATA DOWNLOAD BIOCONTROL BIOMATERIALS
DATA ANALYSIS HOW YOU CAN HELP RESOURCES WHO WE ARE CONTACT US

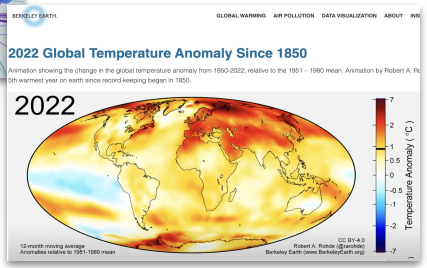
LET'S MAKE A DIFFERENCE

Wheat blast is a fearsome fungal disease of wheat. It is caused by a fungus known as *Magnaporthe oryzae* (syn. *Pyricularia oryzae*). There is a risk that wheat blast could expand beyond South America and threaten food security in wheat growing areas in Asia and Africa.

Type here to search...

VISIT OUR SISTER WEBSITE

openriceblast.net



BERKELEY EARTH

GLOBAL WARMING AIR POLLUTION DATA VISUALIZATION ABOUT

2022 Global Temperature Anomaly Since 1850

Animation showing the change in the global temperature anomaly from 1850-2022, relative to the 1951 – 1980 mean. Animation by Robert A. Rohde. 6th warmest year on earth since record keeping began in 1850.

2022

Temperature Anomaly (°C)

12-month moving average
Anomalies relative to 1951-1980 mean

(CC BY-4.0)
Robert A. Rohde (@rarohde)
Berkeley Earth (www.BerkeleyEarth.org)

Understanding the impact of open data requires transparent and responsible data metrics

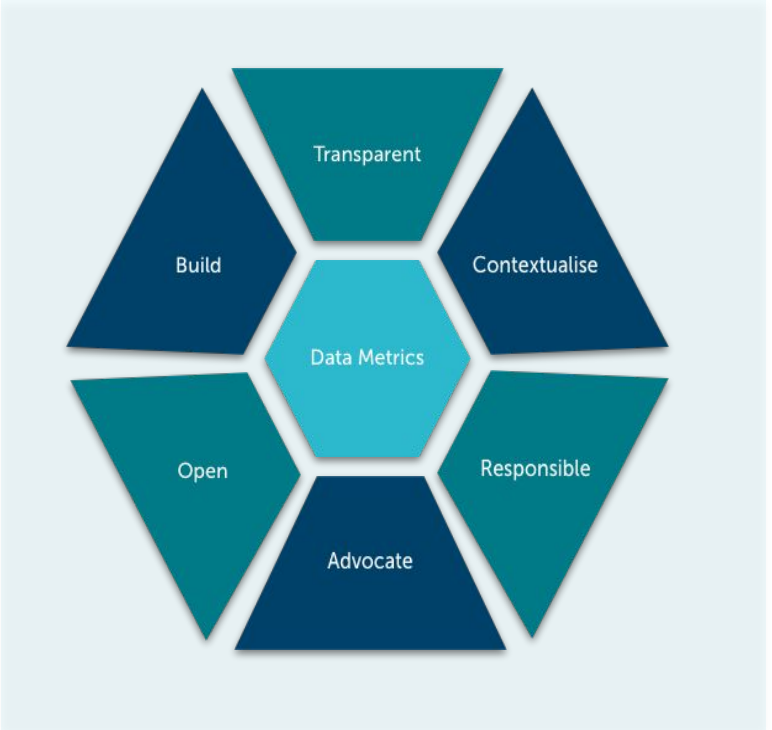
Make Data Count

Make Data Count is an initiative that **promotes open data metrics** to enable **evaluation and reward of research data** reuse and impact.

Community effort to ensure that data are used and cited in open, transparent, and responsible ways.

- **Build** open infrastructure and community-based standards.
- **Advocate** through outreach and adoption campaigns.
- **Contextualize** with evidence-based bibliometric studies.

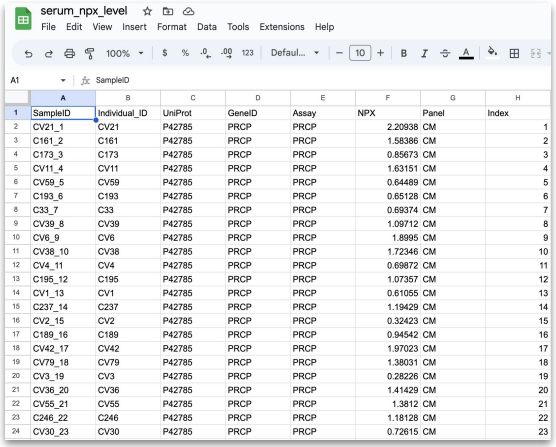
makedatacount.org/about-us/



Data Citations

Data citations are references to data, in the same way researchers routinely provide a bibliographic reference to other scholarly resources.

Data citations do not provide the full picture of data usage, but they are useful as they clearly point to data being used or reused in research.


serum_npx_level

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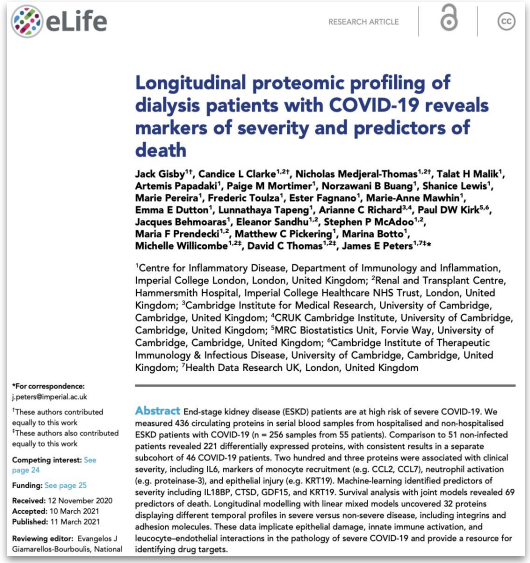
	A	B	C	D	E	F	G	H
1	SampleID	Individual_ID	UniProt	GeneID	Assay	NPX	Panel	Index
2	CV21_1	CV21	P42785	PRCP	PRCP	2.20938	CM	1
3	C161_2	C161	P42785	PRCP	PRCP	1.58386	CM	2
4	C173_3	C173	P42785	PRCP	PRCP	0.85673	CM	3
5	CV11_4	CV11	P42785	PRCP	PRCP	1.63151	CM	4
6	CV59_5	CV59	P42785	PRCP	PRCP	0.64489	CM	5
7	C193_6	C193	P42785	PRCP	PRCP	0.65128	CM	6
8	C33_7	C33	P42785	PRCP	PRCP	0.69374	CM	7
9	CV39_8	CV39	P42785	PRCP	PRCP	1.09712	CM	8
10	CV6_9	CV6	P42785	PRCP	PRCP	1.8995	CM	9
11	CV38_10	CV38	P42785	PRCP	PRCP	1.72346	CM	10
12	CV4_11	CV4	P42785	PRCP	PRCP	0.69872	CM	11
13	C195_12	C195	P42785	PRCP	PRCP	1.07357	CM	12
14	CV1_13	CV1	P42785	PRCP	PRCP	0.61055	CM	13
15	C237_14	C237	P42785	PRCP	PRCP	1.19429	CM	14
16	CV2_15	CV2	P42785	PRCP	PRCP	0.32423	CM	15
17	C189_16	C189	P42785	PRCP	PRCP	0.94542	CM	16
18	CV42_17	CV42	P42785	PRCP	PRCP	1.97023	CM	17
19	CV79_18	CV79	P42785	PRCP	PRCP	1.38031	CM	18
20	CV3_19	CV3	P42785	PRCP	PRCP	0.28226	CM	19
21	CV36_20	CV36	P42785	PRCP	PRCP	1.41429	CM	20
22	CV55_21	CV55	P42785	PRCP	PRCP	1.3812	CM	21
23	C246_22	C246	P42785	PRCP	PRCP	1.18128	CM	22
24	CV30_23	CV30	P42785	PRCP	PRCP	0.72615	CM	23

Gisby J, Clarke CL, Medjeral-Thomas N, Malik TH, Papadaki A, Mortimer PM, Buang NB, Lewis S, Pereira M, Toulza F, Fagnano E, Mawhin M, Dutton EE, Tapeng L, Kirk P, Behmoaras J, Sandhu E, McAdoo SP, Prendecki MF, Pickering MC, Botto M, Willicombe W, Thomas DC, Peters JE (2020) **Dryad Digital Repository** Longitudinal proteomic profiling of high-risk patients with COVID-19 reveals markers of severity and predictors of fatal disease. https://doi.org/10.5061/dryad.6t1g1jwxj


eLife

RESEARCH ARTICLE

Longitudinal proteomic profiling of dialysis patients with COVID-19 reveals markers of severity and predictors of death

Jack Gisby[†1], Candice L Clarke[†1,2†], Nicholas Medjeral-Thomas[†1,2†], Talat H Malik[1], Artemis Papadaki[1], Paige M Mortimer[1], Norzawani B Buang[1], Shanice Lewis[1], Marie Pereira[1], Frederic Toulza[1], Ester Fagnano[1], Marie-Anne Mawhin[1], Emma E Dutton[1], Lunnathaya Tapeng[1], Arianne C Richard[3,4], Paul DW Kirk[5,6], Jacques Behmoaras[1], Eleanor Sandhu[1,2], Stephen P McAdoo[1,2], Maria F Prendecki[1,2], Matthew C Pickering[1], Marina Botto[1], Michelle Willicombe[1,2‡], David C Thomas[1,2‡], James E Peters[1,7‡*]

[1]Centre for Inflammatory Disease, Department of Immunology and Inflammation, Imperial College London, London, United Kingdom; [2]Renal and Transplant Centre, Hammersmith Hospital, Imperial College Healthcare NHS Trust, London, United Kingdom; [3]Cambridge Institute for Medical Research, University of Cambridge, Cambridge, United Kingdom; [4]CRUK Cambridge Institute, University of Cambridge, Cambridge, United Kingdom; [5]MRC Biostatistics Unit, Forvie Way, University of Cambridge, Cambridge, United Kingdom; [6]Cambridge Institute of Therapeutic Immunology & Infectious Disease, University of Cambridge, Cambridge, United Kingdom; [7]Health Data Research UK, London, United Kingdom

*For correspondence: j.peters@imperial.ac.uk

†These authors contributed equally to this work

‡These authors also contributed equally to this work

Competing interest: See page 24

Funding: See page 25

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Accepted: 10 March 2021
Published: 11 March 2021

Reviewing editor: Evangelos J Giamarellos-Bourboulis, National

Abstract End-stage kidney disease (ESKD) patients are at high risk of severe COVID-19. We measured 436 circulating proteins in serial blood samples from hospitalised and non-hospitalised ESKD patients with COVID-19 (n = 256 samples from 55 patients). Comparison to 51 non-infected patients revealed 221 differentially expressed proteins, with consistent results in a separate subcohort of 46 COVID-19 patients. Two hundred and three proteins were associated with clinical severity, including IL6, markers of monocyte recruitment (e.g. CCL2, CCL7), neutrophil activation (e.g. proteinase-3), and epithelial injury (e.g. KRT19). Machine-learning identified predictors of severity including IL18BP, CTSD, GDF15, and KRT19. Survival analysis with joint models revealed 69 predictors of death. Longitudinal modelling with linear mixed models uncovered 32 proteins displaying different temporal profiles in severe versus non-severe disease, including integrins and adhesion molecules. These data implicate epithelial damage, innate immune activation, and leucocyte–endothelial interactions in the pathology of severe COVID-19 and provide a resource for identifying drug targets.

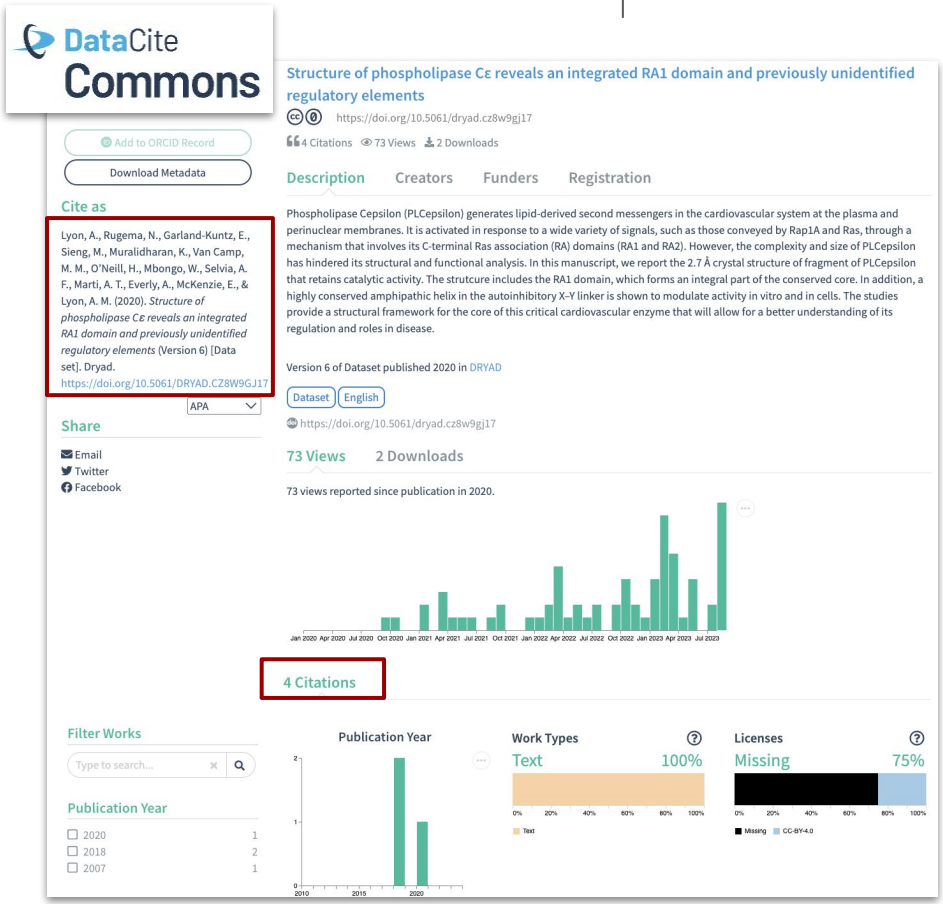
Data Citations

Data Citations enable

Credit for the researchers who produce the data

Transparency & reproducibility for those using the data

Evaluation of open data



https://commons.datacite.org/doi.org/10.5061/dryad.cz8w9gj17

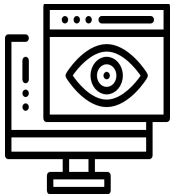
Data Citations: The challenges

- Researchers do not always cite the data they use.
- Data citations can appear at different locations in an article: Methods section, Data Availability statement, References, footnotes.
- Citations and/or associated metadata may be lost when the publisher deposits in Crossref.
- Many datasets in the life sciences and biomedical fields use accession numbers instead of DOIs.

We know there are many more instances of data usage than we are currently capturing

Data Citations: How funders can help

Funders can drive awareness about best practices in data usage among grantees and incentivize adoption by incorporating data sharing and reuse in evaluation processes



Encourage researchers to deposit datasets at repositories that assign DOIs

Encourage researchers to cite datasets they have used - their own and others' - in their research outputs

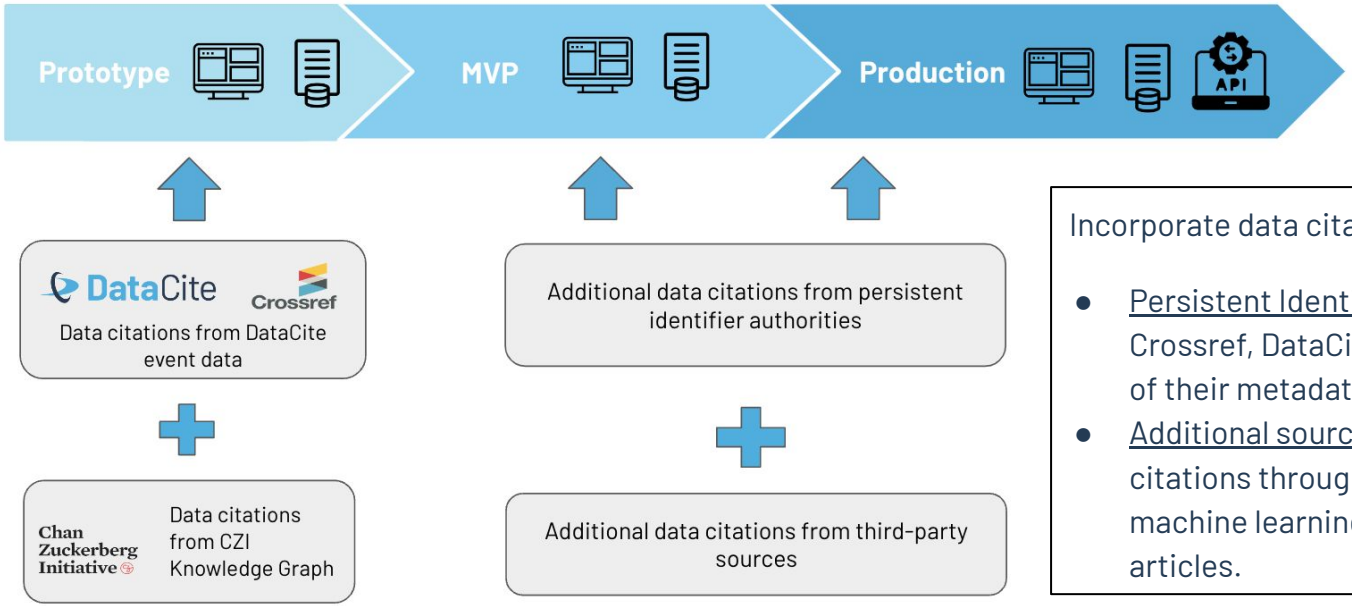
In grant applications and reports, ask researches to report the datasets they shared and their reuse & consider this as part of evaluation processes

In addition to promoting best practices, we also need infrastructure and services that automate the data citation process and make metadata inclusion easy for researchers.

Icons by Freepik and justicon via Flaticon

Global Open Data Citation Corpus

Goal: **Develop a comprehensive corpus that incorporates data citations from different sources into a centralized, publicly accessible community resource**



Incorporate data citations from diverse sources:

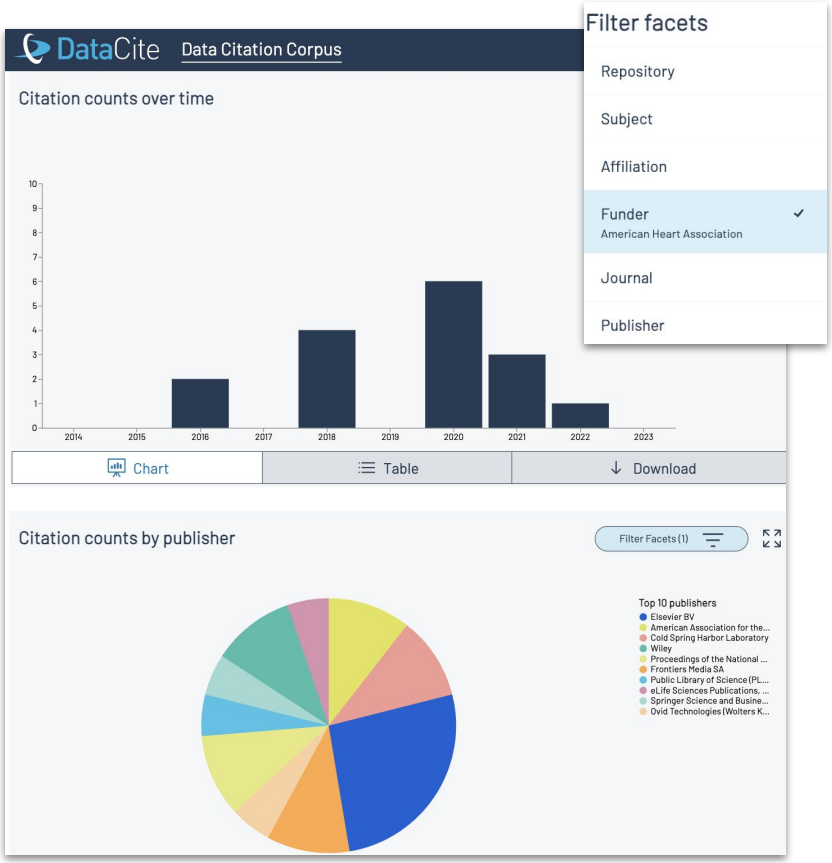
- Persistent Identifier (PID) authorities (e.g. Crossref, DataCite) that collect citations as part of their metadata deposit workflow.
- Additional sources that aggregate or discover citations through various techniques, such as machine learning and curation of full-text in articles.

Data Citation Corpus: Prototype

The prototype will make the initial seed data available and provide a basic user interface to visualize the data with different filters.

Our longer term goal is to enable stakeholders, including funders, to use the corpus as part of their processes to:

- Evaluate the outputs and reach of researchers' work, e.g. in grant applications or reports.
- Report on the reach of research outputs from funded projects.



Thank you!

Make Data Count Summit
September 12-13, Washington DC

Bringing together researchers, funders, government data administrators, publishers and infrastructure providers to discuss data impact, data usage, and data metrics.

summit.makedatacount.org

We will seek community input as we work on the development of the data citation corpus. Interested in learning more? Do get in touch:

iratxe.puebla@datacite.org
info@datacite.org

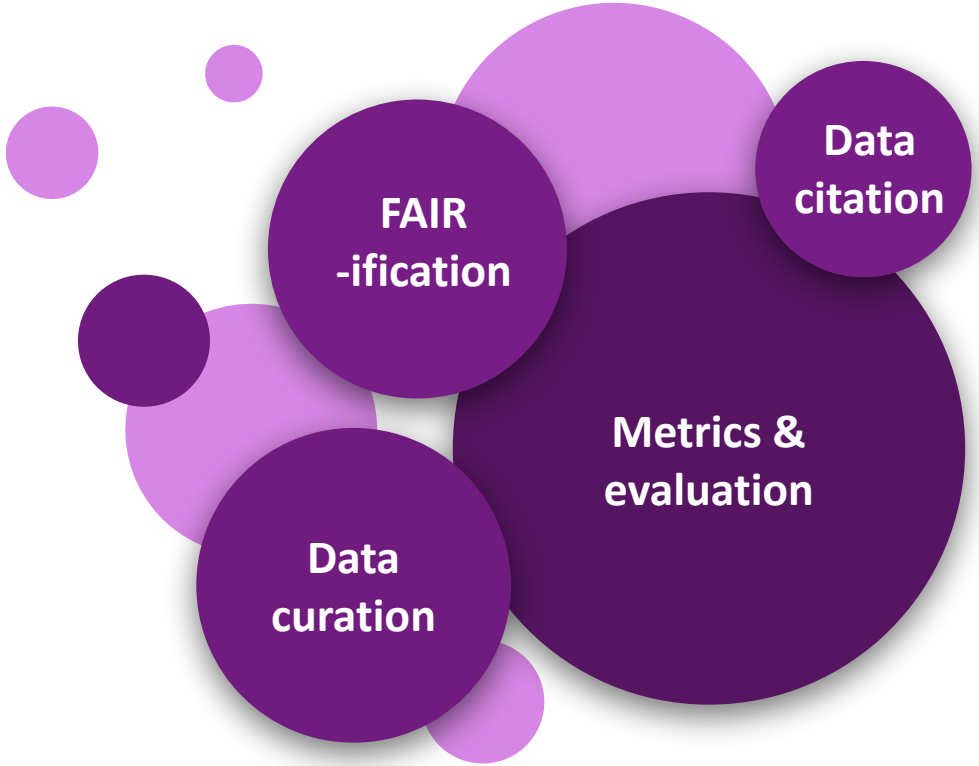
Data citation corpus:
makedatacount.org/data-citation

Data sharing workflow

Funding	Research	Analysis & Writing	Publishing/ Sharing	Post-Publication
• Preliminary data • Data sharing plan	• Dataset creation & collection • Data storage	• Preparing to share findings • Data curation	• Dataset in a FAIR repository • Data citation	• Data citation • Re/use metrics
Funders, Grantees	Researchers, Institutions	Co-/Authors, Data helpers	Publishers, Infrastructures	Many stakeholders

For discussion: What is the right toolchain?

Stratos



Actions and Resources

Fall 2023 Data Sharing BOF Sign up sheet

Updated Policy Worksheet - save as your own working document

Email me with questions: kristen@strategiesos.org

Health Research Alliance

Stratos

Thank you!