INFORMATION LITERACY

aka How to survive your PhD

800 1222·2022 ANNI

UNIVERSITÀ DEGLI STUDI DI PADOVA

February 2025

SBA SISTEMA BIBLIOTECARIO DI ATENEO

Learning outcomes

After attending this module, you'll learn about:

Scholarly communication
The publication process:

- choosing the journal
- article and submission requirements
- peer review

Scholarly communication

What is scholarly communication?

Scholarly Publication System, courtesy University of Winnipeg

The functions of scientific journals

Registration: third-party establishment by date-stamping of the author's precedence and ownership of an idea

Dissemination: communicating the findings to its intended audience

Certification: ensuring quality control through peer review and rewarding authors

Archival record: preserving a fixed version of the paper for future reference and citation

One article different versions:

PRE-PRINT: Any version of a journal article that is considered by the author to be of sufficient quality to be submitted for formal peer review by a second party.

POST-PRINT: The version of a journal article that has been accepted for publication in a journal, **after some review process**.

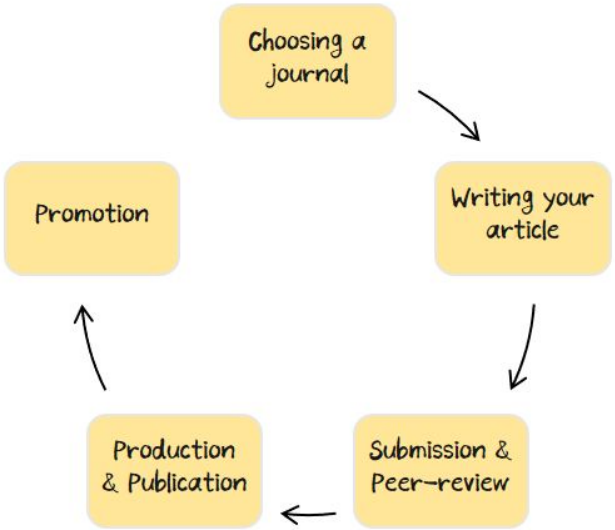
FINAL VERSION: also known as Publisher's Version (or VoR-Version of record)

https://aoasg.files.wordpress.com/2013/12/hefce-publishing.jpg

Publication Process steps

1. Research your publishing options.

   Take the time to explore the journals in your field, to choose the best fit for your research
2. Draft your article
3. Read the instructions for authors
4. Make your submission
5. Peer review
6. Making revisions
7. Your article is accepted: publication!

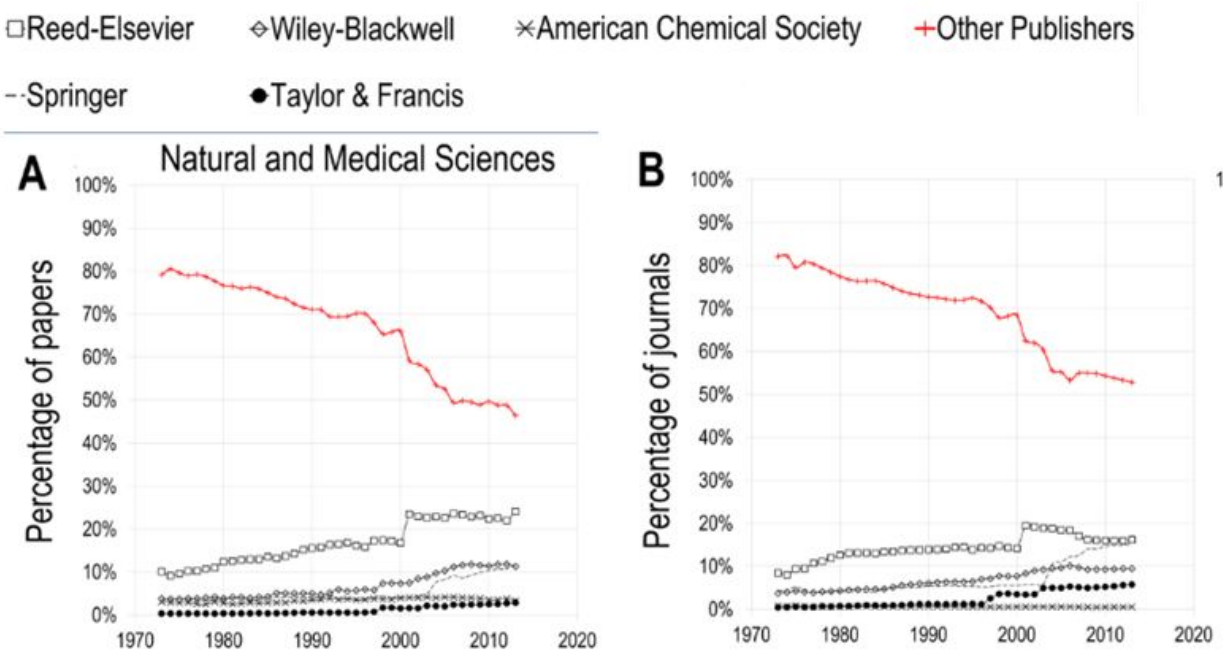


https://library.unist.ac.kr/en/research/scholarly_publishing/

Publication Process: choosing the journal

The STM journals market - who

Large commercial publishing houses increase their control of the science system



http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0127502

The STM journals market - price

TABLE 1: AVERAGE 2024 PRICE FOR SCIENTIFIC DISCIPLINES

SUBJECT	AVERAGE COST PER TITLE
Chemistry	$7,754
Physics	6,138
Engineering	5,258
Food Science	4,550
Biology	4,542
Geology	4,082
Technology	3,920
Botany	3,422
Geography	3,036
Health Sciences	2,918
General Science	2,912
Agriculture	2,700
Astronomy	2,693
Zoology	2,651
Math & Computer Science	2,644

SOURCE: *LJ* PERIODICALS PRICE SURVEY 2024

https://www.libraryjournal.com/story/oa-ai-and-dei-triple-advantage-or-triple-threat-periodicals-price-survey-2024

Research your publishing options:

What to consider when choosing a journal:

- Look at lists of journals in your subject area or discipline
- Read the journal's aims and scope to make sure it is a match with your research
- Use journal metrics to understand the impact of a journal
- Think about the journal policy: traditional publishing or Open Access

Choosing the journal:
Journal and article metrics

Journal reputation: evaluation of a scientific research

Qualitative assessment

before publication: editorial board of the journal, referees after the publication: scientific community

Quantitative assessment

analysis of bibliographic citations (Bibliometric indicators)

Other criteria

congress participation as invited speaker, awards, grants, patents, software etc.

Journal reputation: evaluation of a scientific research

What is bibliometrics?

It is the branch of library science concerned with the application of mathematical and statistical analysis to bibliography; the statistical analysis of books, articles, or other media of communication. It produces a quantitative analysis that can help to make decisions about where to publish a research or to get information about the impact of published research.

Why to use bibliometric indicators?

We can use bibliometric indicators to get to know:

- what are the best journals in the field of my discipline?
- who is citing my articles? how many times have I been cited?
- in which journal should I publish?

Journal reputation: evaluation of a scientific research

Bibliometric indicators

Citation analysis is a way of measuring the relative importance or impact of an author, an article or a publication by counting the number of times that author, article, or publication has been cited by other works.

> *«… the number of citations received by a publication is seen as a quantitative measure of the resonance and impact that this publication has created in the scientific community».*

Impact factor *(IF)* :
Measure the impact of a journal

Hirsch Index *(H-Index)*:
Measure the impact of an author.

…and many others!

Journal reputation: evaluation of a scientific research

Impact factor (IF)

The impact factor (IF) is used to compare different journals within a specific disciplinary field.

Impact factor is a measure of the frequency with which the average article in a journal has been cited in a particular year. It is used to measure the importance or **rank** of a journal by calculating the times its articles are cited.

It is a copyrighted index, and can be consulted only through the products of the publisher Clarivate Analytics, and in particular the Journal Citations Reports database

the value of a bibliometric indicator depends on its use: IF is used also for the VQR

Journal reputation - Researcher metrics

Hirsch Index (h- index)

The *h*-index quantifies the prolificacy and impact of scientists' work, based on the number of their publications and the number of citations received.

The *h*-index calculators are easily available on the net and are accessible through:
Web of Science , Scopus, Google Scholar

Pros & Cons
H index is one of the main tool to evaluate the "importance" of an author
but the way is calculated penalizes "young" researchers who have just started publishing

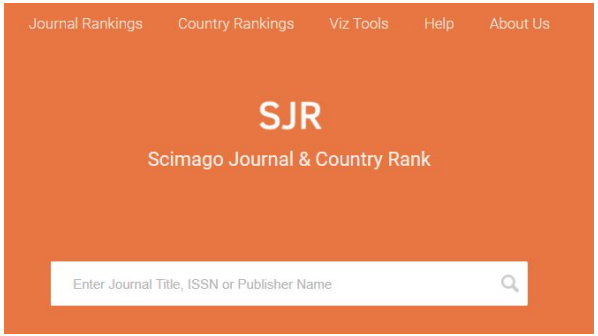
https://elearning.unipd.it/sba/mod/lesson/view.php?id=417&pageid=1715

SCImago Journal Rank

The SCImago Journal & Country Rank is a publicly available portal that includes the journals and country scientific indicators developed from the information contained in the Scopus® database.

The **SCImago Journal Rank** (**SJR**) indicator is a measure of the scientific influence of scholarly journals that accounts for both the number of citations received by a journal and the importance or “prestige” of the journals where the citations come from.

It is a numeric value indicating the average number of weighted citations received during a selected year per document published in that journal during the previous three years.



Journal reputation

Be careful and keep in mind that a quantitative measure not always can give you a clear insight of the real prestige of a journal.

For example a journal that publish mainly reviews will have obviously a huge amount of citations, on the other hand a journal that is very selective during its peer review process will have less article published but maybe of higher quality.

Still it can be a useful tool to understand the scientific journal market and which are the most important journals of a specific field.

Chemistry journals
Pharmacological sciences journals
Physics journals

SCImago Journal Rank - Chemistry Journals

	Title	Type	↓ SJR	H index	Total Docs. (2023)	Total Docs. (3years)	Total Refs. (2023)	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc. (2023)	%Female (2023)	
1	Chemical Reviews	journal	17.828 Q1	833	271	851	115878	50519	819	49.76	427.59	30.50	
2	Nano Research Energy	journal	14.707 Q1	32	46	35	4815	2160	34	61.71	104.67	36.44	
3	Nature Materials	journal	14.231 Q1	558	306	834	9499	20730	593	24.08	31.04	24.85	
4	Chemical Society Reviews	journal	12.511 Q1	635	252	983	61439	44032	979	38.71	243.81	32.40	
5	eScience	journal	12.288 Q1	44	60	79	4858	3323	78	42.06	80.97	33.06	
6	Nature Reviews Chemistry	journal	11.603 Q1	109	107	283	7360	5690	172	19.84	68.79	25.58	
7	ACS Energy Letters	journal	7.202 Q1	195	606	1443	30127	28217	1382	18.42	49.71	30.17	
8	Nature Chemistry	journal	6.940 Q1	291	280	662	10961	8948	511	12.55	39.15	26.86	
9	Electrochemical Energy Reviews	journal	6.791 Q1	62	34	93	8854	2587	93	26.49	260.41	29.13	
10	Chem	journal	6.556 Q1	144	281	798	14147	12069	634	12.19	50.35	29.08	

https://www.scimagojr.com/journalrank.php?area=1600&type=j

Chemistry Journals

Berichte der Deutschen chemischen Gesellschaft
founded in 1868 in Berlin

Journal of the Chemical Society
founded in 1878 in London

Journal of the American Chemical Society
founded in 1879 at Easton (NY)

Chemistry Journals

Journal of the American Chemical Society (ACS) and *Angewandte Chemie* (Gesellschaft Deutscher Chemiker) are the most prestigious chemistry journals.

JACS has the highest number of citations among chemistry journals.

Nature Chemistry, born in 2009, is growing fast in prestige.

"Angewandte Chemie rejects 70% of received manuscripts"
(Peter Gölitz, editor-in-chief of Angewandte Chemie).
Angewandte Chemie - International edition is in the 15th place in Scimago journal ranking 2024

13	Advanced Functional Materials	journal	5.496 Q1	402	3240	6403	227642	125554	6369	18.99	70.26	33.52
14	Journal of the American Chemical Society	journal	5.489 Q1	703	2986	7482	175673	110449	7464	14.13	58.83	30.11
15	Angewandte Chemie - International Edition	journal	5.300 Q1	640	4075	10226	249418	161620	10129	15.74	61.21	32.31

Chemistry Journals

Journal system in chemistry has been described as a 3-layered structure

- publication in *Science* or *Nature*
- publication in *JACS* or *Angewandte Chemie*
- publication in chemistry journals specific to a subfield of chemistry or to a narrower specialized area
  (e.g. *Molecular Crystals, Chemical Vapor Deposition, Journal of Biomolecular NMR, Applied Spectroscopy*, etc.)

(Walden & Lagoze, 2009)

When choosing where to submit your article take into consideration the kind of article a journal publish

Pharmacological sciences journals

	Title	Type	↓ SJR	H index	Total Docs. (2023)	Total Docs. (3years)	Total Refs. (2023)	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc. (2023)	%Female (2023)	
1	Nature Reviews Drug Discovery	journal	22.399 Q1	391	239	731	8584	13091	153	19.72	35.92	34.15	
2	Pharmacological Reviews	journal	6.050 Q1	254	35	102	13259	2111	100	19.42	378.83	33.99	
3	Drug Resistance Updates	journal	4.665 Q1	132	74	76	6493	1477	75	17.53	87.74	34.58	
4	Protein and Cell	journal	4.412 Q1	94	83	257	551	2693	152	12.12	6.64	42.80	
5	Annual Review of Pharmacology and Toxicology	journal	3.957 Q1	224	32	103	4593	1346	103	11.26	143.53	35.63	
6	Molecular Therapy	journal	3.736 Q1	209	288	830	15752	7824	717	9.43	54.69	42.79	
7	Journal for ImmunoTherapy of Cancer	journal	3.728 Q1	117	445	1590	19408	14743	1571	8.71	43.61	42.99	
8	Nano Today	journal	3.483 Q1	175	275	635	24164	9420	605	13.75	87.87	39.78	
9	Advanced Drug Delivery Reviews	journal	3.411 Q1	366	198	737	40639	12569	702	15.21	205.25	40.22	
10	Trends in Pharmacological Sciences	journal	3.232 Q1	244	108	297	6396	3109	284	10.30	59.22	37.31	

https://www.scimagojr.com/journalrank.php?type=j&area=3000

Pharmacological sciences journals

Pharmacological Reviews
founded in America in 1949

Journal of Medicinal Chemistry
established in 1959 as the *Journal of Medicinal and Pharmaceutical Chemistry*
(name changed in 1963)

Nature Reviews Drug Discovery
publication of Nature established in 2002

Pharmacological sciences journals

Pharmacological Reviews is published by the American Society for Pharmacology and Experimental Therapeutics, it presents important review articles covering the broad spectrum of pharmacological research

Nature Reviews Drug Discovery In addition to the highest-quality reviews and perspectives covering a broad scope, each issue includes news stories that investigate the hottest topics in drug discovery and concise updates on the latest advances in the field.

Journal of Medicinal Chemistry is a peer-reviewed medical journal covering research in medicinal chemistry and it is published by the American Chemical Society

Physics journals

	Title	Type	SJR	H index	Total Docs. (2023)	Total Docs. (3years)	Total Refs. (2023)	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc. (2023)	%Female (2023)	
1	Reviews of Modern Physics	journal	16.061 Q1	388	36	103	14097	4303	99	42.66	391.58	14.94	
2	Advances in Physics	journal	14.780 Q1	123	0	13	0	374	11	12.56	0.00	0.00	
3	Nature Nanotechnology	journal	14.577 Q1	419	262	637	10044	17562	466	27.42	38.34	28.93	
4	Nature Materials	journal	14.231 Q1	558	306	834	9499	20730	593	24.08	31.04	24.85	
5	Nature Electronics	journal	11.667 Q1	109	196	507	5029	9336	303	16.04	25.66	24.33	
6	Nature Photonics	journal	11.249 Q1	385	209	516	6870	10826	362	19.59	32.87	20.68	
7	Living Reviews in Relativity	journal	10.188 Q1	93	5	14	4669	473	14	25.80	933.80	25.50	
8	Annual Review of Condensed Matter Physics	journal	9.821 Q1	87	19	55	3059	1219	55	15.56	161.00	15.38	
9	Astronomy and Astrophysics Review	journal	9.664 Q1	78	5	24	2659	622	24	26.00	531.80	16.67	
10	Advances in Optics and Photonics	journal	8.735 Q1	88	14	41	4278	1198	38	25.25	305.57	12.66	

https://www.scimagojr.com/journalrank.php?type=j&area=3100

Physics journals

Nature
British weekly scientific journal founded in 1869

Physical Review
American peer-reviewed scientific journal established in 1893

Reviews of Modern Physics
published by the American Physical Society in 1929

Advances in Physics
published by Taylor & Francis in 1952

Physics journals

Nature in the late-1980s and early-1990s it created a network of editorial offices and established ten new supplementary, specialty publications
(e.g. *Nature Materials* -3rd place in 2019 Scimago ranking for Physics, *Nature photonics* -5th Scimago ranking 2019)

Physical Review is published by the American Physical Society (APS). It is split in several sub-journals each covering a particular field of physics.

I*n 1936 Einstein and Rosen withdrew their paper (on gravitational waves) from Physical Review due to a controversy about its peer review process "...I prefer to publish elsewhere"*

Choosing the journal:
Open Access or traditional publishing

Open Access or traditional publishing:

While choosing the best journal where to publish your article think about the journal policy regarding open access , licenses.

Be aware of the possibilities in front of you!

OPEN ACCESS COLOURS

SISTEMA BIBLIOTECARIO DI ATENEO

	Diamond OA	Gold OA	Hybrid OA
			
	Full, immediate OA publishing, without Article Processing Charge - APC	Full, immediate OA. Author pays an APC	Immediate OA of a single article/chapter in a paywalled Journal/Ebook, author pays an APC
COST	NO	YES	YES
LICENCE	CREATIVE COMMONS CC BY CC BY SA	OPEN or CC LICENCE	CC LICENCE on single item

Publication Process:
article and submission requirements

How to write a scientific manuscript for publication

After choosing where to submit your article for publication let’s think about how to:

- Draft your article
- meet submission requirements and read the instructions for authors
- Make your submission
- Editor choice and peer review process

Types of journal articles

Letter or communication: short description of important current research findings that are usually fast-tracked for immediate publication because they are considered urgent, usually without experimental data.

Research note: short descriptions of current research findings that are considered less urgent or important than Letters (or Communications)

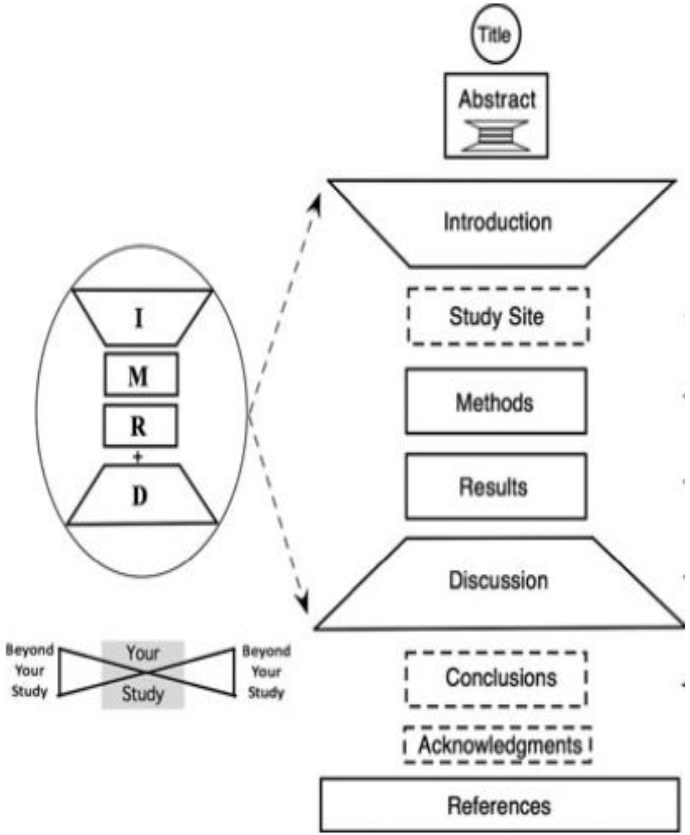
Review: provides an overview and critical analysis of relevant published scholarly articles, research reports, books, theses etc. on the topic or issue to be investigated. They do not report any new or original experimental work.

Paper or article: complete description of current original research findings, with clearly defined structure. They are usually between five and twenty pages. Scientific articles published in scientific journals are primary sources

The structure of the scientific article

IMRAD structure:
Introduction
Methods
Results
(and)
Discussion

The structure of the scientific article gradually came to be extremely well-organised

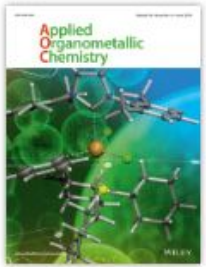


http://leml.asu.edu/jingle/Wu-Publications-PDFs/2011/Wu-2011-ScientificWriting.pdf

How to write a scientific manuscript for publication

An example of the structure of an article:

https://onlinelibrary.wiley.com/doi/full/10.1002/aoc.4912



Volume 33, Issue 6
June 2019
e4912

Applied Organometallic Chemistry

FULL PAPER | Full Access

N-heterocyclic carbene–palladium complexes for Suzuki–Miyaura coupling reaction with benzyl chloride and aromatic boronic acid leading to diarylmethanes

Ming-Tsz Chen, Wan-Rong Wang, Yi-Jun Li

First published:03 April 2019 | https://doi.org/10.1002/aoc.4912 | Citations: 1

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Abstract

A family of N-heterocyclic carbene–palladium(II)–*N*,*N*-dimethylbenzylamine complexes ((NHC)LPdCl_2; L = *N*,*N*-dimethylbenzylamine) were synthesized as well as characterized

Submission requirements

Not only you have to meet some specific requirements while writing the article but also you have to prepare other materials:

Cover Letter

Your research paper's role is to prove the merits of your research, but a cover letter is your opportunity to highlight the significance of your research and "sell" its concept to journal editors. The cover letter should explain why your work is perfect for their journal and why it will be of interest to the journal's readers. A well-written cover letter can help your paper reach the next stage of the manuscript submission process.
The cover letter can also include the Justification for publication and the declaration of co-author.

Submission requirements

Justification for publication

The justification should explain what new discovery, interpretation, understanding, concepts, is advanced in the paper and how the content fits within the scope of the journal.

Declaration of co-authors

Authors are expected to consider carefully the list and order of authors before submitting their manuscript and provide the definitive list of authors at the time of the original submission, the corresponding author is expected to seek approval from all co-authors.

Upon submission, the publisher will contact the authors via email to verify their role and contributions.

Submission requirements

Conflict of Interest

Most journals require a declaration of Conflict of Interest to be included in the manuscript upon submission.

A “conflict of interest” is any financial interests or connections, direct or indirect, or other situations that might raise the question of bias in the submitted work.

The corresponding author is expected to obtain the relevant information from all co-authors

https://us.sagepub.com/en-us/nam/declaration-of-conflicting-interests-policy
https://academic.oup.com/pages/authoring/journals/preparing_your_manuscript/conflicts_of_interest

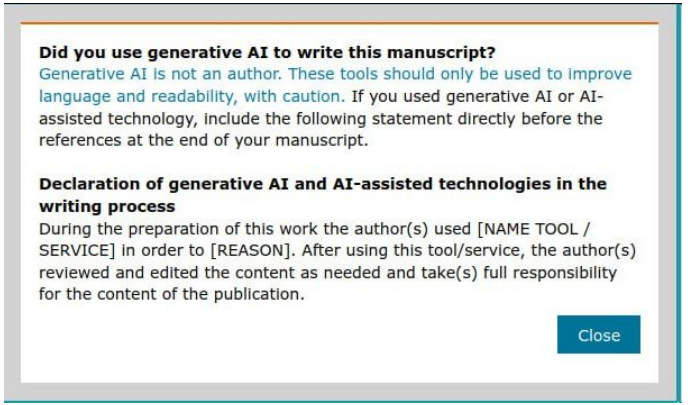
Submission requirements

Highlights (optional)
Highlights are a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any)

Graphical abstract (optional)
Graphical abstracts are a single image and are designed to help the reader to gain an overview on a scholarly paper, research article.

Declaration of generative AI in scientific writing
Authors should disclose in their manuscript the use of AI and AI-assisted technologies in the writing process.

https://www.springer.com/us/editorial-policies/artificial-intelligence--ai-/25428500



Submission requirements -AI in scientific writing

“Authorship implies responsibilities and tasks that can only be attributed to and performed by humans” (Elsevier AI policy for authors) https://www.elsevier.com/about/policies-and-standards/publishing-ethics#Authors

“Attribution of authorship carries with it accountability for the work, which cannot be effectively applied to LLMs” (Springer AI policies) https://www.springer.com/us/editorial-policies/artificial-intelligence--ai-/25428500

Tools that can be used: **Writefull**

writefull

Writefull is a tool that supports the researcher in writing a scientific text in English using AI. It provides tools that examine the text for grammatical, spelling, lexical, punctuation and sentence structure correctness, suggest language improvements and missing bibliographic citations, and much more.

https://biblio.unipd.it/en/digital-library/writefull

Publication Process: article submission

Author submit article and submission requirements

article assessed by editor

rejected

sent to reviewers

PEER REVIEW PROCESS

Publication Process: peer review

Peer-review

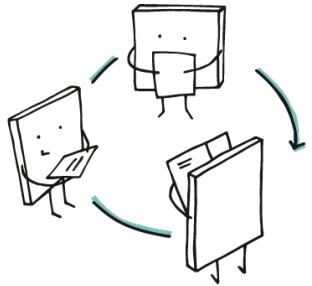
Peer review – in all its forms – is **central** to scholarly communications.

Peer-review is radically different from domain to domain, from discipline to discipline. And, often enough, from journal to journal.

In the peer review process, **editors**, **reviewers**, and **authors** cooperatively work together to ensure the **quality** of scientific research before it is published.

Peer review means that other scientific experts in the field check

research papers for **validity**, **significance** and **originality**



https://www.flickr.com/photos/187223776@N02/49604108081/

Peer-review: types of peer-review

Single Blind Review
Reviewers are unknown to the author
This allows reviewers to provide honest, critical reviews and opinions without fear of reprisal from the authors.
Lack of accountability, allows unscrupulous reviewers to submit unwarranted negative reviews. The most common system in science disciplines.

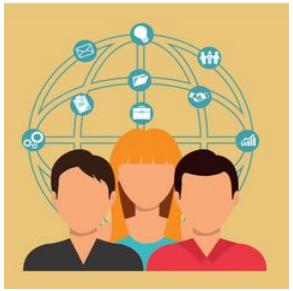
Double Blind Review
The reviewers and the authors do not know each other.
Reduces possible bias resulting from knowing who the authors are.
Involves some effort to make sure manuscripts are anonymised, reviewers can often guess who the authors are.
Main form of peer review used in the humanities and social sciences.

Infograhic by@editage

Peer-review: new models of peer-review

Open peer review:
Author and reviewer are aware of each other's identity.
This system allows the peer reviewers' comment as well as
the authors' responses to be published along with the final manuscript.

Collaborative peer review:
to have two or more reviewers work together to review the paper, or another approach is to have one or more reviewers collaborate with the author to improve the paper, until it reaches a publishable standard.



Infograhic by@editage

Peer-review: acceptance rates

Acceptance rates: the number of manuscripts accepted and published compared to the total number of manuscripts submitted in one year.

Most journals refrain from publishing acceptance rates on their website as they feel authors might be put off by a low acceptance rate.

The average acceptance rate across all scientific journals is about 55%
https://publons.com/static/Publons-Global-State-Of-Peer-Review-2018.pdf

Nature Chemistry the overall acceptance rate of the journal was roughly 9% (2013)

Angewandte Chemie International 21% (2012)

Common criticisms (1)

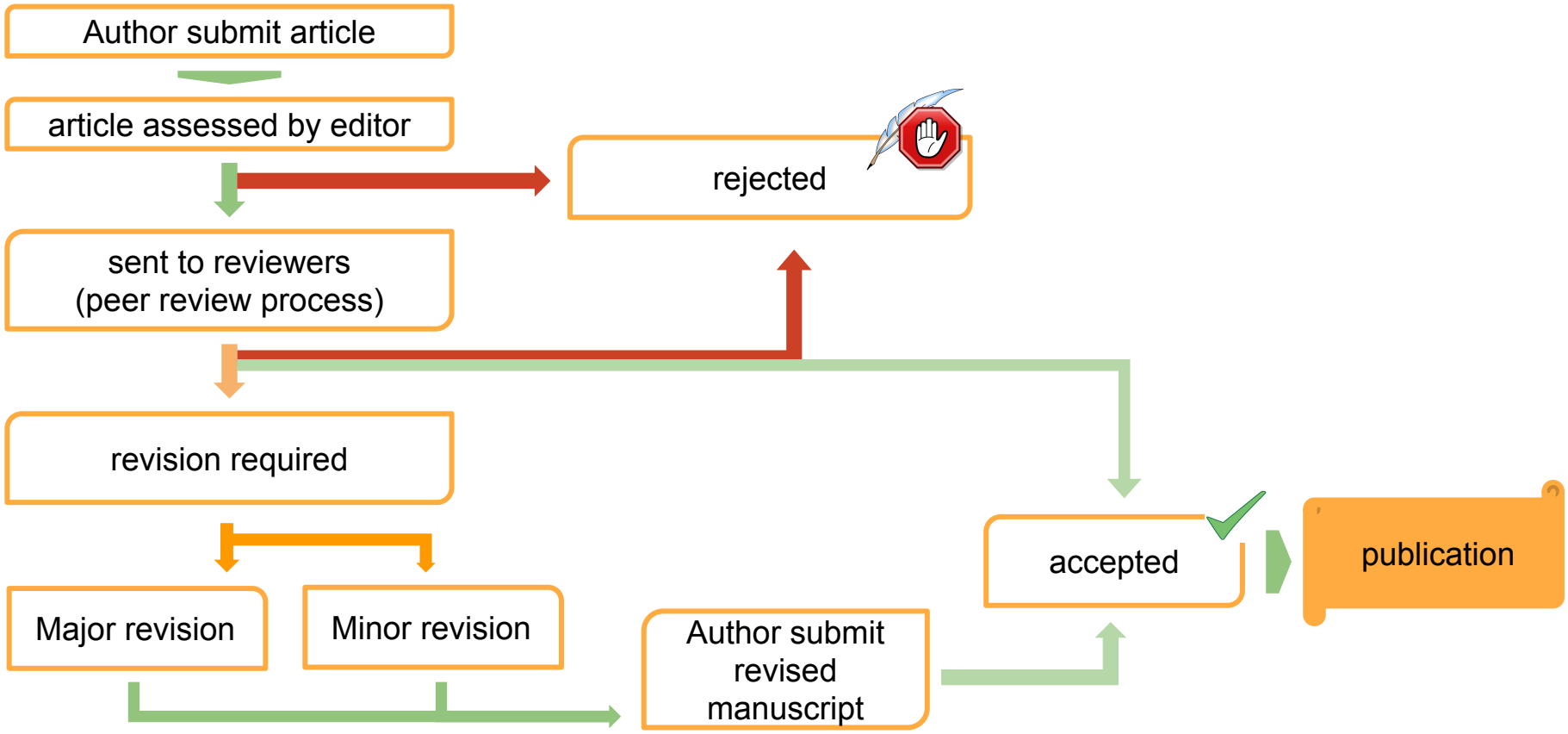
- **Stifles innovation**: there may be a tendency towards conservative judgements.
- **Bias**: the violation of impartiality in the evaluation of a submission:
  - error in assessing a submission's “true quality”
  - social characteristics of the author
  - social characteristics of the reviewer and/or
  - content of the submission.
- **Expensive**: peer reviewers are rarely paid by publishers.
  Expensive mostly in time. But it is also expensive in terms of money for the research community (time = money) and for publishers (infrastructure and staff)

Common criticisms (2)

- **Burdensome**: criticism of the perceived burden on academics involved in the peer-review process, particularly in the role of reviewer. Peer review is rarely acknowledged as part of the formal workload of an academic researcher. Reviewing is often an “out of normal hours” activity and therefore adds additional burdens on researchers
- **Lack of evidence of efficacy**: Despite these criticisms editorial peer review is viewed by many as important. However, there is little solid evidence on its efficacy.

The majority of retractions have involved scientific fraud (fabrication, falsification, and plagiarism) or other kinds of misconduct (such as fake peer review).

Submission Process



a cura di Marina Zannoni