

# **WELCOME TO OUR 2024 ANNUAL MEETING**

**2024-10-29  
#CROSSREF2024**



# GOOD TO KNOW



Review the Crossref code of conduct:

**[crossref.org/code-of-conduct](https://crossref.org/code-of-conduct)**



Join the discussion on Mastodon and X:

**[#Crossref2024](#)**



Please use the Q&A box for your questions



The slides and recordings will be shared afterwards

# BOARD ELECTION: NOMINATION PROCESS



- Board composition review
- Public call for nominations
- 53 respondents
- Committee reviews and discussed candidates

Interested in next year? Stay tuned for the call for expressions of interest in April/May 2025

Interested in joining a future Nominating Committee? Contact [lucy@crossref.org](mailto:lucy@crossref.org)

# 2024 BOARD NOMINATIONS

## 2024 Nominating committee

- James Phillpotts\*, Oxford University Press, chair
- Oscar Donde\*, Pan Africa Science Journal
- Rose L'Huillier\*, Elsevier
- Ivy Mutambanengwe-Matanga, African Journals Online
- Adam Sewell, IOP Publishing

\* indicates current Crossref board member



# 2024 BOARD SLATE



## Tier 1 candidates (electing two seats):

- Katharina Rieck, Austrian Science Fund (FWF)
- Lisa Schiff, California Digital Library
- Ejaz Khan, Health Services Academy, Pakistan Journal of Public Health
- Karthikeyan Ramalingam, MM Publishers

## Tier 2 candidates (electing two seats):

- Aaron Wood, American Psychological Association
- Dan Shanahan, PLOS
- Amanda Ward, Taylor and Francis

**Voting closes at 15:00 UTC**

Email [lucy@crossref.org](mailto:lucy@crossref.org) if you still need to place or change your vote.

Crossref financial performance					Year end	Year end	Year end	Year end	Year end	Forecast	Variance
2019 to 2024					2019 Total	2020 Total	2021 Total	2022 Total	2023 Total	2024	2023 v 2024
					Actual	Actual	Actual	Actual	Actual	9 mos act + 3 mos forecast	
	Earned Revenues:										
	Annual Fees										
			Membership Fees		2,419,550	2,654,482	2,893,999	3,059,335	3,150,261	3,279,783	4%
			Subscriber Fees		800,254	821,692	926,759	1,010,800	1,036,852	998,026	-4%
			Similarity Check Fees		177,407	185,384	192,959	196,929	203,484	219,247	8%
			Total Annual Fees		3,397,211	3,661,558	4,013,717	4,267,064	4,390,598	4,497,056	2%
	Service Fees										
			Content Registration Fees		5,901,455	6,033,219	6,467,340	6,586,139	7,057,057	7,628,115	8%
			Content Registration Fees -Donated		(61,715)	(46,554)	(47,647)	(143,013)	(179,678)	(75,659)	-58%
			Similarity Check usage (net)		94,758	467,489	693,006	785,795	776,656	880,267	13%
			Total Service Fees		5,934,498	6,454,155	7,112,699	7,228,921	7,654,035	8,432,723	10%
			ROR funds (Crossref as fiscal conduit)		-	-	171,447	170,170	331,524	292,963	-12%
Total Earned Revenue					9,331,709	10,115,713	11,297,863	11,666,156	12,376,157	13,222,742	7%
Operating Expenses											
	Personnel				5,740,359	5,589,782	6,367,184	6,533,962	7,120,696	7,777,770	9%
	Nonpersonnel				2,664,091	2,151,213	2,127,977	2,614,178	3,142,050	3,390,092	8%
Total Operating Expenses					8,404,449	7,740,995	8,495,162	9,148,140	10,262,746	11,167,862	9%
Total Other Income & Expense					199,240	100,090	58,560	(389,729)	529,016	599,984	13%
Net Income (Loss)					1,126,499	2,474,808	2,861,262	2,128,287	2,642,427	2,654,864	0%

Rate of growth up slightly from last year

Loss is the result of consolidation of subscribers

Rate of growth up from last year

Temporary fee waiver for Ukrainian members ended

Service adoption and increased checks by existing user driving growth

Expenses are still bouncing back from Covid, inflation

Increased hosting fees (AWS) and resumed travel

# MISSION



We're a not-for-profit membership organisation that exists to make scholarly communications better.

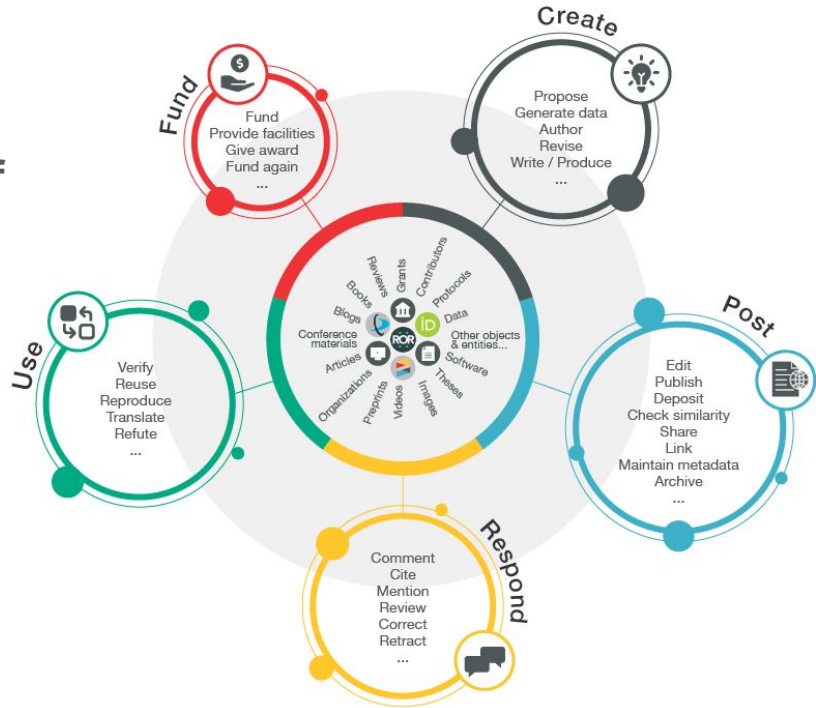
We rally the community; tag and share metadata; run an open infrastructure; play with technology; and make tools and services—all to help put research in context.

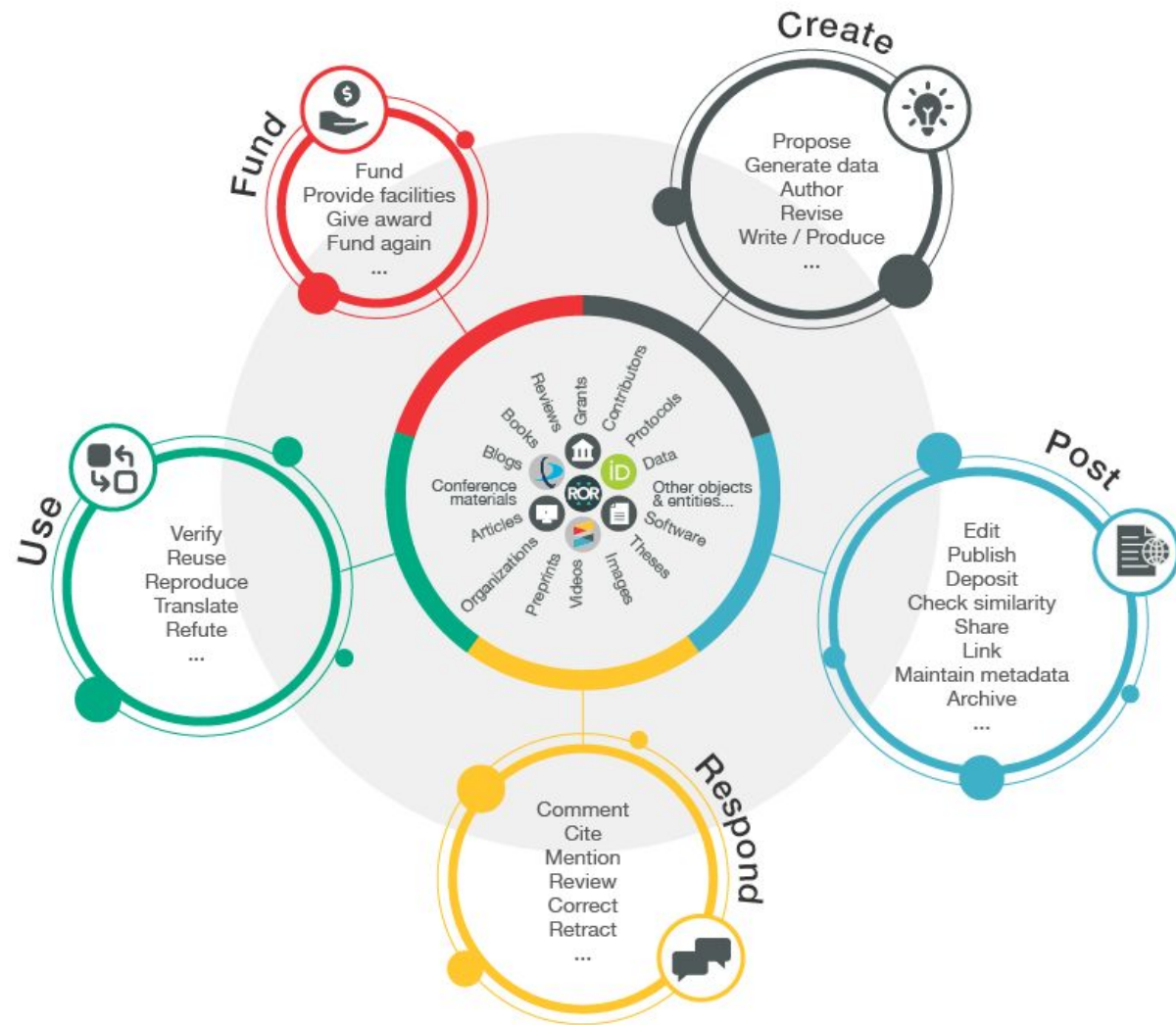
# VISION: THE RESEARCH NEXUS

Like others... we envision

**"a rich and reusable open network of relationships connecting research organizations, people, things, and actions; a scholarly record that the global community can build on forever, for the benefit of society."**

**Metadata** is the thread that is woven to produce such a network

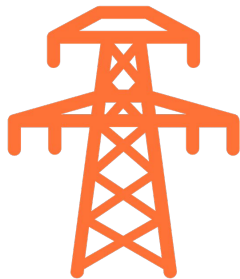




# WHAT WE'RE AIMING FOR

- Bringing together the disparate pieces of the scholarly record
- Better view of relationships (beyond PIDs)
- Exposing internal stuff publicly
- Enabling multi-party assertions
- Evidence. Provenance. Persistence.
- **60% of this is possible, the rest is aspirational**

## The Principles of Open Scholarly Infrastructure



*"Trust must run strongly across each of the following areas: running the infrastructure (governance), funding it (sustainability), and preserving community ownership of it (insurance). In this spirit, we have drafted a set of design principles we think could support the creation of successful shared infrastructures."*

Bilder G, Lin J, Neylon C (2020), The Principles of Open Scholarly Infrastructure, retrieved October 25, 2024, <https://doi.org/10.24343/C34W2H>

### Supporting Open Research

[Openscholarlyinfrastructure.org](https://openscholarlyinfrastructure.org)

# POSI



## GOVERNANCE

- Coverage across the research enterprise
- Stakeholder Governed
- Non-discriminatory membership
- Transparent governance
- Cannot lobby
- Living will
- Formal incentives to fulfil mission & wind-down



## SUSTAINABILITY

- Time-limited funds for time-limited activities
- Goal to generate surplus
- Goal to create contingency fund
- Mission-consistent revenue generation
- Revenue based on services, not data



## INSURANCE

- Open source
- Open data
- Available data
- Patent non-assertion



# PROGRESS AND PROGRAMS

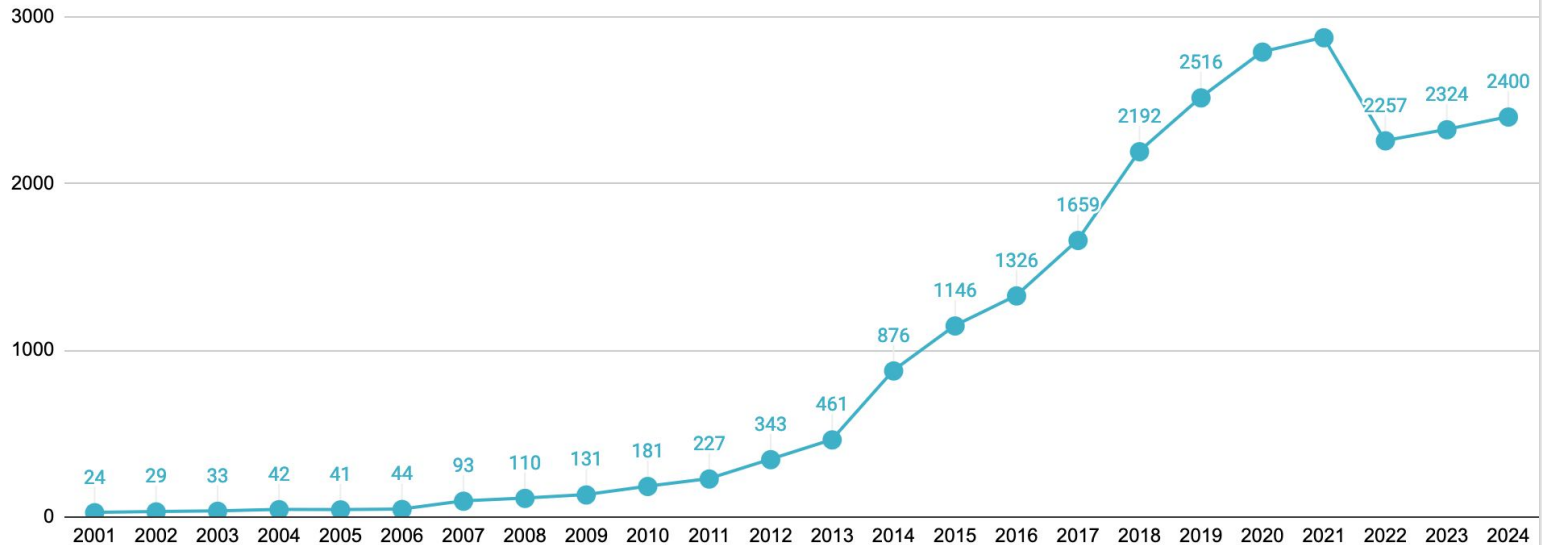


**Crossref**



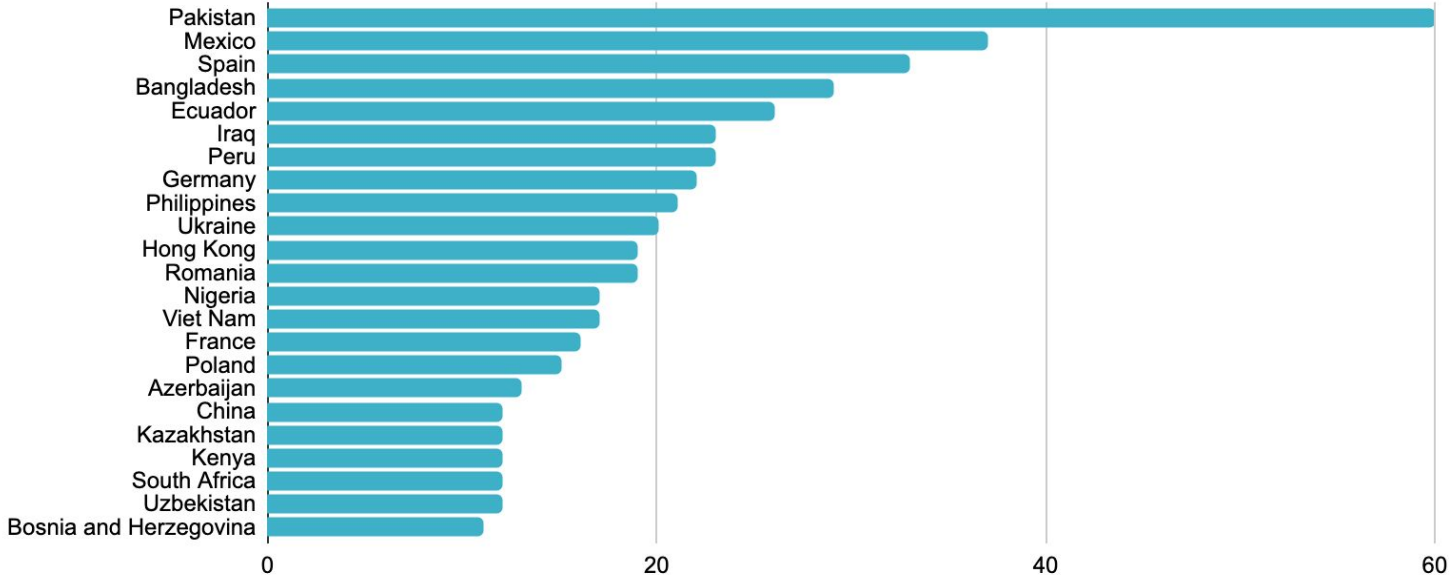
# MEMBERSHIP STATS: >2000 NEW MEMBERS PER YEAR

New member growth 2000-2024



# MEMBERSHIP STATS: COUNTRY TRENDS

Members joining per country YTD (excl. the typical ones!)



Research Nexus records	Oct 2023	Oct 2024	% change
Total records registered	151,255,483	163,351,778	8%
Number of Journals	123,336	136,632	11%
Number of Journal articles	102,775,406	110,017,692	7%
Number of Books	1,913,683	2,064,184	8%
Number of Book-related records	24,576,712	28,812,044	17%
Number of Conference proceedings	66,527	71,880	8%
Number of Conference papers	8,125,166	8,716,870	7%
Number of Preprints	1,637,103	2,143,063	31%
Number of Reports	746,921	795,391	6%
Number of Peer reviews	421,782	594,119	41%
Number of Standards	378,946	391,808	3%
Number of Components	7,865,443	8,496,980	8%
Number of Databases	63,926	65,708	3%
Number of Datasets	2,919,950	2,998,276	3%
Number of Dissertations	618,951	698,158	13%
Number of Grants	87,259	127,295	46%

Research Nexus connections	Oct 2023	Oct 2024	% change
Records with references	66,508,539	71,295,180	7%
Number of Cited-by matches	1,542,481,107	1,684,708,729	9%
Number of Preprint-to-article links	555,134	615,813	11%
Number of records with Funder IDs	8,099,744	9,444,516	17%
Records with >1 authors with ORCID iDs	12,114,204	14,981,441	24%
Total unique ORCID iDs	6,093,373	7,130,216	17%
Total works auto-pushed to ORCID	16,256,452	21,581,924	33%
Records with abstracts	26,814,551	33,144,453	24%
Records with ROR IDs	73,560	148,747	102%
Records with Crossmark	25,013,338	29,227,010	17%
Crossmark status updates	267,583	326,560	22%
Crossmark retractions	14,004	30,980	121%
Research Nexus adoption	Oct 2023	Oct 2024	% change
Members registering references	10,158	11,389	12%
Members registering abstracts	22,312	26,851	20%
Members participating in Crossmark	516	548	6%
Members registering ORCID iDs	15,154	18,122	20%
Members registering ROR IDs	290	520	79%
Members registering Funder IDs	2,161	2,490	15%

# SCALE OF CROSSREF



- **21,000** organisational members from **160** countries
  - **50%** of members are based in Asia
  - **40%** of members are universities or scholar-led
- **120** Sponsor orgs; **50** Ambassadors
- **162 million** open metadata records with DOIs that are resolved **1.3 billion** times per month (**94%** of all DOI usage)
- **2 billion** calls to our API every month by **0000s** (?) systems ingesting and reusing this open metadata

# STRATEGIC THEMES



Contribute to an environment where the community identifies and co-creates solutions for broad benefit



A sustainable source of complete, open, and global scholarly metadata and relationships



Manage Crossref openly and sustainably, modernising and making transparent all operations so that we are accountable to the communities that govern us



Foster a strong team—because reliable infrastructure needs committed people who contribute to and realise the vision, and thrive doing it

# 2024 HIGHLIGHTS SO FAR



- Research for Resourcing Crossref for Future Sustainability (RCFS)
- Integrity of the Scholarly Record (ISR)
- Grant Linking System (GLS) reached 5 years
- Automated some very manual membership processes
- Released new form for journal article record registration
- Upgraded Participation Reports to include Affiliations and ROR IDs
- Launched a new API Learning Hub
- Paused further development of a Relationships API
- Migrated to a new open-source database
- Schema development - ROR as Funder identifiers
- REST API bug fixes and metadata consistency fixes

# REST OF YEAR

- Commence move out of the data centre
- Deliver schema 5.4 with reference types, among other things
- ROR as Funder identification

## ONGOING

- More ISR engagement
- More research for RCFS work + fee recommendations
- More automation

# NEXT YEAR

- Complete move out of the data centre
- Preprint (and other) matching
- Retraction Watch data in the REST API
- Continue a focus on metadata users: tutorials; API hack/workshop
- Continuous metadata development and additional schema updates
- New Crossmark approach
- Plan new approach to rewrite and open core system code
- Exploring more localized support
- RCFS Fee recommendations
- ISR



# DEMOS



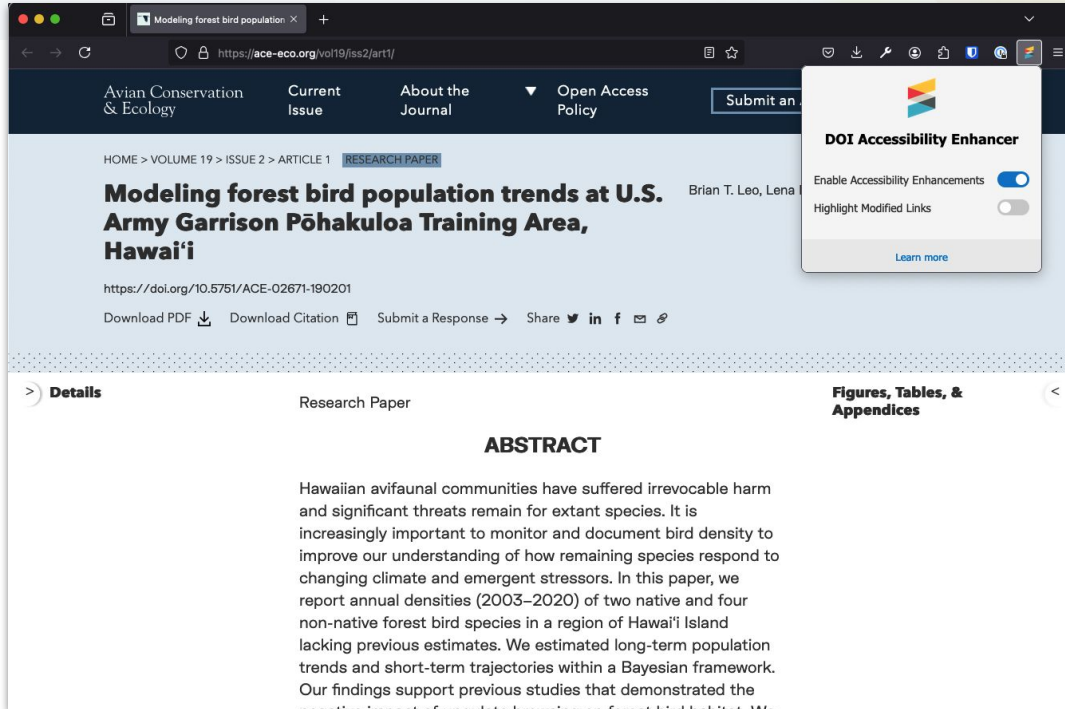
**Crossref**

# DEMOS



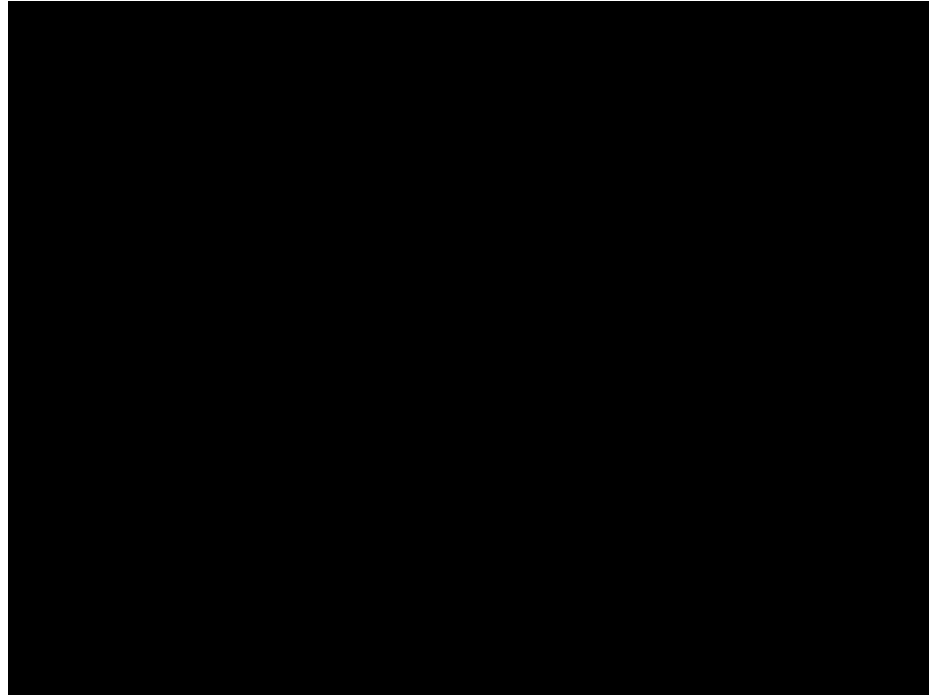
- **DOI accessibility browser plugin**  
Patrick Vale, Crossref
- **What's new in Participation Reports, and community contributions at Crossref**  
Patrick Vale, Crossref
- **New record management tool for journal articles**  
Lena Stoll, Crossref

# DOI ACCESSIBILITY BROWSER PLUGIN



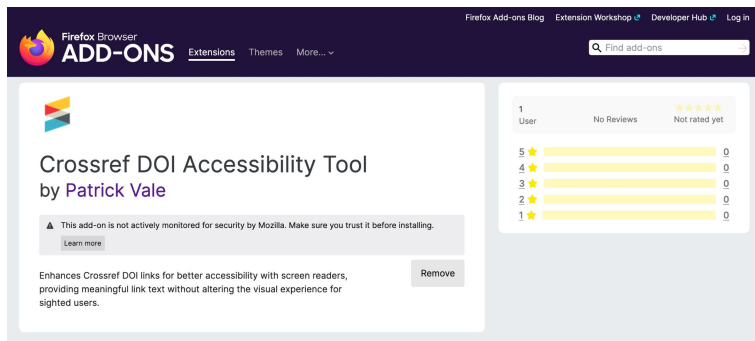
- What is DOI accessibility?
- Why do we need a user-facing tool?
- Where can the tool be found?

# DOI ACCESSIBILITY BROWSER PLUGIN

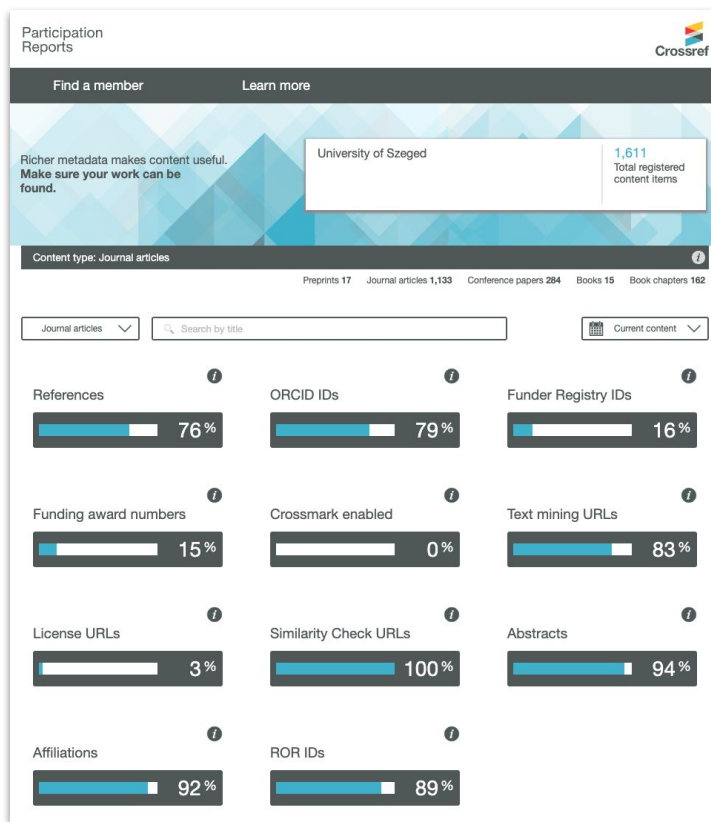


# DOI ACCESSIBILITY BROWSER PLUGIN

- Find the extension on Firefox Addons at:  
<https://addons.mozilla.org/en-GB/firefox/addon/crossref-doi-a11y-tool/>
- Check out the Gitlab repo at:  
<https://gitlab.com/crossref/doi-accessibility-enhancer>



# Participation Reports



- Community-led effort to include affiliation and ROR ID coverage data in interface
- Find out more on our [blog](#)
- Register for metadata health check webinar on Thursday: <https://tinyurl.com/nhhw55sb>

[crossref.org/members/prep](https://crossref.org/members/prep)

# New record management tool for journal articles



**Crossref**

# New record management tool for journal articles



**Each of the existing tools serves a different set of use cases.  
Each of the existing tools has critical limitations.**


With the new content registration tool, we aim to:

- Build on a flexible, scalable, and schema-driven framework
- Unify multiple disparate user interfaces
- Prevent human error before submission

[crossref.org/blog/next-steps-for-content-registration/](https://crossref.org/blog/next-steps-for-content-registration/)



# New record management tool for journal articles

 REGISTER RECORD

## New record submission

Select the type of work you wish to register, then give your submission a name. This will be the file name for your record if you choose to download it for later use, but it is not included in your metadata deposit.

1 Select a Record type

Journal Article (BETA) ▼

CANCEL

CONTINUE

2 Give your Record a name

# New record management tool for journal articles

1

Article

2

Journal

3

Review

4

Submit

Article title\*

The title of the article. If the article has a subtitle, or multiple titles in different languages, only the primary title should be included. [Learn more](#)

Article title\*

Test article title

Article DOI\*

The DOI for the article. This must be unique and use the format 10.xxxx/xxxx, with a prefix associated with your organization. [Learn more](#)

Article DOI\*

10.5555/

Please enter a valid DOI, in the format 10.xxxx/xxxx.

Article landing page URL\*

The link to the page where the article DOI will resolve, starting with http:// or https://. The landing page must be outside of any logins, be unique to the article, and contain some key information about it. [Learn more](#)

Article landing page URL\*

<https://www.crossref.org/test-article>

Contributors

+

Stoll

↑

↓

✖

▼

Vale

↑

↓

✖

▼

+ ADD NEW

Focus on key fields: basic bibliographic metadata, contributor details incl. ORCID/ROR, abstract(s), funding, licence, ...

Input validations prevent human error

# New record management tool for journal articles

✓

2

3

4

ArticleJournalReviewSubmit

Online ISSN of journal

ISSNs are commonly used unique identifiers for journals. At least one ISSN is required to register articles using this tool. [Learn more](#)

Online ISSN of journal

0037-7333

✓ Matched ISSN to Journal

0037-7333

Journal Title

Testing new deposit code

Print ISSN

0037-7333

Online ISSN

0037-7333

Autofill Journal details?

NO, THANKS

AUTOFILL

ISSN lookup simplifies title matching

Optionally add issue and volume metadata

# New record management tool for journal articles

Similarity Check

URL (optional)

**Journal**

Online ISSN of journal

Print ISSN of journal

Full title of journal

Abbreviated title (optional)

**Issue**

Issue published (optional)

Issue published (optional)

Issue number (optional) A3

Volume number (optional) B3

**An error occurred.**

Your submission could not be completed due to the following error(s). Click below to see a list of common errors and tips for troubleshooting your submission.

COPY

Error Code: 403

Error: ISSN "00280836" has already been assigned, title/issn: Nature/00280836 is owned by publisher: 10.1038

Details: <?xml version="1.0" encoding="UTF-8"?><doi\_batch\_diagnostic status="completed" sp="bstn-prod-ds-03"><submission\_id>1653883700</submission\_id><batch\_id>NONE</batch\_id><record\_diagnostic status="Failure" msg\_id="22"><doi>all doi's under the current journal

CLOSE

GO TO DOCUMENTATION

View summary before confirming submission

Get actionable feedback if there are errors from deposit system...

# New record management tool for journal articles



## Journal Article successfully submitted.

Keep this copy as a record of your submission activity. The record is a JSON file, which you can load, edit, and resubmit to update your metadata.

DOWNLOAD RECORD

test

Submission ID 1653879806

DOI [10.5555/2825134803](https://doi.org/10.5555/2825134803)

### What's next

- Use the [Simple Text Query](#) form to deposit the article's reference list. [Learn more.](#)
- Your record will become available in our APIs and on [Crossref Metadata Search](#) in the next 24 hours.
- Use this link to see more information on your submission in the Crossref Admin portal: [1653879806](#)

START NEW SUBMISSION

... and if there aren't

# New record management tool for journal articles



## What's next?

- Built-in reference deposit
- Register multiple articles without re-entering journal/issue metadata
- Transition members from the deprecated Metadata Manager

# Thank you

- Register records (requires Crossref login):  
[manage.crossref.org/records](https://manage.crossref.org/records)
- Community Forum:  
[community.crossref.org](https://community.crossref.org)
- Email: [lstoll@crossref.org](mailto:lstoll@crossref.org) (or use the feedback widget within the tool)



# UPDATES FROM THE COMMUNITY PART I

Michael Parkin, EuropePMC

Hans de Jonge, Dutch Research Council

Fred Atherden, eLife

Brietta Pike, CSIRO







# **EuropePMC maximising discoverability and reuse of open access content and data**

Michael Parkin, EuropePMC

# Six years of preprints in Europe PMC

Our better metadata story

**Michael Parkin**

**Data Scientist, Literature Services**

Crossref AGM, 29th October 2024

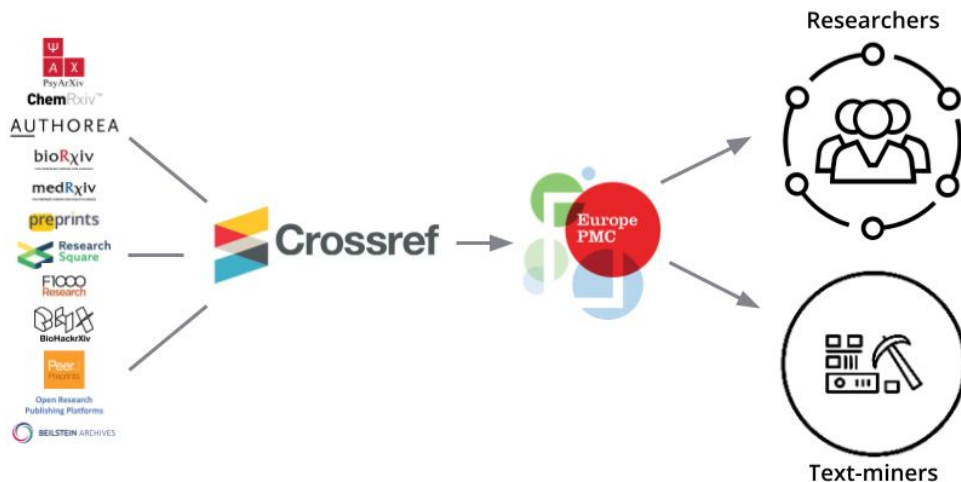
EMBL-EBI



# Introduction to Europe PMC

Europe PMC is a database for life science literature and a platform for content-based innovation using text mining and machine learning approaches

Started indexing preprints *via* Crossref REST API in 2018 to aid their access and discovery



# Preprints *via* the Crossref REST API

- Preprints supported in Crossref since 2016 under the “posted-content” work type
- Europe PMC queries the Crossref REST API daily for new preprints and updates
- Maintain a configuration to handle discrepancies between preprint servers

```
- repository: 'PsyArXiv'  
  doiPrefix: '10.31234'  
  uniqueKey: 'PsyArXiv:10.31234'  
  versioningPattern: 'n/a'  
  loadAll: 'true'  
  loadMaster: 'false'  
  filter: '?filter=type:posted-content,member:15934,group-title:PsyArXiv'  
  dateFromPostedDateParts: 'true'
```

- Annual volume of ~30k in 2018, increasing to ~180k in 2023

More details in a Crossref blog: <https://www.crossref.org/blog/using-the-crossref-rest-api.-part-12-with-europe-pmc/>

# Early metadata challenges

Versioning	Journal linking	Deleted content
<ul style="list-style-type: none"><li>• Hadn't been seen in existing PubMed/PMC journal content</li><li>• Different approaches taken by servers when registering DOIs</li><li>• Opted to “stack” versions but only display latest version in search results</li></ul>	<ul style="list-style-type: none"><li>• Relationship metadata was rarely included in Crossref</li><li>• Developed an in-house matching system based on title and author similarity</li><li>• Looking forward to Crossref's heuristic-based strategy</li></ul>	<ul style="list-style-type: none"><li>• Crossref DOIs (thankfully) persist; early on, preprints did not</li><li>• Requests from authors to remove indexed preprints were common</li><li>• Preprint server policies have dramatically improved since then</li></ul>

[Preprint version history ▼](#)

- Version 2 [29 Dec 2023]
- Version 1 [01 Dec 2023]

⚠ This article is a preprint. A journal published article is available.

# Community outreach

## Encouraging provision of extra metadata

- Early requests to server to include abstracts in Crossref metadata
- More recently requested licensing information
- Would be great to see funding metadata, but very challenging to collect at submission

## Preprint Advisory Group

- Participation in the group since 2021
- Great opportunity to feedback to Crossref and servers on metadata challenges we've faced as an indexer

# Latest developments

Peer reviews *via* Crossref

Removal/withdrawal status

## Reviews & evaluations

Reviews, recommendations & commentary from expert sources. ⓘ

ScienceOpen

27 Mar 2023

**Review of "Psychosocial risks in the working environment : Approaches to formative risk assessment"**

Chinchu Chithrangathan

<http://dx.doi.org/10.14293/s2199-1006.1.sor-socsci.apws63s.v1.rj1pgz>

30 Mar 2023

**Review of "Psychosocial risks in the working environment : Approaches to formative risk assessment"**

Roghieh Nooripour

<http://dx.doi.org/10.14293/s2199-1006.1.sor-socsci.apws63s.v1.xrake>

<https://europepmc.org/article/PPR/PPR756034#reviews>

## WITHDRAWN: Optimized Cost Estimation in Software Project Planning using Fuzzy Logic and Genetic Algorithm

Jaiswal A , Raikwal J , Raikwal P

Preprint from Research Square, 18 Oct 2024

<https://doi.org/10.21203/rs.3.rs-4737605/v2> PPR: PPR927408

Preprint v2

ⓘ This article is a preprint. Versions 1 and 2 of this preprint have been withdrawn by the author(s).

Preprint version history ▾

- Version 2 [18 Oct 2024]
- Version 1 [13 Aug 2024]

<https://europepmc.org/article/PPR/PPR927408>

# Thank you!

## Europe PMC Funders Group



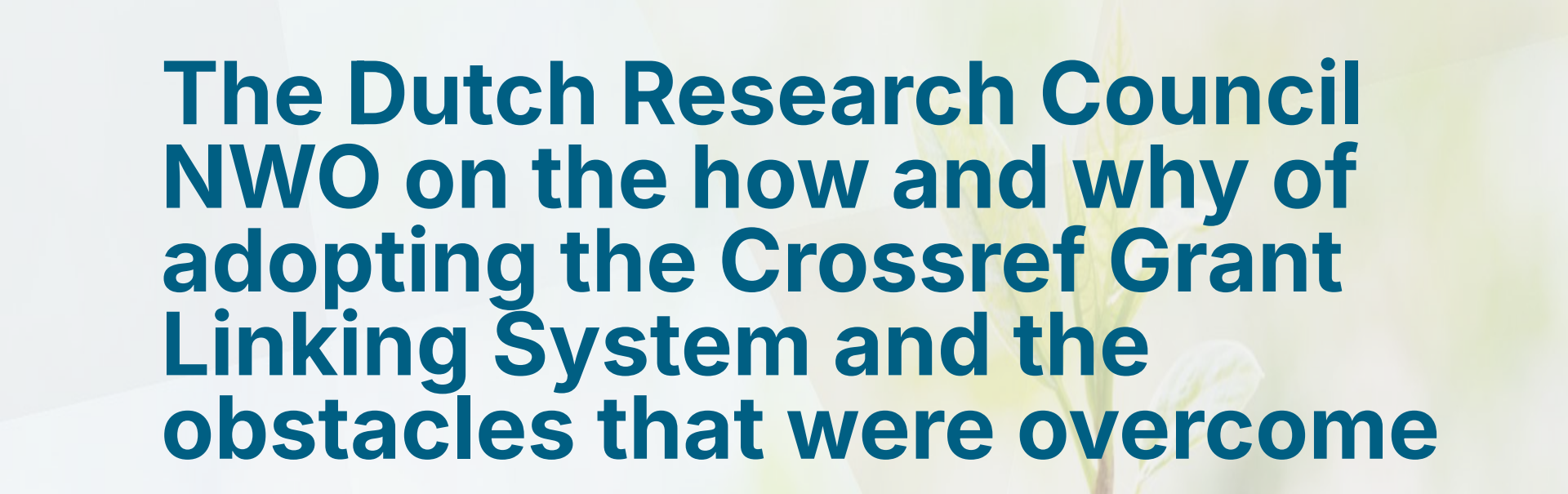
## Contact us

Website: <https://europepmc.org/>

Twitter: [@EuropePMC\\_News](https://twitter.com/EuropePMC_News)

Email: [helpdesk@europepmc.org](mailto:helpdesk@europepmc.org)





# **The Dutch Research Council NWO on the how and why of adopting the Crossref Grant Linking System and the obstacles that were overcome**

Hans de Jonge,

Dutch Research Council NWO



## 1. What is Crossref Grant ID?

- A service for funders to assign globally unique identifiers to grants.
- Facilitating easy linking of funding with publications, datasets and other outputs.

<https://doi.org/10.5555/YRFU1371>  
DOI resolver    prefix    suffix

- Started in 2017 after a pilot with Wellcome Trust
- Currently:
  - > 35 funders
  - 125.000 grants
  - connecting 160 million published outputs

## 2. Why PIDs for grants?

- Challenges surround the tracking of outputs from funded research.
  - Underreporting by researchers
  - Inconsistencies when acknowledging funding
  - Need for globally unique ID's

*If every funder were to ... expose their grant metadata in a consistent, machine-readable way, it would facilitate the development of applications to help funders get a greatly enhanced picture of the global funding landscape, which in turn would inform strategic planning and resource allocation.*

Robert Kiley (head of Open Research Wellcome)

## 3. Wider considerations to adopt Grant ID for NWO

- Open Science and wish to apply these principles to our own procedures and data.
- Funders are part of the (open) scholarly communication landscape and can be / should be the **authoritative source of important data about research**.
- Push for open metadata gaining momentum: [Barcelona Declaration on Open Research Information](#).

## 4. How did we go about?

- **Interdisciplinary project team**
  - Open Science, IT, data office, communication
- **High level steps taken:**
  - Crossref membership
  - Adjustments to our Grant Management System to register DOI's with Crossref.
  - Communication: adjusting template documents to inform applicants
- Time investment / planning:
  - ~ 18 months from inception to launch.



## Important decisions to take:

- Assign DOI's for all projects or only for new ones?  
-> We decided to only register new projects.
- Which metadata to register? -> Due to GDPR regulations our legal council advised only to register the mandatory fields
- Soft launch in july, public launch october 2024
- Positive reactions so far.

## 6. Acknowledgements

The people who did the actual work:

- René Nouwens (I&I) - projectmanager
- Maria Cruz (Open Science) – product owner
- Marc Martens (ICT)
- Boubkhar el Bouchtaoui (ICT)
- Danny ten Bosch (I&I)
- Margot Haanstra-La Fontaine (Primary Proces)
- Karolien Kleijer (Communication)

## 7. Links

- [www.crossref.org/services/grant-linking-system/](https://www.crossref.org/services/grant-linking-system/)
- [www.nwo.nl/en/news/nwo-funded-research-projects-get-unique-identifier-with-grant-id](https://www.nwo.nl/en/news/nwo-funded-research-projects-get-unique-identifier-with-grant-id)





# **eLife on Capturing Persistent Grant Identifier in Journal Article**

Fred Atherden, eLife

# Persistent Grant IDs

Fred Atherden  
(Head of Production Operations)



# ‘Grant Linking System’



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

# Content and metadata best practice

- FAIR data and code
- The use of PIDs
- Collection of (authenticated) ORCID IDs
- Correct tagging of metadata and content in JATS



# Submission

Funder: Alberta Innovates Technology Futures

Grant reference: New Faculty Award, 201000076 10.35802/202802

Funder(s) *		Grant Reference or DOI	Author(s) *	
National Institutes of Health (NIH)	✓	F31NS108522	Jennifer N Jahncke Daniel S Miller Milana Krush Eric Schnell Kevin M Wright	Clear
Cure CMD (CURE CMD INC)	✓	N/A	Jennifer N Jahncke Daniel S Miller Milana Krush Eric Schnell Kevin M Wright	Clear
Muscular Dystrophy Association (MDA)	✓	1061101	Jennifer N Jahncke Daniel S Miller Milana Krush Eric Schnell Kevin M Wright	Clear

# Proofing

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233     <institution-wrap>
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241       <surname>Wright</surname>
242       <given-names>Kevin M</given-names>
243     </name>
244   </principal-award-recipient>
245 </award-group>
246 <funding-statement>The funders had no role in study design, data
collection and interpretation, or the decision to submit the work for
publication.</funding-statement>
```

## Schematron

↕	Type	ID	Message
<input type="checkbox"/>	Warning	grant-doi-test-1	[grant-doi-test-1] Funding entry from Muscular Dystrophy Association has an award-id (1061101) which could potentially be replaced with a grant DOI. The following grant DOIs are possibilities: <a href="https://doi.org/10.55762/mda.1061101.pc.gr.174090">https://doi.org/10.55762/mda.1061101.pc.gr.174090</a> .
<input type="checkbox"/>	Warning	aff-ror-name	[aff-ror-name] Affiliation has a ROR id, but it does not contain the name of the institution as captured in the ROR data within its institution. Is that OK? ROR has 'VA Portland Health Care System', but the institution is Operative Care Division, Portland VA Health Care System.



Wellcome Trust (WT)



214283/Z/18/Z

Peppi Karppinen

Jorge Lira Ruas

Helene Rundqvist

Johanna Lanner

Randall S Johnson

Clear

submitted:  
**214283/Z/18/Z**

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  ],  
}
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Crossref:  
**214283**

# Publication

## Funding

### Berrow Foundation (Graduate Student Fellowship)

- Daniel Ballmer

### Wellcome Trust

<https://doi.org/10.35802/210622>

- Bungo Akiyoshi

### Wellcome Trust (227243/Z/23/Z)

- Bungo Akiyoshi

### Wellcome Trust

<https://doi.org/10.35802/203149>

- Bungo Akiyoshi

From: <https://doi.org/10.7554/eLife.93522.3>

## Funding

### Marie Skłodowska-Curie Actions

<https://doi.org/10.3030/847681>

- Bert Hobmayer

From: <https://doi.org/10.7554/eLife.87330>



Funded by  
Wellcome Trust

£ 1,890,493

Duration  
01 Oct 2018 - 15 Oct 2023

Internal grant ID  
210622

Grant DOI  
<https://doi.org/10.35802/210622>

Funding stream  
Molecular Basis of Cell Function

Grant type  
Senior Research Fellowship Basic

Publications  
[All publications \(20\)](#)  
[Free to read articles \(19\)](#)

## Understanding unconventional kinetoplastid kinetochores in *Trypanosoma brucei*

Dr Akiyoshi, Bungo | ORCID: 0000-0001-6010-394X | University of Oxford

 [Author profile](#)

### Abstract

I am interested in understanding the mechanism of how eukaryotic cells inherit their genetic material at each round of cell division. I have been studying the kinetochore, the macromolecular protein complex that drives chromosome segregation. Although it was widely believed that the structural core of kinetochores would be composed of proteins that are conserved in all eukaryotes, I discovered an unconventional class of kinetochore proteins (KKT1–20) in *Trypanosoma brucei*, an evolutionarily-divergent kinetoplastid parasite. My current goal is to understand how they carry out conserved kinetochore functions such as binding to DNA and microtubules. Based on preliminary data, I propose that two homologous protein kinases KKT2 and KKT3 lie at the base of the kinetoplastid kinetochore. I will aim to understand how these proteins localize specifically at the centromeric DNA using a variety of approaches. I will also characterize the KKT4 protein to reveal the mechanism of microtubule interaction. To understand the design principle of kinetoplastid kinetochores, I will reconstitute and characterize kinetochore subcomplexes. Finally, I will examine how the evolutionarily-conserved Aurora B kinase regulates the function of unconventional kinetoplastid kinetochores.

### Lay abstract

All cells must transmit their genetic material accurately to offspring. Errors in this process lead to various diseases such as cancer and birth defects in humans. Revealing the mechanism of how cells inherit their genetic material (chromosomes) is a fundamental question in biology and also important for understanding the molecular basis of diseases. I am studying trypanosomes because they are divergent from popular model organisms such as yeast and human. I discovered that trypanosomes use a different set of proteins to separate chromosomes. By characterizing these proteins, I will try to gain deeper understanding of how cells accurately transmit their genetic material. Our work is also medically important because trypanosomes cause sleeping sickness that affects a number of people in Africa. Understanding how trypanosomes uniquely inherit their genetic material will facilitate the development of drugs that specifically kill the parasite and cure sleeping sickness.

## Journal article DOI

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Source: <https://api.crossref.org/works/10.7554/eLife.93522.3>

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## Grant IDs

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    }
  ]
},
```

Sources:

<https://api.crossref.org/works/10.35802/210622>

<https://api.crossref.org/works/10.35802/203149>

# Next steps

- Tweak bespoke matching to catch more
- Update submission system
- Capture further upstream (in Reviewed Preprints)

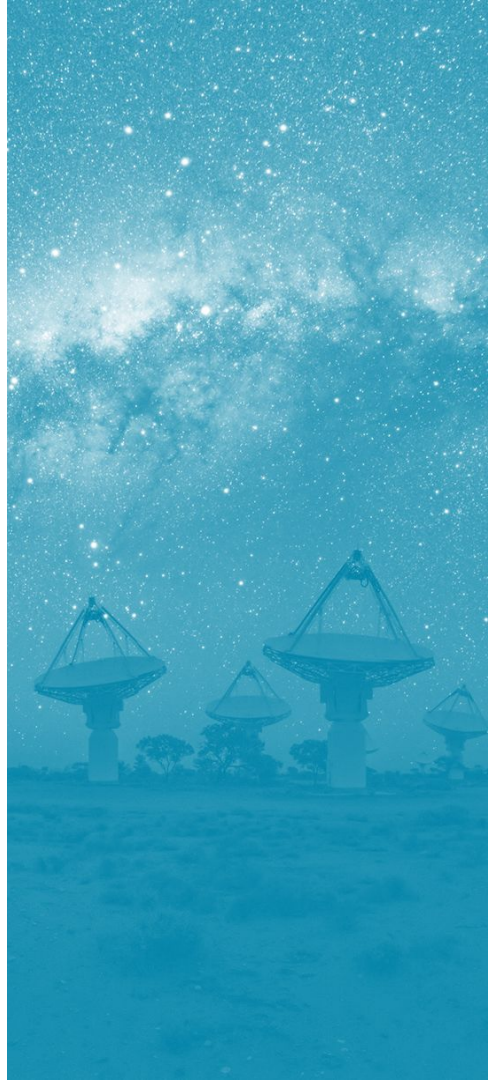
# CSIRO: Our better metadata story



Brietta Pike, CSIRO

# A case study on improving our journal metadata

Brietta Pike, CSIRO Publishing  
Crossref annual meeting  
29 October 2024



# CSIRO Publishing - Who are we?

- CSIRO – Australia's National Science Agency
- CSIRO Publishing is an editorially independent business unit
- Not-for-profit publisher
- Books, peer-reviewed journals, magazines and writer training
- 75 years of scholarly publishing experience



**PUBLISHING**



# Our Journals



<https://www.publish.csiro.au/journals/all>

# Metadata is key – what are our challenges?

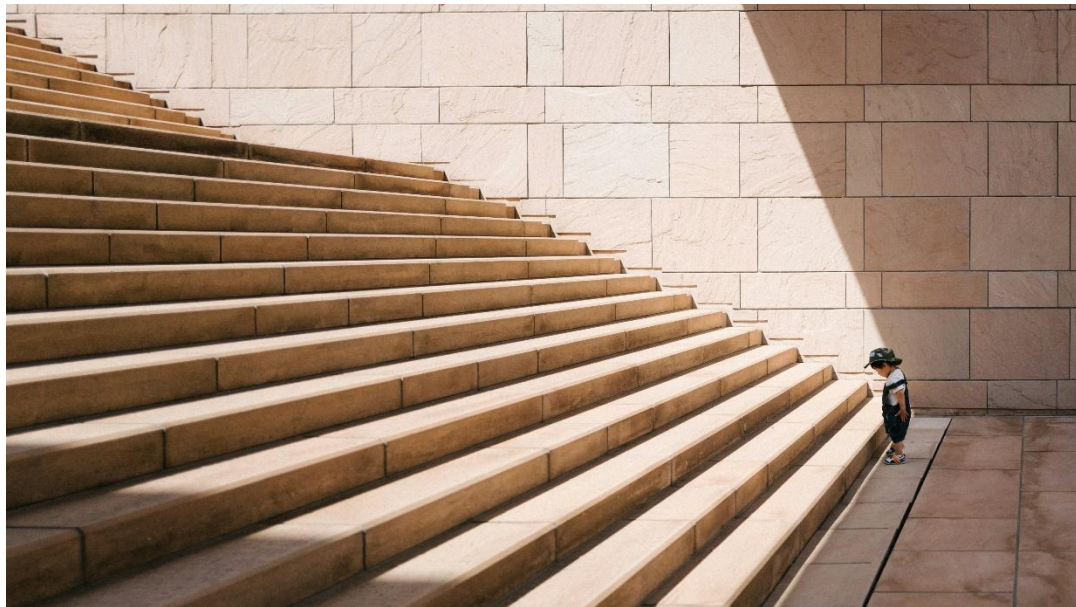


Photo by [Jukan Tateisi](#) on [Unsplash](#)

# On our journey to capture and deposit better metadata

- Business priority – small project team
- Improve quality and completeness of data
- XML stylesheet
- Better XML / best practice tagging
- New content display engine
- Collaboration with partners

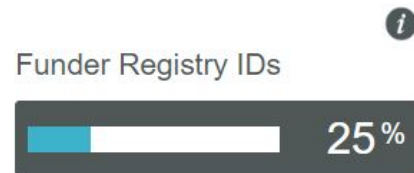
**= richer, more complete metadata and better discoverability**



# Case study: funding data

Declaration of funding statement in paper is not enough

- Improved data collection/clean up in editorial and production
- Implementation of funder name, funder ID, grant number in XML
- Since late 2023, send to Crossref and aggregators



CSIRO Publishing participation report,  
Current content 24 Oct 2024

**= Transparency  
on who funded  
research**

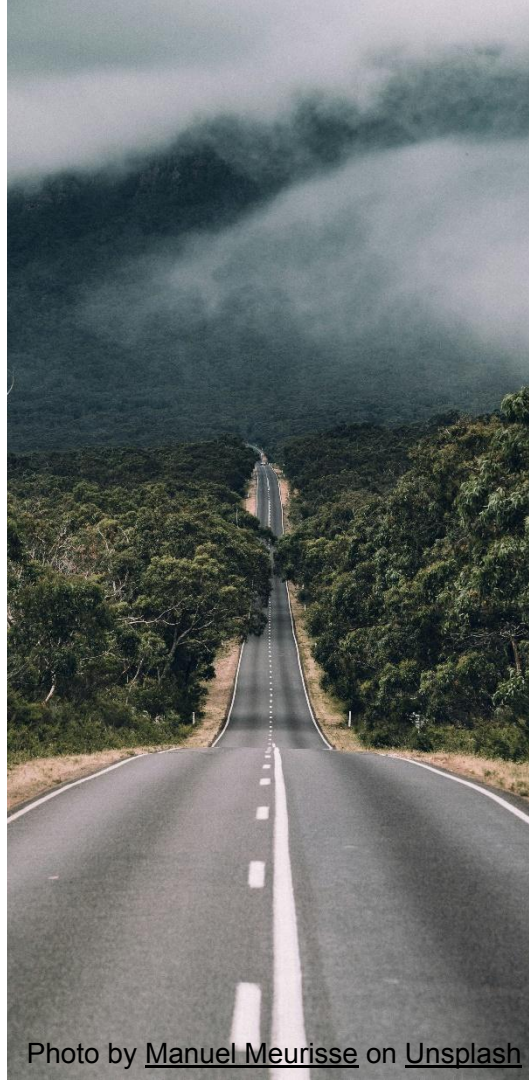
# Coming in 2025

Affiliations/ROR IDs

License URLs

Metadata header = more complete metadata for whole archive

Crossmark (late 2025)





PUBLISHING

# Thank you

Brietta Pike

[Brietta.pike@csiro.au](mailto:Brietta.pike@csiro.au)

[publish.csiro.au](http://publish.csiro.au)

[Linkedin.com/in/briettapike](https://www.linkedin.com/in/briettapike)

We would love to talk about  
all things metadata. Please  
get in touch!



# **BREAK**

**Let's take 10 minutes  
Back at 10am UTC**



**Crossref**

# PANEL DISCUSSION:

**Opportunities and  
challenges for open  
scholarly infrastructures**



**Crossref**

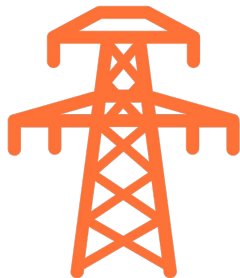


# PANELISTS



# Evolution of POSI

## The Principles of Open Scholarly Infrastructure



*"Trust must run strongly across each of the following areas: running the infrastructure (governance), funding it (sustainability), and preserving community ownership of it (insurance). In this spirit, we have drafted a set of design principles we think could support the creation of successful shared infrastructures."*

Bilder G, Lin J, Neylon C (2020), The Principles of Open Scholarly Infrastructure, retrieved October 25, 2024, <https://doi.org/10.24343/C34W2H>

## Supporting Open Research

[Openscholarlyinfrastructure.org](https://openscholarlyinfrastructure.org)

# POSI



## GOVERNANCE

- Coverage across the research enterprise
- Stakeholder Governed
- Non-discriminatory membership
- Transparent governance
- Cannot lobby
- Living will
- Formal incentives to fulfil mission & wind-down



## SUSTAINABILITY

- Time-limited funds for time-limited activities
- Goal to generate surplus
- Goal to create contingency fund
- Mission-consistent revenue generation
- Revenue based on services, not data



## INSURANCE

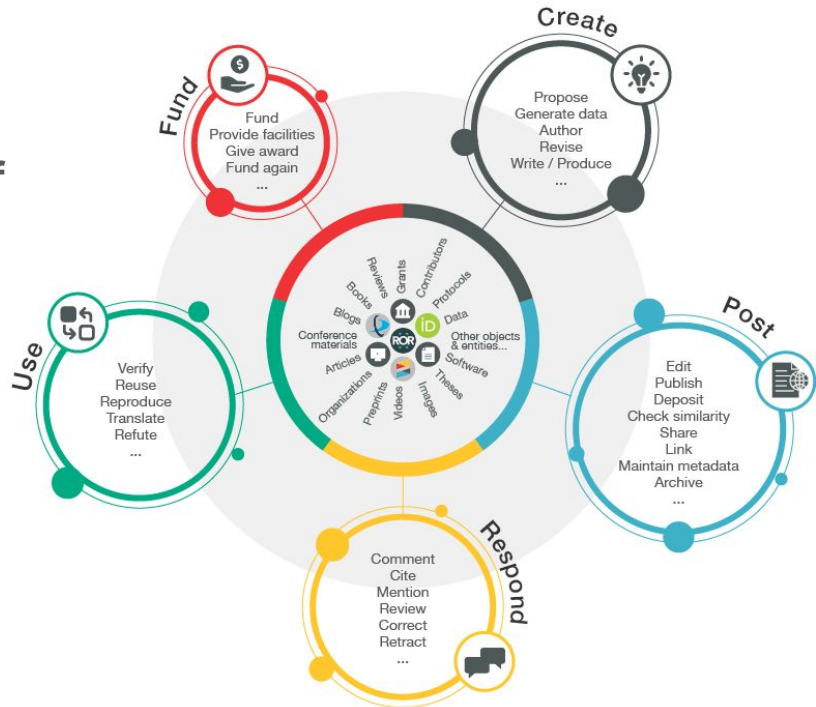
- Open source
- Open data
- Available data
- Patent non-assertion

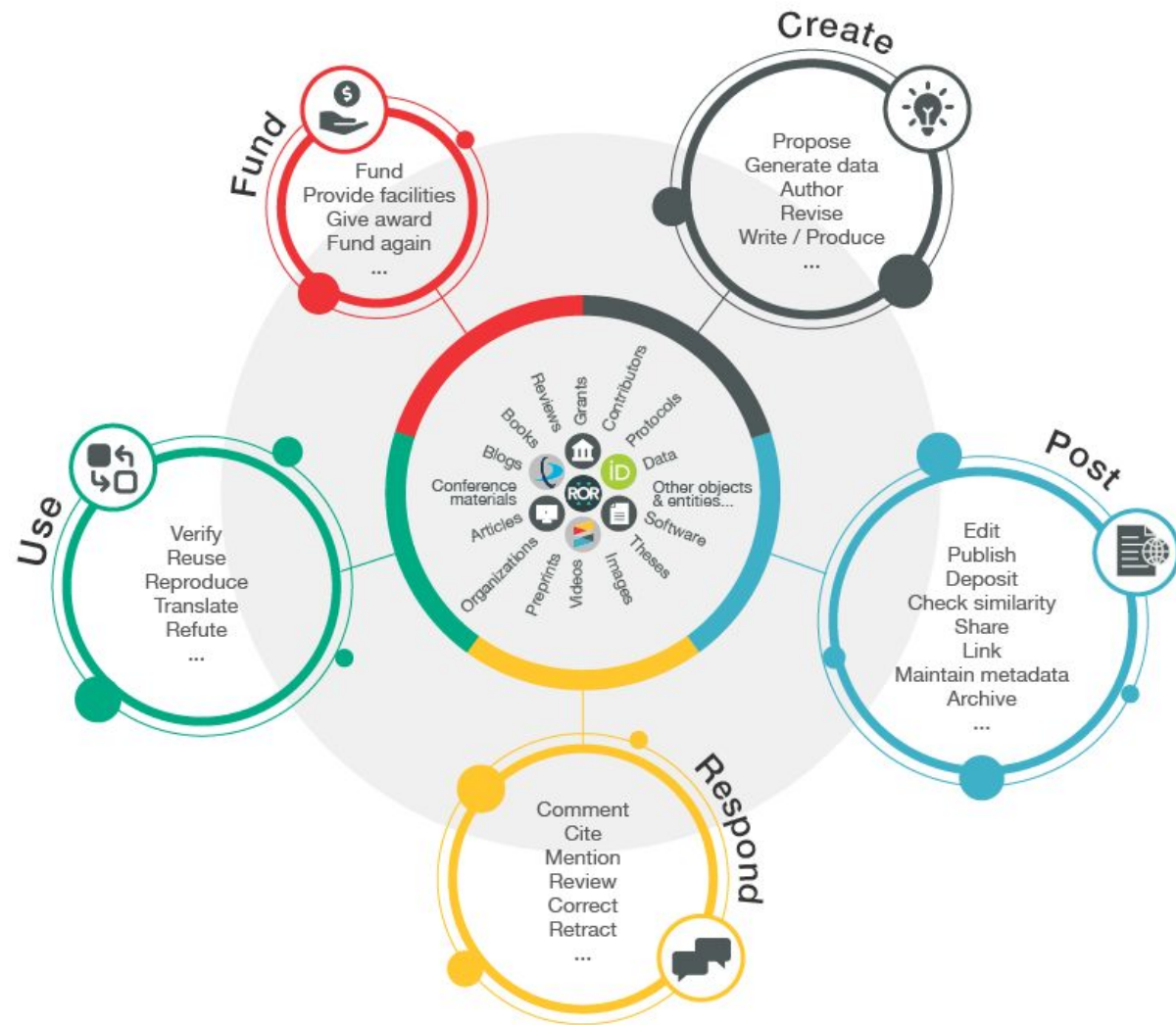
# Research Nexus depends on openness

Like others... we envision

**"a rich and reusable open network of relationships connecting research organizations, people, things, and actions; a scholarly record that the global community can build on forever, for the benefit of society."**

**Metadata** is the thread that is woven to produce such a network



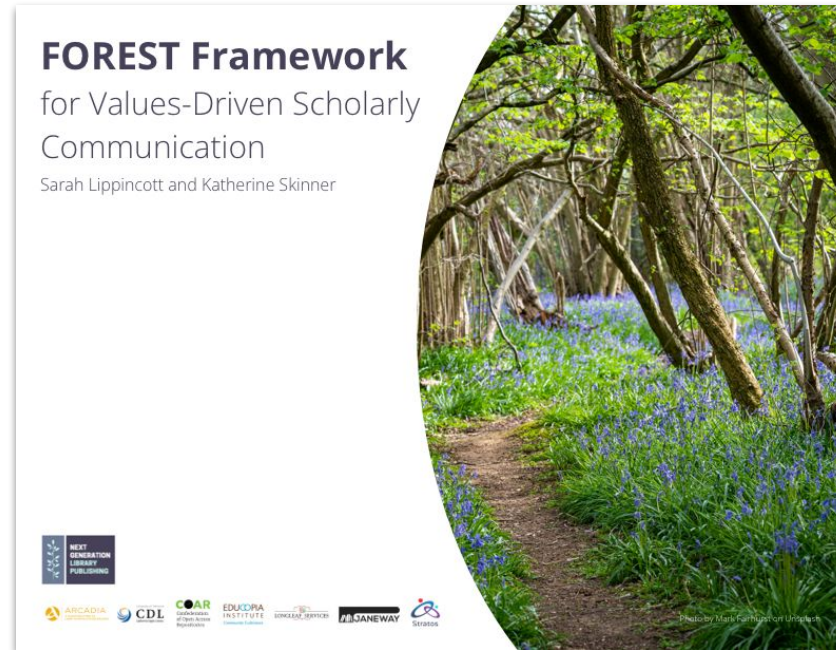


# WHAT WE'RE AIMING FOR

- Bringing together the disparate pieces of the scholarly record
- Better view of relationships (beyond PIDs)
- Exposing internal stuff publicly
- Enabling multi-party assertions
- Evidence. Provenance. Persistence.
- **60% of this is possible, the rest is aspirational**



# Creating a values framework for the knowledge commons



<https://doi.org/10.5281/zenodo.6557302>

# Open infrastructure illusions

## **Common myths** (*Skinner 2024*)

Nonprofits are values aligned; commercial entities are not

If it has an advisory group, it is “community governed” and “community-led”

## **More nuanced view**

Organizations can adopt more or less ethical, responsible practices regardless of business form

Community governance requires active, ongoing engagement with stakeholders + development of and adherence to defined decision-making processes

**An equitable, efficient and sustainable commons requires robust governance mechanisms defined by and carried out by stakeholders. Values and principles provide a scaffold for such community governance.**

Lippincott, S. and Skinner, K., 2022. Accountability in the knowledge commons: lessons from Next Generation Library Publishing and the 2022 Values and Principles Summit. Insights: the UKSG journal, 35(0), p.20.DOI: <https://doi.org/10.1629/uksg.588>



# Why a framework?

## **Frameworks shift power dynamics**

Shared frameworks can provide strength in numbers around aspirational values.

## **Frameworks facilitate collaboration**


Collaborations thrive when partners set expectations upfront.

## **Frameworks are tools of engagement, not checklists**

Engagement is ongoing and iterative, not a one-time activity.

## **Frameworks encourage informed decisions**

When choosing where to invest resources, values-based frameworks provide tools to make and justify values-based decisions

An aerial photograph showing a dense, vibrant green forest covering a hillside that meets a clear, turquoise body of water. The forest is composed of many small, rounded tree canopies, creating a textured green surface. The water is a bright, clear blue, and the shoreline is visible where the forest meets the water's edge.

**F**inancial and organizational resilience  
**O**penness  
**R**esponsible governance  
**E**quity, accessibility, anti-oppression  
**S**haring of knowledge  
**T**ransparency



<b>Value</b>	A quality considered intrinsically desirable
<b>Principle</b>	A standard of conduct derived from a value and intended to provide guidance on translating values into action.
<b>Indicator</b>	The practical, context-appropriate manifestations of principles in a community's operations and activities
<b>Evidence</b>	The specific and concrete documentation substantiating a community's adherence to an indicator.



## FOREST EQUITY, ACCESSIBILITY, AND ANTI-OPPRESSION

### E1 Attract, welcome, and retain stakeholders with diverse lived experiences

- a maintain and demonstrate success in attaining concrete equity, diversity, accessibility, and inclusion (EDAI) and anti-oppression goals
- b use proven strategies to recruit, hire, retain, and support staff—including community leadership—from diverse lived experiences
- c regularly evaluate how stakeholders with diverse lived experiences sense their belonging, and make changes and decisions based on this knowledge\*
- d proactively express the value of diversity and undertake antiracism work to build awareness of the harms of implicit bias and white supremacy culture in the workplace\*

### E2 Promote equitable treatment of and opportunity for stakeholders

- a use fair and transparent criteria for hiring and advancement
- b offer or require regular EDAI and anti-oppression training for all employees and leadership
- c prioritize accessibility when designing communications and events
- d provide reasonable accommodations for community members with disabilities upon request to facilitate participation in all community forums
- e proactively design events to provide reasonable accommodations for community members with disabilities\*

### E3 Maintain a safe and welcoming environment

- a maintain, post, and enforce policies that define acceptable and unacceptable behavior for all communication channels and virtual and in-person gatherings
- b maintain and post a clear path for reporting unacceptable behavior
- c maintain and post details about how reports of violation are managed and resolved
- d design technology safeguards that minimize risk of abuse or harm
- e regularly evaluate policies, reporting processes, and violation management strategies\*
- f adopt a restorative justice approach to addressing harms caused by the community\*
- g expressly prohibit the use of software or code to violate universal standards of human rights\*

### E4 Adhere to industry standards for accessibility

- a comply with W3C standards and guidelines and national or international accessibility standards for all products, publications, and events
- b provide information and services in formats appropriate for users with disabilities in a timely manner and at no additional cost to the user\*
- c formally evaluate products and publications for accessibility\*

FOREST Framework  
for Values-Driven Scholarly Communication



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\* Adherence to this indicator applies to mature or well-established communities

1 of 6

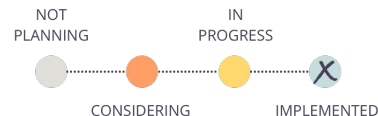
### b. offer or require regular EDAI and anti-oppression training for all employees and leadership

- ✓ Documentation of training offered to staff during the previous 12 months



### c. formally evaluate products and publications for accessibility

Results of internal or third-party accessibility evaluations (e.g., WCAG 2.1 AAA audit)



MAI  
2024

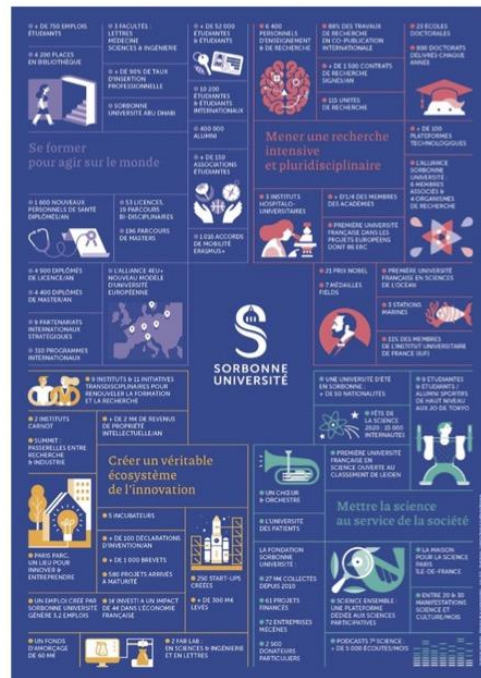
# **The Barcelona Declaration on Open Research information** a new step in Sorbonne University's Open Science policy

AMÉLIE CHURCH, CO-DIRECTOR, SORBONNE UNIVERSITY LIBRARY



# SORBONNE UNIVERSITY

1. THREE FACULTIES : HEALTH SCIENCES, SCIENCE AND ENGINEERING, ARTS & HUMANITIES
2. ABOUT 7 000 RESEARCHERS, 3 000 DOCTORAL STUDENTS, 55 000 STUDENTS
3. 135 RESEARCH STRUCTURES : LAB, INSTITUTES, INITIATIVES
4. PARTNERSHIP WITH NATIONAL RESEARCH ORGANISATIONS : CNRS, INSERM, INRIA, IRD
5. 15 000 PUBLICATIONS A YEAR : 14% OF FRENCH PUBLICATIONS



## A strong Open Science policy

**2011** Institutional repository

**2019** Open Access policy

**2021** Open Data policy

**2021** Policy for promoting open science activity in the internal evaluation of research

**2021** Rights Retention Strategy support

**2022** MOOC Open Science

**2022** Signature DORA

**2022** Signature COARA

**2023** Audit by High Council for Evaluation of Research and Higher Education

**2018-2021** National Open Science Plan #1

**2021-2024** National Open Science Plan #2

**2022** COARA



Titre de la présentation




## We cancel subscriptions





## Open access : which results ?

CWTS Leiden Ranking Open Edition

Leiden University

CWTS

CWTS B.V.

Other CWTS sites

Home






















Ranking

Information

Resources

Services

Contact

	University		P	P(OA)	PP(OA)	
1	Univ Coll London		59898	52969	88.4%	
2	Univ Oxford		51341	45400	88.4%	
3	Sorbonne Univ		42153	35779	84.9%	
4	Univ Cambridge		40952	35108	85.7%	
5	Imperial Coll London		39542	34020	86.0%	
6	Univ Copenhagen		35911	26436	73.6%	
7	Univ Paris-Cité (EPE)		35282	29324	83.1%	
8	Univ Paris-Saclay (EPE)		33434	27857	83.3%	
9	Katholieke Univ Leuven		32667	26703	81.7%	
10	 Utrecht Univ		31255	27817	89.0%	

# Main issues at Sorbonne University

## Need for monitoring

- Of publications
- Of research
- Of our Open Science policy

## At the governance level

- Critical view of international rankings and their methodology
- Awareness of the limits of proprietary tools

## In 2023, strategic choice to use HAL-SU as a monitoring tool

- Important investment to promote the use of HAL
- Retrospective deposits projects
- HAL as a source for the HCERES assessment (previously: WoS extractions or excel files)



Nathalie DRACH-TEMAM • 1er

Présidente de Sorbonne Université

1 mois • Modifié •

La progression de [#Sorbonne\\_univ](#) dans le classement de [#ShanghaiRanking](#) offre une opportunité de clarifier le rôle de ce classement international et ce qui fait l'université.

Le classement de Shanghai : un outil de communication

Le classement de Shanghai est devenu un outil de communication et un baromètre international des performances des écosystèmes de recherche nationaux qui montre en 2024, une progression du système français. Il permet chaque année à la presse et au public de s'intéresser aux universités et doit être l'occasion de rappeler que la production de connaissances est un moteur d'innovation et que progrès scientifiques et progrès sociétaux peuvent se conjuguer. Il doit aussi permettre par les résultats des universités françaises de mettre en avant le modèle de service public, fort des personnels titulaires et basé sur des frais d'inscription modérés.

Au-delà du classement : une évaluation plus adaptée

En se concentrant sur un nombre limité d'indicateurs (publications en anglais dans les sciences dures, prix Nobel, médailles Fields), le classement de Shanghai ne rend pas compte de la diversité des activités de recherche, des contextes culturels et de l'impact sociétal des travaux de recherche. De plus, il est basé sur des données commerciales (Web Of Science) et des services bibliométriques payants. Il n'est pas un outil de pilotage pour les universités qui doivent évaluer leur recherche de manière plus complète et pertinente en prenant en compte une large diversité de disciplines (incluant sciences humaines et sociales, lettres, droit, économie...) et de langues de diffusion.

NATHALIE DRACH-TEMAM [LINKED IN](#)

## BARCELONA DECLARATION ON OPEN RESEARCH INFORMATION



Credit: Laurent Arban

“ Sorbonne University has strongly supported the move toward open science for many years and the implementation of open research practices and principles in all their dimensions within its community. Beyond its benefits for researchers and research institutions, this next step towards open research information is also a civic engagement for a more open, responsible and trustworthy university. ”

**Nathalie Drach-Temam**

President, Sorbonne University

# Barcelona Declaration

- To draft the Barcelona Declaration on Open Research Information, a workshop was organized **in Barcelona in November 2023**, hosted by **SIRIS Foundation**
- **Over 25 research information experts**, representing organizations that carry out, fund, and evaluate research, as well as open infrastructure organizations, participated in the workshop
- Preparation of the Declaration was coordinated by **Bianca Kramer** (Sesame Open Science), **Cameron Neylon** (Curtin Open Knowledge Initiative, Curtin University), and **Ludo Waltman** (Centre for Science and Technology Studies, Leiden University)
- Declaration was published **in April 2024**

# Why research information must be open

## Closed research information

We are assessing researchers and institutions based on **non-transparent evidence...**

We are making decisions based on information that is **biased against less privileged languages, geographical regions, and research agendas...**

We are monitoring and incentivizing open science using **closed data...**

— but —→

— but —→

— but —→

## Open research information



**fair assessment requires full transparency**

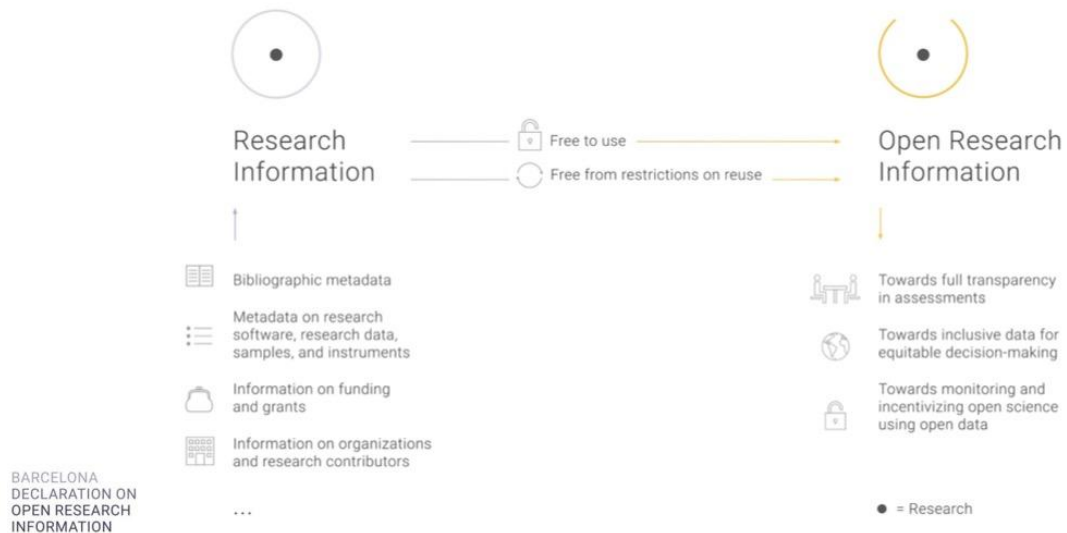


**equitable decision-making requires inclusive data**



**open science requires open research information**

# Open research information



# Barcelona Declaration - Commitments

As organizations that carry out, fund, and evaluate research, we commit to the following:



1

We will make openness the default for the research information we use and produce



2

We will work with services and systems that support and enable open research information

BARCELONA  
DECLARATION ON  
OPEN RESEARCH  
INFORMATION

# Barcelona Declaration - Commitments

As organizations that carry out, fund, and evaluate research, we commit to the following:



3

We will support the sustainability of infrastructures for open research information



4

We will support collective action to accelerate the transition to openness of research information



## Paris Conference (23-24 september 2024)

- Building community and define what we can work on together
  - To provide a forum for sharing experiences and good practices regarding open research information.
  - To develop a joint roadmap for open research information.

## 7 Topics identified

- Increasing the open availability of metadata on journal articles
- Increasing open availability of metadata on research outputs in institutional repositories, preprint repositories, data repositories
- Increasing the open availability of metadata on research funding, grants and resourcing
- Replacing closed systems like Web of Science and Scopus by open alternatives
- Supporting the sustainability of infrastructures for open research information
- Evaluating open data sources on their quality, coverage, and openness aspects
- Providing the evidence of the benefits of adopting open research information

THANKS !



# REFLECTIONS BREAKOUTS



**Crossref**

# JOIN A GROUP OF YOUR INTEREST



1. Integrity of the Scholarly Record (Madhura Amdekar)
2. Resourcing Crossref for Future Sustainability (Kora Korzec)
3. Research Nexus (Dominika Tkaczyk)
4. General reflections from this meeting (Evans Atoni)

Break-outs will close at 11:40 UTC



# MAIN BREAK

See you again at 2pm UTC at

<https://tinyurl.com/crossref2024-part2>



# **WELCOME BACK TO OUR 2024 ANNUAL MEETING**

**2024-10-29  
#CROSSREF2024**



# GOOD TO KNOW



Review the Crossref code of conduct:

**[crossref.org/code-of-conduct](https://crossref.org/code-of-conduct)**



Join the discussion on Mastodon and X:

**[#Crossref2024](#)**



Please use the Q&A box for your questions



The slides and recordings will be shared afterwards



# 2024 BOARD SLATE



## Tier 1 candidates (electing two seats):

- Katharina Rieck, Austrian Science Fund (FWF)
- Lisa Schiff, California Digital Library
- Ejaz Khan, Health Services Academy, Pakistan Journal of Public Health
- Karthikeyan Ramalingam, MM Publishers

## Tier 2 candidates (electing two seats):

- Aaron Wood, American Psychological Association
- Dan Shanahan, PLOS
- Amanda Ward, Taylor and Francis

**Voting closes at 15:00 UTC**

Email [lucy@crossref.org](mailto:lucy@crossref.org) if you still need to place or change your vote.

# BEYOND THE BASICS: Crossref API Workshop



**Crossref**

# PREVIOUSLY



## ...an intro to the Crossref API

Or how I learned to love APIs

Luis Montilla  
Technical Community Manager

<https://doi.org/10.13003/h3yygefpyf>



# We make this metadata open through our REST API

<https://api.crossref.org/>



/swagger-docs

Explore

## Crossref Unified Resource API <sup>0.1</sup>

[/swagger-docs](#)

### Preamble

The Crossref REST API is one of [a variety of tools and APIs](#) that allow anybody to search and reuse our members' metadata in sophisticated ways.

If you read nothing else, please at least look at the [API TIPS](#) document and the "Etiquette" section of this document. It will save you (and us) much heartburn.

## Funders

Endpoints that expose funder related data

GET /funders/{id}/works

GET /funders/{id}

GET /funders

## Journals

Endpoints that expose journal related data

GET /journals

GET /journals/{issn}

GET /journals/{issn}/works

## Works

Endpoints that expose works related data

GET /works/{doi}

GET /works

GET /works/{doi}/agency

## Prefixes

Endpoints that expose prefix related data

GET /prefixes/{prefix}/works

GET /prefixes/{prefix}

## Members

Endpoints that expose member related data

GET /members/{id}/works

GET /members/{id}

GET /members

## Types

Endpoints that expose type related data

GET /types/{id}

GET /types

GET /types/{id}/works

# GOOD TO REMEMBER



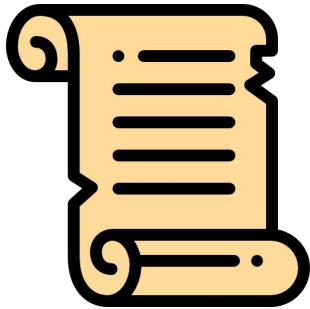
You have three access levels to the API metadata:

- Public. Free, fully anonymous.
- Polite. Free, you provide your email (recommended).<sup>1</sup>
  - We only use this information to contact you in case of issues.
  - Include 'mailto' field in your API query.
- Plus. Premium service, you get:
  - A service level agreement guaranteeing you extra service and support, giving you a consistent and predictable experience.
  - Additional features such as snapshots and priority service/rate limits.

<sup>1</sup> We get rid of your information after 90 days.

# BEYOND SIMPLE QUERIES

Long list of results?



Many requests changing  
a single variable?



# PAGINATION

Too many results? The response will be limited to 20 in a page



A pointer that will divide  
our list of results into  
smaller sections

<Some results...>

Cursor

<Some results...>





# PAGINATION

Too many results? The response will be limited to 20 in a page



**GET request**

Limited number of results

**Returns with the  
cursor**

A string , an alphanumeric  
sequence of characters

**Cursor included in  
subsequent results**



# PAGINATION

Too many results? The response will be limited to 20 in a page



GET request

Returns with the  
cursor

Cursor included in  
subsequent results

We include the parameter  
and value:  
`"cursor=* "`



# PAGINATION



# GOOD TO REMEMBER



*"Instability in our APIs is almost always tracked down to a particular user who has created a script that either:*

- *Performs needlessly complex and inefficient requests*
- *Performs requests that repeatedly trigger server errors (sometimes related to above)*
- *Polls the API too quickly (we rate limit at the IP level, but some users run distributed systems coming in on multiple IPs)*
- *Performs redundant requests"*

# ITERATIONS

Example: Let's retrieve journal metadata starting with a list of ISSNs



For each ISSN

0264-3561

# ITERATIONS

Example: Let's retrieve journal metadata starting with a list of ISSNs



For each ISSN

0264-3561

Build GET  
Request

<http://api.crossref.org/journals/0264-3561>

# ITERATIONS

Example: Let's retrieve journal metadata starting with a list of ISSNs



For each ISSN

0264-3561

Build GET  
Request

<http://api.crossref.org/journals/0264-3561>

Modify it

<http://api.crossref.org/journals/0264-3561?mailto=crossref2024@crossref.org>

# ITERATIONS

Example: Let's retrieve journal metadata starting with a list of ISSNs



For each ISSN

0264-3561

Build GET  
Request

<http://api.crossref.org/journals/0264-3561>

Modify it

<http://api.crossref.org/journals/0264-3561?mailto=crossref2024@crossref.org>

Add a delay

We limit each IP address to sending **50 requests per second**. To avoid being blocked, please add identify yourself and ensure that your request rate stays below this threshold



# ITERATIONS

Example: Let's retrieve journal metadata starting with a list of ISSNs



For each ISSN

0264-3561

Build GET  
Request

<http://api.crossref.org/journals/0264-3561>

Modify it

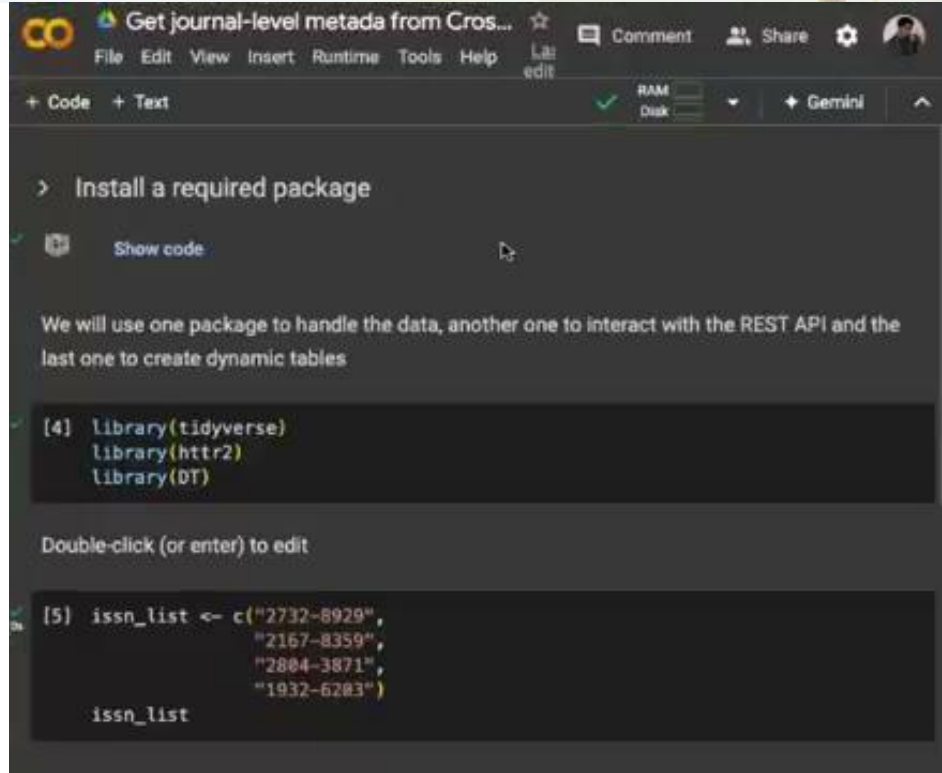
<http://api.crossref.org/journals/0264-3561?mailto=crossref2024@crossref.org>

Add a delay

We limit each IP address to sending **50 requests per second**. To avoid being blocked, please add identify yourself and ensure that your request rate stays below this threshold

Perform the  
requests

# ITERATIONS



The screenshot shows a Google Colab notebook titled "Get journal-level metadata from Cros...". The interface includes a top menu bar with options like File, Edit, View, Insert, Runtime, Tools, and Help. Below the menu, there are tabs for "+ Code" and "+ Text", and a status bar showing "RAM" and "Disk" usage. The notebook content is as follows:

```
> Install a required package
```

[Show code](#)

We will use one package to handle the data, another one to interact with the REST API and the last one to create dynamic tables

```
[4] library(tidyverse)
      library(httr2)
      library(DT)
```

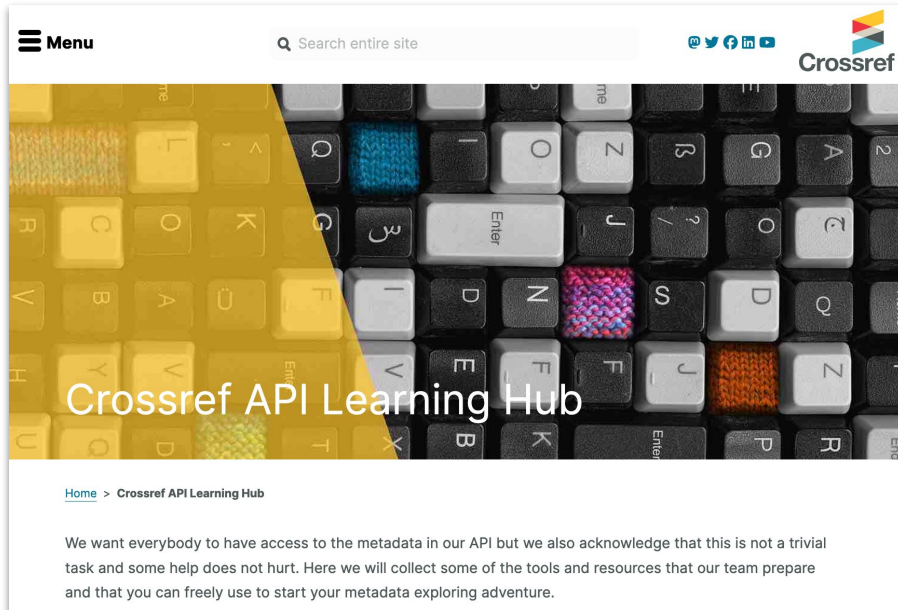
Double-click (or enter) to edit

```
[5] issn_list <- c("2732-8929",
                 "2167-8359",
                 "2804-3871",
                 "1932-6203")

      issn_list
```

# ITERATIONS

<https://www.crossref.org/learning/>



These examples are available in the Crossref Learning Hub, together with other resources, slides, and tutorials

# THANK YOU

- Documentation:  
<https://www.crossref.org/documentation/>
- Learning hub:  
<https://www.crossref.org/learning/>
- Community Forum:  
<https://community.crossref.org>
- Email:  
[lmontilla@crossref.org](mailto:lmontilla@crossref.org)



# METADATA DEVELOPMENT & SCHEMA



**Crossref**



# OUT SOON

- Support for ROR ID as a funder identifier in both metadata and grants schema
  - update will apply to all existing metadata deposit schema
  - will require new grant schema
- New grant schema (v. 0.2.0) will also support new funding types:
  - APC
  - BPC
  - infrastructure



# IN PROGRESS: Schema 5.4.0

## Typed citations

- adds a 'type' to citations supplied with Crossref metadata records

## Version

- add support for version number/string and version description to journal article, content item (book, report, or standard chapter/segment), proceedings paper, posted content, database / dataset, report, standard, dissertation

## Status

- preprint specific; supports a status of 'withdrawn' or 'removed'

# SUPPORTED TYPES



blog  
blog post  
book  
book chapter  
collection  
conference paper  
conference proceedings  
dataset  
dissertation  
journal  
journal article  
other  
patent  
peer review  
poster  
preprint  
protocol  
registered report  
report  
software  
standard  
web resource

## Current Crossref record types:

book / book chapter  
conference paper /  
conference proceedings  
dataset  
dissertation  
journal / journal article  
peer review  
preprint  
report  
standard

## Increasingly registered:

blog / blog post  
poster  
protocol  
registered report

## Citation identification:

collection  
dataset  
software  
patent  
web resource



# NEXT UP

Add support for CRediT as well as:

- multiple contributor roles
- additional Crossref roles -
  - corresponding author
  - other



# CURRENTLY REFINING



## **Statements, including:**

- funding
- acknowledgement
- conflict of interest
- data availability

## **Abstract markup including:**

- BITS
- ONIX
- general

## **Grants schema updates**

- 0.3.0: early 2025?
  - Group authors/beneficiaries
  - additional values for null funding types
  - expanded language support
  - expand relationships
  - support for project identifiers

# NAME UPDATES



- better support for single and alternate names
  - repeatable name field to accommodate single names and multiple character sets
- contributor identifiers
  - ISNI, wikicite IDs
- update organization / group contributor support
  - identifiers

# MULTILINGUAL METADATA



Working group to help define:

- ways we can improve multilingual and overall language metadata support
- issue community-led best practice guidelines
- help generate momentum for encouraging language tagging adoption

# **DISCUSSION: Resourcing Crossref for Future Sustainability (RCFS)**

- **More equitable fees**

Project 1: Explore and break out the lowest annual membership tier of \$275 which now includes over 8000 members

Project 2: Explore a new basis for sizing and tiering members for their capacity to pay that isn't tied to publishing

- **Simplifying complex fees**

Project 3: Address and adjust volume discounts for content registration

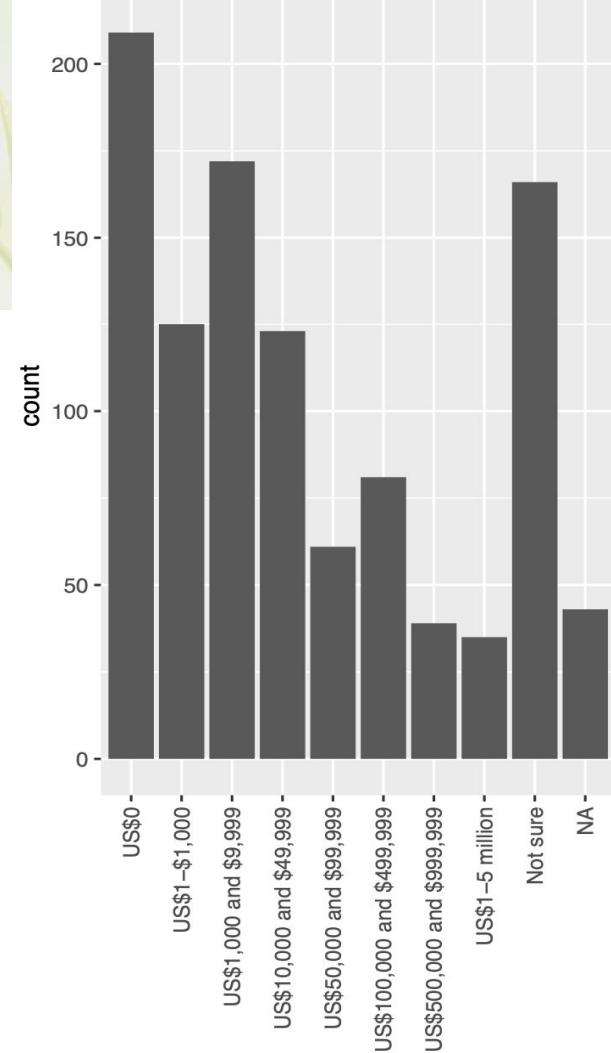
Project 4: Address and adjust backfile discounts for content registration

- **Rebalancing resources**

Project 5: Reflect the increasing value of Crossref as a metadata source, likely increasing Metadata Plus fees

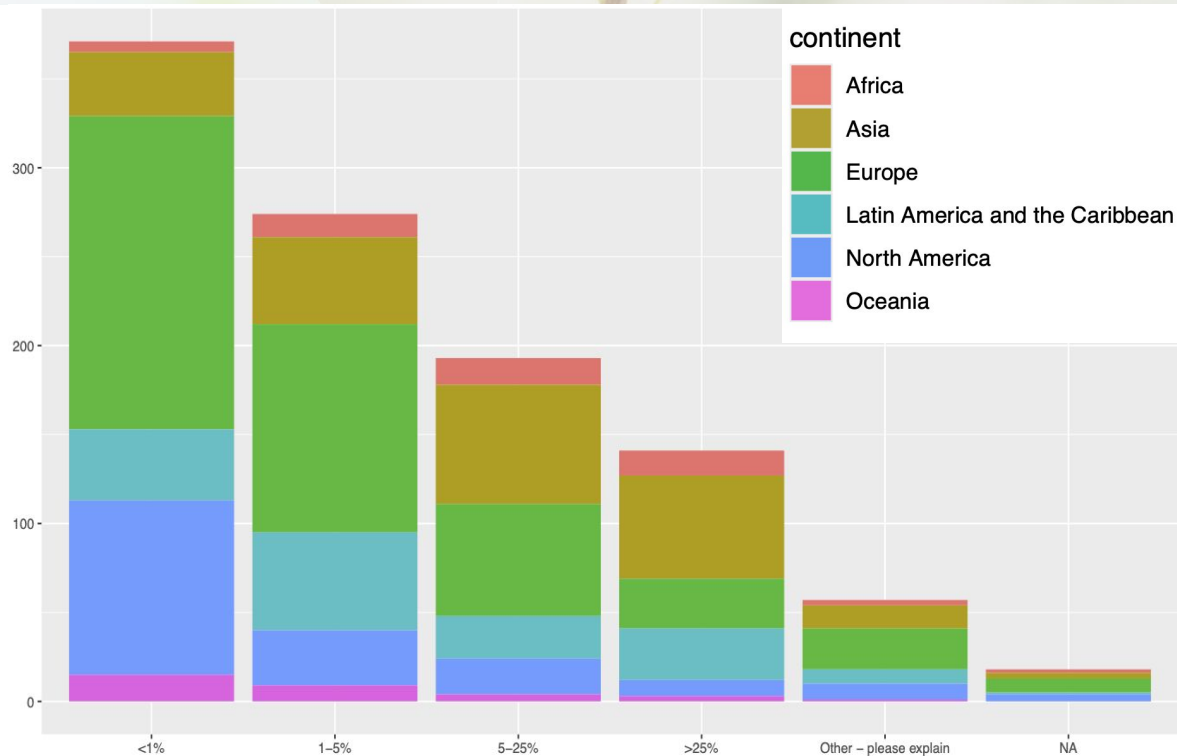
# MORE EQUITABLE FEES

- \$275 tier: Annual publishing revenue or expenses of \$0 to \$1 million
- 8098 direct members in this tier
- Survey of direct members in this tier (13% response rate)



# MORE EQUITABLE FEES

~32% spend  
>5% of their  
budget on  
Crossref fees





# MORE EQUITABLE FEES



Consultation about barriers to joining with publishing organisations, who are not members of Crossref (ongoing)

# SIMPLIFYING FEES: FEES NOW

## Funder members vs. all other members

Total annual award value (USD)	Annual membership fee
--------------------------------	-----------------------

< 500k	USD 200
--------	---------

0.5-2 million	USD 400
---------------	---------

2.1-10 million	USD 600
----------------	---------

10.1-500 million	USD 800
------------------	---------

500.1 million - 1 billion	USD 1,000
---------------------------	-----------

> 1 billion	USD 1,200
-------------	-----------

Total publishing revenue or expenses	Annual membership fee
--------------------------------------	-----------------------

<USD 1 million	USD 275
----------------	---------

USD 1 million - USD 5 million	USD 550
-------------------------------	---------

USD 5 million - USD 10 million	USD 1,650
--------------------------------	-----------

USD 10 million - USD 25 million	USD 3,900
---------------------------------	-----------

USD 25 million - USD 50 million	USD 8,300
---------------------------------	-----------

USD 50 million - USD 100 million	USD 14,000
----------------------------------	------------

USD 100 million - USD 200 million	USD 22,000
-----------------------------------	------------

USD 200 million - USD 500 million	USD 33,000
-----------------------------------	------------

>USD 500 million	USD 50,000
------------------	------------

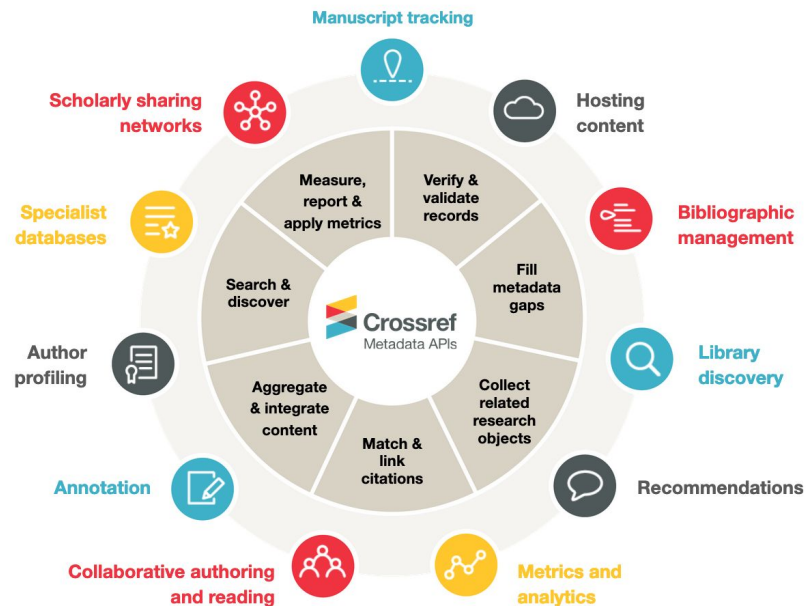
# SIMPLIFYING FEES

Audit of annual fee models among 7 similar organisations: Crossref, CORE, DOAJ, Dryad, OA Switchboard, OpenCitations, ORCID

Unit of measure used to set annual fee	Crossref	CORE	DOAJ	Dryad	OA Switchboard	OpenCitations	ORCID
Multiple levels based on annual revenue			● institutions/ libraries only			●	●
Multiple levels based on annual publishing revenue	●				● publishers only		
Multiple levels based on annual expense	●						
Volume ( e.g. of research output, number of journals)		●	● publishers only	●	● institutions/ funders only		
Business model: nonprofit/govt vs. commercial			●				●
Additional discount based on World Bank data	●	●	●			●	●
Total number of tiers of membership (excludes additional discounts, service or add-on fees)	9 for publishers; 6 for funders	11	2 for institutions/ libraries; 14 for publishers	3 for institutions; 4 for societies/ publishers	5 for publishers; 4 for institutions; 4 for funders		3 for direct membership; 5 for consortia

# REBALANCING REVENUE

- **Crossref REST API** is and will remain open and free to use for all
- **Metadata Plus** – paid service for high volume use in external tools integrating our API



# POLL TIME!



- Who's in the room?  
If you are a Crossref member, please select in which fee tier is your organisation?

# POLL TIME!

- Who's in the room?  
Are you using Crossref API to meet your objectives?

# POLL TIME!



- Who's in the room?  
Is publishing scholarly content the primary activity of the organisation you represent?

# DISCUSSION



- What is the fairest measure for us to base "ability to pay" on?
- Do you have a view on Crossref offering lower and \$0 fees to members in low and middle-income countries?
- What would be a useful set of streamlined discounts to support greater participation in the Research Nexus?





# **BREAK**

**Let's take 10 minutes  
Back at 4pm UTC**



**Crossref**

# ANNUAL MEETING AND BOARD ELECTION

2024-10-29

#Crossref2024



# THE STATE OF CROSSREF



**Crossref**

# STRATEGIC THEMES



Contribute to an environment where the community identifies and co-creates solutions for broad benefit



A sustainable source of complete, open, and global scholarly metadata and relationships



Manage Crossref openly and sustainably, modernising and making transparent all operations so that we are accountable to the communities that govern us



Foster a strong team—because reliable infrastructure needs committed people who contribute to and realise the vision, and thrive doing it

# 2024 HIGHLIGHTS SO FAR



- Research for Resourcing Crossref for Future Sustainability (RCFS)
- Integrity of the Scholarly Record (ISR)
- Grant Linking System (GLS) reached 5 years
- Automated some very manual membership processes
- Released new form for journal article record registration
- Upgraded Participation Reports to include Affiliations and ROR IDs
- Launched a new API Learning Hub
- Paused further development of a Relationships API
- Migrated to a new open-source database
- Schema development - ROR as Funder identifiers
- REST API bug fixes and metadata consistency fixes

# REST OF YEAR

- Commence move out of the data centre
- Deliver schema 5.4 with reference types, among other things
- ROR as Funder identification

## ONGOING

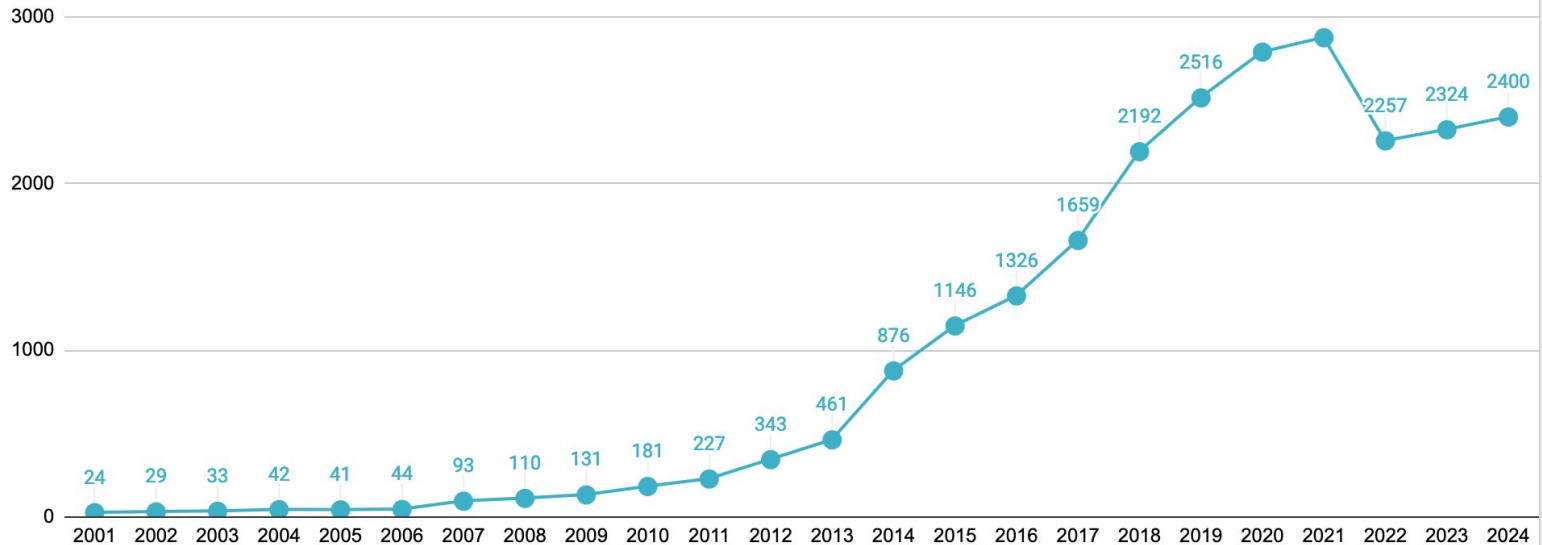
- More ISR engagement
- More research for RCFS work + fee recommendations
- More automation

# NEXT YEAR

- Complete move out of the data centre
- Preprint (and other) matching
- Retraction Watch data in the REST API
- Continue a focus on metadata users: tutorials; API hack/workshop
- Continuous metadata development and additional schema updates
- New Crossmark approach
- Plan new approach to rewrite and open core system code
- Exploring more localized support
- RCFS Fee recommendations
- ISR

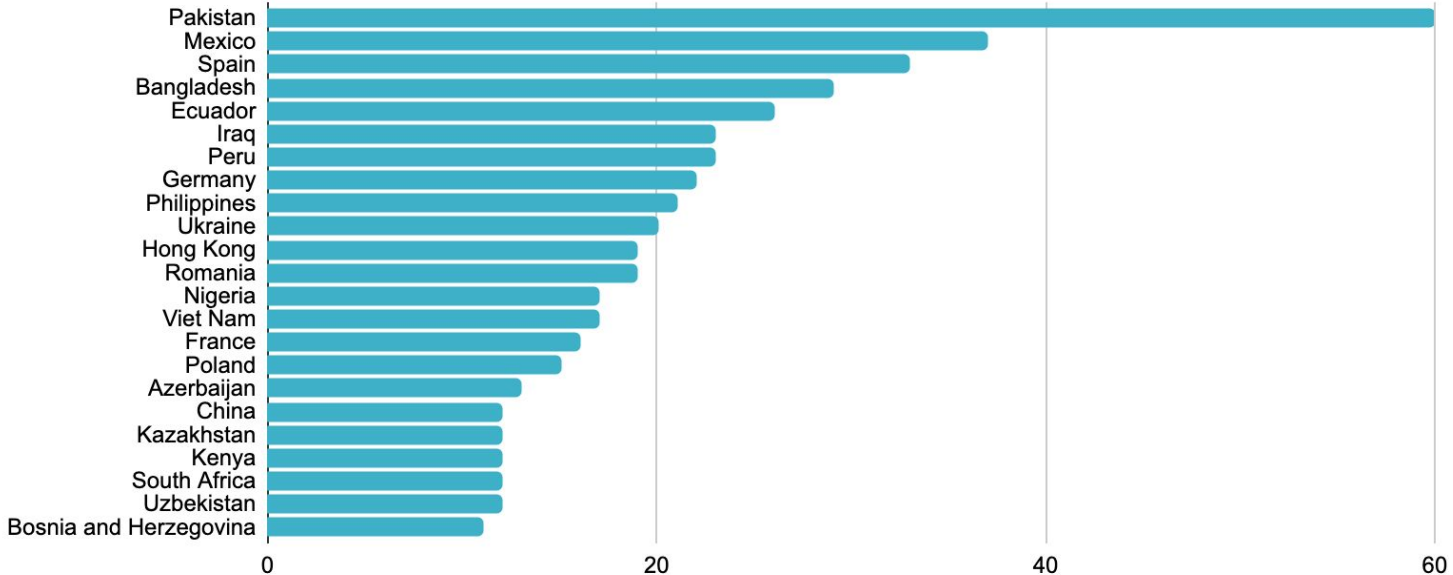
# MEMBERSHIP STATS: >2000 NEW MEMBERS PER YEAR

New member growth 2000-2024



# MEMBERSHIP STATS: COUNTRY TRENDS

Members joining per country YTD (excl. the typical ones!)





Crossref financial performance					Year end	Year end	Year end	Year end	Year end	Forecast	Variance
2019 to 2024					2019 Total	2020 Total	2021 Total	2022 Total	2023 Total	2024	2023 v 2024
					Actual	Actual	Actual	Actual	Actual	9 mos act + 3 mos forecast	
Earned Revenues:											
Annual Fees											
				Membership Fees	2,419,550	2,654,482	2,893,999	3,059,335	3,150,261	3,279,783	4%
				Subscriber Fees	800,254	821,692	926,759	1,010,800	1,036,852	998,026	-4%
				Similarity Check Fees	177,407	185,384	192,959	196,929	203,484	219,247	8%
Total Annual Fees					3,397,211	3,661,558	4,013,717	4,267,064	4,390,598	4,497,056	2%
Service Fees											
				Content Registration Fees	5,901,455	6,033,219	6,467,340	6,586,139	7,057,057	7,628,115	8%
				Content Registration Fees -Donated	(61,715)	(46,554)	(47,647)	(143,013)	(179,678)	(75,659)	-58%
				Similarity Check usage (net)	94,758	467,489	693,006	785,795	776,656	880,267	13%
Total Service Fees					5,934,498	6,454,155	7,112,699	7,228,921	7,654,035	8,432,723	10%
ROR funds (Crossref as fiscal conduit)					-	-	171,447	170,170	331,524	292,963	-12%
Total Earned Revenue					9,331,709	10,115,713	11,297,863	11,666,156	12,376,157	13,222,742	7%
Operating Expenses											
				Personnel	5,740,359	5,589,782	6,367,184	6,533,962	7,120,696	7,777,770	9%
				Nonpersonnel	2,664,091	2,151,213	2,127,977	2,614,178	3,142,050	3,390,092	8%
Total Operating Expenses					8,404,449	7,740,995	8,495,162	9,148,140	10,262,746	11,167,862	9%
Total Other Income & Expense					199,240	100,090	58,560	(389,729)	529,016	599,984	13%
Net Income (Loss)					1,126,499	2,474,808	2,861,262	2,128,287	2,642,427	2,654,864	0%

Rate of growth up slightly from last year

Loss is the result of consolidation of subscribers

Rate of growth up from last year

Temporary fee waiver for Ukrainian members ended

Service adoption and increased checks by existing user driving growth

Expenses are still bouncing back from Covid, inflation

Increased hosting fees (AWS) and resumed travel

# BOARD ELECTION



**Crossref**



# OVERVIEW OF CROSSREF GOVERNANCE



- 501(c)6 organization, a trade association
- To be eligible for the Board, a Director must be an employee or officer of a member organization. Once a Director is elected, the member organization can appoint an alternate for such Director. Board seat belongs to the organization, not the individual.
- Board members serve 3-year terms and are eligible for reelection with no term limits
- Corporate officers (Chair and Treasurer) are elected by the board to serve one-year terms, for up to to three consecutive years
- All board members agree to a whistleblower policy and a conflicts of interest disclosure policy

# OVERVIEW OF CROSSREF GOVERNANCE



The role of the board at Crossref is to provide strategic and financial oversight of the organization, as well as guidance to the Executive Director and the staff leadership team, with the key responsibilities being:

- Setting the strategic direction for the organization;
- Providing financial oversight; and
- Approving new policies and services

# ANNUAL MEETING ELECTION



- Notice of Annual meeting sent September 25th, 2024
- Review of Nominating Procedure

# 2024 BOARD NOMINATIONS

## 2024 Nominating committee

- James Phillpotts\*, Oxford University Press, chair
- Oscar Donde\*, Pan Africa Science Journal
- Rose L'Huillier\*, Elsevier
- Ivy Mutambanengwe-Matanga, African Journals Online
- Adam Sewell, IOP Publishing

\* indicates current Crossref board member

# NOMINATION PROCESS



- Board composition review
- Public call for nominations
- 53 respondents
- Committee reviews and discussed candidates

Interested in next year? Stay tuned for the call for expressions of interest in April/May 2025

Interested in joining a future Nominating Committee? Contact [lucy@crossref.org](mailto:lucy@crossref.org)

# 2024 BOARD SLATE



## **Tier 1 candidates (electing two seats):**

- Katharina Rieck, Austrian Science Fund (FWF)
- Lisa Schiff, California Digital Library
- Ejaz Khan, Health Services Academy, Pakistan Journal of Public Health
- Karthikeyan Ramalingam, MM Publishers

## **Tier 2 candidates (electing two seats):**

- Aaron Wood, American Psychological Association
- Dan Shanahan, PLOS
- Amanda Ward, Taylor and Francis

**Vote** to place these names in nomination



# 2024 BOARD ELECTION RESULTS



## **Tier 1 candidates (electing two seats):**

- Katharina Rieck, Austrian Science Fund (FWF)
- Lisa Schiff, California Digital Library

## **Tier 2 candidates (electing two seats):**

- Aaron Wood, American Psychological Association
- Amanda Ward, Taylor and Francis

# ANY OTHER BUSINESS?



**Crossref**



# **BREAK**

**Let's take 10 minutes  
Back at 5pm UTC**



**Crossref**

# UPDATES FROM THE COMMUNITY PART II

**Alicia Wise, CLOCKSS**

**Mark Williams, Sciety / eLife**

**Arianna Becerril-García, AmeliCA/Redalyc**



**Crossref**





# **CLOCKSS ON Preserving Scholarship for Future Generations**

**Alicia Wise, CLOCKSS**



# Preserving Scholarship for Future Generations

Alicia Wise,  
Executive Director, CLOCKSS  
[awise@clocks.org](mailto:awise@clocks.org)

Crossref Annual Meeting  
29 October 2024

# Working Group

- Graham Bell (EDItEUR)
- David Cirella & Euan Cochrane (Yale)
- Gareth Cole (COPIM)
- Rebecca Cook (Wiley)
- Sarah Fricker (IOPP)
- Matt Garrish (DAISY)
- Thib Guicherd-Callin (LOCKSS)
- Clare Hodder (rights<sup>2</sup>)
- Claire Holloway (OCLC)
- Neil Jefferies (Oxford)
- Ruth Jones
- Roxanne Missingham (Australian National University)
- Lynette Owen
- Sylvia Pegg & Becky Roberts (RSC)
- James Phillpotts (OUP)
- Wendy Reid (Rakutan)
- Denis Shannon (U of Wyoming)
- Tzivya Siegman
- Alicia Wise (CLOCKSS)

# PRESERVING BOOKS FOR FUTURE GENERATIONS



Will you champion  
the vital cause of  
digital preservation?

[https://bit.ly/4btvkj](https://bit.ly/4btvkjm)  
[m](https://bit.ly/4btvkjm)





# EPUB/a standard

ISO: the International Organization for **Standardization**

## EPUB 3.3

W3C Recommendation 17 October 2024



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# Discovering what books are preserved where

To what domains do OA book DOIs resolve?

DOAB	count	OpenAire	count	OpenAlex	count	The Lens	count
library.oapen.org	18889	biodiversitylibrary.org	74133	biodiversitylibrary.org	23347	biodiversitylibrary.org	121956
books.openedition.org	7889	link.springer.com	21466	afghandata.org	19840	link.springer.com	43261
mdpi.com	4023	elibrary.worldbank.org	6666	link.springer.com	8174	law.acku.edu.af	14183
mts.intechopen.com	3274	degruyter.com	5747	law.acku.edu.af	5562	afghandata.org	12944
frontiersin.org	2930	cambridge.org	5356	books.openedition.org	4566	onlinelibrary.wiley.com	10323
intechopen.com	2092	classiques.uqac.ca	4583	library.si.edu	4237	elibrary.worldbank.org	6910
degruyter.com	1652	books.openedition.org	3856	classiques.uqac.ca	4193	classiques.uqac.ca	6759
ksp.kit.edu	1647	taylorfrancis.com	3239	repository.usta.edu.co	4031	ieeexplore.ieee.org	6416
media.fupress.com	1371	library.si.edu	3175	openknowledge.worldbank.org	2036	degruyter.com	6241
books.scielo.org	1009	apps.crossref.org	3168	constellation.uqac.ca	1950	dl.acm.org	6078
omp.zrc-sazu.si	591	mr.crossref.org	3002	vr-elibrary.de	1837	journals.openedition.org	4922
ucdigitalis.uc.pt	494	repository.usta.edu.co	2854	darchive.mblwhoilibrary.org	1721	taylorfrancis.com	4569
nomos-elibrary.de	429	vr-elibrary.de	2350	press.umich.edu	1692	apps.crossref.org	4518
edp-open.org	288	oxford.universitypressscholarship.com	2277	apps.crossref.org	1634	repository.si.edu	4193
link.springer.com	252	press.umich.edu	2203	mohrsiebeck.com	1445	repository.usta.edu.co	3702
ledizioni.it	228	rand.org	2109	books.fupress.com	1353	mdpi.com	3007
bloomsburycollections.com	193	worldscientific.com	2077	liu.diva-portal.org	1294	jstor.org	2855
e-archivo.uc3m.es	170	darchive.mblwhoilibrary.org	2028	jstor.org	1279	deepblue.lib.umich.edu	2819
api.intechopen.com	162	constellation.uqac.ca	2026	rand.org	1230	academic.oup.com	2410

...and 188 more domains containing the remaining 7% of items.

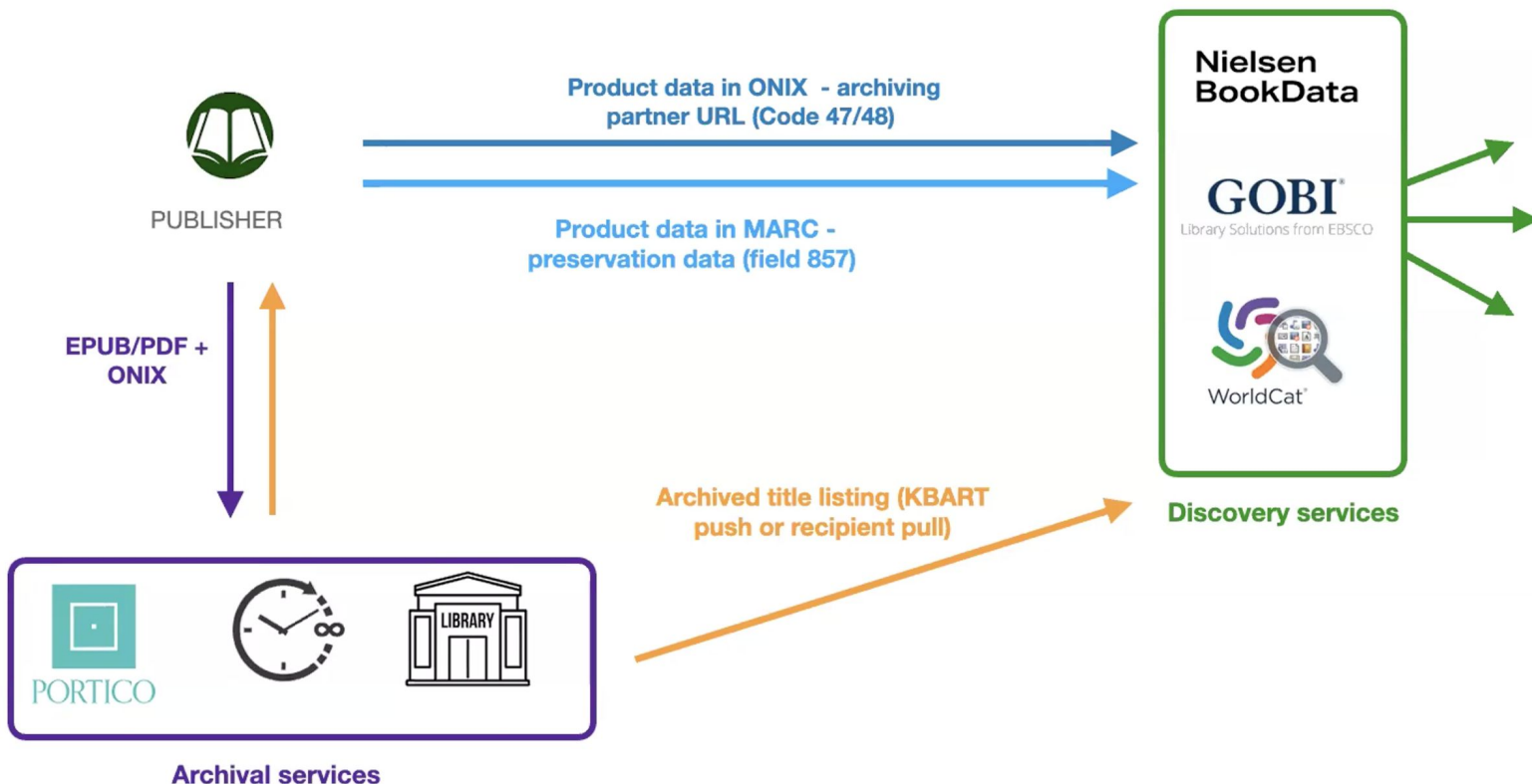
...and 1453 more domains containing the remaining 28% of items.

...and 1470 more domains containing the remaining 32% of items.

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Mikael Laakso: <https://doi.org/10.1108/JD-02-2023-0016>

# Digital archive discoverability PoC





# **Society/eLife on Building Preprint Histories: Enhancing discoverability of and recognition for preprint peer evaluation**

**Mark Williams, Society**



# Building Preprint Histories



**Mark Williams**  
Product Manager, Society.org



# Atlas of Plasmodium falciparum intraerythrocytic development using expansion microscopy

Benjamin Liffner, Ana Karla Cepeda Diaz, James Blauwkamp, David Anaguano, Sonja Frolich, Vasant Muralidharan, Danny W Wilson, Jeffrey D Dvorin, Sabrina Absalon.

## Curated by eLife



### eLife assessment

This important study provides an unprecedented overview of the subcellular organization of proliferative blood stage malaria parasites using expansion microscopy. The localization of multiple parasite organelles is comprehensively probed using three-dimensional super-resolution microscopy throughout the entire intraerythrocytic development cycle. This work provides a compelling framework to investigate in future more deeply the unconventional cell biology of malaria-causing parasites.

## Abstract

Apicomplexan parasites exhibit tremendous diversity in much of their fundamental cell biology, but study of these organisms using light microscopy is often hindered by their small size. Ultrastructural expansion microscopy (U-ExM) is a microscopy preparation method that physically expands the sample by ~4.5x. Here, we apply U-ExM to the human malaria parasite *Plasmodium falciparum* during the asexual blood stage of its lifecycle to understand how this parasite is organized in three dimensions. Using a combination of dye-conjugated reagents and immunostaining, we have cataloged 13 different *P. falciparum* structures or organelles across the intraerythrocytic development of this parasite and made multiple observations about fundamental parasite cell biology. We describe that the outer centriolar plaque and its associated proteins anchor the nucleus to the parasite plasma membrane during mitosis. Furthermore, the rhoptries, Golgi, basal complex, and inner membrane complex, which form around this anchoring site while nuclei are still dividing, are concurrently segregated and maintain an association to the outer centriolar plaque until the start of segmentation. We also show that the mitochondrion and apicoplast undergo sequential fission events while maintaining an association with the outer centriolar plaque during cytokinesis. Collectively, this study represents the most detailed ultrastructural analysis of *P. falciparum* during its intraerythrocytic development to date and sheds light on multiple poorly understood aspects of its organelle biogenesis and fundamental cell biology.

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# Challenges for preprint peer evaluation



**Fragmented &  
Unconnected  
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Outputs**



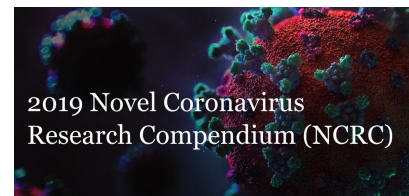
**Lack Of  
Visibility &  
Discovery**



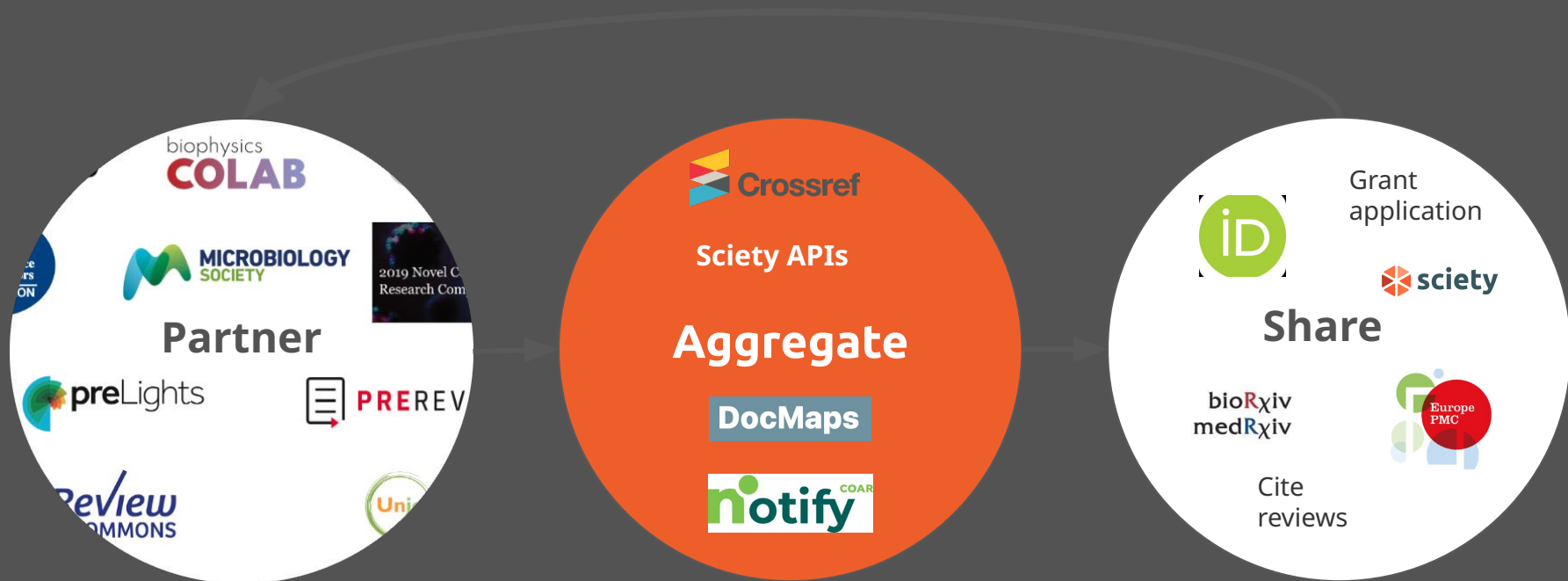
**Limited  
Mechanisms  
For  
Recognition &  
Reward**



# Partner with communities and organisations



# Building Preprint Histories



# Utilising Crossref

## Transferred mitochondria accumulate reactive oxygen species, promoting proliferation

Chelsea U Kidwell, Joseph R Casalini, Soorya Pradeep, Sandra D Scherer, Daniel Greiner, Defne Bayik, Dionysios C Watson, Gregory S Olson, Justin D Lathia, Jarrod S Johnson, Jared Rutter, Alana L Weim, Thomas A Zangle, Minna Roh-Johnson.

Curated by eLife

eLife assessment

This manuscript provides compelling evidence that macrophages transfer mitochondria to cancer cells and that transferred mitochondria stimulate proliferation in recipient cells. The usage an array of clever cell biology-based tools provides compelling evidence for these claims despite the difficulties associated with studying a relatively low probability event. Solid evidence supports the proposed model that transferred mitochondria induce proliferation by stimulating ERK signaling in a ROS dependent manner, although at present some aspects of the proposed model are incomplete. The work has broad significance for both mitochondrial biology and cancer biology as the authors show clear evidence of mitochondrial transfer in mouse models of human tumors.

Reviewed by eLife, ASAPbio crowd review

6 evaluations • Appears in 5 lists • Latest version Mar 6, 2023 • Latest activity Feb 13, 2023

## DNMT3B PWWP mutations cause hypermethylation of heterochromatin

Francesca Taglini, Ioannis Kafetzopoulos, Willow Rolls, Kamila Irena Musialik, Heng Yang Lee, Yujin Zhang, Matbia Marenda, Lyndsay Kerr, Hannah Finan, Cristina Rubio-Ramon, Philippe Gautier, Hannah Wapenaar, Dhananjay Kumar, Hazel Davidson-Smith, Jimi Willis, Laura C Murphy, Ann Wheeler, Marcus D Wilson, Duncan Spraul.

Reviewed by Review Commons, PREREVIEW

6 evaluations • Appears in 4 lists • Latest version Jan 30, 2024 • Latest activity Mar 31, 2023

## Atlas of Plasmodium falciparum intraerythrocytic development using expansion microscopy

Benjamin Liffner, Ana Karla Cepeda Diaz, James Blauwkamp, David Anaguano, Sonja Frolich, Vasant Muralidharan, Danny W Wilson, Jeffrey D Dvorin, Sabrina Absalon.

Curated by eLife

eLife assessment

This important study provides an unprecedented overview of the subcellular organization of Plasmodium falciparum intraerythrocytic development using expansion microscopy. The localization of

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## Atlas of Plasmodium falciparum intraerythrocytic development using expansion microscopy

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Curated by eLife

eLife assessment

This important study provides an unprecedented overview of the subcellular organization of proliferative blood stage malaria parasites using expansion microscopy. The localization of multiple parasite organelles is comprehensively probed using three-dimensional super-resolution microscopy throughout the entire intraerythrocytic development cycle. This work provides a compelling framework to investigate in future more deeply the unconventional cell biology of malaria-causing parasites.

### Abstract

Apicomplexan parasites exhibit tremendous diversity in much of their fundamental cell biology, but study of these organisms using light microscopy is often hindered by their small size. Ultrastructural expansion microscopy (U-ExM) is a microscopy preparation method that physically expands the sample by ~4.5x. Here, we apply U-ExM to the human malaria parasite *Plasmodium falciparum* during the asexual blood stage of its lifecycle to understand how this parasite is organized in three dimensions. Using a combination of dye-conjugated reagents and immunostaining, we have cataloged 13 different *P. falciparum* structures or organelles across the intraerythrocytic development of this parasite and made multiple observations about fundamental parasite cell biology. We describe that the outer centriolar plaque and its associated proteins anchor the nucleus to the parasite plasma membrane during mitosis. Furthermore, the rhoptries, Golgi, basal complex, and inner membrane complex, which form around this anchoring site while nuclei are still dividing, are concurrently segregated and maintain an association to the outer centriolar plaque until the start of segmentation. We also show that the mitochondrion and apicoplast undergo sequential fission events while maintaining an association with the outer centriolar plaque during cytokinesis. Collectively, this study represents the most detailed ultrastructural analysis of *P. falciparum* during its intraerythrocytic development to date and sheds light on multiple poorly understood aspects of its organelle biogenesis and fundamental cell biology.

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## DNMT3B PWWP mutations cause hypermethylation of heterochromatin

Francesca Taglini, Ioannis Kafetzopoulos, Willow Rolis, Kamila Irena Musialik, Heng Yang Lee, Yujie Zhang, Mattia Marenza, Lyndsay Kerr, Hannah Finan, Cristina Rubio-Ramon, Philippe Gautier, Hannah Wapenaar, Dhananjay Kumar, Hazel Davidson-Smith, Jimi Wills, Laura C Murphy, Ann Wheeler, Marcus D Wilson, Duncan Sproul.

### Abstract

The correct establishment of DNA methylation patterns is vital for mammalian development and is achieved by the *de novo* DNA methyltransferases DNMT3A and DNMT3B. DNMT3B localises to H3K36me3 at actively transcribing gene bodies via its PWWP domain. It also functions at heterochromatin through an unknown recruitment mechanism. Here, we find that knockout of DNMT3B causes loss of methylation predominantly at H3K9me3-marked heterochromatin and that DNMT3B PWWP domain mutations or deletion result in striking increases of methylation in H3K9me3-marked heterochromatin. Removal of the N-terminal region of DNMT3B affects its ability to methylate H3K9me3-marked regions. This region of DNMT3B directly interacts with HP1 $\alpha$  and facilitates the bridging of DNMT3B with H3K9me3-marked nucleosomes *in vitro*. Our results suggest that DNMT3B is recruited to H3K9me3-marked heterochromatin in a PWWP-independent manner that is facilitated by the protein's N-terminal region through an interaction with a key heterochromatin protein. More generally, we suggest that DNMT3B plays a role in DNA methylation homeostasis at heterochromatin, a process which is disrupted in cancer, aging and immunodeficiency, Centromeric Instability and Facial Anomalies (ICF) syndrome.

### Article activity feed

 **Review Commons** Mar 31, 2023

**Note:** This rebuttal was posted by the corresponding author to *Review Commons*. Content has not been altered except for formatting.

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**Reply to the reviewers**

General comments:

We thank the reviewers for recognizing the importance of our work and for their supportive and insightful comments.

Our planned revisions focus on addressing all the comments and especially in further elucidating the molecular mechanism underpinning our observations, their consequences for cell phenotypes and reproducing our observations in an additional cell line. Our revision plan is backed up in many cases by preliminary data.

Our submitted manuscript demonstrated that DNMT3B's recruitment to H3K9me3-marked heterochromatin was mediated by the N-terminal region of DNMT3B. Data generated since

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**Referee #1**


**Evidence, reproducibility and clarity**

**Summary:**


This paper by Francesca Taglini, Duncan Sproul, and their coworkers, examines the mechanisms of DNA methylation in a human cancer cell line. They use the human colorectal cancer line HCT116, which has been very widely used to look at epigenetics in cancer, and to dissect the contribution of different proteins and chromatin marks to DNA methylation.

The authors focus on the role of the *de novo* methyltransferase DNMT3B. It has been shown in ES cells in 2015 that its PWWP domain directs it to H3K36me3, typically found in gene bodies. More recently, the authors showed similar conclusions in colorectal cancer (Masalmeh Nat Comm ... [More](#)

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 **Version published to 10.1101/2022.12.19.521050v2 on bioRxiv** Jan 18, 2023

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 **PREreview** Jan 12, 2023

**This Zenodo record is a permanently preserved version of a PREreview. You can view the complete PREreview at <https://prereview.org/reviews/7529495>.**

In this manuscript, Taglini and colleagues explore the role of *de novo* DNA methyltransferase DNMT3B in human heterochromatin methylation. Using a human colorectal cancer cell line lacking DNMT3B, the authors demonstrate a specific loss of DNA methylation over pericentromeric DNA and constitutive heterochromatin, which are normally characterized by intermediate levels of DNA methylation and high H3K9 methylation. This model is consistent with previous studies that link DNMT3B loss of function mutations with pericentromeric DNA demethylation, genome instability and ICF-1 syndrome.


The authors then reconstituted DNMT3B-less cells with DNMT3B variants that carry a series of clinically relevant ... [More](#)

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 **PREreview** Jan 12, 2023

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 **Version published to 10.1101/2022.12.19.521050v1 on bioRxiv** Dec 19, 2022

# Technical Challenges and Surprising Outcomes

What are the technical challenges?

Any surprising outcomes?

there is no identifier for a work as opposed to an expression

some publishers don't issue new IDs for new expressions e.g. biorxiv/medrxiv necessitating further API calls to find all expressions

need to use XML API endpoint to get reliable styling markup in titles/abstract content

date fields can have year, month or day resolution

publishers depositing data that goes against the schema e.g. DOIs in short-doi field

'preprint' is a term interpreted differently across our domain. eg F1000 reviewed preprints are called 'journal articles'.

we thought we needed to build a database copying (and maintaining) Crossref information, but saw acceptable performance just by caching of responses

some API responses with errors do not have error level http status codes

Showing people the relationships on Society pages has encouraged people to deposit relationship metadata

 **society** +  **Crossref** = **Greater opportunities to  
recognise and reward peer  
evaluation**

**connect@sciety.org**



# Redalyc on trends in OA publishing in Latin America

Arianna Garcia, Redalyc



# SUMMARY REMARKS Then breakouts



**Crossref**



# WINDING-DOWN BREAK-OUT SESSIONS (optional!)



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# JOIN A GROUP OF YOUR INTEREST



1. Integrity of the Scholarly Record (Madhura Amdekar)
2. Resourcing Crossref for Future Sustainability (Lucy Ofiesh)
3. Research Nexus (Dominika Tkaczyk / Patricia Feeney)
4. General reflections from this meeting (Kathleen Luschek)

Break-outs will be open for 20 minutes.

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