Ethics in Publication and the Responsible Use of Artificial Intelligence in Research

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Content

Publication Ethics

MDPI

MDPI supports Research Integrity

- **Prevention**—early detection and flagging of potential ethics issues via automated and manual checks of peer review and manuscript.
- **Neutrality**—to be fair and objective, making assessments to correct the literature where necessary.
- **Transparency**—keeping all parties informed when possible and appropriate, and providing the time for them to respond.
- **Consistency**—ensuring standard processes are followed for the investigation of issues and applicability of policies and that principles and flowcharts of COPE are upheld.

- Dedicated Research Integrity Team:
    - Team of full time Research Integrity Specialist
    - Office units in Switzerland, Serbia and Romania and Manchester
    - Ethics issue specialization: Image manipulation, data fabrication, Plagiarism etc.
- MDPI Ethics Committee:
    - Comprised of more than 30 experienced publishers
    - Mentoring and supporting staff in resolving submission and post publication issues

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Role

Prevention

- Develop and implement MDPI publication Ethics strategy
- Update external and internal policies
- Strengthen and streamline ethics submission checks
- Collaborate on integrity tool development
- Deliver regular in-depth training

Resolution

- Monitor case management and analyze journal performance
- Support journals and Editorial Boards in complicated cases
- Deliver detailed case analysis reports to facilitate informed Editorial Board decision making
- Supervise amendments to the scientific record

MDPI – Open science and good research practice

MDPI is a member of the Committee on Publication Ethics (COPE)

- fully adheres to COPE Core Practices and Guidelines,
- follows ICMJE, CONSORT, TOP, FAIR Principles, PRISMA, ARRIVE, and Guidance for Editors: Research, Audit and Service Evaluations.

MDPI performs automatic and manual checks on all manuscripts to ensure compliance with editorial and ethical policies :

- MDPI | Research and Publication Ethics;
- MDPI | The Editorial Process and MDPI Instructions for Authors.

- **MDPI operates a rigorous and transparent peer review process that aims to maximize quality!**

- **MDPI Editorial Boards are independent**!

MDPI Ethical Principles:

- **Prevention** – early detection of ethics issues via automated and manual checks of peer review and manuscript
- **Neutrality** – to be fair and objective, making assessments to correct the literature where necessary and not judging people
- **Transparency** – keeping all parties informed when possible and appropriate, and providing the time for them to respond
- **Consistency** – ensuring standard processes are followed for the investigation of issues, and principles and flowcharts of the Committee on Publication Ethics are upheld.

Technological tools for integrity checks

Integrated tools for automated ethical checks in the SuSy platform:

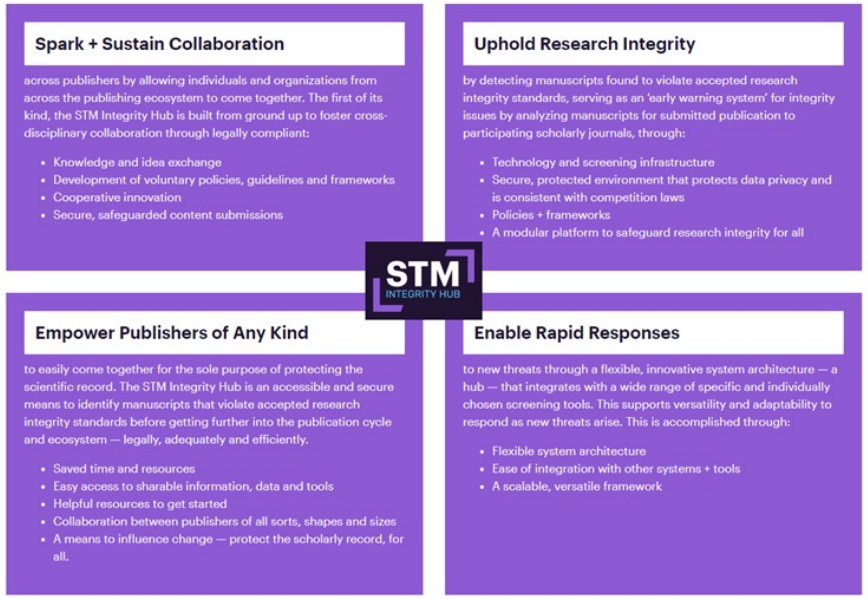
- iThenticate (text similarity checking tool)
- Duplicate submission detector
- Alert for critical institutional email addresses
- Self-citation alert
- Reviewer template report detector
- Warning system for controversial topics, non-scientific terms, etc.
- Potential conflict of interest alert

Tools developed by the MDPI IT team:

- Ethicality - a tool for checking the validity of references
- AI text detector
- AI image similarity checker

Tools used in the publishing industry:

- STM integrity Hub – integrity screening tool
  - Provides access to over 10 tools developed by leading publishers and IT development teams
  - Connects publishers to coordinate the detection of problematic papers (AI detection tool)
- Many programs are currently in testing and development (pilot) phases



How are you Involved in Publication Ethics as an Author?

1.1

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Common Author Misconduct Situations

- Improper authorship
- Plagiarism, reusing their own earlier wording
- Dishonesty, fabrication, falsification, e.g., fabricated data, modifying images, especially Western Blot gels; removing outliers from data.
- Multiple, Redundant or Concurrent publication Salami slicing
- Ethic violations in research involving human and animal subjects
- Undisclosed conflicts of interest

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Authorship

1.2

Correspondence and Authorship

Authorship must include and be limited to those who have contributed substantially to the work.

MDPI uses the ICMJE 4 basic criteria for authorship:

Substantial contributions to the original work; AND

Drafting the work or revising it critically for important intellectual content; AND

Final approval of the version to be published; AND

Agreement to be accountable for all aspects

All authors will be informed about each step of manuscript processing including submission, revision, revision reminder, etc. via emails from our system or assigned Assistant Editor.

* ☐ All listed authors meet the ICMJE criteria and all who meet the four criteria are identified as authors. We attest that all authors contributed significantly to the creation of this manuscript, each having fulfilled criteria as established by the ICMJE.

* ☐ We confirm that the manuscript has been read and approved by all named authors.

* ☐ We confirm that the order of authors listed in the manuscript has been approved by all named authors.

Authorship – CRediT Taxonomy

----provide transparency in contributions to scholarly published work

14 CRediT taxonomy categories for contributor roles:

- Conceptualization
- Methodology
- Software
- Validation
- Formal analysis
- Investigation
- Resources
- Data curation
- Writing – original draft
- Writing – review & editing
- Visualization
- Supervision
- Project administration
- Funding acquisition

Author Contributions

Conceptualization, S.C.P. and S.Y.W.; Methodology, A.B., S.C.P., and S.Y.W.; Investigation, M.E., A.N.V., N.A.V., S.C.P., and S.Y.W.; Writing – Original Draft, S.C.P. and S.Y.W.; Writing – Review & Editing, S.C.P. and S.Y.W.; Funding Acquisition, S.C.P. and S.Y.W.; Resources, M.E.V and C.K.B.; Supervision, A.B., N.L.W., and A.A.D

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Who should be Acknowledged Instead?

Common Acknowledgements:

- English editing (typically non-Commercial/non-MDPI)
- Admin, technical work supporter
- Assisting the research by providing advice
- Supplying space
- Obtaining financial support
  - Supply of patient data, reagents, biological specimens, illustrations

Acknowledge whoever has contributed to the research but does not meet the four ICJME criteria for authorship

Don’t Acknowledge:

- Contributions not specifically related to the research
  - Personal encouragement (e.g., friends or parents)
  - Very general help (e.g., laboratory manager who purchases all supplies for the research group)
- Anonymous editors and peer reviewers (with some exceptions)

The ICMJE encourages **written permission** from acknowledged individuals because acknowledgment may imply endorsement.

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Unethical Authorship Practices

Ghost authorship

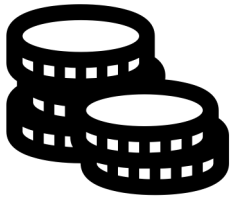
When a scholar who participates in research/data analysis/writing is not included in the manuscript

Gift authorship

When a scholar is included as an author without making a significant contribution to the research

Authorship for sale

The practice of buying or selling authorship on research papers (with or without contributing to the research itself)



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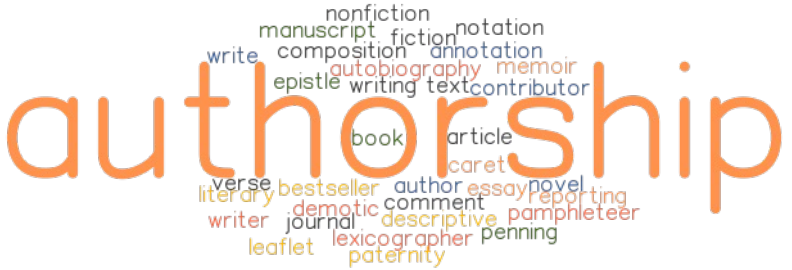
Change of Authorship

- Any change to the author list (order, deletion, addition, affiliations) should be made during the editorial process, **before** manuscript acceptance.

- To process the change, authors need to provide a valid **Change of Authorship Form**, with dates and **handwritten** signatures from every author.



Conflicts of Interest

1.3

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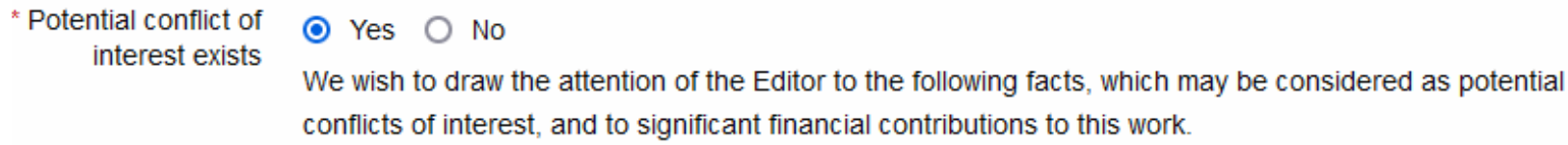
Conflicts of Interest (COI)

ICMJE definition of conflict of interest: “relationships or activities that readers could perceive to have influenced, or that give the appearance of potentially influencing, what you wrote in the submitted work”.

- **Financial interests:** membership, employment, consultancies, stocks/shares ownership; honoraria; grants or other funding; paid expert testimony and patent-licensing arrangements, etc.;
- **Non-financial interests:** personal or professional relationships, affiliations, personal beliefs, etc.

Conflict of interest is not in itself wrongdoing. However, an undisclosed conflict of interest is unethical, and potentially harmful.



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Conflicts of Interest (COI)

- All authors must disclose all relationships or interests that could inappropriately influence or bias their work.

Example of CoI Statement in a published paper:

> "The funding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results. XX, leader of the Knowledge Engineering division at ABC Clinic, and XY declare that in a separate research project they received financial support from XWZ, a company developing a rapid learning health-care system. YX and YW consult for MNO, a company developing biomarkers and software to individualize radiotherapy treatment. XX is co-inventor of several radiomics patents."

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Plagiarism

1.4

Plagiarism – proper referencing matter

Copying of text, ideas, images, or data from another source, even from the author's own publications, ***without proper permission, credit, or acknowledgment***.

Authors should ensure:

- ✓ Short quotes from a previously published article should be set off in quotation marks and the original version cited
- ✓ Permission must be requested when large sections are reproduced
- ✓ Methods and literature reviews generally need to be paraphrased
- ✓ Avoid text recycling or overlap is not allowed in the Results, Discussion, and Conclusion sections

All MDPI submissions are checked for plagiarism using the industry standard software iThenticate (Plagiarism Detection Software | iThenticate).

How to Avoid Plagiarism I Tips on Citing Sources (scribbr.com)

Human and Animal Research

1.5

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Research involving human and animal subjects

MDPI upholds ethical standards for **human and animal welfare**.

Research reporting on human subjects must follow the rules of **the Declaration of Helsinki of 1975** (https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/)

For research involving the use of animals, authors should particularly ensure that their research complies with the '3Rs' principles – **Replacement, Reduction, Refinement**.

Approval from the local **institutional review board (IRB)** must be obtained before undertaking the research on human and animal subjects.

For non-interventional studies (e.g. surveys, questionnaires, social media research), all participants must be fully informed if the anonymity is assured, why the research is being conducted, how their data will be used and if there are any risks associated

Dual Use Research of Concern:
Research that could pose a significant threat, with broad potential consequences to public health or national security, should be clearly indicated in the manuscript, and potential dual-use research of concern should be explained.

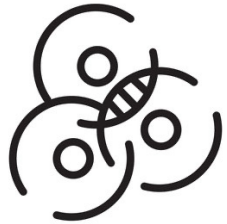
https://ahrecs.com/latestnews/australia-animal-welfare-advisory-committee-appointed-government-of-western-australia-february-2022/

Animals / Plants / Cells

Animal studies: Need ethical approval (country's legislation permitting)

Plant studies: Should be present in a database or specific information should be provided.

Cell lines: Established lines can just include the line details. New or fresh lines need ethical approval and/or full details



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Informed Consent

1.6

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Informed consent

Before participating in a research study, people must consent to the study and their involvement. Two types:

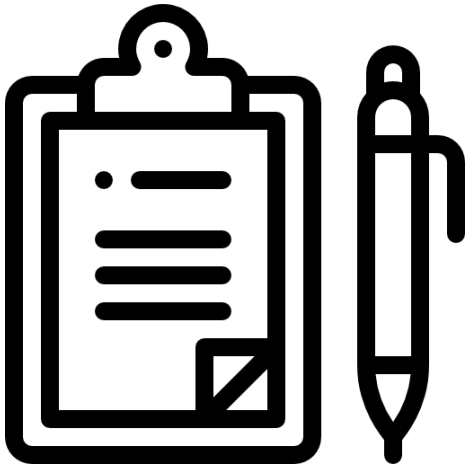
- **Informed consent** (to participate): Need **blank** consent form
- **Identifiable participants**: Need **blank** permission to **publish** (must contain journal name).

If vulnerable people were involved, then next of kin informed consent should have been obtained

- E.g., a study on elderly patients with Alzheimer's should obtain next of kin permission, not (just) the patient's

Sometimes the Informed Consent form will be provided in a **non-English language**

- Generally, we should trust the files provided by authors
- Ask authors to confirm that the original file conforms to our guidelines



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Ethical Statement

- Example of an ethical statement:
  “All subjects gave their **informed consent** for inclusion before they participated in the study. The study was conducted in accordance with the **Declaration of Helsinki**, and the protocol was approved by the Ethics Committee of **XXX** (Project identification code).”

NOTE: Only **original research** needs ethical approval or informed consent.

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Copyright

1.7

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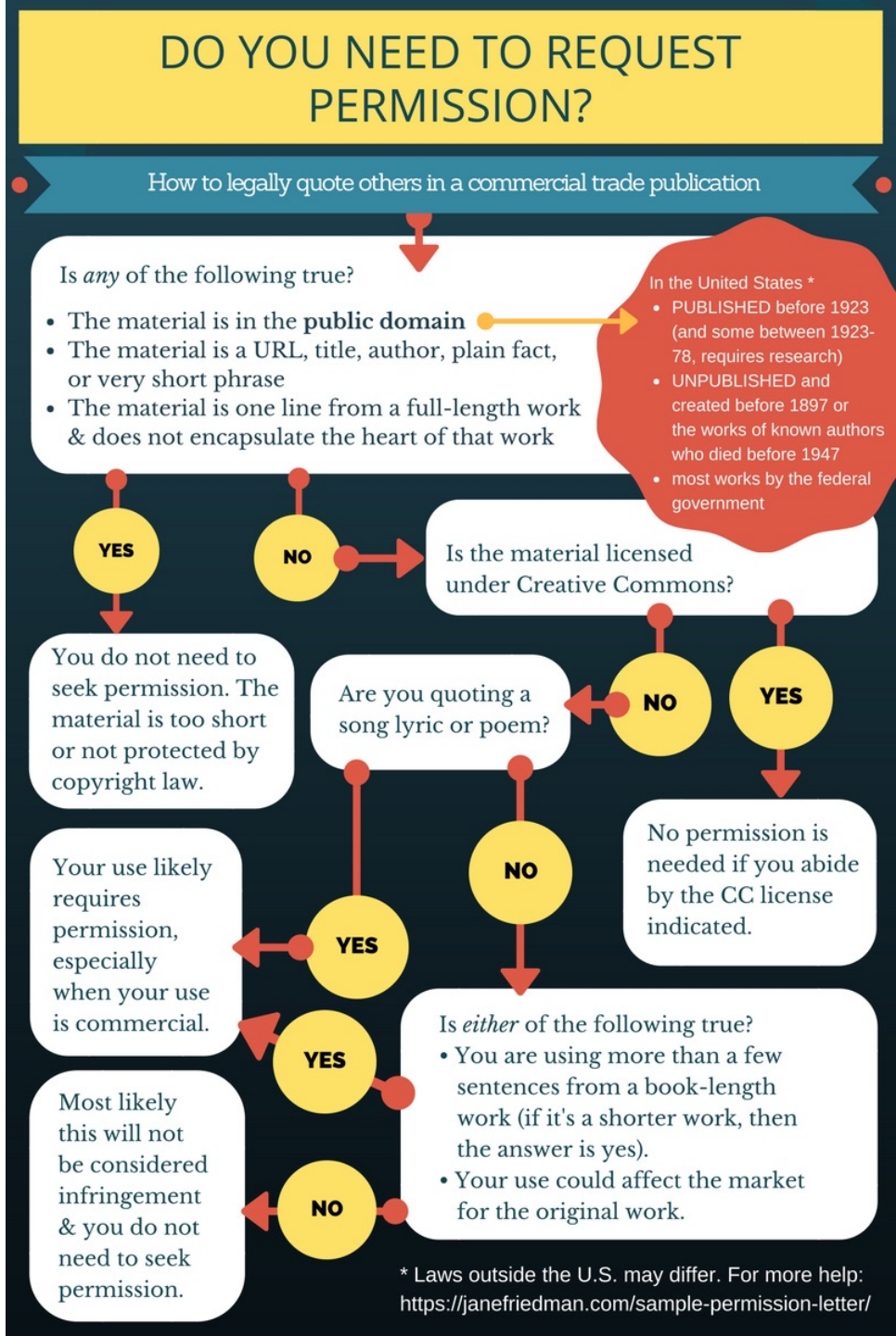
Copyright

- For all articles published in MDPI journals, **copyright is retained by the authors.**

- **An open access Creative Commons CC BY 4.0 license**: anyone may **download, read, reuse, and quote** the paper for free**,** and **no permission is required** provided that a **citation is given**.

- **For previously published content**, it is essential that prior to submission, authors obtain permission to reproduce any published material (figures, tables, text, etc.) that does not fall into the public domain, or for which they do not hold the copyright.



Copyright

Original work was published in Open Access

Work needs to be correctly cited in figure/table caption

Original work was published in a subscription-based journal

Authors need to apply to the Publisher to ask for permission to reuse

If permission is granted, the work needs to be correctly cited in figure/table caption

Non-Publisher based materials

Check if copyright permissions are needed and have been given.

If needed but not obtained, authors will need to modify/replace

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Data Fabrication

1.8

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MDPI Research Data Policies

- **Data availability statements** are required for all articles published with MDPI.
- During the peer-review and editorial decision process, authors can be asked to share existing datasets or raw data that have been analyzed in the manuscript, and whether they will be made available to other researchers following publication.
- Raw data is required for all original research articles.
- Authors will also be asked for the details of any existing datasets that have been analyzed in the manuscript.

Data availability status	Recommended Data Availability Statement
Data available in a publicly accessible repository	The original data presented in the study are openly available in [repository name, e.g., FigShare] at [DOI/URL] or [reference/accession number].
Data available on request due to restrictions (e.g., privacy, legal or ethical reasons)	The data presented in this study are available on request from the corresponding author due to (specify the reason for the restriction).
3rd Party Data	Restrictions apply to the availability of these data. Data were obtained from [third party] and are available [from the authors/at URL] with the permission of [third party].
Embargo on data due to commercial restrictions	The data that support the findings will be available in [repository name] at [URL / DOI link] following an embargo from the date of publication to allow for commercialization of research findings.
Restrictions apply to the datasets	The datasets presented in this article are not readily available because [include reason, e.g., the data are part of an ongoing study or due to technical/ time limitations]. Requests to access the datasets should be directed to [text input].
Data derived from public domain resources	The data presented in this study are available in [repository name] at [URL/DOI], reference number [reference number]. These data were derived from the following resources available in the public domain: [list resources and URLs]
Data sharing is not applicable (only appropriate if no new data is generated or the article describes entirely theoretical research	No new data were created or analyzed in this study. Data sharing is not applicable to this article
Data is contained within the article or supplementary material	The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.
Dataset available on request from the authors	The raw data supporting the conclusions of this article will be made available by the authors on request.

Data fabrication

Fabrication is making up data or results and recording or reporting them.

"… the fabrication of research data … *hits at the heart of our responsibility to society*, the reputation of our institution, the trust between the public and the research community, and our personal credibility and that of our mentors, colleagues…"

"It can *waste the time of others*, trying to replicate false data or designing experiments based on false premises, and can lead to therapeutic errors. It can never be tolerated."

Professor Richard Hawkes

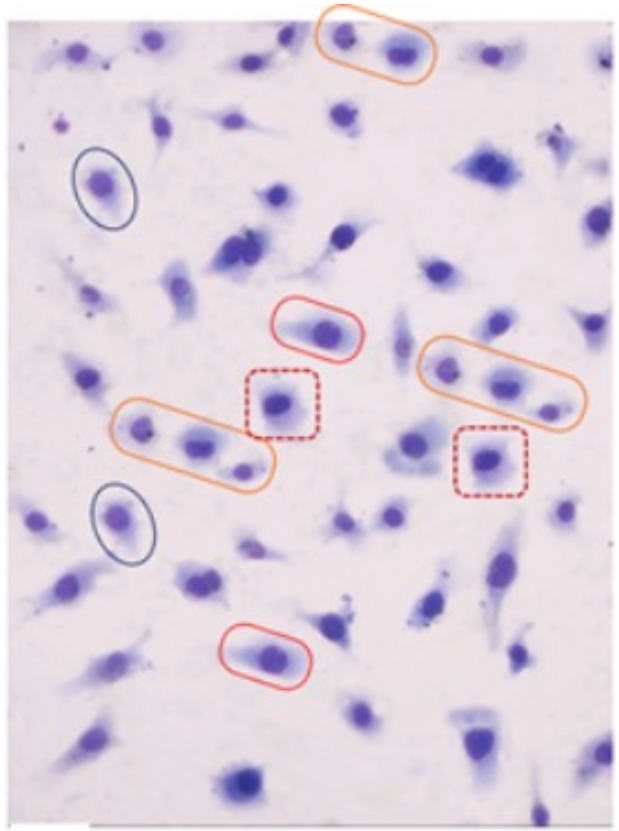
Department of Cell Biology and Anatomy, University of Calgary

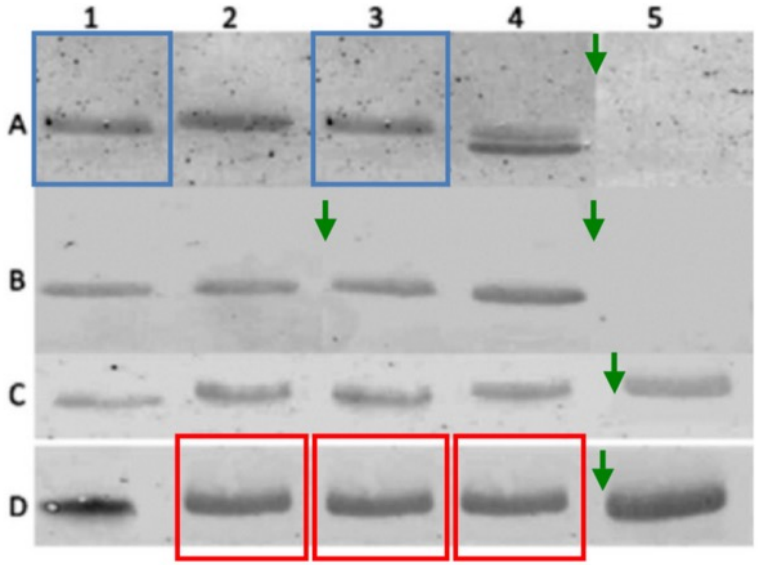
Image fabrication or falsification

- Keep images/data unchanged to maintain original information.
- Any concerns raised over undisclosed data alterations will be investigated.
- Authors should provide original images and raw data at submission in Supplementary material or through Data availability statements.

Common image manipulation includes:

- *Duplications*
- *Image splicing, cloning, erasing, cropping*
- *Enhancing a specific feature*
- *Uneven brightness/contrast adjustments*
- *Background cleaning up*
- *Gross misrepresentation*





Simultaneous Submission /Duplicate Publication

Simultaneous submission: occurs when a person submits a paper to different publications at the same time, which can result in more than one journal publishing that particular paper.

Duplicate/multiple publication: occurs when two or more papers, without full cross-reference, share essentially the same hypotheses, data, discussion points, and/or conclusions. This can occur in varying degrees: literal duplication, partial but substantial duplication, or even duplication by paraphrasing.

Publisher’s Responsibilities

1.9

Post-publication investigation process

Comments and complaints from reviewers, readers, external stakeholders, etc.

Concerns raised following internal review

Comments on public forums – PubPeer or other social media platforms

- Plagiarism
- Authorship disputes
- Manipulation of the editorial process
- Simultaneous submission of the same manuscript to multiple journals
- Copyright and intellectual property infringement
- Image manipulation
- Data fabrication
- Non-compliance with ethical procedures in studies involving humans and animals
- "Salami slicing" and duplicate/identical publication
- Citation manipulation

The follow-ups for handling problem papers (after proper investigation):

1. Withdrawal of a paper (for papers under processing)
2. Correcting the literature through correction, or retraction (for published papers)

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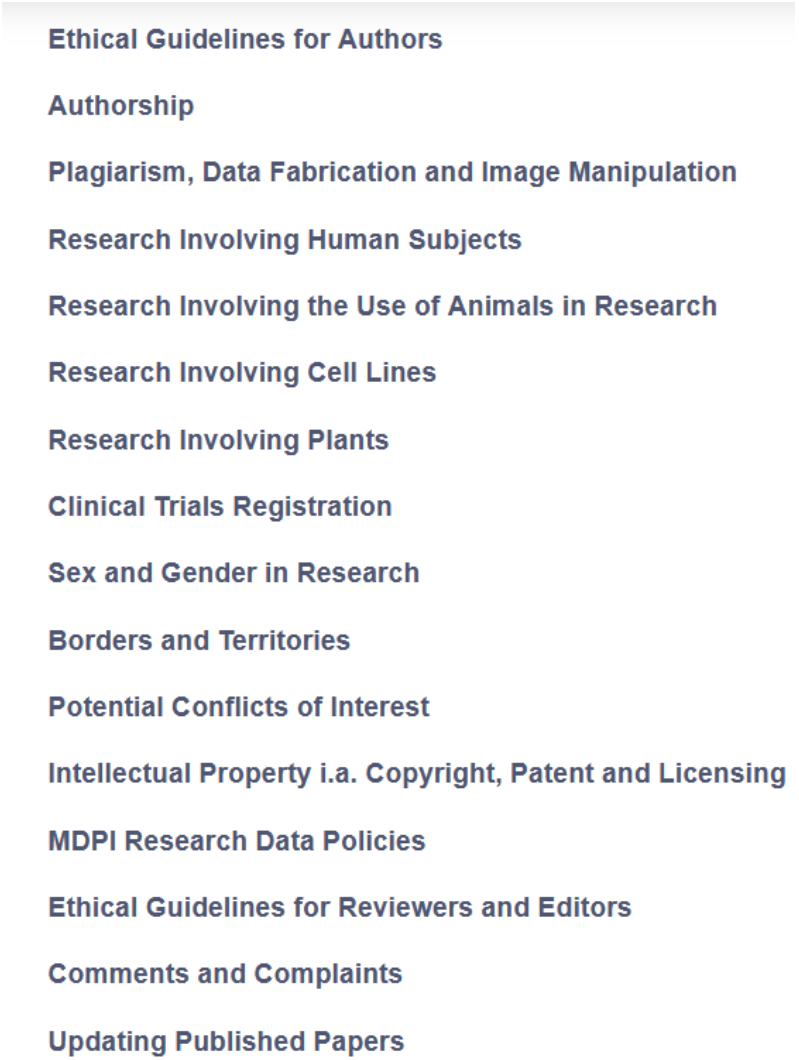
COPE recommends an educational approach as the first step. If the author exhibits a repeated pattern of misconduct, the may consider contacting the author's institution.

International Guidelines

- **The Committee on Publication Ethics (COPE)** has guidelines for editors and peer reviewers (substantive) and authorship (substantive). http://publicationethics.org/

- **International Committee of Medical Journal Editors (ICMJE)** Includes guidelines for authorship (substantive), peer review (not substantive), conflict of interest (substantive), and redundant publications (substantive). http://www.icmje.org/

- **MDPI Ethics policies and guidelines.** https://www.mdpi.com/ethics



How MDPI promotes good scientific practices

- Authors: Journals should provide information, raise awareness, and list authors' contributions. Ensure conflicts of interest are disclosed. Encourage post-publication debate and provide guidance on authorship. Screen for plagiarism, redundancy and image manipulation.
- Reviewers: Journals should require conflicts of interest to be disclosed and should explain expectations regarding confidentiality.
- Editors: Journals should have processes for handling editors' and editorial board members' conflicts of interest (as well as for Guest Editors etc.).

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Responsibilities of the Publisher

- Guardianship of the scholarly record
- Safeguard editorial independence
- Collaborate to set industry best practice
- Provide editors with technical, procedural and legal support
- Educate researchers on publishing ethics
- Detect and prevent publication and research misconduct

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Artificial Intelligence in Scientific Publishing

07

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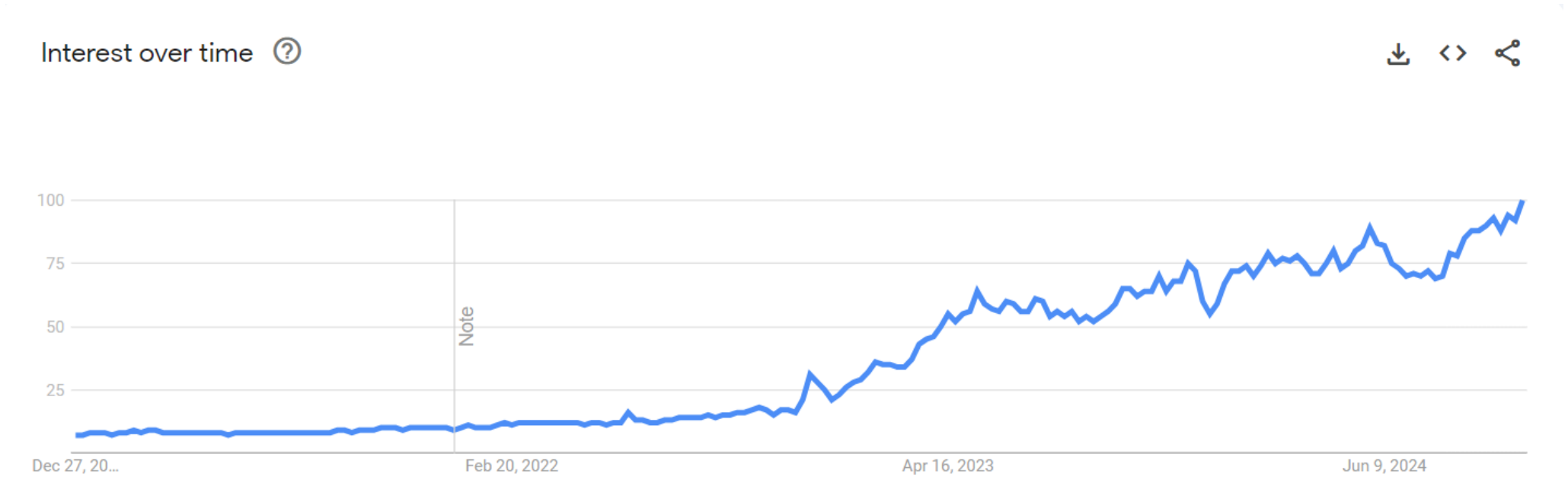
AI



https://trends.google.com/trends/explore?date=2021-01-01%202024-10-21&q=%2Fm%2F0mkz

AI Usage

- It would be difficult to ban AI usage outright
  - Many academics use AI without realizing (Eg. Grammarly)
- As a **publisher** it is our responsibility to establish clear **guidelines** for our authors to ensure AI usage is **controlled.**

20 April 2023

MDPI's Updated Guidelines on Artificial Intelligence and Authorship

https://www.mdpi.com/about/announcements/5687

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AI Usage: COPE Guidelines

„Authors are fully responsible for the content of their manuscript, even those parts produced by an AI tool, and are thus liable for any breach of publication ethics."

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https://publicationethics.org/cope-position-statements/ai-author

AI & Authorship

Artificial Intelligence in Journalism: A Ten-Year Retrospective of Scientific Articles (2014–2023)

by **Fabia Ioscote** [1,*], **Adriana Gonçalves** [2] and **Claudia Quadros** [1]

[1] PPGCOM, Federal University of Paraná, Curitiba 80035-010, Brazil
[2] LabCom, University of Beira Interior, 6201-001 Covilhã, Portugal
* Author to whom correspondence should be addressed.

AI Usage - AI-assisted technologies have raised concerns in relation to the **authenticity** and **credibility** of academic work.

AI does not recognize what content ownership is and can result in copyright breaches and/or lead to plagiarism. AI tools may be used to fabricate data, results, findings and in some cases, citations!

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Authorship Requirements

- MDPI follows the authorship criteria outlined within the ICMJE recommendations (**International Committee of Medical Journal Editors**):

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work.

Drafting the work or reviewing it critically for important intellectual content.

Final approval of the version to be published.

Agreement to be accountable for all aspects of the work.

AI **cannot take responsibility** for the content it produces

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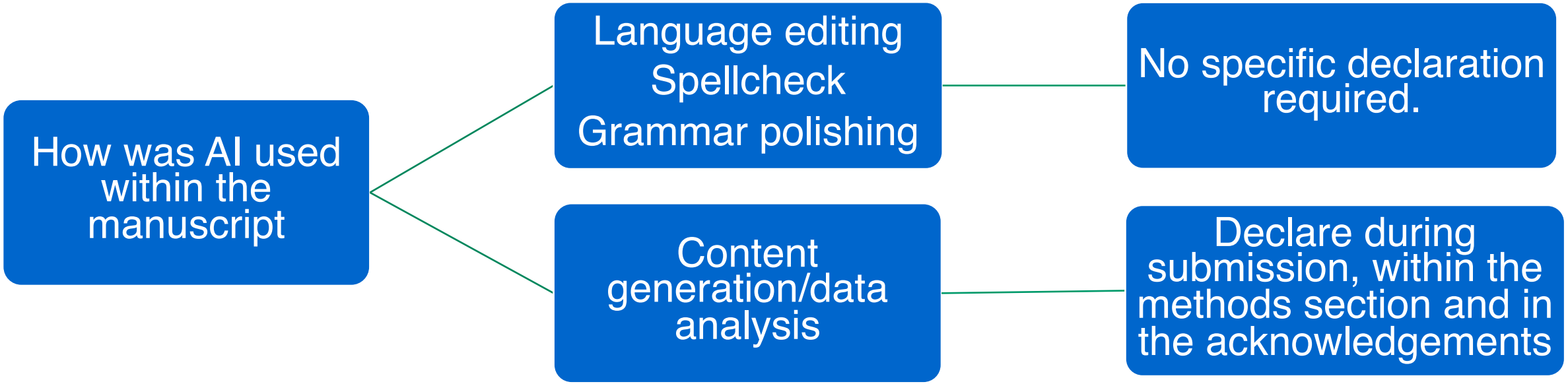
MDPI's Guidelines

Scientific publishers allow the use of generative AI to different degrees, provided it is noted in the Acknowledgments or Materials and Methods sections. However, regulations may vary between publishers. Authors must consult the relevant guide for authors before submitting a manuscript.



https://www.mdpi.com/ethics#_bookmark4

AI Usage: Transparency

Authors are permitted to use AI within their MDPI manuscripts if they are **transparent** in how and where it has been used to provide clarity for the academic community.

Uses of GenAI by Authors

Key Indicator	Permitted—disclosure not necessary	Disclosure necessary—permission by editorial teams	Not permitted
Basic author support tool (refine, correct, edit, and format text and documents)	✓		
Uses transcending basic author support tool		✓	
Create, alter, or manipulate original research data and results			✗
Credit GenAI as an author of a published work[1]			✗

https://www.stm-assoc.org/new-white-paper-launch-generative-ai-in-scholarly-communications/

https://publicationethics.org/guidance/cope-position/authorship-and-ai-tools

Example of an AI Acknowledgement statement

“During the preparation of this manuscript/study, the author(s) used [*tool name, version information*] for the purposes of [*description of use*]. The authors have reviewed and edited the output and take full responsibility for the content of this publication.“

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https://www.mdpi.com/ethics#_bookmark4

Use of artificial intelligence in scientific writing – limitations and risks

Hallucinations – Sometimes large language models (LLMs) “invent” content

- LLMs can generate text that appears realistic and convincing, but is inaccurate, misleading, or nonsensical. This can happen for two reasons:
    1. LLMs learn by “absorbing” vast amounts of data from the internet, which inevitably contain errors, biases, and outdated information.
    2. LLMs are trained to always provide an answer. When information is missing, they often “make up” a response.

Lack of true reasoning – LLMs struggle with complex, multi-step problems

- LLMs’ ability to “reason” is often an illusion created by their sophisticated pattern-recognition capabilities. This is because LLMs fundamentally operate on statistical word associations rather than robust causal models or rich representations of world knowledge.

Bias and stereotypes – LLMs can perpetuate prejudices

- LLMs can replicate harmful biases and stereotypes present in training data and in society at large. Since these models learn from content created by humans on the internet, they may inadvertently perpetuate biased or discriminatory views in their outputs.

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Risks associated with AI generated content

Copyright Infringement

Data Fabrication

Plagiarism

Image manipulation

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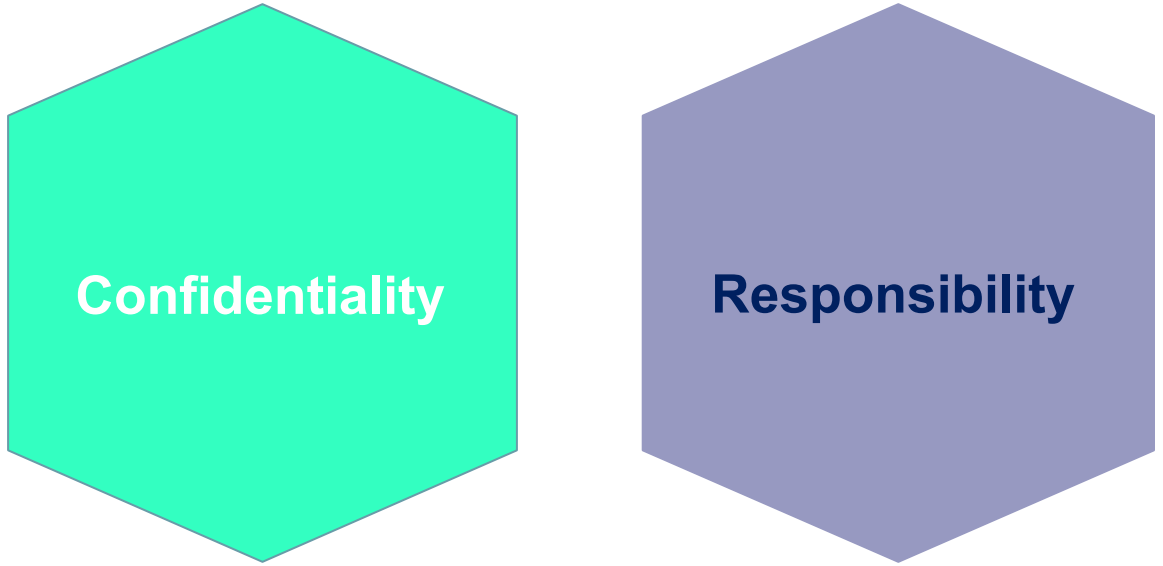
AI Usage in Peer Review

- At MDPI, and many other major publishers, the use of AI at **any point** during the peer review process is **strictly prohibited.**

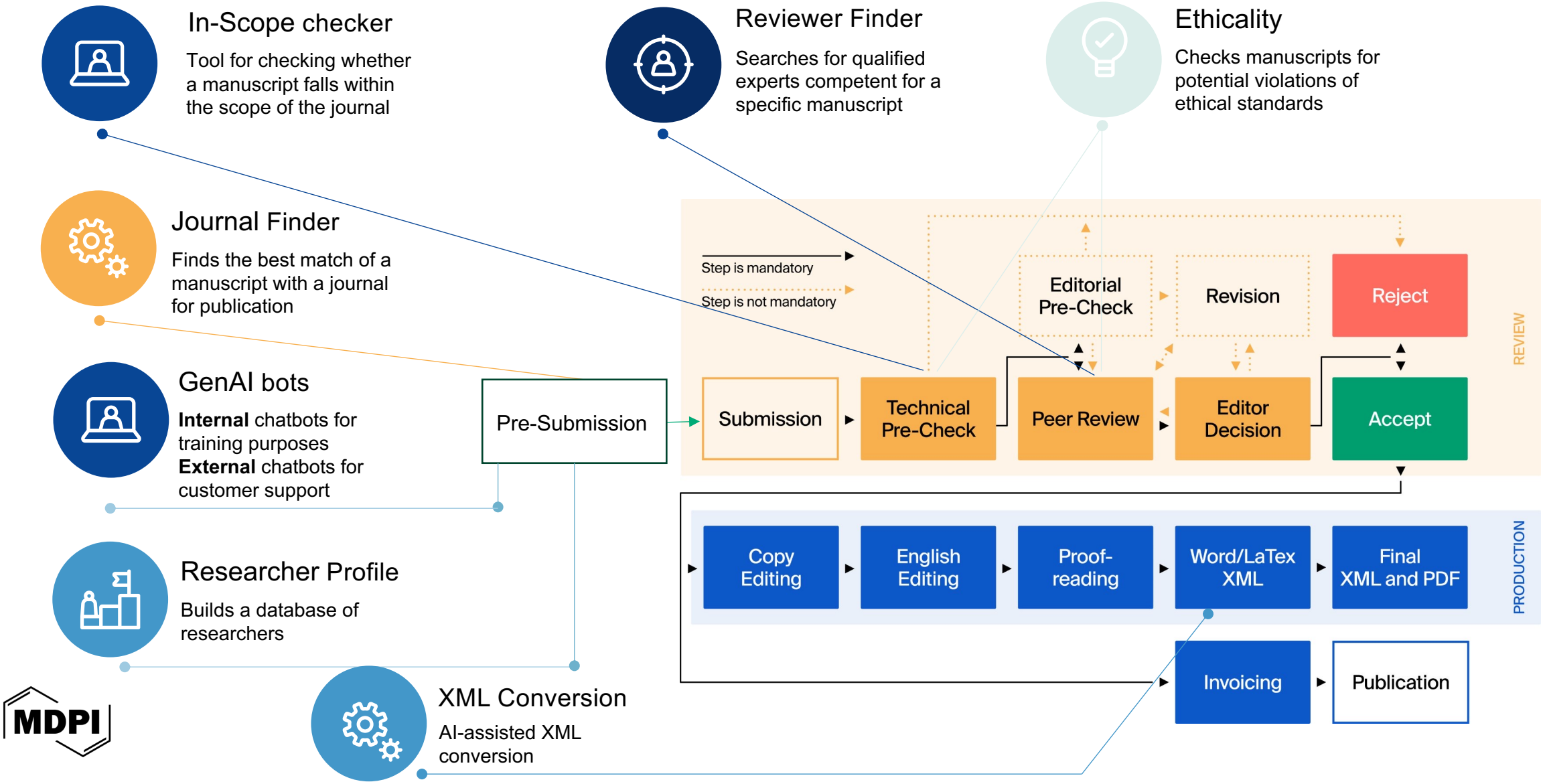


- At MDPI, all reviewers are required to **declare** they have not used AI in their review report on submission.

MDPI

https://www.mdpi.com/reviewers

AI tools for enhancing the publication process at MDPI



AI tools for enhancing the publication process at MDPI

In addition to the tools mentioned, MDPI also uses various AI text-detection tools.

AI detection tools are used to check manuscripts and review reports.

An AI detection tool serves as an indicator, not a final determination!

It is a starting point for a careful, human-led assessment of the academic and ethical integrity of a manuscript!

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Conclusion

Artificial intelligence is here to stay!

Responsible use, clear guidelines, and critical thinking are essential.

Thank you!

@MDPIOpenAccess

facebook.com/MDPIOpenAccessPublishing

linkedin.com/company/mdpi

MDPI AG – YouTube

instagram.com/mdpiopenaccess

www.mdpi.com

https://www.surveymonkey.com/r/8VBNSJB

MDPI Academic Publishing Workshop Survey