

Peer review & scientific publishing

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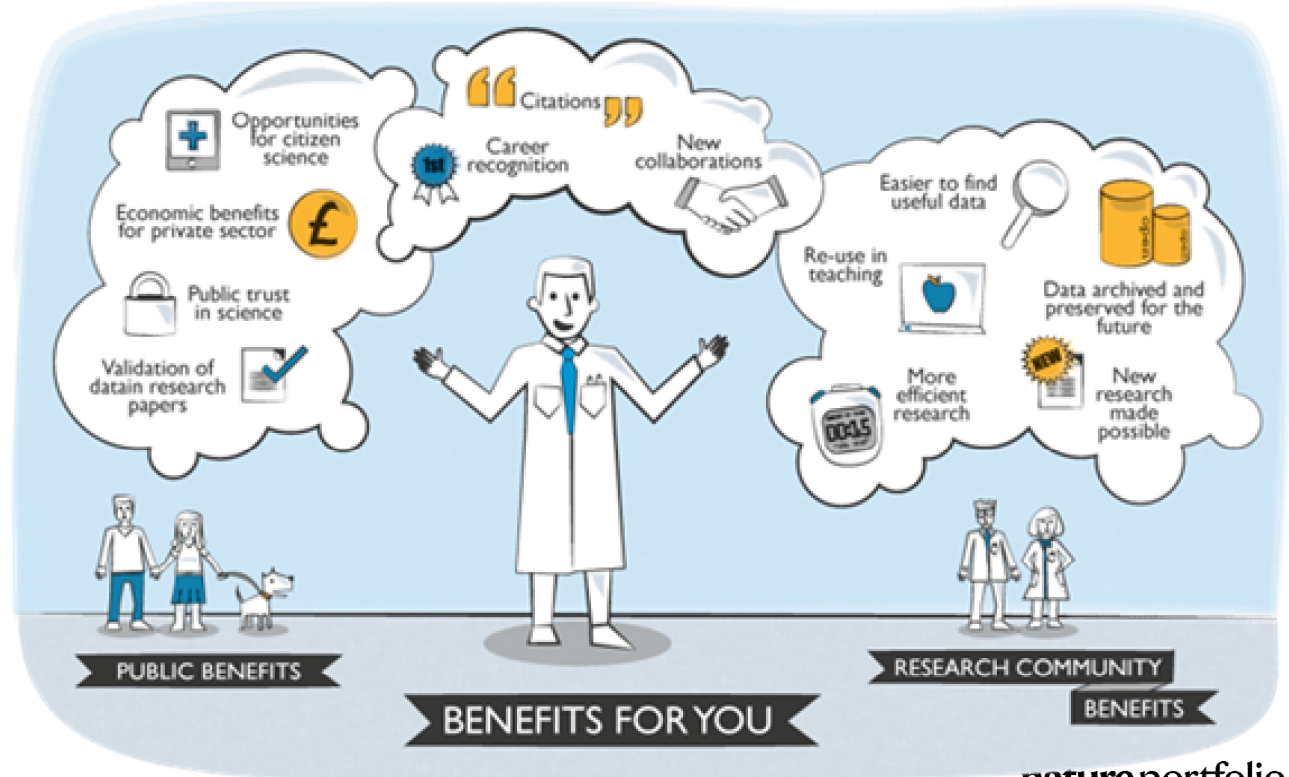
Today's menu

1	Peer review --- what it is, what are the benefits and pitfalls, what are the roles involved
2	Academic publishing --- what journals are out there, publishing models, pros and cons
3	Editorial careers --- what is involved, which journals take on full-time editors, necessary skills

Peer review

1

Why do researchers write and publish papers?



Why do researchers write and publish papers?

“Tall height causes heart disease” says study who found that 10 out of 12 people taller than 1.80m suffered heart attacks.

“Dancing naked under a full Moon causes rain showers within a week”, find scientists who experimented with naked dancing during various phases of the Moon.

“COVID-19 is caused by 5G network towers” says retired football player now working as an electrician.

What is peer review?

“Peer review provides a system to select which research should be brought to the attention of other researchers. It also gives authors feedback to improve the quality of their research papers before publication. The peer-review system judges the validity, significance and originality of the work, rather than who has done it.”

(definition from Sense About Science)



Credit: Flickr/AJ Cann

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1. Validity

Are there any technical flaws? (e.g., $1 + 1 = 3$)

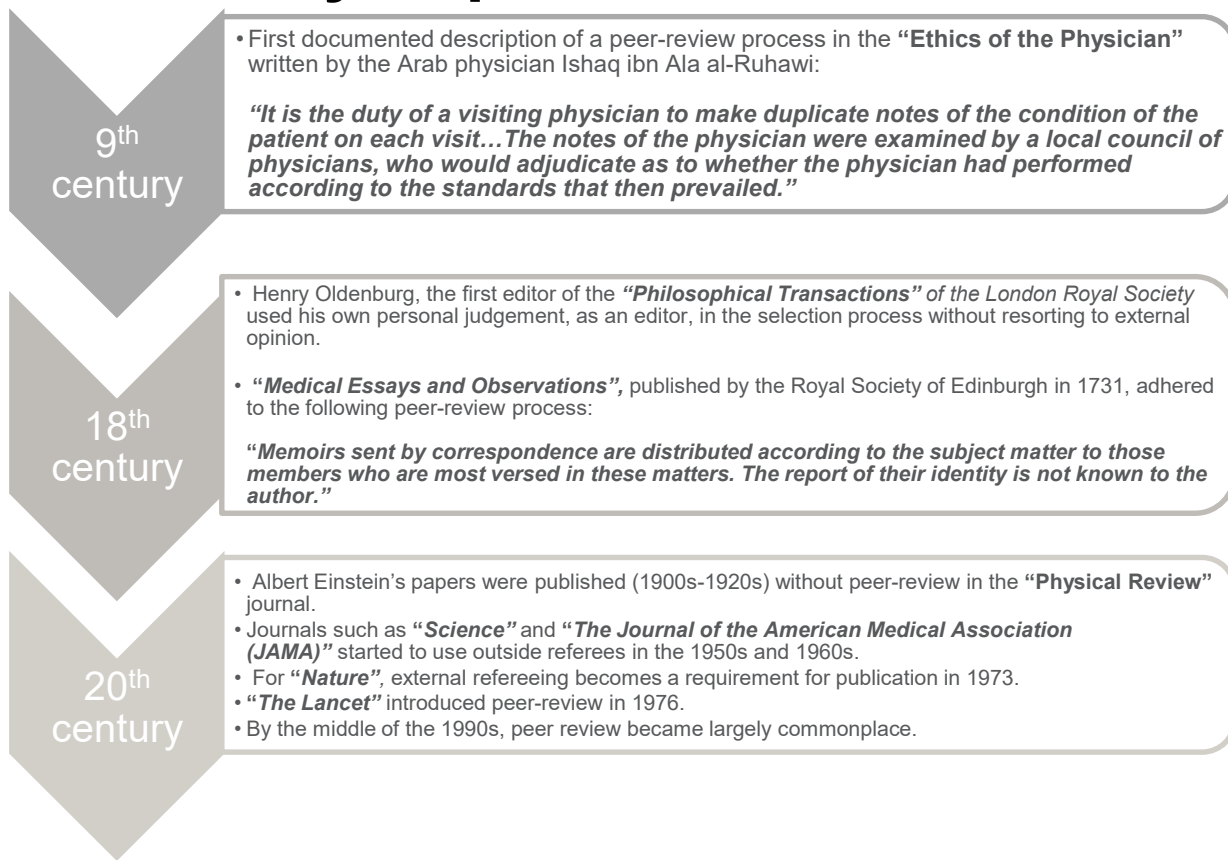
2. Significance

Is the result significant? (e.g., $1 + 1 = 3 \pm 1$)

3. Originality

Is the study telling us something new? (e.g., $1 + 1 = 2$)

A very brief history of peer review

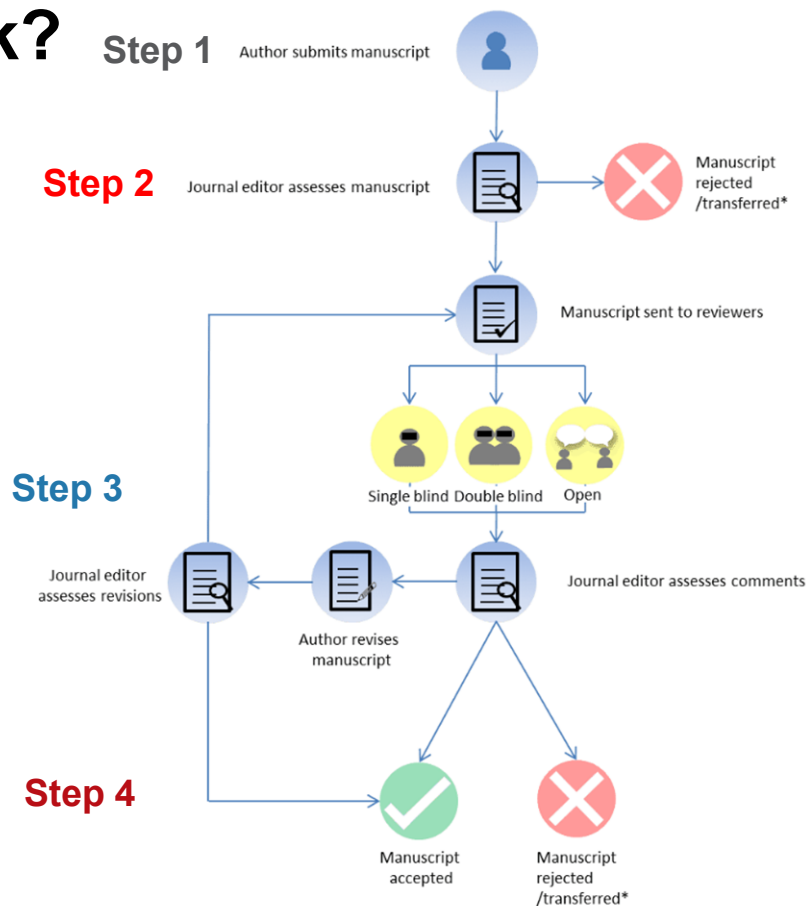


How does peer review work?

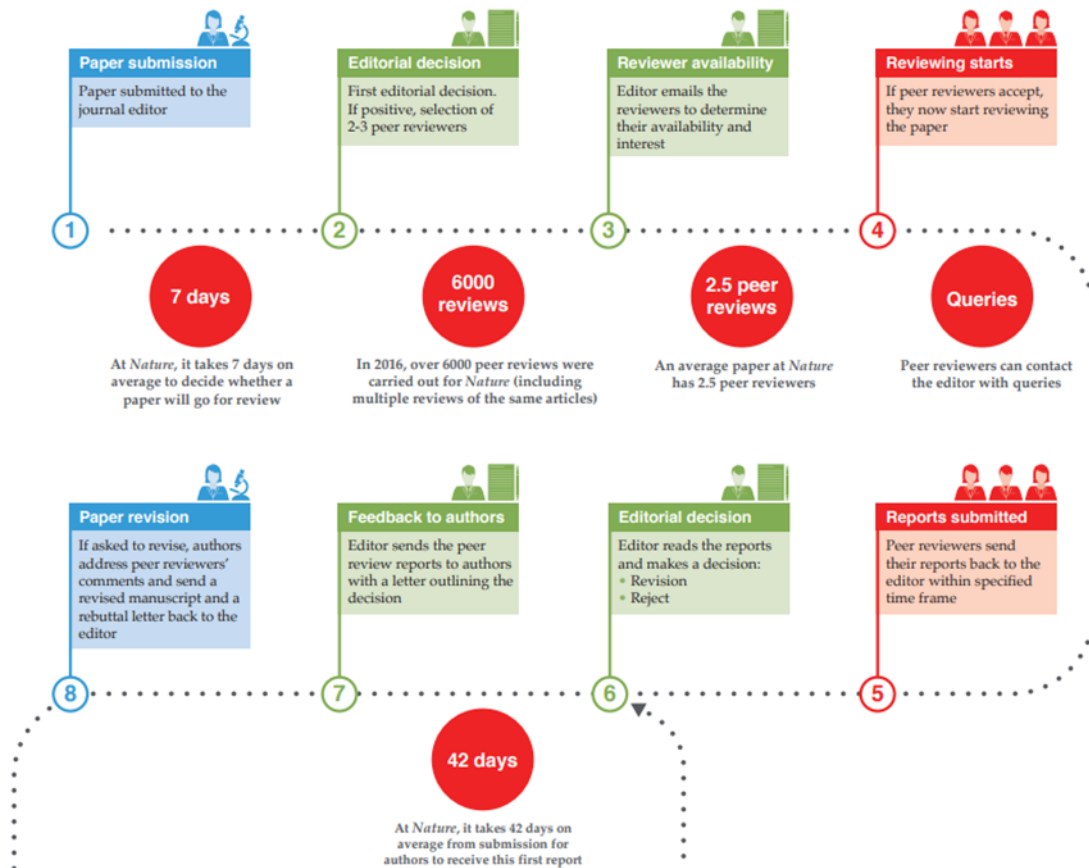
Step 0. Write a manuscript. Useful resources:

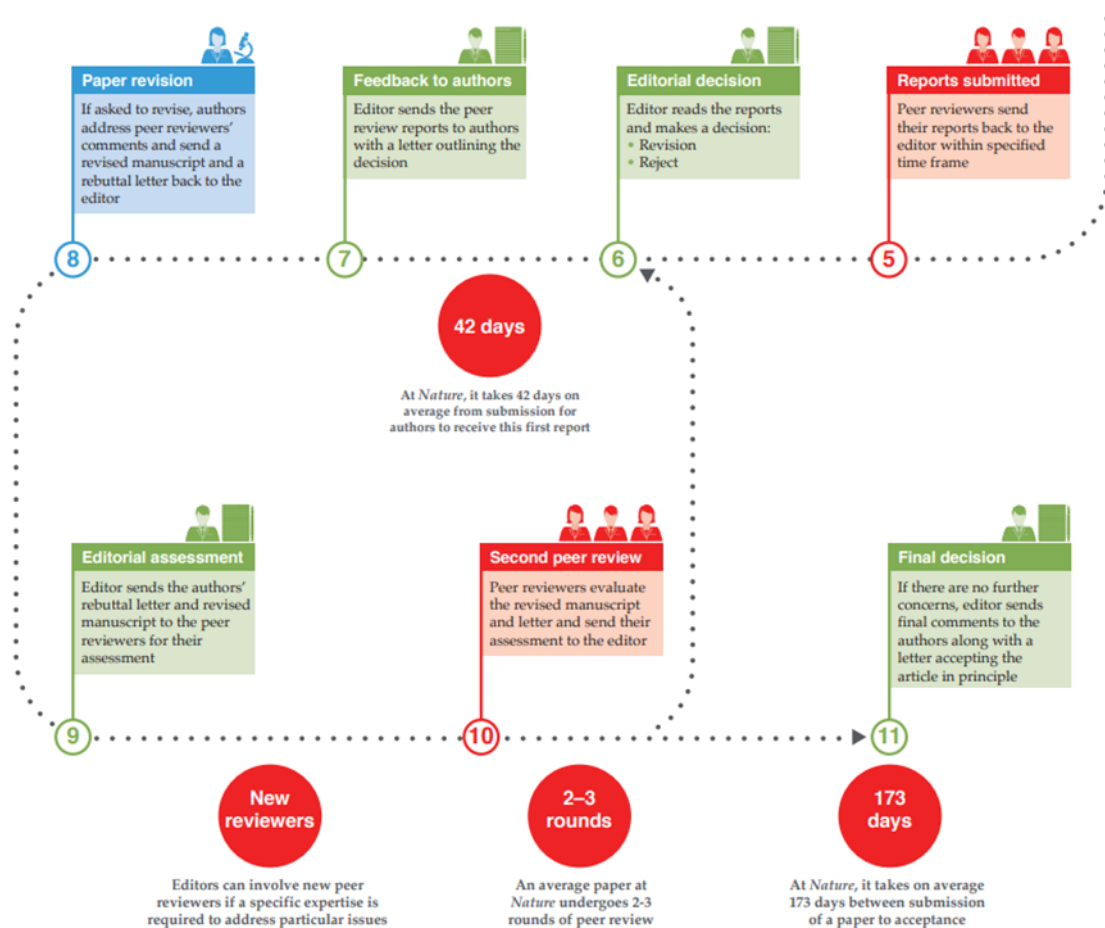
“How to plan your astronomy research paper in ten steps” Chamba, Knapen & Black, *Nat. Astron.* (2022).
<https://www.nature.com/articles/s41550-022-01757-1>

“How to write and develop your astronomy research paper” Knapen, Chamba & Black, *Nat. Astron.* (2022).
<https://www.nature.com/articles/s41550-022-01759-z>



The peer review process explained



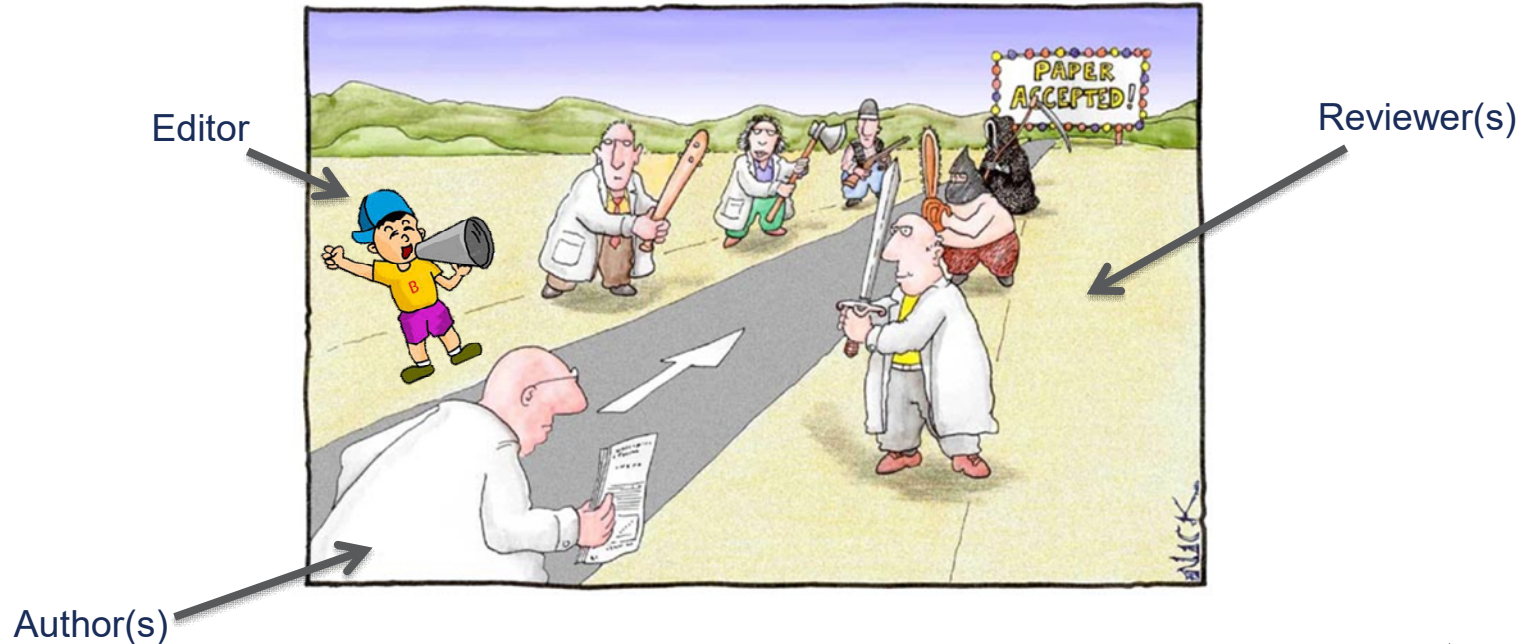


How does peer review work?

Paper submitted



Paper accepted!



Who are the people involved in peer review?

Authors

- Usually scientists affiliated with an academic institution.
- Can be anyone (seniority, affiliation, country, etc., do not matter).
- Someone with an original idea combined with a well-executed project/experiment.



Editor

- Either a full-time editor or a part-time editor / editorial board member.
- Expertise in specific field, typically with experience in research.
- Part-time editors usually senior distinguished academics.



Referees

- Usually scientists affiliated with an academic institution.
- Typically senior researchers with proven track-record in specific sub-discipline.
- Not affiliated or collaborating with any of the authors (conflict of interest).
- Usually not direct competitor of authors.



“Hurdles” between you and publication

The editor(s) is looking for:

- **Original conclusions** (not a repeat)
- **A logical development of the paper** (not a timeline!)
- **A well-written paper** (the audience are not all experts in one field)
- **No ‘hype’** (immediate implications, not overstated or far-flung predictions)
- **A significant advance** (context is important here!) --- for **SELECTIVE** journals

The referee(s) is looking for:

As editor, but also:

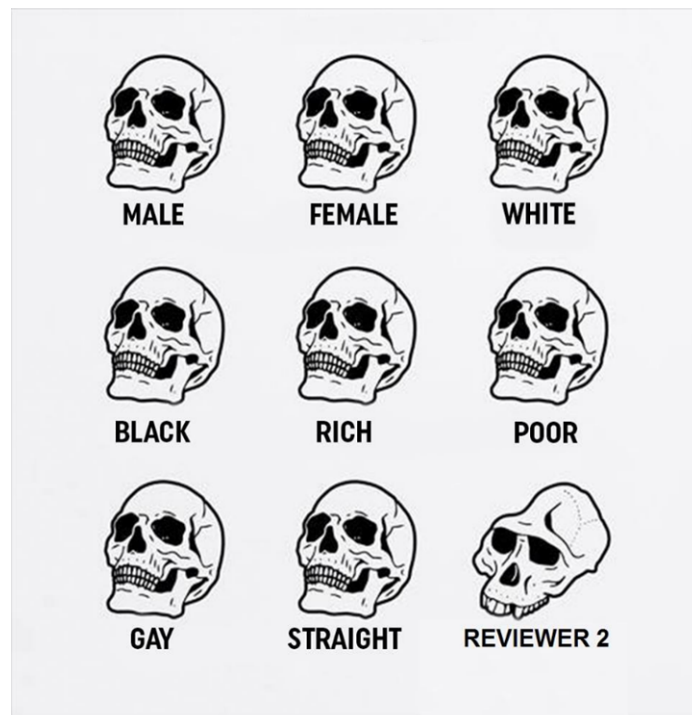
- **Technical/conceptual flaws that prevent publication**
- **Missing relevant research**
- **Immediate interest to people in their research area**

What kind of peer review are we aiming for?

Fair
Objective
Timely
Constructive

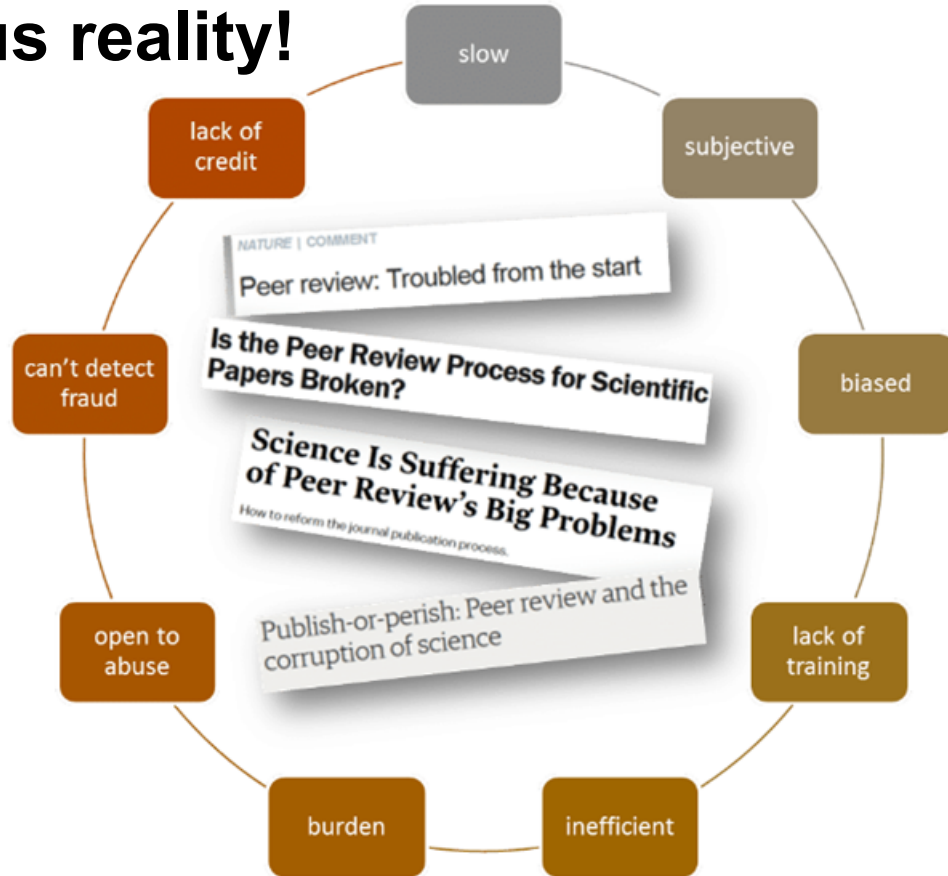
Aim:

- Identify science worth publishing
- Improve papers before publication
- Facilitate science communication
- Maximize science dissemination



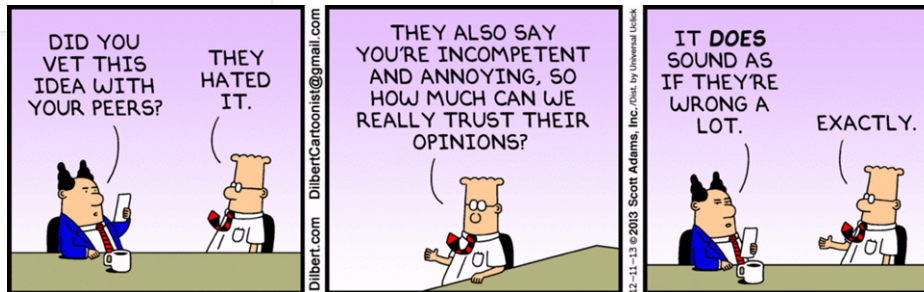
Paolo Gaggero

Theory versus reality!



Types of peer review

Single-blind peer review	+
Double-blind peer review	+
Open peer review	+
Transparent peer review	+
Portable peer review	+
Decoupled peer review	+



Disagreeing with an editor's decision

Most journals will have an appeals process:

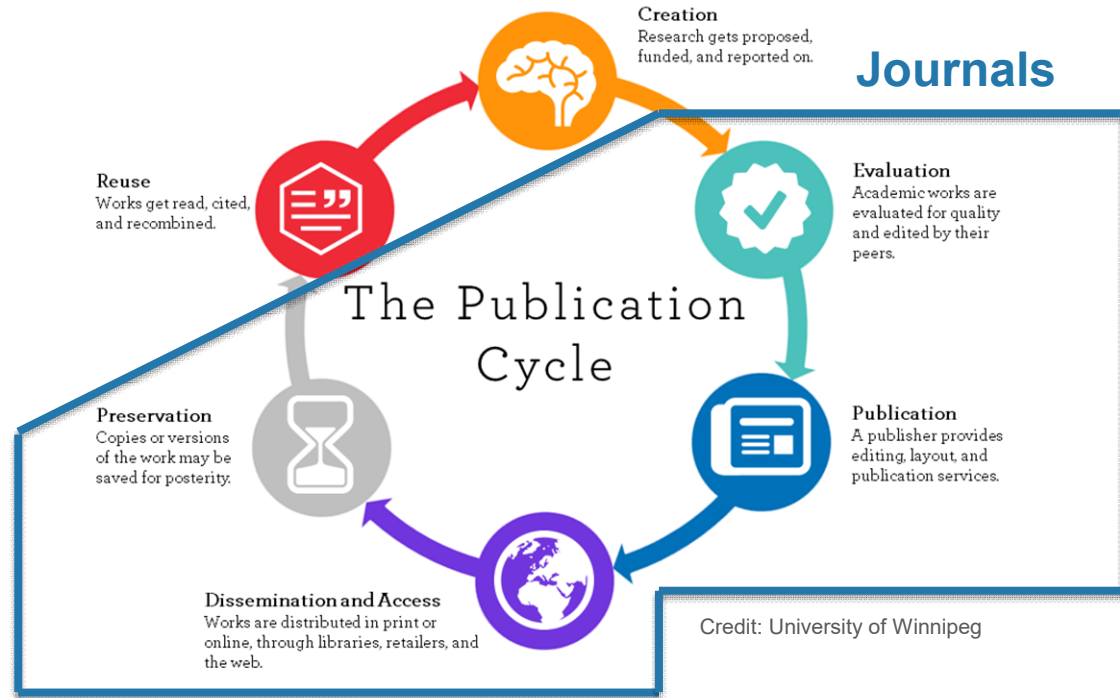
- present a case to the editor (or Chief Editor)
- make clear that the editor/reviewer has overlooked/misunderstood something
- 'celebrity' endorsements generally do not help
- need a strong case to replace a referee
- appealing rejection post-review more difficult

Academic publishing

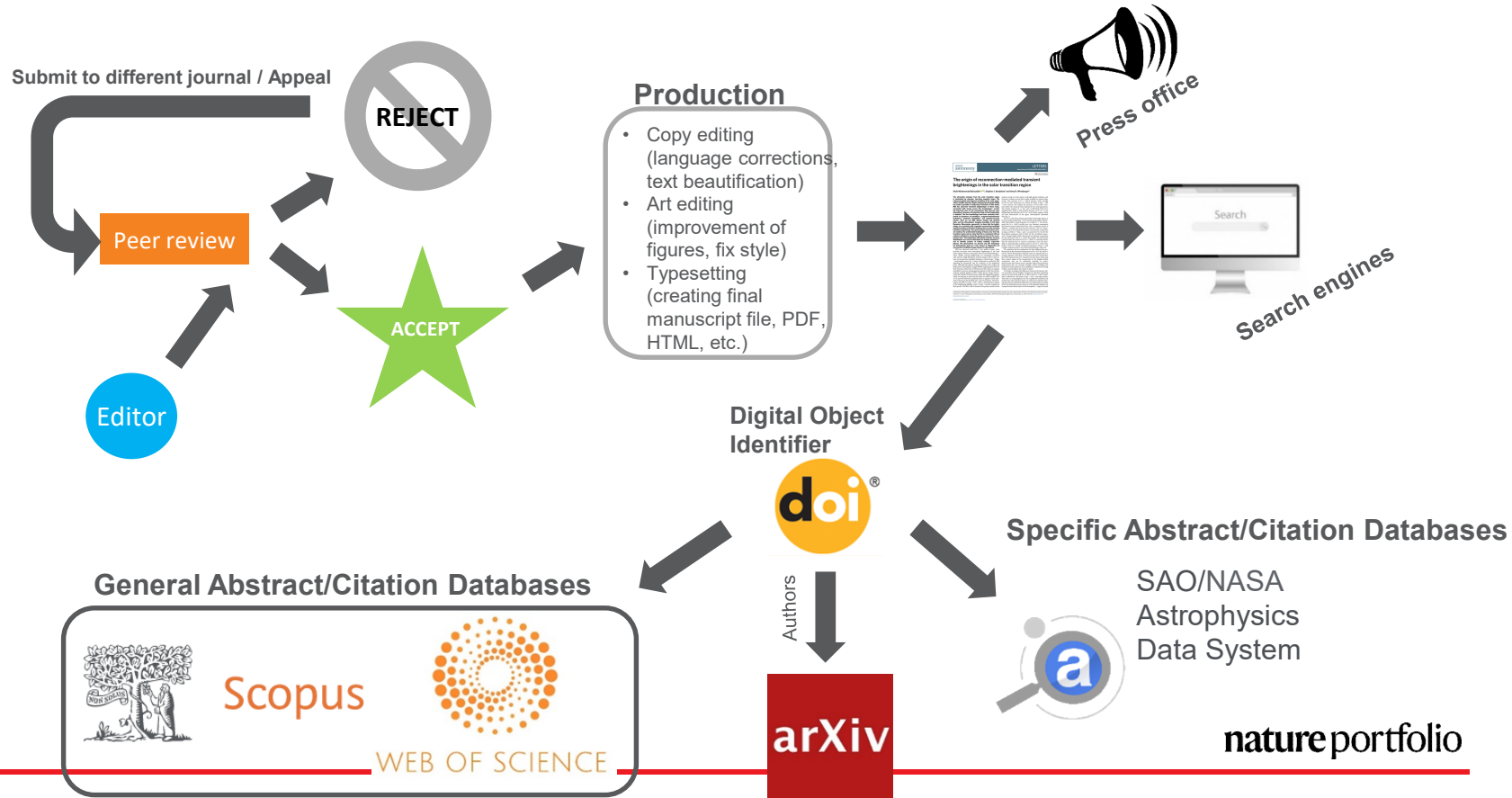
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What is academic publishing?

“**Academic publishing** is the subfield of publishing which distributes academic research and scholarship. Most academic work is published in academic journal article, book or thesis form. Most scientific and scholarly journals, and many academic and scholarly books, though not all, are based on some form of peer review or editorial refereeing to qualify texts for publication. Peer review quality and selectivity standards vary greatly from journal to journal, publisher to publisher, and field to field.” (definition from Wikipedia)



How do journals make articles discoverable?



What is academic publishing?

Every step of the publication chain costs money.



Publishing costs

- Editorial & production (salaries of editors, copyeditors, art editors, typesetters) who work on manuscripts.
- Software/hardware development and maintenance.
- Overhead costs (staff supporting editorial, web, legal, etc.).

Publishing revenues

- Institutional subscription
- Publication fees
- Other author services
- Advertisements

Who are the academic publishers?



ELSEVIER



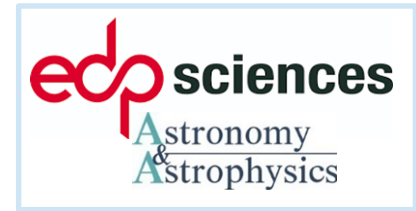
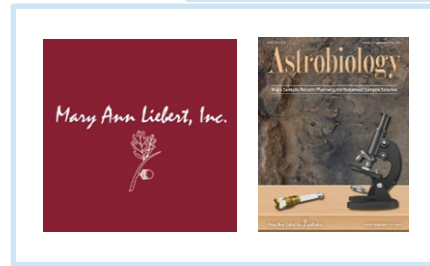
OXFORD
UNIVERSITY PRESS

SPRINGER
NATURE



nature portfolio

Who are the major publishers in astronomy?



nature portfolio

Considerations when choosing a journal

So who do you send your paper to?

Original research or review?

Topic and scope:

All fields

nature **Science**

Astronomy & Planetary

nature astronomy Astronomy & Astrophysics MONTHLY NOTICES
— Royal Astronomical Society

THE ASTROPHYSICAL JOURNAL LETTERS

Planetary ICARUS International Journal of Solar System Studies

Solar Solar Physics

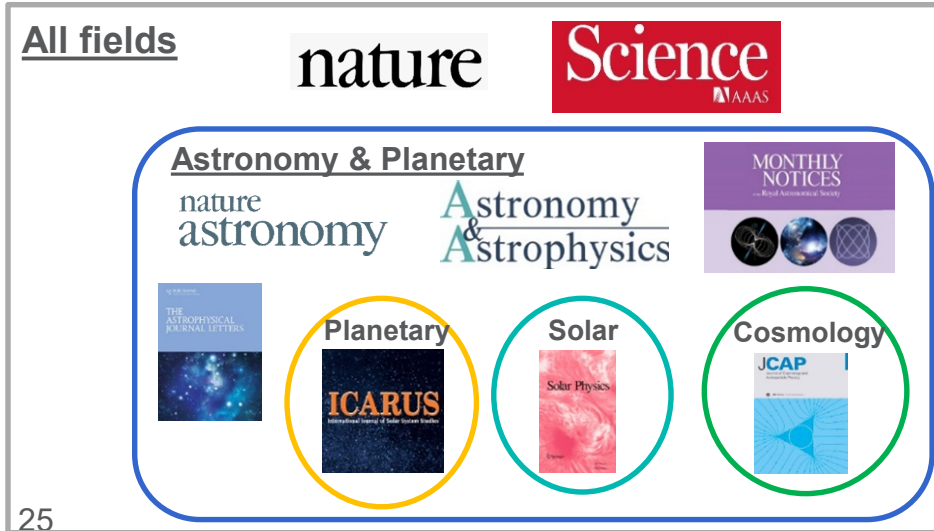
Cosmology JCAP Journal of Cosmology and Particle Physics

Considerations when choosing a journal

So who do you send your paper to?

Original research or review?

Topic and scope:



Other things to think about:

- What is the **impact** of the journal (correlates with selectivity)?
- Which **audience** do you want to reach (general, specific, cross-disciplinary)?
- **Subscription vs. open access**
- **Cost** to publish (page/figure charges, processing fees, etc.)
- **Speed**

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Impact

“Journal impact factor”

1. Nature Astronomy (15.647)
2. Astrophysical Journal Supplement Series (9.200)
3. Astrophysical Journal Letters (8.811)
4. Journal of Cosmology & Astroparticle Physics (7.280)
5. Publications of the Astronomical Society of Australia (6.510)
6. Astronomy & Astrophysics (6.240)
7. Publications of the Astronomical Society of the Pacific (5.842)
8. Astrophysical Journal (5.521)
9. Astronomical Journal (5.491)
10. Monthly Notices of the RAS (5.235)

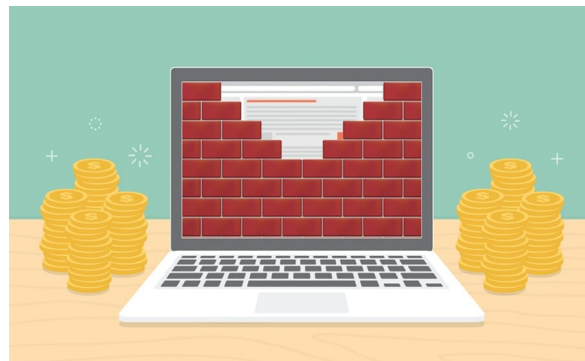
“Scopus Citescore”

1. Nature Astronomy (16.0)
2. Astrophysical Journal Supplement Series (14.7)
3. Astrophysical Journal Letters (13.8)
4. Monthly Notices of the RAS: Letters (10.6)
5. Publications of the Astronomical Society of the Pacific (10.1)
6. Astronomy & Astrophysics (9.9)
7. Journal of Cosmology & Astroparticle Physics (9.7)
8. Astronomical Journal (9.6)
9. Monthly Notices of the RAS (9.6)
10. Astrophysical Journal (9.5)

“Scimago journal score”

1. Astrophysical Journal Supplement Series (3.084)
2. Nature Astronomy (2.647)
3. Astrophysical Journal Letters (2.636)
4. Publications of the Astronomical Society of the Pacific (1.978)
5. Astronomy & Astrophysics (1.918)
6. Astronomical Journal (1.905)
7. Astrophysical Journal (1.901)
8. Monthly Notices of the RAS: Letters (1.705)
9. Monthly Notices of the RAS (1.678)
10. Publ. Astron. Soc. of Japan (1.582)

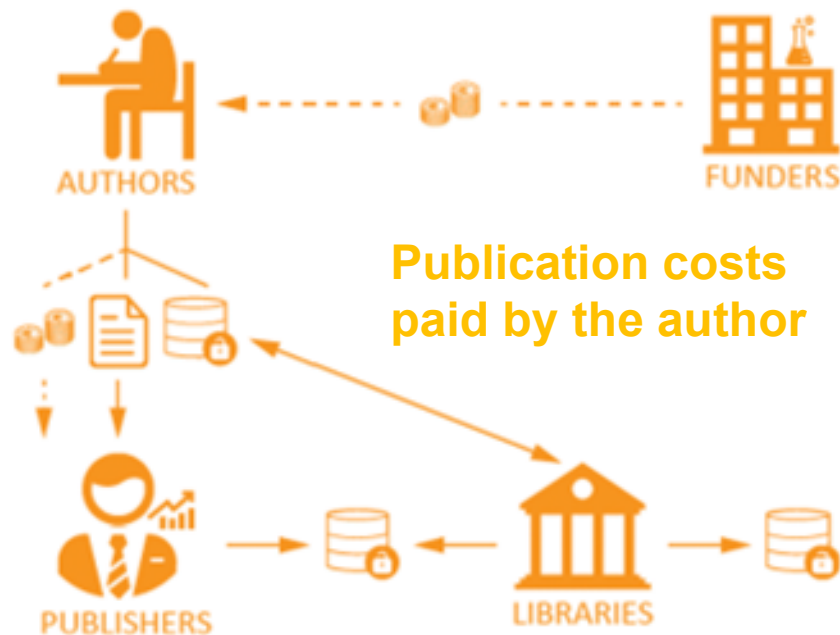
Cost and choice of publishing models



The open access model
&
the subscription model

Some publishing models

The subscription model & Open Access (OA) model



Some publishing models

The subscription model & Open Access (OA) model



Subscribe
to Open
Astronomy
&
Astrophysics

(usually free* to publish
but k\$ to read)



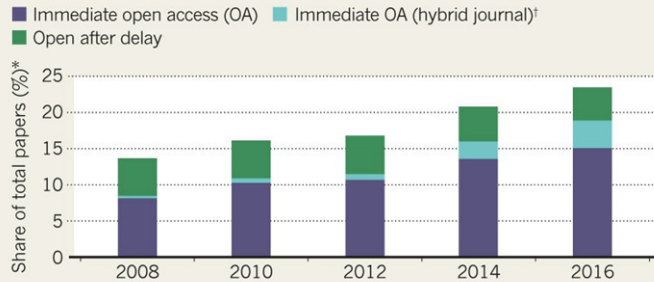
(usually k\$ to publish,
but free to read)

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Benefits of open access

GROWTH OF OPEN ACCESS

In 2016, journals made 18.9% of papers open immediately on publication, up from 11.5% in 2012.



*From Scopus database. †Subscription journals with OA option.

©nature



Assessing the open access effect for hybrid journals

Springer Nature and Digital Science have released a new comparative study of articles published in Springer hybrid journals

A significant advantage for open access (OA) articles

On average:

4x
more
downloads

of OA articles than
non-OA articles



1.6x
more
citations

of OA articles than non-OA
articles across all subjects



2.5x
more Altmetric
attention

OA articles attracted
1.9x more news mentions and
1.2x more policy mentions



We performed two multi-disciplinary studies:



1. Global sample

73,925 journal articles:
3,004 OA articles
70,921 non-OA articles



2. UK case study

9,114 journal articles:
3,087 OA articles
6,027 non-OA articles

Modelled* results also found a significant advantage for OA:

296%
more downloads

36%
more cumulative
citations

219%
more news mentions

166%
more policy mentions

*Negative Binomial Generalised Linear Models and Negative Binomial Generalised Linear Mixed Models used based on models run in R (package lme4).

We controlled for:



Institutional reputation
based on the
proxy of a
university ranking



Journal Impact Factor
as a proxy
for perceived
journal prestige



Geographic region



Subject field

What do you choose?

Different journals adopt different business models and therefore have different costs to you as an author

- Subscription journals (e.g., Science)
- Open access journals (e.g., ApJ, PSJ, Galaxies)
- Hybrid journals (e.g., Nature journals, MNRAS)

Do you get a free choice?

- Funders are increasingly **mandating** open access publication.
- If this is the case, check that the chosen journal is compliant with funder mandate.
- If this is the case, the funder should pay the OA charge (article publishing charge or APC)

A word of caution: predatory publishers/journals

Predatory publishing is an exploitive [academic publishing](#) business model that involves [charging publication fees](#) to authors without checking articles for quality and legitimacy and without providing the other editorial and publishing services that legitimate [academic journals](#) provide. They are regarded as predatory because scholars are tricked into publishing with them, although some authors may be aware that the journal is poor quality or even fraudulent. New scholars are especially at risk of being misled by predatory publishers. (definition from Wikipedia)

<input type="checkbox"/> ☆ ➤	Open Journal of Sta.	Special Issue on "Applied Statistics" - Deadline: December 29th, 2020 - Open Jour
<input type="checkbox"/> ☆ ➤	Merch Mother	9 Days To Order Your Xmas Presents 📦 Locals Collections Online Now - 12th Dec
<input type="checkbox"/> ☆ ➤	J Editor	Dear Karouzos, Marios: We Sincerely Invite You to Pub-lish Your Manu-scripts wit

BEALL'S LIST OF POTENTIAL PREDATORY JOURNALS AND PUBLISHERS

PUBLISHERS • STANDALONE JOURNALS • VANITY PRESS • CONTACT • OTHER

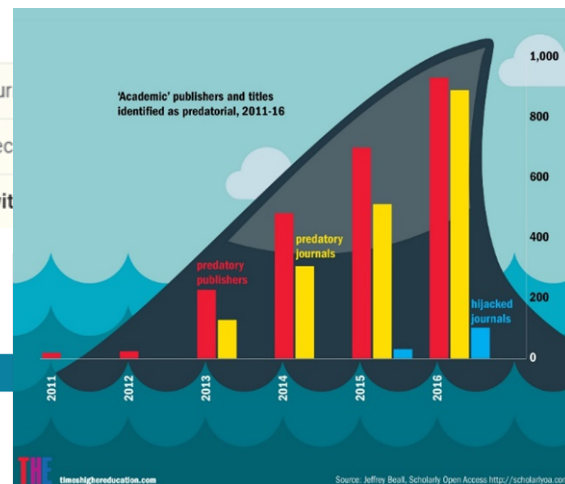
🔍 Search for publishers (name or URL)

Potential predatory scholarly open-access publishers

Instructions: first, find the journal's publisher – it is usually written at the bottom of the journal's webpage or in the "About" section. Then simply enter the publisher's name or its URL in the search box above. If the journal does not have a publisher use the [Standalone Journals list](#).

Useful pages

[List of journals falsely claiming to be indexed by DOAJ](#)



Further resources

Peer review course:

<https://masterclasses.nature.com/courses/205>

Email:

Paul.Woods@nature.com

Twitter:

@dr_paul_woods
@Nature Astronomy

Paper writing tips:

<https://www.nature.com/articles/s41550-022-01757-1>

Slack:

@Paul Woods

<https://www.nature.com/articles/s41550-022-01759-z>