



CITATION  
NEEDED!

# Setting your cites on open

## The Initiative for Open Citations

Mark Patterson, eLife

Open Science Days, 2018 • Paris, January, 2018

# About eLife

“

Creativity, imagination, and  
doing the **experiments**.  
That's what **eLife** is all about.

”

Sir Mark Walport,  
eLife board of directors



eLife is a non-profit organisation  
A collaboration between the funders and practitioners of science



## Current problems in research communication

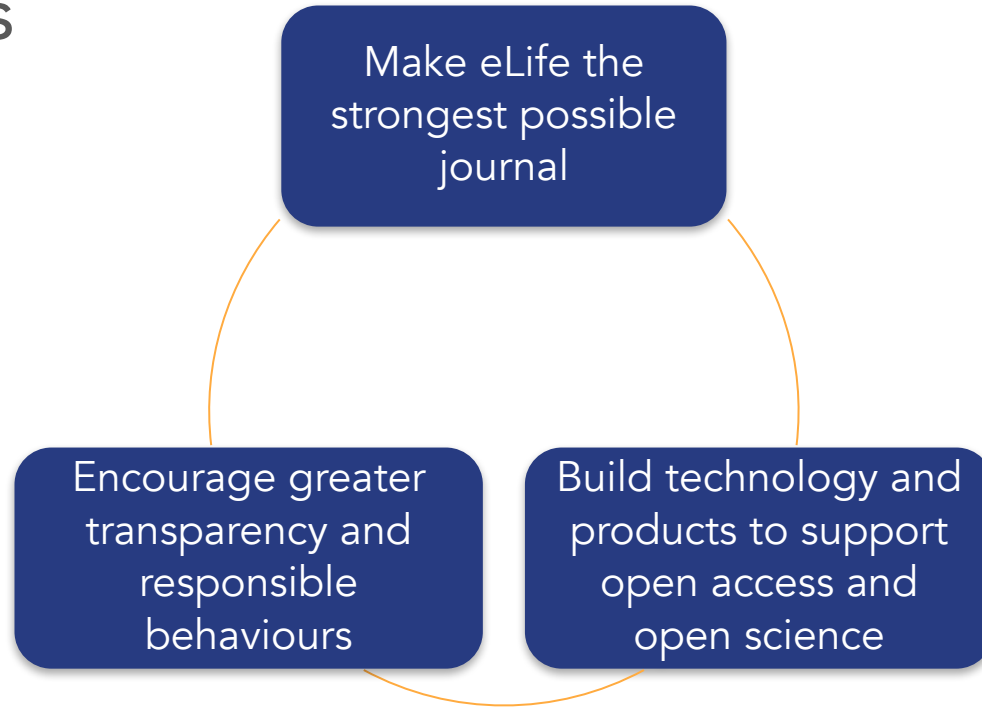
- Slow from discovery to communication
- Optimised for print, not the web
- Little incentive to share the full story
- Competition over collaboration
- Inaccessible to the public

Helping scientists **accelerate discovery** by  
operating a platform for research **communication**  
that encourages and recognises **the most**  
**responsible behaviours in science.**

# What do we mean by “responsible behaviours”?

- Sharing of data, tools, and resources
- Objective and comprehensive reporting
- Cooperation and collaboration
- Constructive feedback and encouragement

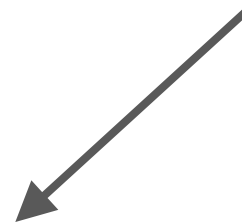
# eLife's three core goals



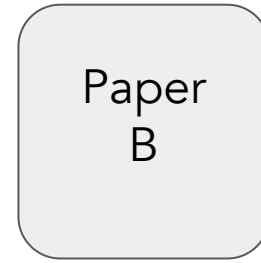
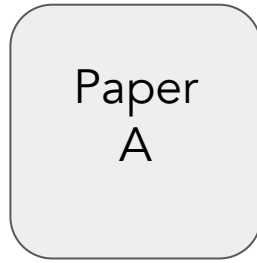
Back to I4OC  
and citations



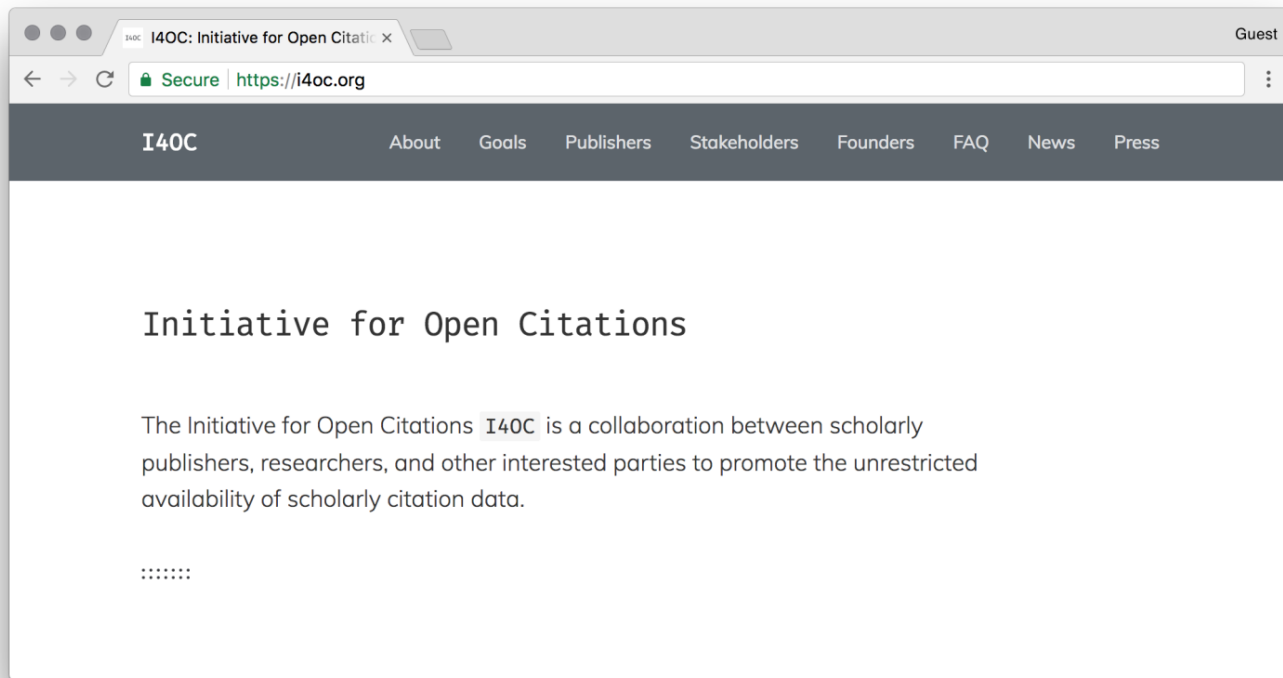
Citation  
Data







# The Initiative for Open Citations (I4OC.org)



# How it came together

## The starting point

Most publishers already deposit their citation data with Crossref

The default state for the data is not open

## The challenge

Could we persuade a group of influential publishers to release their data all at once?



WikiCite

@Wikicite

Following



Out of 999 scholarly publishers depositing reference data to @CrossrefOrg, only 28 (3%) are making them open

[docs.google.com/spreadsheets/d ...](https://docs.google.com/spreadsheets/d/...)  
#COASP8

| Publishers listed are depositing or not depositing their data to Crossref |  |
|---|--|
| Open  |  |
| ing References  |  |
| How much  |  |
| Working Paper   |  |
| Other   |  |
| entity Crossref Entity Types  |  |
| Geographical  |  |
| History Information   |  |

### (ARCHIVED) Publishers depositing citation data to Crossref...

Publisher list depositing open references PUBLISHERS\*,\* publishers listed are depositing references for at least one journal. they may not be doing so for all titles. American Geophysical...

[docs.google.com](https://docs.google.com)

8:37 AM - 22 Sep 2016



# Making the case

## **It's easy and doesn't cost anything**

All you need to do is to send an email to  
[support@crossref.org](mailto:support@crossref.org)

## **Publishers also benefit**

Better discovery tools mean that content will be found and  
used more

## **The goal cannot be achieved alone**

A comprehensive network of all scholarship can only be  
achieved if data is pooled

# Making it happen

## **Agree a deadline**

Everyone has time to prepare their comms and to be part of a big splash

## **Focus on publishers depositing the most data**

Contacted the top-20 publishers asking for agreement in principle and permission to share their decision

## **Leverage the early adopters**

As soon as we had a few publishers on board, others quickly followed





Taylor & Francis Group  
an **informa** business

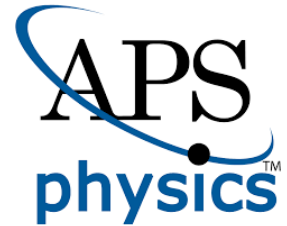


CAMBRIDGE  
UNIVERSITY PRESS

**SPRINGER**  
**NATURE**



OXFORD  
UNIVERSITY PRESS



DE GRUYTER



# Why are publishers joining I4OC?

“At Taylor & Francis we are working to make it as easy as possible for the communities we serve to achieve their open aims. I4OC sits well with this, and was a **very quick and easy** process to implement.”

“We believe there is great benefit in supporting sustainable and standardized infrastructure. Opening up our reference metadata **cost us no more than the time required to write one simple email.**” Liz Ferguson, Wiley

“It will make our customers’ lives easier by **helping data scientists to mine a large body of references in one go.** Currently we see little threat to our business as this aligns perfectly with our aims to go beyond open access to research, by using open approaches and utilizing our own data to advance discovery.” Steven Inchcoombe, Springer Nature

In the last six months, 112 new publishers and scholarly societies have joined the Initiative for Open Citations and opened up their reference data. [i4oc.org/#publishers](https://i4oc.org/#publishers)  
[#opencitations](https://i4oc.org/#opencitations)

ACADEMIC INSTITUTIONS

- Asociación Española de Contabilidad y Administración de Empresas
- Association of Lithuanian Serials
- Atlantis Press
- Baishideng Publishing Group Inc.
- Bangladesh Journals Online
- Biology Centre, AS CR
- Botanic Garden & Botanical Museum Berlin-Dahlem BGBM
- Brighthall
- Brill
- British Institute of Radiology
- CABI Publishing
- Canadian Science Publishing
- Cappelen Damm AS - Cappelen Damm Akademisk
- Cellule MathDoc/CEDRAM

INDUSTRIAL BANK OF LONDON

- Nepal Journals Online
- New Prairie Press
- Open Book Publishers
- Open Library of the Humanities
- Open Publishing Association
- OpenEdition
- Oxford Institute for Energy Studies
- Oxford University Press
- Peer Community In
- Perio J
- Petro Mohyla Black Sea National University
- Places Journal
- Polskie Naukowe-Techniczne Towarzystwo Eksplatacyjne
- Research-Publishing.net
- Royal College of Obstetricians & Gynaecologists
- Quantum

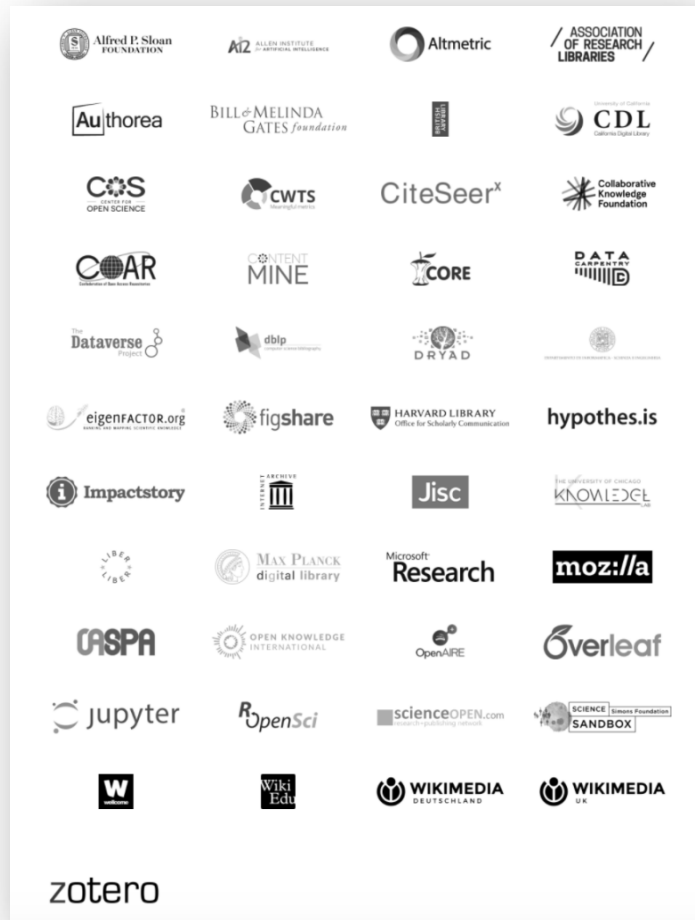
12:46 PM - 18 Jan 2018

60 Retweets 83 Likes



## Supporting stakeholders

We built a coalition of major funders, technology platforms, open data organizations and publishers supporting the unrestricted availability of scholarly citation data.



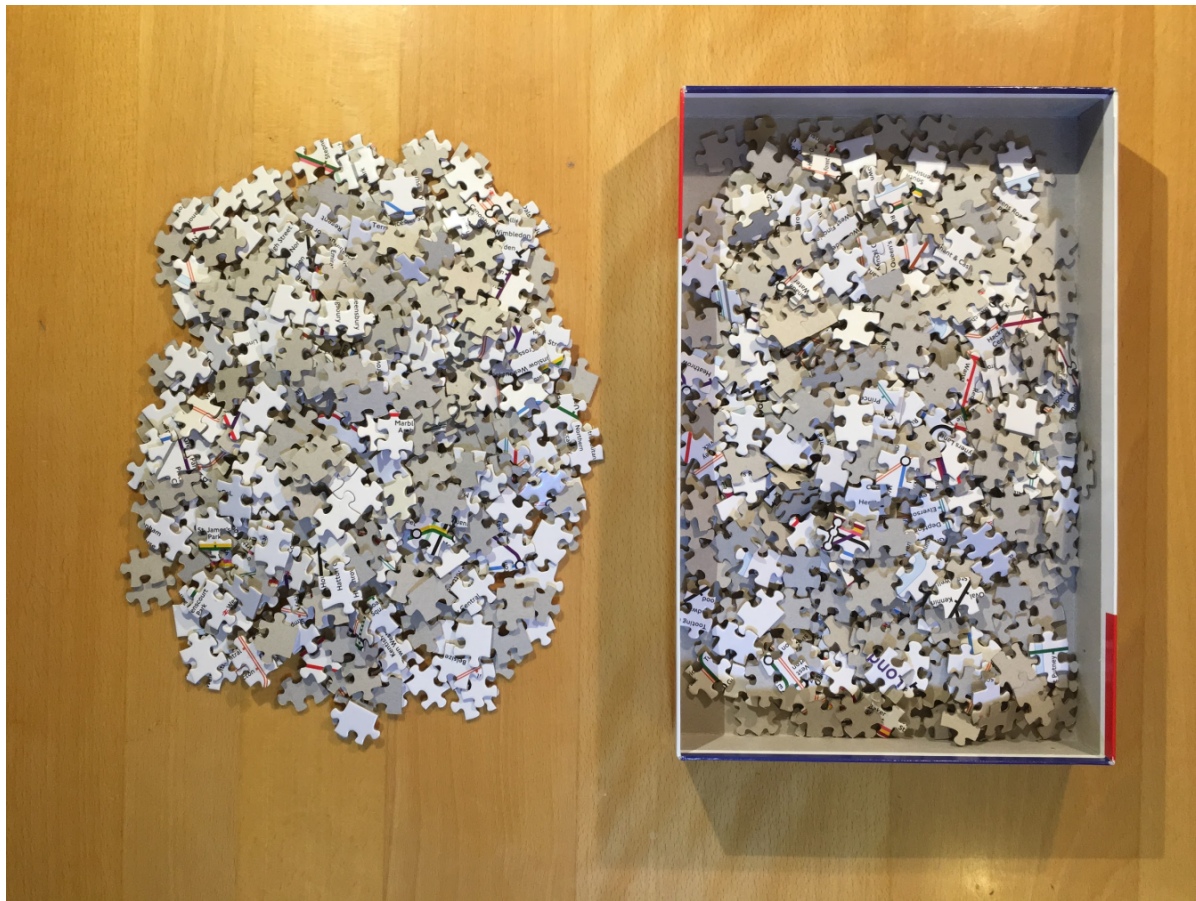
Where we  
started

~1% of the  
Crossref citation  
data is open



Where we are  
now

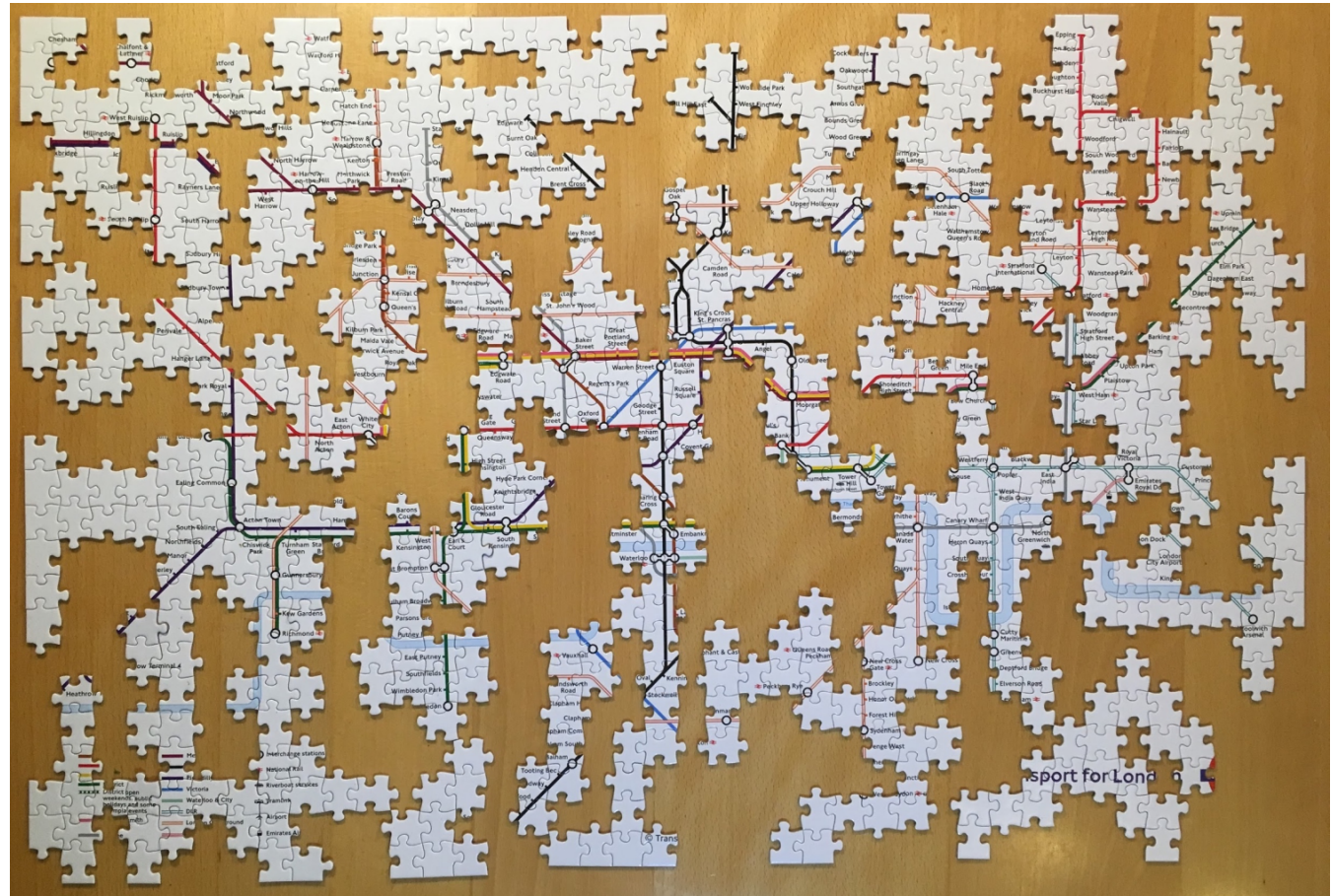
~50% of the  
citation data is  
open





What we can do  
now

We can start to  
use the data



Where we'd like  
to get to

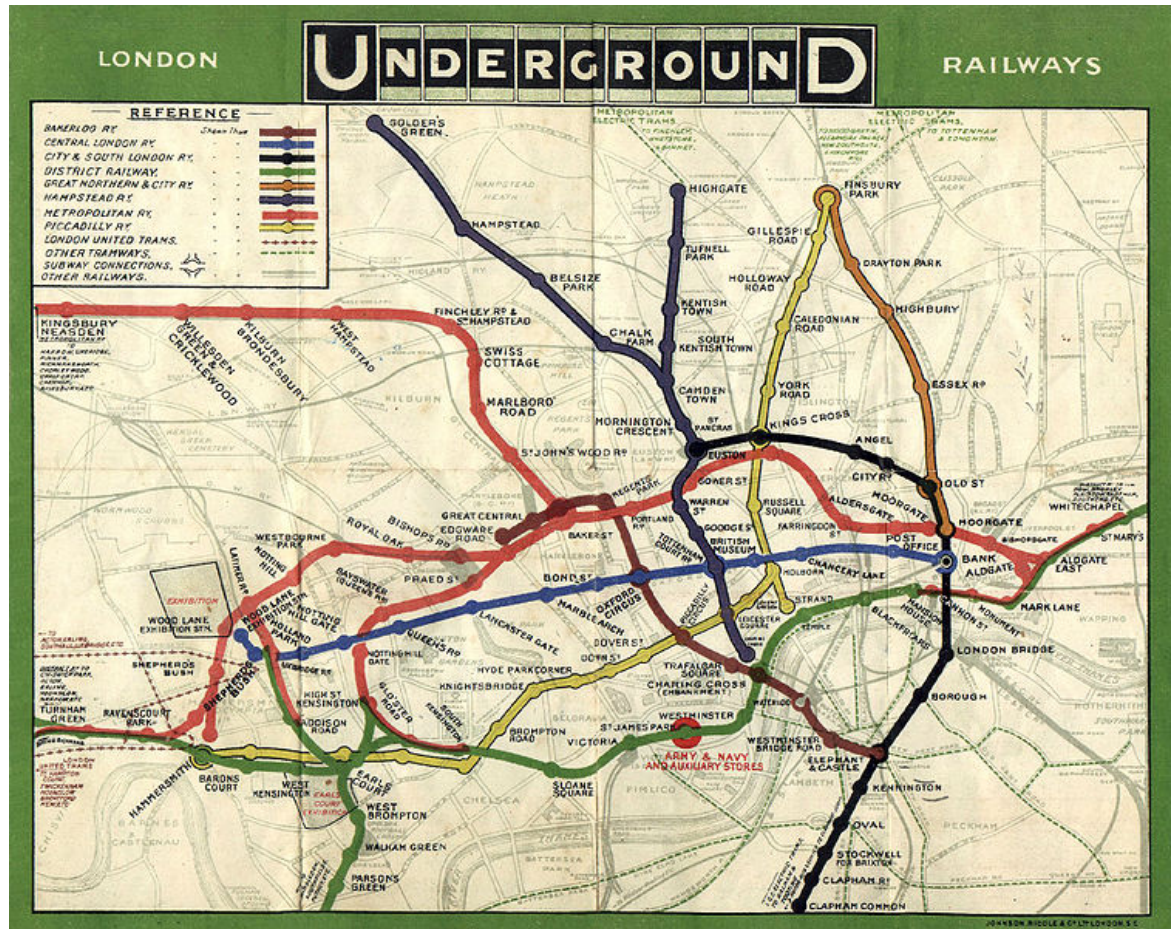
A public map of  
scholarship



ACKNOWLEDGEMENT: SUSAN KENWRICK FOR HELP WITH THE JIGSAW



Can also explore how the map of scholarship has evolved

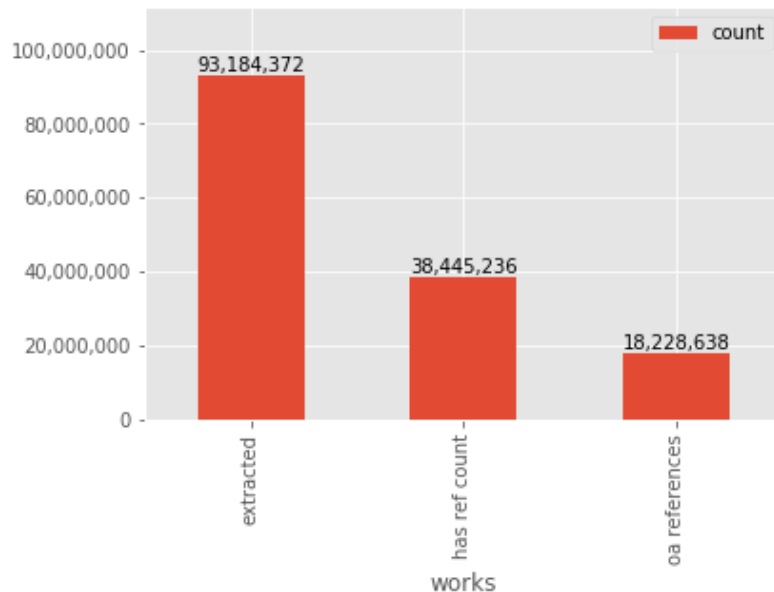


# Exploring the data from Crossref

Extracting data via  
the Crossref API

~41% Crossref  
records have citation  
data

~47% of those have  
public citation data



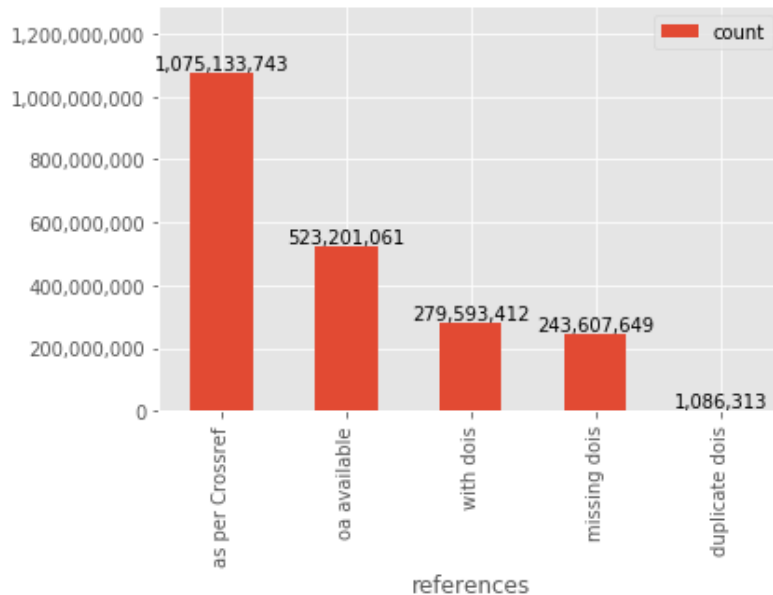
# Exploring the data from Crossref

>1billion citations

49% are open

53% have DOIs  
(and can be linked  
to another record)

Some cleanup  
required



# The road to 100%

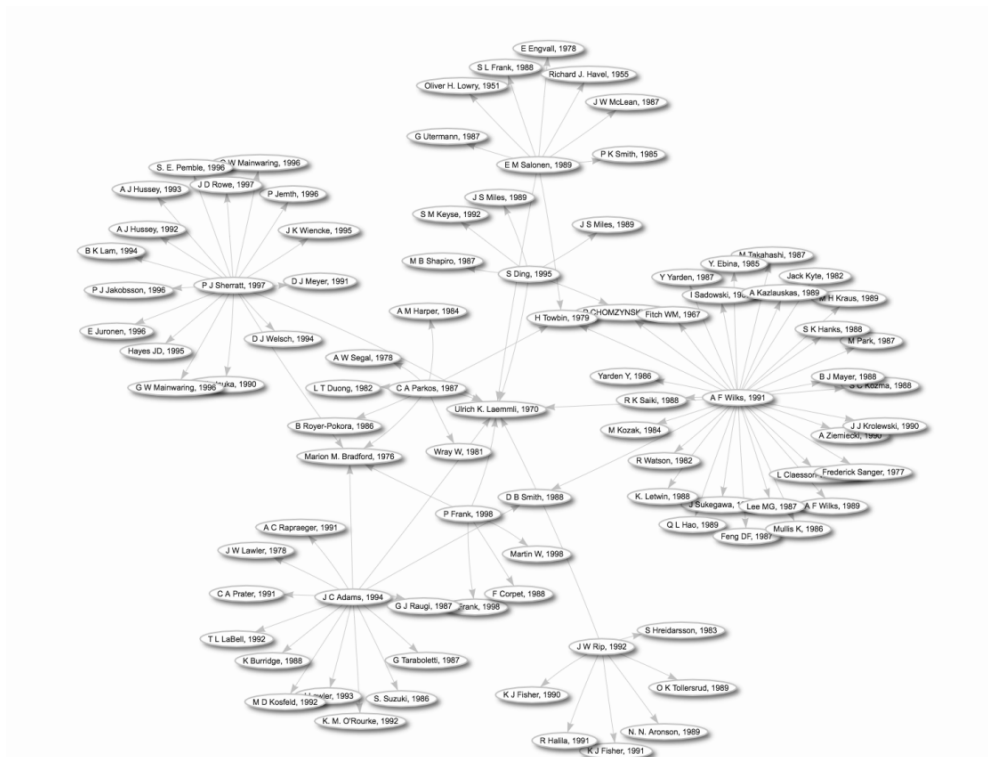
A list of all Crossref members with open references and statistics on their open reference coverage

| Member Name & ID  | Sponsored member & prefix   | Open References | Total Backfile DOIs | Total Current DOIs | Deposits Backfile References | Deposits Current References |
|---|---|-----------------|---------------------|--------------------|------------------------------|-----------------------------|
| AIP Publishing (ID 317)   | American Institute of Physics<br>10.1063                              | true            | 674618              | 49449              | true                         | true                        |
| AOSIS (ID 2580)   | AOSIS<br>10.4102  | true            | 20226               | 2700               | true                         | true                        |
| Alliance Against Traffic in Women Foundation (ID 5611)              | Alliance Against Traffic in Women Foundation<br>10.14197              | true            | 64                  | 48                 | false                        | false                       |
| American Association for the Advancement of Science (AAAS) (ID 221) | American Association for the Advancement of Science (AAAS)<br>10.1126 | true            | 264316              | 13047              | true                         | true                        |



# The Wikidata Citation Graph

## 36 million citation links



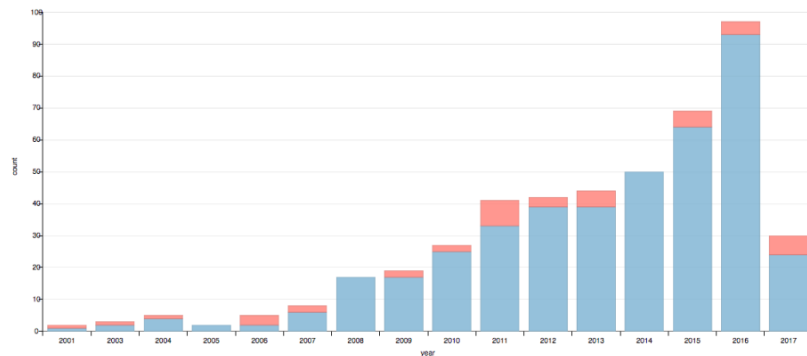
PARTIAL CITATION GRAPH FOR ULRICH K. LAEMMLI (1970) • <http://tinyurl.com/kbzdwxh>

# How data from the I4OC is being reused?

## *Tools to create profiles*

Scholia uses data from Wikidata sourced from Crossref and other metadata providers

Citations by year



### Citing authors

Authors that cite the author (excluding self citations).

Show 10 entries

Search:

| Count | Citing author                        |
|-------|--------------------------------------|
| 25    | <a href="#">Christoph Steinbeck</a>  |
| 24    | <a href="#">Antony John Williams</a> |
| 21    | <a href="#">Sean Ekins</a>           |
| 17    | <a href="#">Alex M Clark</a>         |
| 13    | <a href="#">Peter Murray-Rust</a>    |
| 12    | <a href="#">Ola Spjuth</a>           |
| 11    | <a href="#">John R Overington</a>    |
| 11    | <a href="#">Nina Jellaszova</a>      |
| 10    | <a href="#">Oliver Fiehn</a>         |
| 10    | <a href="#">Tobias Kind</a>          |

[Edit on query.Wikidata.org](#)

# How data from the I4OC is being reused?

## *Integration of cited by data by ScienceOpen*

The screenshot displays the ScienceOpen website interface. On the left, there are filters for 'Narrow by collection', 'Narrow by publisher', 'Narrow by journal', and 'Narrow by discipline'. The main search results area shows three articles, each with a 'RECORD', 'ABSTRACT', and 'ARTICLE' tab. The first article, 'RNA-programmed genome editing in human cells', has 4,511 results, 113 views, 0 recommendations, and 216 citations. The second article, 'Sodium taurocholate cotransporting polypeptide is a functional receptor for human hepatitis B and D virus', has 190 views, 0 recommendations, and 133 citations. The third article, 'Predicting effective microRNA target sites in mammalian mRNAs', has 190 views, 0 recommendations, and 133 citations. Each article entry includes a thumbnail image and a 'Show more' link.

scienceOPEN.com  
research + publishing network

MY SCIENCEOPEN ▾ BLOG ABOUT 🔍 SEARCH +

Narrow by collection

|                                     |     |
|-------------------------------------|-----|
| Resource Identification             | 329 |
| Climate Change: Open Access         | 7   |
| Higher order chromatin architecture | 6   |
| Zika Virus                          | 6   |
| Research Paper of the Future        | 2   |

Narrow by publisher

|                                   |       |
|-----------------------------------|-------|
| eLife Sciences Publications, Ltd  | 4,296 |
| eLife Sciences Organisation, Ltd. | 47    |
| BioMed Central                    | 15    |
| Public Library of Science         | 8     |
| MDPI                              | 5     |

Narrow by journal

|                  |       |
|------------------|-------|
| eLife            | 4,383 |
| Elife            | 31    |
| PLoS Biology     | 4     |
| BMC Neuroscience | 2     |
| Biology Open     | 2     |

Narrow by discipline

|               |       |
|---------------|-------|
| Life sciences | 4,361 |
| Medicine      | 30    |
| Uncategorized | 16    |
| Neurosciences | 10    |
| Genetics      | 9     |

Search

Content Authors Collections Featured Journals Publishers

elife ☒ Exact match

4,511 results Add filter Save search Export as citations ▾ Sort by cited by count ▾ Search 🔍

RECORD ABSTRACT ARTICLE 8

**RNA-programmed genome editing in human cells**

Martin Jinek, Alexandra East-Seletsky, Aaron Cheng, Steven Lin, Enbo Ma, 1 more... (2013)

Type II CRISPR immune systems in bacteria use a dual RNA-guided DNA endonuclease, Cas9, to cleave foreign DNA at specific sites. We show here that Cas9 also... [Show more](#)

113 views 0 recommend 216 ☆☆☆☆☆ 0 [Altmetric](#) 72

RECORD ABSTRACT ARTICLE 8

**Sodium taurocholate cotransporting polypeptide is a functional receptor for human hepatitis B and D virus**

Huan Yan, Guocai Zhong, Guangwei Xu, Wenhui He, Zhiyi Jing, 15 more... (2012)

Human hepatitis B virus (HBV) infection and HBV-related diseases remain a major public health problem. Individuals coinfectd with its satellite hepatitis D virus... [Show more](#)

190 views 0 recommend 133 ☆☆☆☆☆ 0 [Altmetric](#) 29

RECORD ABSTRACT ARTICLE 8

**Predicting effective microRNA target sites in mammalian mRNAs**

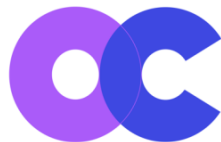
Vikram Agarwal, George Bell, Jin-Wu Nam, David Bartel (2015)

MicroRNA targets are often recognized through pairing between the miRNA seed region and complementary sites within target mRNAs, but not all of these can... [Show more](#)

SEARCH RESULTS FROM SCIENCEOPEN SHOWING CITED-BY DATA • <http://www.scienceopen.com/>

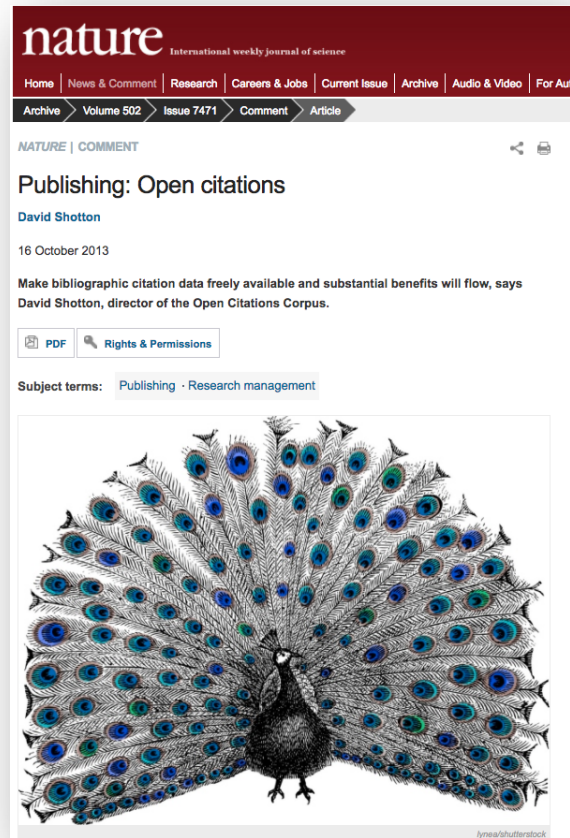
# How data from the I4OC is being reused?

## *The Open Citations Corpus*



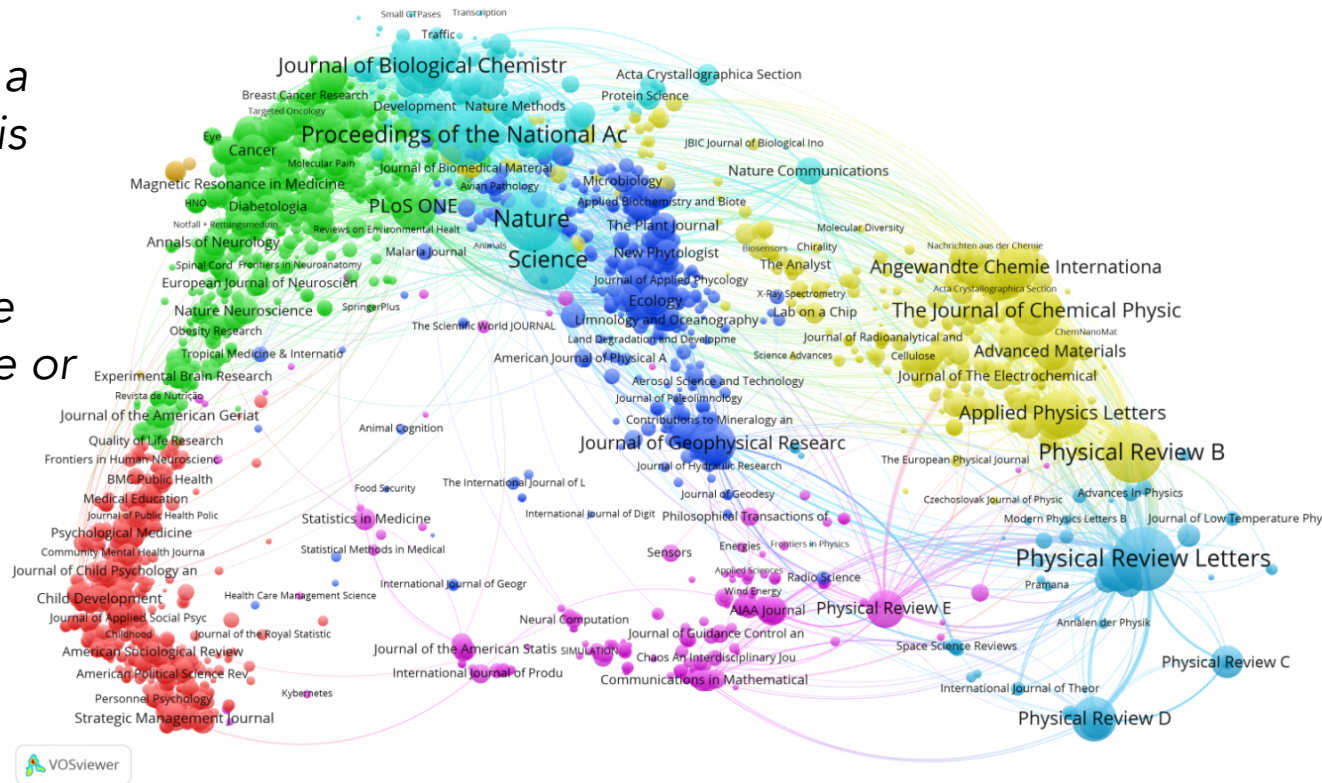
A broad and open collection of  
citation information from many  
sources

David Shotton and Silvio Peroni



# Towards a fully open scholarly graph

*"The visualization shows a structure of science that is well known from earlier large-scale bibliometric visualizations, which were based on Web of Science or Scopus data."*



# A new discovery tool using I4OC data

Dimensions

Re-imagining discovery and access to research: grants, publications, citations, clinical trials and patents in one place

Access free app

Get in contact

Stay updated

**Innovative**  
Using data science to place research in its context!

**Extensive**  
128 million grants, publications, clinical trials and patents with 4 billion connections

**Together**  
Built with and for the research community

Learn more about Dimensions

DIGITAL science

Twitter Facebook LinkedIn

Dimensions  
@DSDimensions

Follow

Thanks to [@i4oc\\_org](https://www.i4oc.org) for making things like [@DSDimensions](https://twitter.com/DSDimensions) possible! Really exciting to be involved with such a fantastic initiative [#highered](https://twitter.com/highered)

4:47 AM - 19 Jan 2018

BRINGING TOGETHER DIVERSE DATA SOURCES TO AID DISCOVERY DIMENSIONS • <https://www.dimensions.ai>

# Changing incentives





The findings of a series of engagement activities exploring  
**THE CULTURE OF  
SCIENTIFIC RESEARCH  
IN THE UK**

NUFFIELD  
COUNCIL ON  
BIOETHICS

DECEMBER 2014

“Not only are we failing to provide the right incentives, we are actually providing perverse incentives.”



## Briefing Paper


Research Integrity: What it Means, Why it Is Important and How we Might Protect it

DECEMBER 2015



## Reproducibility and Reliability of Biomedical Research

On the 1-2 April, the AMS, in partnership with the BBSRC, MRC and Wellcome Trust, organised a two day symposium discussing solutions to the problems of reliability and reproducibility of biomedical research. Here's a round-up of the action of our hashtag #ReproSymp during the meeting!

by  Academy of Medical Sciences 3 months ago 64 Views



## RNA-programmed genome editing in human cells

Haoyi Jiao<sup>1,2</sup>, Alexander Earl<sup>1</sup>, Aaron Cheng<sup>1</sup>, Steven Li<sup>1,3</sup>, Robin Wu<sup>1</sup>, Jennifer Doudna<sup>1,4,5</sup>

<sup>1</sup>Howard Hughes Medical Institute, University of California, Berkeley, Berkeley, California, 94720; <sup>2</sup>Department of Chemical and Biomolecular Engineering, University of California, Berkeley, Berkeley, California, 94720; <sup>3</sup>Department of Chemistry, University of California, Berkeley, Berkeley, California, 94720; <sup>4</sup>Department of Molecular and Cell Biology, University of California, Berkeley, Berkeley, California, 94720; <sup>5</sup>Department of Biochemistry, University of California, Berkeley, Berkeley, California, 94720

**Abstract** Type II CRISPR-Cas9 systems are powerful tools for genome editing. However, Cas9 is a DNA-specific endonuclease and cannot edit RNA. Here, we report a method for RNA-programmed genome editing in human cells using a Cas9-Cas10 complex. This complex is programmed with a guide RNA that targets a specific RNA sequence. The Cas9-Cas10 complex then cleaves the target RNA, resulting in a permanent deletion. This method allows for the precise editing of RNA sequences in human cells, opening up new possibilities for studying gene function and developing new therapies.

### Introduction

Genome editing has revolutionized biology and medicine. CRISPR-Cas9 systems have emerged as powerful tools for editing DNA sequences. However, the inability to edit RNA sequences has been a major limitation. Here, we describe a method for RNA-programmed genome editing in human cells. This method uses a Cas9-Cas10 complex, which is programmed with a guide RNA to target a specific RNA sequence. The complex then cleaves the target RNA, resulting in a permanent deletion. This method allows for the precise editing of RNA sequences in human cells, opening up new possibilities for studying gene function and developing new therapies.

# What journal?



# What journal?



# What impact factor?

What  
journal?

What  
impact  
factor?

## Citations

I40C



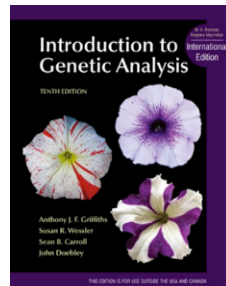
## Citations



## Usage



## Textbooks



## Policy and practice



## Grants



European Research Council

## Media

the guardian

The New York Times



## Twitter



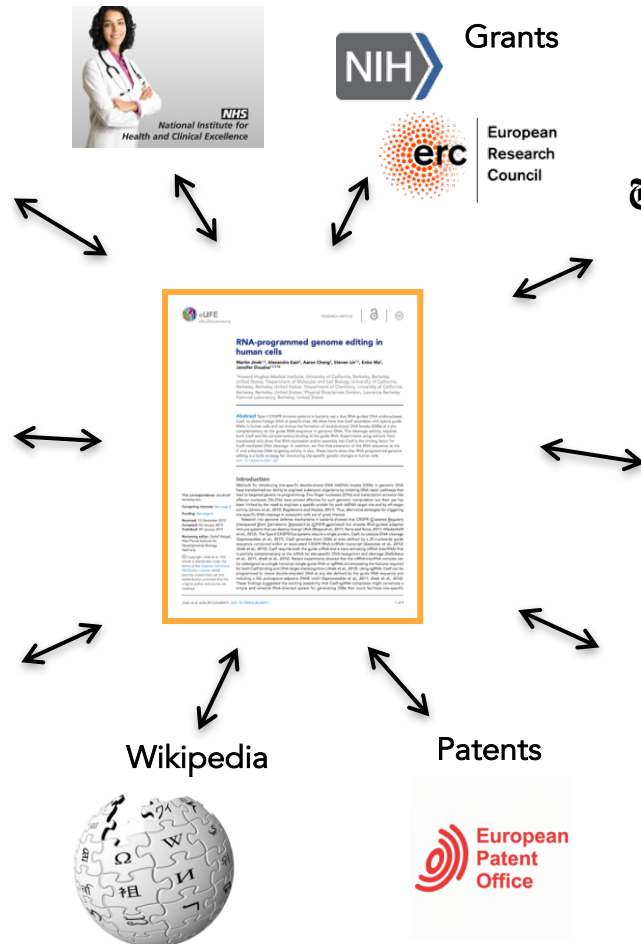
## Reference managers



## Patents



## Wikipedia



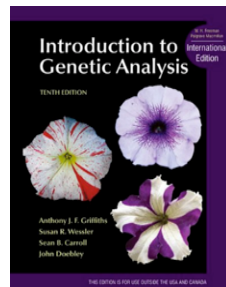
Citations



Usage



Textbooks



Policy and practice



Grants



European Research Council

Media

the guardian

The New York Times



Twitter



Reference managers



Patents



Wikipedia



# Time to get an ORCID

- ORCID is a unique ID for authors (of articles, datasets, software and other research outputs)
- ORCID profiles are updated automatically
- Publishers like eLife deposit ORCID along with article metadata





San Francisco



Declaration on Research Assessment

- Recommendations for publishers, funders, institutions, metrics suppliers, and researchers
- >12,000 signatories

<https://flic.kr/p/cPC2kb>  
CC BY-NC



The Leiden Manifesto  
for research metrics

# Taking steps to improve assessment (HEFCE)

**No sub-panel will make any use of journal impact factors,** rankings, lists or the perceived standing of publishers in assessing the quality of research outputs.

An underpinning principle of the REF is that all types of research and **all forms of research outputs** across all disciplines shall be assessed on a fair and equal basis.



An der Fakultät für Psychologie und Pädagogik der Ludwig-Maximilians-Universität München ist zum Wintersemester 2016/2017 eine

## Professur (W3) für Sozialpsychologie (Lehrstuhl)

zu besetzen.

"The Department of Psychology puts a high value on transparent and replicable research and supports these goals through **open data, open materials**, and **preregistration**. Because of this, applicants are asked to **describe in their application** in which ways they have already achieved these goals and how they plan to do so in the future."

Thanks to Corina Logan  
Cambridge University, UK

ng des Faches Sozialpsychologie in seiner  
ogie", in verschiedenen Nebenfachstudiengängen  
in Psychologie: Wirtschafts-, Organisations- und

an die Forschungsaktivitäten im Rahmen des  
[www.mcls.lmu.de](http://www.mcls.lmu.de) <sup>7)</sup>, des „Munich Experimental  
ELESSA, [www.melessa.lmu.de](http://www.melessa.lmu.de) <sup>7)</sup> oder der  
SN, [www.gsn.lmu.de](http://www.gsn.lmu.de) <sup>7)</sup> sind erwünscht.

J) möchte eine hervorragend ausgewiesene  
e Qualifikation im Anschluss an ein

abgeschlossenes Hochschulstudium und eine überdurchschnittliche Promotion im Bereich Psychologie durch international sichtbare, exzellente Leistungen in Forschung (z. B. Publikationen in international anerkannten Fachzeitschriften, erfolgreiche Einwerbung von Drittmitteln) und Lehre (u. a. durch Lehrevaluation) nachgewiesen hat. Die Mitwirkung an den Forschungsaktivitäten im Rahmen von MCLS, MELESSA oder GSN ist erwünscht.

Das Department Psychologie legt Wert auf transparente und replizierbare Forschung und unterstützt diese Ziele durch Open Data, Open Material und Präregistrierungen. Bewerber/innen werden daher gebeten, in ihrem Anschreiben darzulegen, auf welche Art und Weise sie diese Ziele bereits verfolgt haben und in Zukunft verfolgen möchten.

Bei einer Einstellung im Beamtenverhältnis darf das 52. Lebensjahr zum Zeitpunkt der Ernennung

Publish or  
perish

Share and  
shine



**Erin McKiernan**  
@emckiernan13

Physiologist. Neuroscientist. Tweeting on my research, #science news, #openaccess publishing, and occasional random thoughts. #neuroscience #physiology #math

TWEETS 10.2K FOLLOWING 482 FOLLOWERS 2,299

Follow

## Living in an Ivory Basement

Stochastic thoughts on science, testing, and programming.

misc personal python **science** teaching testing

### On gaining tenure as an open scientist

On December 10th, 2014, I was formally awarded tenure at UC Davis, where I will start as an Associate Professor in the School of Veterinary Medicine on January 5th, 2015. In [my research statement for my job application](#), I wrote:

*Open science and scientific reproducibility: I am a strong advocate of open science, open source, open data, open access, and the use of social media in research as a way to advance research more broadly.*

I've been an advocate of "open" for decades, and since becoming an Assistant Professor at Michigan State University in spring 2008, I have explored a variety of approaches to doing science more openly:

- I [blog](#) and [tweet](#) about our research.
- [All my senior-author papers are open access and were posted as preprints.](#)
- [I post all of my single-author grants openly, as soon as I submit them.](#)
- [All of our source code is openly available on github](#) and most of our papers are written in public on github.
- I sign almost all of my paper reviews and [post many of them](#) (the ones that I remember to post ;) on my blog.

Fri 26 December 2014  
By [C. Titus Brown](#)  
In [science](#).  
tags: [tenure open science](#)

eLIFE

ABOUT LABS COMMUNITY [SUBMIT MY RESEARCH](#)

MENU HOME MAGAZINE


Q

## Campaigning for change: Bullied Into Bad Science

Early-career researchers are hoping to reform the research and publication environment.

INTERVIEW Sep 14, 2017

The Bullied Into Bad Science campaign was established by early-career researchers at the University of Cambridge after efforts to discuss their disappointment at the terms of the deal signed in 2016 to provide UK universities with subscriptions to journals owned by the publishing giant Elsevier appeared to be unwelcome. The aim of the campaign is to establish a fairer, more open and ethical research and publication environment. Since launching publicly in May 2017, over 100 early-career researchers (ECRs) have signed the campaign's letter. However, as Laurent Gatto and Corina Logan explain, there is still a long way to go.



Left: Corina Logan investigates behavioural flexibility in invasive species at the University of Cambridge. Photo credit: Dieter Lukas. Right: Laurent Gatto in Paris. Photo credit: Caroline Termonia.

# Thank you

## Acknowledgments

*The I4OC founders:* OpenCitations, Wikimedia Foundation, PLOS, eLife, DataCite, the Center for Culture and Technology at Curtin University.

*The I4OC instigators:* Jonathan Dugan, Martin Fenner, Jan Gerlach, Catriona MacCallum, Daniel Mietchen, Cameron Neylon, Mark Patterson, Michelle Paulson, Silvio Peroni, David Shotton, Dario Taraborelli

*The I4OC stakeholders* ([i4oc.org/#stakeholders](https://i4oc.org/#stakeholders)) *and participating publishers* ([i4oc.org/#publishers](https://i4oc.org/#publishers))