

# Research assessment in open science

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Manager, EMBO Science Policy Programme



# About EMBO

- European Molecular Biology Organization (Maria Leptin, Director)
- Founded 1964, Heidelberg, DE
- Funded by the European Molecular Biology Conference
  - 31 Member and Associate Member States
  - 2 Cooperation Agreements
- *Advancing policies for a world-class European research environment*

# Programmes

- Members
- Fellowships
- Young Investigators
- Courses and Workshops
- Science Policy
- Scientific publishing: EMBO Press





# SHARING PUBLICATION-RELATED DATA AND MATERIALS

RESPONSIBILITIES OF AUTHORSHIP  
IN THE LIFE SCIENCES

Committee on Responsibilities of Authorship in the Biological Sciences

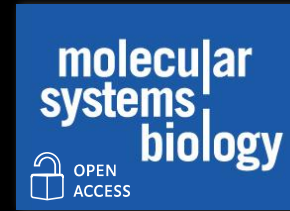
Board on Life Sciences  
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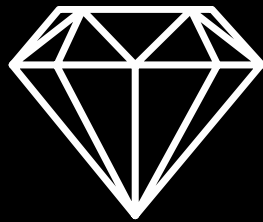
THE NATIONAL ACADEMIES PRESS  
Washington, D.C.  
**[www.nap.edu](http://www.nap.edu)**

## Scientific publishing

The publication of scientific information is intended to move science forward. More specifically, the act of publishing is a *quid pro quo* in which authors receive credit and acknowledgment in exchange for disclosure of their scientific findings.



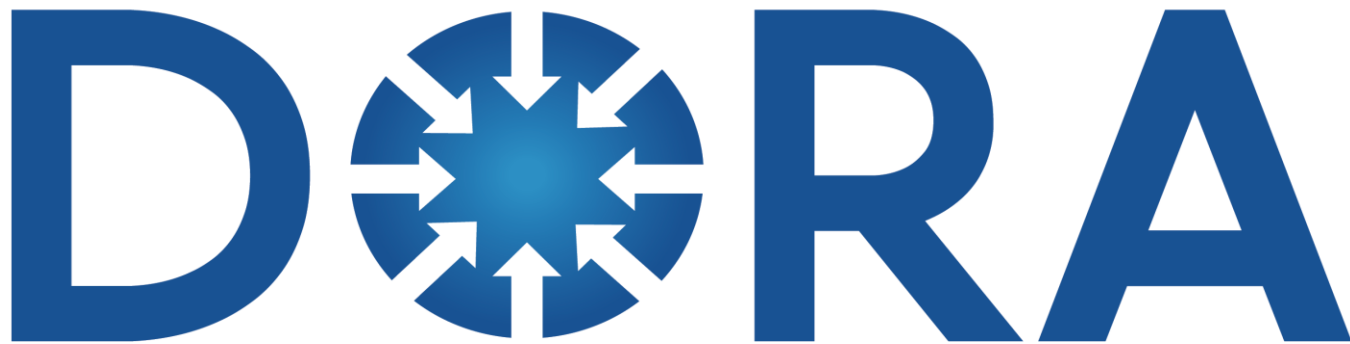
# Core principles and services



TRANSPARENT  
PROCESS

1. Transparent review
2. Scooping Protection
3. Referee Cross-Commenting
4. Single Round
5. Fast Process
6. Source Data
7. Approachable Editors
8. Informed Evaluation
9. Manuscript Transfers
10. Flexible Formatting
11. Pre-publication screening

**San Francisco**



**Declaration on Research Assessment**

The San Francisco Declaration on Research Assessment (DORA), initiated by the American Society for Cell Biology (ASCB) together with a group of editors and publishers of scholarly journals, recognizes the need to improve the ways in which the outputs of scientific research are evaluated. The group met in December 2012 during the ASCB Annual Meeting in San Francisco and subsequently circulated a draft declaration among various stakeholders. DORA as it now stands has benefited from input by many of the original signers listed below. It is a worldwide initiative covering all scholarly disciplines. We encourage individuals and organizations who are concerned about the appropriate assessment of scientific research to sign DORA.

## The Declaration

There is a pressing need to improve the ways in which the output of scientific research is evaluated by funding agencies, academic institutions, and other parties. To address this issue, a group of editors and publishers of scholarly journals met during the Annual Meeting of The American Society for Cell Biology (ASCB) in San Francisco, CA, on December 16, 2012.

The group developed a set of recommendations, referred to as the San Francisco Declaration on Research Assessment. We invite interested parties across all scientific disciplines to indicate their support by adding their names to this Declaration. The outputs from scientific research are many and varied, including: research articles reporting new knowledge, data, reagents, and software; intellectual property; and highly trained young scientists. Funding agencies, institutions that employ scientists, and scientists themselves, all have a desire, and need, to assess the quality and impact of scientific outputs. It is thus imperative that scientific output is measured accurately and evaluated wisely.

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## Individual Signers

**Total: 12709**

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The Index and the Moon: Mortgaging Scientific Evaluation

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## Organization Signers

**Total: 438**

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## **General Recommendation**

1. Do not use journal-based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of individual research articles, to assess an individual scientist's contributions, or in hiring, promotion, or funding decisions.

## **For funding agencies**

2. Be explicit about the criteria used in evaluating the scientific productivity of grant applicants and clearly highlight, especially for early-stage investigators, that the scientific content of a paper is much more important than publication metrics or the identity of the journal in which it was published.
3. For the purposes of research assessment, consider the value and impact of all research outputs (including datasets and software) in addition to research publications, and consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice.

## **For institutions**

4. Be explicit about the criteria used to reach hiring, tenure, and promotion decisions, clearly highlighting, especially for early-stage investigators, that the scientific content of a paper is much more important than publication metrics or the identity of the journal in which it was published.
5. For the purposes of research assessment, consider the value and impact of all research outputs (including datasets and software) in addition to research publications, and consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice.

## **For publishers**

6. Greatly reduce emphasis on the journal impact factor as a promotional tool, ideally by ceasing to promote the impact factor or by presenting the metric in the

context of a variety of journal-based metrics (e.g., 5-year impact factor, EigenFactor [8], SCImago [9], *h*-index, editorial and publication times, etc.) that provide a richer view of journal performance.

7. Make available a range of article-level metrics to encourage a shift toward assessment based on the scientific content of an article rather than publication metrics of the journal in which it was published.
8. Encourage responsible authorship practices and the provision of information about the specific contributions of each author.
9. Whether a journal is open-access or subscription-based, remove all reuse limitations on reference lists in research articles and make them available under the Creative Commons Public Domain Dedication [10].
10. Remove or reduce the constraints on the number of references in research articles, and, where appropriate, mandate the citation of primary literature in favor of reviews in order to give credit to the group(s) who first reported a finding.

### For organizations that supply metrics

11. Be open and transparent by providing data and methods used to calculate all metrics.
12. Provide the data under a licence that allows unrestricted reuse, and provide computational access to data, where possible.
13. Be clear that inappropriate manipulation of metrics will not be tolerated; be explicit about what constitutes inappropriate manipulation and what measures will be taken to combat this.
14. Account for the variation in article types (e.g., reviews versus research articles), and in different subject areas when metrics are used, aggregated, or compared.

### For researchers

15. When involved in committees making decisions about funding, hiring, tenure, or promotion, make assessments based on scientific content rather than publication metrics.
16. Wherever appropriate, cite primary literature in which observations are first reported rather than reviews in order to give credit where credit is due.
17. Use a range of article metrics and indicators on personal/supporting statements, as evidence of the impact of individual published articles and other research outputs [11].
18. Challenge research assessment practices that rely inappropriately on Journal Impact Factors and promote and teach best practice that focuses on the value and influence of specific research outputs.

## What it does *not* say

- Metrics based research assessment is wrong
- JIF is useless
- Citations are a flawed metric
- There is a simple alternative
- Publishers are to blame
- Metrics providers are to blame

# Publishing/policy interface

- Preprint servers
  - ArXiv/BioArXiv
  - ASAPbio
- Assessing contributors of data (microattribution) (extend DORA?)
- Identification of authors and contributors
- Formal and informal post-publication review



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- General Relativity and Quantum Cosmology (**gr-qc** new, recent, find)
- High Energy Physics – Experiment (**hep-ex** new, recent, find)
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- High Energy Physics – Phenomenology (**hep-ph** new, recent, find)
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- Mathematical Physics (**math-ph** new, recent, find)
- Nonlinear Sciences (**nlin** new, recent, find)  
includes: Adaptation and Self-Organizing Systems; Cellular Automata and Lattice Gases; Chaotic Dynamics; Exactly Solvable and Integrable Systems; Pattern Formation and Solitons
- Nuclear Experiment (**nucl-ex** new, recent, find)
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- Physics (**physics** new, recent, find)  
includes: Accelerator Physics; Applied Physics; Atmospheric and Oceanic Physics; Atomic Physics; Atomic and Molecular Clusters; Biological Physics; Chemical Physics; Classical Physics; Computational Physics; Data Analysis, Statistics and Probability; Fluid Dynamics; General Physics; Geophysics; History and Philosophy of Physics; Instrumentation and Detectors; Medical Physics; Optics; Physics Education; Physics and Society; Plasma Physics; Popular Physics; Space Physics
- Quantum Physics (**quant-ph** new, recent, find)

## Mathematics



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- **Condensed Matter** (**cond-mat** [new](#), [recent](#), [find](#))  
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- **General Relativity and Quantum Cosmology** (**gr-qc** [new](#), [recent](#), [find](#))
- **High Energy Physics – Experiment** (**hep-ex** [new](#), [recent](#), [find](#))
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## Mathematics



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## Cooperation And Liaison Between Universities And Editors (CLUE): Recommendations On Best Practice

[Elizabeth Wager](#), [Sabine Kleinert](#), [Michele Garfinkel](#), [Volker Bähr](#), [Ksenija Baždarić](#),  
[Michael Farthing](#), [Chris Graf](#), [Zoë Hammatt](#), [Lyn Horn](#), [Susan King](#), [Debra Parrish](#),  
[Bernd Pulverer](#), [Paul Taylor](#), [Gerrit van Meer](#)

**doi:** <https://doi.org/10.1101/139170>

This article is a preprint and has not been peer-reviewed [what does this mean?].

**Abstract**

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ASAPbio is a scientist-driven initiative to promote transparency and innovation in life sciences communication.

## News

A promotional graphic for a webcast. It features a green background with a hexagonal pattern. In the center, there is an illustration of a computer monitor displaying the text 'Webcast: Peer Review in the Life Sciences'. The monitor is surrounded by stacks of books, a blue mug, a keyboard, and a mouse. To the right of the monitor, the text 'SAVE THE DATE' is written in large, white, bold letters. Below this, a white box contains the text 'Feb 7-8, 2018'. At the bottom, there are logos for 'hhmi', 'wellcome' (a green 'W' in a white square), and 'ASAPbio' (a red arrow pointing right). To the right of these logos, the text 'Visit [asapbio.org/peer-review](https://asapbio.org/peer-review)' is displayed.

**Webcast:**  
Peer Review in the  
Life Sciences

**SAVE  
THE  
DATE**

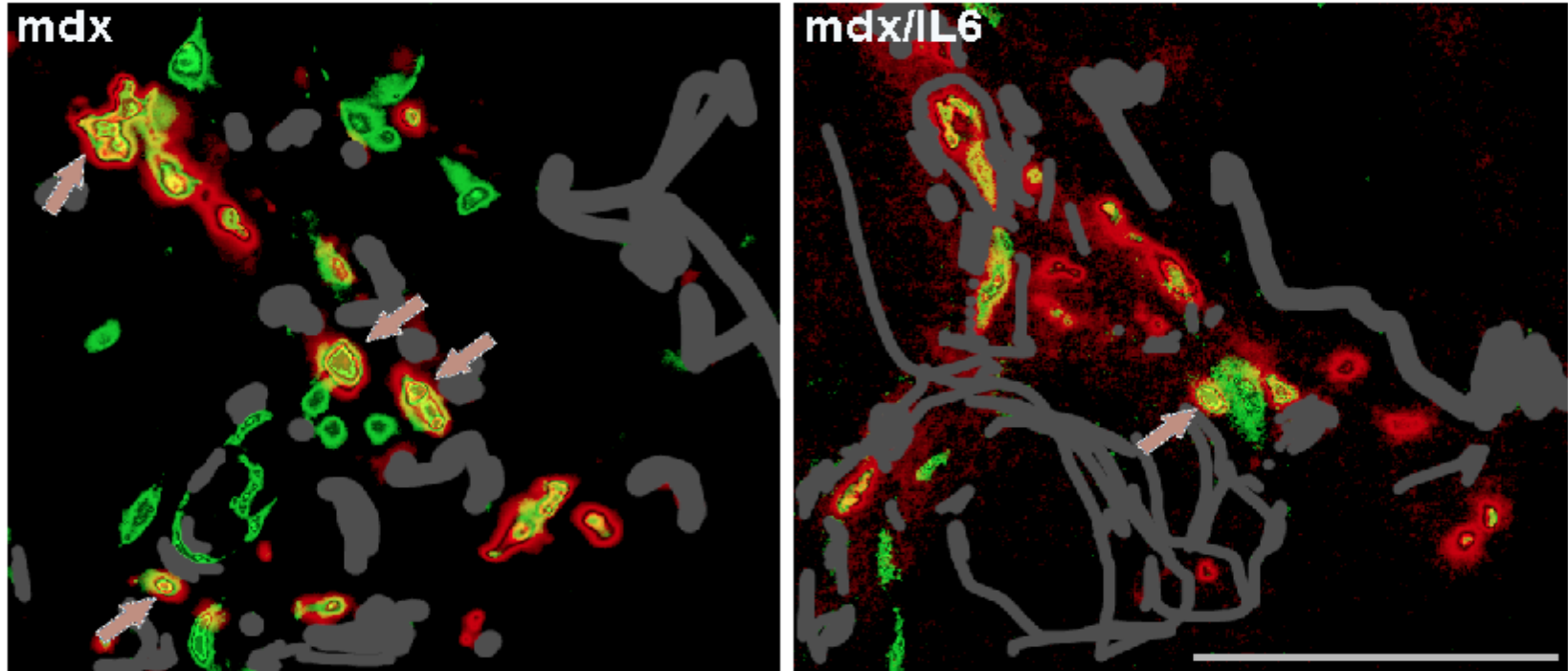
**Feb 7-8, 2018**

hhmi |  |  ASAPbio Visit [asapbio.org/peer-review](https://asapbio.org/peer-review)

Meeting on Transparency, Recognition, and Innovation in  
Peer Review in the Life Sciences

# Fraud or Beautification?

A



EMM submission



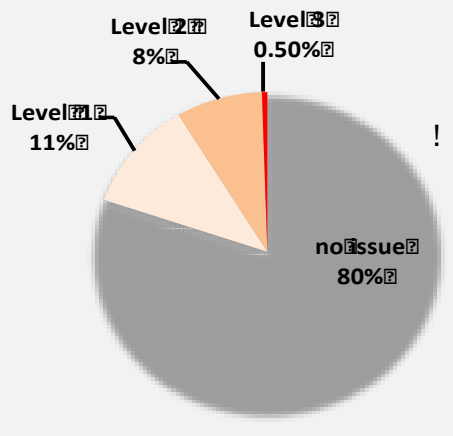
EMBOpress



# Pre-publication image screening

	pre-pub check	% 'issues'
2013	215	20.9
2014	289	20.4

Level	Attributes	Action	%
I	cosmetic aberrations or mistakes with supporting source data and satisfactory author explanation.	allow revision no report to institution	12
II	data 'beautification' and undeclared manipulation that changes conclusions; available source data or new data	may allow revision, may report to institution	8
III	image manipulation with digital obfuscation (splicing, cloning, insertion, selective deletion); no explanation; no source data	reject and report	<0.5



**request source data  
without providing details**

# Need for training

Date: March 11, 2015 1:22:05 PM GMT+01:00

To: Michele Garfinkel <michele.garfinkel@embo.org>



---

Dear Michele,

In addition, I am currently attending the course on research integrity; I am more or less half way to do the test. It is a great course; although I have been doing research for more than 15 years, I was not aware of many important details. I am ashamed in admitting that I have sometimes followed and witnessed incorrect research conduct, without even noticing. Of course I haven't done anything evil, but in the future I will pay more attention. I think that more education, at all levels, is needed to get the research community aware and more attentive to Research Integrity.



# Contributor Roles

A high-level classification of the diverse roles performed in the work leading to a published research output in the sciences. Its purpose to provide transparency in contributions to scholarly published work, to enable improved systems of attribution, credit, and accountability.

## Sub-elements

Consortia Advancing  
Standards in Research  
Administration Information:  
Contributor Roles Taxonomy

1. [Contributor Roles/Conceptualization](#)
2. [Contributor Roles/Data curation](#)
3. [Contributor Roles/Formal analysis](#)
4. [Contributor Roles/Funding acquisition](#)
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[Announcing the Winners of the First ORCID Consortia Awards](#)

**Tue 2018-01-30**  
[Five Key Takeaways from ORCID's First Consortia Workshop](#)

Open Researcher and  
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Consortia  
Workshop

**Michele Garfinkel**

### ORCID ID

 <https://orcid.org/0000-0001-8946-7907>

# What or who needs to be responsible?

- The system?
- The individual?
- “Science”?
- Scientists?

# Asilomar 1975

ROLLING STONE, JUNE 19, 1975

## THE PANDORA'S BOX CONGRESS

By Michael Rogers

**140 Scientists Ask: Now that We Can Rewrite  
the Genetic Code, What Are We Going To Say?**

...sious patterns. The most understood—and also the



