

Open Data and Scientific Integrity in Biological and Biomedical Sciences

Darla P. Henderson, PhD Chief Publications, Open Science, and Research Integrity Officer <u>dhenderson@faseb.org</u>





22 FASEB Member Societies | 110,000+ Scientists

to advance health and well-being by promoting

research and education in biological and biomedical sciences





American Association of Immunologists









The American Society for Bone and Mineral Research





American Society of Human Genetics











SOCIETY for

Glycobiology















Source: Making Sense of Retractions and Tackling Research Misconduct (Petrou, The Scholarly Kitchen)

Volume of retractions







Source: Retraction Watch Database https://www.crossref.org.labs/reaction-watch/

Does China have the highest retraction rate per published article? No - the top spot is claimed by Saudi Arabia with 31.6 retractions per 10,000 papers from 2020 to 2022
 34%
 34%
 34%
 34%

 2014
 2015
 2016
 2017
 2018
 2019
 2020
 2021
 2022

 Vear of retraction

Making Sense of Retractions and Tackling Research Misconduct (Petrou, The Scholarly Kitchen)

<u>China conducts first nationwide review of</u> <u>retractions and research misconduct</u>



Are retractions increasing due to

- More fraud?
- More manipulation of the editorial and peer review process?
- Or better detection methods and broader availability of articles and data?

Common reasons for retraction:

- Data errors
- Duplication
- Lack of confidence in reliability (can result from questionable statistics, analytical choices, or results aren't reproducible in same lab)
- Manipulation of the peer review process
- Paper mills
- Fabricated results or figure manipulation
- Conflict of interest
- Authorship



What is the Impact?

Loss of trust in science



Results Data Images **Authors Peer Reviewers** Journals **Conferences**



Why should biological and biomedical scientists share and make open data connected to journal publications?











transparency

Allows scrutiny of data analysis and interpretation

Improves quality and reproducibility

> Others can replicate findings if data is accessible

Ensures long-term availability and maximizes research value

Provides a path for your research to be of value for a longer time

Catalyzes and accelerates discovery Allows new analyses and integration with other data

Boosts your career

Increases visibility and shows commitment to rigor

Sharing data connected to your scholarly publication brings multiple benefits for science and for you as a scientist.

Openly sharing data that is connected to your journal publications can boost your career



Who sets the requirements for open data and data sharing in biological and biomedical journals?









Requirements often vary by journal, publisher, research field

May be established by commercial publisher or publications staff May be established by scholarly society with volunteer committees or Editorial boards May have communityaccepted standards

Requirements for sharing data in biological and biomedical journals may vary by journal, although there are some community-accepted standards (e.g., MIAPE for proteomics data)

What types of data-related publications requirements are in biological and biomedical science journals?



Where can I best find the data-related publications requirements for a journal?

- 1. Author guidelines (and reviewer guidelines for peer review of data) are frequently found on journal homepage
- 2. Contact the journal editorial office or an editor with specific questions not covered in guidelines
- 3. In some cases, publisher-wide policies are in place

Consider these strategies to enhance data value, visibility, and citation



✓ Use descriptive metadata

Aids in findability, discoverability



✓ Integrate and connect with articles & grants

Cite in each for links, use persistent identifiers to support connections (ORCD, DOIs)



✓ Use accurate, informative, inviting titles

Clear, intuitive, memorable titles add value



Deposit in curated publicly accessible repositories

Where feasible, this increases accessibility of data



Use interoperable, widely available file formats

Where feasible, especially for processed data, use common file formats



✓ When you can, choose licenses that allow reuse

Where feasible, especially for processed data, use common file formats

Other common questions



Data and Copyright





Data and License choice

Data and open access (and public access)



Exceptions to data sharing in publications

Some common exceptions where journals may allow exceptions or alternate arrangements for data sharing requirements with publications include:

- Sensitive or confidential information
- Data privacy concerns (protected species location, human subject data, etc)
 - Intellectual property issues
- Other restrictive concerns such as national security or safety



Resources from FASEB journals that support authors and reviewers with publications data requirements



Author guidelines with specific details for various data types

Variety of research integrity, rigor, and reproducibility checks & tools reviewers

Data availability

e FASEB Journal Welcomes New Early Ca

Started 2024: statements and data Training 118 Early citation required, no Career Researchers more "data available in the peer review for authors, editors, on request" with very process, including limited exceptions how to handle data as a peer reviewer





Now available Integrated no-cost to authors deposition into Dryad as part of submission and peer-review process

Our vision: supporting, encouraging, and making it easy for authors to share FAIR data as part of the publications process.

Practical implementation issues and challenges

- Discuss data anonymization techniques
- Consider phased release approaches







- New challenge today for open data: Gen AI
 - ✓ Protections: Europe has data protections
 - and AI policies; N America and most of
 - rest of world less so -conflicts
 - \checkmark Authors using Gen AI to create fake
 - papers, fake images, fake data

Acknowledgements

Jeannine Botos, PhD

(Sr. Managing Editor, Research Integrity)



Ken Farabaugh, PhD (Managing Editor, FASEB Publications)



Srilaxmi Bhargava

(Peer Review Manager)



Loren Wold, PhD

Editor-in-Chief, FASEB journals

And the entire

FASEB Journal

Editorial team



FASEB Publications Committee | Liliana Schaefer, PhD (Chair) Rita Scheman Luis J. Montaner, DVM Courtney Karner, PhD Nancy Turner, PhD

Denis Baskin, PhD Marcelo Bonini, PhD Early career researchers Dominic Acris, PhD Frederick Ekuban, PhD





Thank you. Questions?

Darla P. Henderson, PhD Chief Publications, Open Science, and Research Integrity Officer <u>dhenderson@faseb.org</u>

