

Nuclear Medicine and Molecular Imaging

Submission guidelines Version 2024 March

Instructions for Authors

Contents

- I. Type of papers
- II. Editorial procedure
- III. Manuscript submission
- IV. Manuscript submission checklist
 1. Title page
 2. Abstract
 3. Keywords
 4. Text
 5. References
 6. Tables
 7. Artwork and illustrations guidelines
 8. Electronic supplementary material
- V. Ethical responsibility of authors
- VI. Authorship principles
- VII. Compliance with ethical standards
 1. Competing interests
 2. Ethical approval
 3. Informed consent
 4. summary of requirements
- VIII. Research data policy
- IX. After Acceptance
- X. Self-archiving policy
- XI. English language editing

I. Types of Papers

The text should be concise and consistent with regard to spelling, abbreviations, etc. All papers must be submitted in English.

The following types of manuscripts can be submitted:

- **News and Comments**

are written or solicited by the Editors. The text should describe personal opinions regarding current advances and future directions of nuclear medicine and molecular imaging, issues related to the intersections between nuclear medicine and other fields of sciences, reports on meetings of the nuclear medicine community, or nuclear medicine society news. It could include original data as well as state a personal opinion. The News and Comments comprise Title, Main document with specific headings, Conclusion, References, and optional images/Legends for images. Abstract and Keywords are not required.

- **Original Articles**

should include examinations or investigations that are new or original in the field of nuclear medicine or molecular imaging. The text should include scientific research results that are relevant to the readerships of Nucl Med Mol Imaging. The original Articles should be divided clearly into Title, Abstract (structured as described below in the Title Page-section, consisting of 150-250 words), Keywords, Introduction, Materials and Methods, Results, Discussion, Conclusion, References, Tables, Images, and Legends for images.

- **Review Articles**

are solicited by the Editorial Board and should give a concise review of the topic concerned. The text should describe the current knowledge in the respective field of nuclear medicine or molecular imaging regarding the study title, for the education of the readers of Nucl Med Mol Imaging. The Review Articles should be divided into Title, Abstract (unstructured, and of max. 200 words in length), Keywords, Introduction, Main document with specific headings, Conclusion, References, and optional Images/Legends for images.

- **Editorials**

are solicited by the Editorial Board and should comment on papers published in Nucl Med Mol Imaging and related academic journals. Abstract is not required.

- **Case Reports**

are no longer considered for publication by Nucl Med Mol Imaging. Please consider submitting as other types such as Original Articles or Interesting Images.

- **Interesting Images**

should provide visual and narrative data about clinically interesting or informative aspects of nuclear medicine or molecular imaging. Interesting Images comprise Title page, Text (maximum 400 words), References (maximum five), Figure (maximum one), and Legend for figure. An abstract should not be included.

- **Letters to the Editor**

are questions and comments on papers published in Nucl Med Mol Imaging within the previous year, or can also serve as a platform for authors to present a new and unique viewpoint on a specific topic within the field of nuclear medicine or molecular imaging.

- **Guidelines**

are aimed to support and promote the high-quality use of nuclear medicine and molecular imaging procedures and to provide appropriate evidence of the practice of nuclear medicine procedures. The Guidelines comprise Title page, Abstract (unstructured, and of max. 200 words in length), Keywords, Introduction, Main document with specific headings, Conclusion, References, and optional images/Legends for images.

II. Editorial Procedure

Peer Review and Publication

All manuscripts are reviewed by a minimum of two referees selected by the editorial board. The review decision is delivered to the author by the editorial board.

The author should revise the manuscript to reflect the suggestions and criticisms made by the reviewers. Revised manuscripts are resubmitted accompanied by a letter from the author about the revisions within one month.

The author requires the permission of the editor-in-chief to extend the revision period. Revised manuscripts are judged on the adequacy of responses and accepted for publication or rejected accordingly.

Any revision of manuscripts after acceptance requires the agreement of the editorial board.

In preparing manuscripts, authors should follow Uniform Requirements for Manuscripts Submitted to Biomedical Journals (as cited in *Ann Intern Med.* 1997; 126: 36-47).

Double-blind peer review

This journal follows a double-blind reviewing procedure. Authors are therefore requested to submit:

- A blinded manuscript, without any author names and affiliations in the text or on the title page. Self-identifying citations and references in the article text should be avoided.
- A separate title page, containing the title, all author names, affiliations, and the contact information of the corresponding author. Any acknowledgments, conflicts of interest or ethical statements should also be included on this page.

III. Manuscript Submission

Submission of a manuscript implies: that the work described has not been published before; that it is not under consideration for publication anywhere else; that its publication has been approved by all co-authors, if any, as well as by the responsible authorities – tacitly or explicitly – at the institute where the work has been carried out. The publisher will not be held legally responsible should there be any claims for compensation.

Permissions

Authors wishing to include figures, tables, or text passages that have already been published elsewhere are required to obtain permission from the copyright owner(s) for both the print and online format and to include evidence that such permission has been granted when submitting their papers. Additionally, authors must explicitly acknowledge the receipt of such permissions in the acknowledgements section of their papers. This acknowledgment should detail the nature of the copyrighted material, the copyright owner(s), and the scope of the permission granted. Any material received without such evidence will be assumed to originate from the authors.

Online Submission

Please follow the hyperlink “Submit Manuscript” on the journal website and upload all of your manuscript files following the instructions given on the screen.

Please ensure you provide all relevant editable source files. Failing to submit these source files might cause unnecessary delays in the review and production process.

IV. Manuscript Submission Checklist

1. Title Page

The title page should include:

- A concise and informative title
- The name(s) of the author(s)
- The affiliation(s) of the author(s), i.e. institution, (department), city, (state), country
- A clear indication and an active e-mail address of the corresponding author
- If available, the 16-digit ORCID of the author(s)
- Declarations:
 - Competing interests
 - Ethics approval and consent to participate
 - Consent for publication
 - Acknowledgements
 - Authors' contributions
 - Funding
 - Data availability
 - Declaration of generative AI in scientific writing
 - Authors' information (optional)
 - Preprint sharing

If the address information is provided with the affiliation(s) it will also be published.

For authors that are (temporarily) unaffiliated we will only capture their city and country of residence, not their e-mail address unless specifically requested.

Important Remarks:

- The journal demands that active eMail-addresses of all authors are given.
- Address information of all authors will be published when they are given on the Title page.

Authors from the Republic of Korea

Only authors who belong to any organizations in the Republic of Korea including hospitals, universities, or research institutes **should provide their position in the organizations** in addition to the names and affiliations of the authors according to the Guideline for Establishment of Research Ethics by the Instruction of the Ministry of Education No. 263.

Authors that are unaffiliated should provide the position and the name of the last institution where the authors belong.

- The examples are as follows:

Gil-Dong Honga¹, Sun-Shin Lee², Dae-Han Kim³, Cheol-Soo Lee⁴

¹Department of XXX, OOO University, Seoul, Republic of Korea (Graduate Student)

²Department of XXX, OOO University, Seoul, Republic of Korea (Lecturer)

³Department of XX, OOO University, Seoul, Republic of Korea (Post-doc until August 2019)

⁴Department of XX, OOO University, Seoul, Republic of Korea (Professor)

Competing interests

All financial and non-financial competing interests must be declared in this section.

For the details of financial and non-financial competing interests, please follow the link below:

Link (*hyperlink to <https://www.springer.com/gp/editorial-policies/competing-interests>*)

- Examples of Competing interests are:

Competing interest: Author A has received research grants from Company A. Author B has received a speaker honorarium from Company X and owns stock in Company Y. Author C is a member of Committee Z.

- If all authors have no competing interests to declare, the authors should state:

Competing interest: Author A, Author B, and Author C (note: Please mention names of all authors here) declare that they have no competing interests.

For more information, please refer to Section VII.

Ethics approval and consent to participate

For manuscripts reporting studies that involved human participants, human data, or human biological material, authors should include a statement regarding ethical approval. This should include a statement on ethics approval and consent (even when the need for approval is waived) and the name of the ethics committee that approved that study and the committee's reference number if appropriate, and certify that the study was performed in accordance with the ethical standards as laid down in the Helsinki Declaration as revised in 2013.

- Examples of Ethics approval are:

Ethical approval and consent to participate: The study was approved by the institutional review board of XXX University (reference number), and informed consent was obtained from all individual participants included in the study (or the requirement for written consent was waived by the institutional review board). All procedures performed in studies involving human participants were in accordance with the Helsinki Declaration as revised in 2013 and its later amendments.

For manuscript reporting studies involving animals, a statement on ethics approval should be included.

For more information, please refer to Section VII.

For the details of ethics approval, please follow the link below:

Link (*hyperlink to <https://www.springer.com/gp/editorial-policies/research-involving-human-and-or-animal-participants#c18077134>*)

Consent for publication

If your manuscript contains any individual person's data in any form (including individual details, images, or videos), consent to publish must be obtained from that person, or in the case of children, their parent or legal guardian. All presentations of case reports must have consent to publish.

Consent for publication: The participants signed consent regarding publishing their data (and/or photographs).

If this section is not relevant to your manuscript, please state:

Consent for publication: Not applicable.

Acknowledgments

Please acknowledge anyone who contributed to the article who does not meet the criteria for authorship including anyone who provided professional writing services or materials. Authors should obtain permission to acknowledge from all those mentioned in the Acknowledgements section.

Authors' contributions

The individual contributions (in conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, supervision, visualization, writing-original draft, and writing-review and editing) of authors to the manuscript should be specified in this section.

- **Examples**

Authors' contributions: The study was designed by [full name]. Material preparation and data collection were performed by [full name], [full name], and [full name]. The data analysis was performed by [full name] and [full name]. The first draft of the manuscript was written by [full name] and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

For more information, please refer to Section VII.

For the details of authors' contributions, refer to Authorship principles in the submission guidelines and follow the link below:

Link (*hyperlink to <https://www.springer.com/gp/editorial-policies/authorship-principles>*)

Funding

All sources of funding for the research reported should be declared. The roles of the funding body in the design of the study and collection, analysis, and interpretation of data and in writing the manuscript should be declared.

- Funding: This study was supported by a grant of XXX funded by OOO. The funders had no role in the study design, data collection, analysis, interpretation, or preparation of the manuscript.
- If no funding has been provided for the research, the authors should state, Funding: There is no source of funding.

Data availability

All authors must include a statement detailing where the data supporting their findings can be found. Authors who do not wish to share their data must state that data will not be shared, and give the reason. If you do not wish to publicly share your data, please write:

Data availability of data and material: Contact the corresponding author for data requests. If this is not applicable, please write: "Data sharing not applicable to this article as no datasets were generated or analyzed during the current study."

Declarations of generative AI in scientific writing

Large Language Models (LLMs), such as ChatGPT, do not currently satisfy authorship criteria by Springer (<https://www.springer.com/kr/editorial-policies/artificial-intelligence--ai-/25428500>). Where authors use generative artificial intelligence (AI) and AI-assisted technologies in the writing process, authors should only use these technologies to improve readability and language. Authorship implies responsibilities and tasks that can only be attributed to and performed by humans. Authors should disclose in their manuscript the use of AI and AI-assisted technologies in the writing process by adding the following statement.

- Declaration of generative AI in scientific writing: During the preparation of this work the author(s) used [NAME TOOL/SERVICE] in order to [REASON]. After using this tool/service, the authors(s) reviewed and edited the content as needed and task(s) full responsibility for the content of the publication.

This declaration does not apply to the use of basic tool for checking grammar, spelling, references, etc. If there is nothing to disclose, the authors should state

- Declaration of generative AI in scientific writing: Authors did not use generative AI in writing./ Authors did not use generative AI in writing except for checking grammar, spelling, references, etc.

Authors' information (optional)

Authors **may** choose to use this section to include any relevant information about the authors that may aid the reader's interpretation of the article, and understand the standpoint of the authors. This may include details about the authors' qualifications, current positions they hold at institutions or societies, or any other relevant background information.

Preprint sharing

Preprints of primary research manuscripts can be posted on preprint servers/platforms prior to formal peer review. Posting of preprints will not jeopardize the consideration of the journal. In case of any previous posting of preprints, authors should disclose details of preprint posting, including DOI and licensing terms on the title page upon submission of the manuscript. Once the preprint is published, it is the authors' responsibility to ensure that the preprint record is updated with a publication reference, including the DOI and a URL link to the published version of the manuscript.

For the details of preprint sharing, please follow the link below:

Link (*hyperlink to <https://www.springer.com/jp/editorial-policies/preprint-sharing>*)

2. Abstract

For Original Articles, an abstract should contain 150-250 words which should be divided into the following sections:

- Purpose (stating the main purposes and research question)
- Methods
- Results
- Conclusion

If the study involves a **clinical trial**, the trial registration number and date of registration should be included in the Methods section. If the trial was registered retrospectively, please state as 'retrospectively registered' following the registration information.

For Review articles, Perspectives, an unstructured abstract consisting of one complete paragraph with a maximum of 200 words is required.

For Editorials and Interesting images, an abstract is not needed.

3. Keywords

Please provide 4 to 6 keywords that can be used for indexing purposes.

4. Text

Text Formatting

Manuscripts should be submitted in Word.

- Use a normal, plain font (e.g., 10-point Times Roman) for text.
- Use double spacing on every line including references.
- Use italics for emphasis.
- Use the automatic page numbering function to number the pages.
- Do not use field functions.
- Use tab stops or other commands for indents, not the space bar.
- Use the table function, not spreadsheets, to make tables.
- Use the equation editor or MathType for equations.
- Save your file in docx format (Word 2007 or higher) or doc format (older Word versions).

Headings

Please use no more than three levels of displayed headings.

Abbreviations

Abbreviations should be defined at first mention and used consistently thereafter.

Footnotes

Footnotes can be used to give additional information, which may include the citation of a reference included in the reference list. They should not consist solely of a reference citation, and they should never include the bibliographic details of a reference. They should also not contain any figures or tables.

Footnotes to the text are numbered consecutively; those to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data). Footnotes to the title or the authors of the article are not given reference symbols.

Always use footnotes instead of endnotes.

Scientific style

Please always use internationally accepted signs and symbols for units (SI units).

Nomenclature: Insofar as possible, authors should use systematic names similar to those used by Chemical Abstract Service or IUPAC.

Radioisotope numbers are either placed on the left shoulder or hyphenated (¹²⁵I, ^{99m}Tc or I-125, Tc-99m); usage should be consistent within a paper.

5. References

Citation

Reference citations in the text should be identified by numbers in square brackets. Some examples:

1. Negotiation research spans many disciplines [3].

2. This result was later contradicted by Becker and Seligman [5].
3. This effect has been widely studied [1-3, 7].

Reference list

The list of references should only include works that are cited in the text and that have been published or accepted for publication. Personal communications and unpublished works should only be mentioned in the text. Do not use footnotes or endnotes as a substitute for a reference list.

The entries in the list should be numbered consecutively.

For references, all authors are to be listed when six or fewer; when there are seven or more, the first six should be given, followed by "et al."

• Journal article

Oh JR, Seo JH, Chang WJ, Bae SI, Song IW, Bong JG, et al. Difference in F-18 FDG Uptake After Esophagogastroduodenoscopy and Colonoscopy in Healthy Sedated Subjects. *Nucl Med Mol Imaging*. 2017;51:240-6.

• Article by DOI

Slifka MK, Whitton JL. Clinical implications of dysregulated cytokine production. *J Mol Med*. 2000; <https://doi.org/10.1007/s001090000086>

• Book

Blenkinsopp A, Paxton P. *Symptoms in the pharmacy: a guide to the management of common illness*. 3rd ed. Oxford: Blackwell Science; 1998.

• Book chapter

Wyllie AH, Kerr JFR, Currie AR. Cell death: the significance of apoptosis. In: Bourne GH, Danielli JF, Jeon KW, editors. *International review of cytology*. London: Academic; 1980. pp. 251–306.

• Online document

Doe J. Title of subordinate document. In: *The dictionary of substances and their effects*. Royal Society of Chemistry. 1999. <http://www.rsc.org/dose/title of subordinate document>. Accessed 15 Jan 1999.

Always use the standard abbreviation of a journal's name according to the ISSN List of Title Word Abbreviations, see ISSN.org LTWA

If you are unsure, please use the full journal title.

Nucl Med Mol Imaging Endnote Style

If you wish to use EndNote, please download the EndNote style available on the NMMI website. Once downloaded, you can install the style file by pasting it into the Styles folder of your EndNote program directory (C:\Program Files (x86)\EndNote\styles). Please note that

the exact directory may vary depending on your specific version of EndNote and your operating system. Go to Edit => Output Styles => Open Style Manager, find the NMMI file and click on it. Once you do this, you will be able to use it thereafter.

6. Tables

All tables are to be numbered using Arabic numerals.

Tables should always be cited in text in consecutive numerical order.

Tables should be placed collectively after references on separate pages or uploaded as separate files

For each table, please supply a table caption (title) explaining the components of the table. Identify any previously published material by giving the original source in the form of a reference at the end of the table caption.

Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

7. Artwork and Illustrations Guidelines

Electronic Figure Submission

Supply all figures electronically.

Indicate what graphics program was used to create the artwork.

For vector graphics, the preferred format is EPS; for halftones, please use TIFF format. MS Office files are also acceptable.

Vector graphics containing fonts must have the fonts embedded in the files.

Name your figure files with "Fig" and the figure number, e.g., Fig1.eps.

Line Art

Definition: Black and white graphic with no shading.

Do not use faint lines and/or lettering and check that all lines and lettering within the figures are legible at final size.

All lines should be at least 0.1 mm (0.3 pt) wide.

Scanned line drawings and line drawings in bitmap format should have a minimum resolution of 1200 dpi.

Vector graphics containing fonts must have the fonts embedded in the files.

Halftone Art

Definition: Photographs, drawings, or paintings with fine shading, etc.

If any magnification is used in the photographs, indicate this by using scale bars within the figures themselves.

Halftones should have a minimum resolution of 300 dpi.

Combination Art

Definition: a combination of halftone and line art, e.g., halftones containing line drawing, extensive lettering, color diagrams, etc.

Combination artwork should have a minimum resolution of 600 dpi.

Color Art

Color art is free of charge for online publication.

If black and white will be shown in the print version, make sure that the main information will still be visible. Many colors are not distinguishable from one another when converted to black and white. A simple way to check this is to make a xerographic copy to see if the necessary distinctions between the different colors are still apparent.

If the figures will be printed in black and white, do not refer to color in the captions.

Color illustrations should be submitted as RGB (8 bits per channel).

Figure Lettering

To add lettering, it is best to use Helvetica or Arial (sans serif fonts).

Keep lettering consistently sized throughout your final-sized artwork, usually about 2–3 mm (8–12 pt).

Variance of type size within an illustration should be minimal, e.g., do not use 8-pt type on an axis and 20-pt type for the axis label. • Avoid effects such as shading, outline letters, etc. Do not include titles or captions within your illustrations.

Figure Numbering

All figures are to be numbered using Arabic numerals.

Figures should always be cited in the text in consecutive numerical order.

• **Figure parts should be denoted by lowercase letters (a, b, c, etc.) in the left upper portion of each part.**

If an appendix appears in your article and it contains one or more figures, continue the consecutive numbering of the main text. Do not number the appendix figures, "A1, A2, A3, etc." Figures in online appendices (Electronic Supplementary Material) should, however, be numbered separately.

Specifically, the manuscript for the interesting image is limited to a single figure. In cases of multiple images, please compile them into figure parts within one figure.

Figure Captions

Each figure should have a concise caption describing accurately what the figure depicts.

Include the captions in the text file of the manuscript, not in the figure file.

Figure captions begin with the term Fig. in bold type, followed by the figure number, also in bold type.

No punctuation is to be included after the number, nor is any punctuation to be placed at the end of the caption.

Identify all elements found in the figure in the figure caption; and use boxes, circles, etc., as

coordinate points in graphs.

Identify previously published material by giving the original source in the form of a reference citation at the end of the figure caption.

Figure Placement and Size

Figures should be submitted separately from the text.

Individual parts of figures should be submitted separately.

When preparing your figures, size figures to fit in the column width.

For large-sized journals the figures should be 84 mm (for double-column text areas), or 174 mm (for single-column text areas) wide and not higher than 234 mm.

For small-sized journals, the figures should be 119 mm wide and not higher than 195 mm.

Permissions

If you include figures that have already been published elsewhere, you must obtain permission from the copyright owner(s) for both the print and online format. Please be aware that some publishers do not grant electronic rights for free and that Springer will not be able to refund any costs that may have occurred to receive these permissions. In such cases, material from other sources should be used.

Accessibility

In order to give people of all abilities and disabilities access to the content of your figures, please make sure that

All figures have descriptive captions (blind users could then use text-to-speech software or text-to-Braille hardware)

Patterns are used instead of or in addition to colors for conveying information (colorblind users would then be able to distinguish the visual elements)

Any figure lettering has a contrast ratio of at least 4.5:1

8. Electronic Supplementary Material

Springer accepts electronic multimedia files (animations, movies, audio, etc.) and other supplementary files to be published online along with an article or a book chapter. This feature can add dimension to the author's article, as certain information cannot be printed or is more convenient in electronic form.

Before submitting research datasets as electronic supplementary material, authors should read the journal's Research data policy. We encourage research data to be archived in data repositories wherever possible.

Submission

- Supply all supplementary material in standard file formats.
- Please include in each file the following information: article title, journal name, author names; affiliation and e-mail address of the corresponding author.

- To accommodate user downloads, please keep in mind that larger-sized files may require very long download times and that some users may experience other problems during downloading.

Audio, Video, and Animations

- Aspect ratio: 16:9 or 4:3
- Maximum file size: 25 GB
- Minimum video duration: 1 sec
- Supported file formats: avi, wmv, mp4, mov, m2p, mp2, mpg, mpeg, flv, mxf, mts, m4v, 3gp

Text and Presentations

- Submit your material in PDF format; .doc or .ppt files are not suitable for long-term viability.
- A collection of figures may also be combined in a PDF file.

Spreadsheets

Spreadsheets should be submitted as .csv or .xlsx files (MS Excel).

Specialized Formats

Specialized formats such as .pdb (chemical), .vrl (VRML), .nb (Mathematica notebook), and .tex can also be supplied.

Collecting Multiple Files

It is possible to collect multiple files in a .zip or .gz file.

Numbering

- If supplying any supplementary material, the text must make a specific mention of the material as a citation, similar to that of figures and tables.
- Refer to the supplementary files as "Online Resource", e.g., "... as shown in the animation (Online Resource 3)", "... additional data are given in Online Resource 4".
- Name the files consecutively, e.g. "ESM_3.mpg", "ESM_4.pdf".

Captions

For each supplementary material, please supply a concise caption describing the content of the file.

Processing of supplementary files

Electronic supplementary material will be published as received from the author without any conversion, editing, or reformatting.

Accessibility

In order to give people of all abilities and disabilities access to the content of your supplementary files, please make sure that

The manuscript contains a descriptive caption for each supplementary material

Video files do not contain anything that flashes more than three times per second (so that users prone to seizures caused by such effects are not put at risk)

V. Ethical Responsibilities of Authors

This journal is committed to upholding the integrity of the scientific record. As a member of the Committee on Publication Ethics (COPE) the journal will follow the COPE guidelines on how to deal with potential acts of misconduct.

Authors should refrain from misrepresenting research results which could damage the trust in the journal, the professionalism of scientific authorship, and ultimately the entire scientific endeavor.

Maintaining the integrity of the research and its presentation is helped by following the rules of good scientific practice, which include*:

The manuscript should not be submitted to more than one journal for simultaneous consideration.

The submitted work should be original and should not have been published elsewhere in any form or language (partially or in full) unless the new work concerns an expansion of previous work. (Please provide transparency on the re-use of material to avoid concerns about text recycling ('self-plagiarism').

A single study should not be split up into several parts to increase the number of submissions and submitted to various journals or to one journal over time (i.e. 'salami-slicing/publishing').

Concurrent or secondary publication is sometimes justifiable, provided certain conditions are met. Examples include: translations or a manuscript that is intended for a different group of readers.

Results should be presented clearly, honestly, and without fabrication, falsification, or inappropriate data manipulation (including image-based manipulation). Authors should adhere to discipline-specific rules for acquiring, selecting, and processing data.

No data, text, or theories by others are presented as if they were the author's own ('plagiarism'). Proper acknowledgments to other works must be given (this includes material that is closely copied (near verbatim), summarized, and/or paraphrased), quotation marks (to indicate words taken from another source) are used for verbatim copying of material, and permissions secured for material that is copyrighted.

Important note: the journal may use software to screen for plagiarism.

Authors should make sure they have permission for the use of software, questionnaires/(web) surveys, and scales in their studies (if appropriate).

Authors should avoid untrue statements about an entity (who can be an individual person or a company) or descriptions of their behavior or actions that could potentially be seen as personal attacks or allegations about that person.

Research that may be misapplied to pose a threat to public health or national security should be clearly identified in the manuscript (e.g. dual use of research). Examples include the creation of harmful consequences of biological agents or toxins, disruption of immunity of vaccines, unusual hazards in the use of chemicals, and weaponization of research/technology (amongst others).

Authors are strongly advised to ensure the author group, the Corresponding Author, and the order of authors are all correct at submission. Adding and/or deleting authors during the revision stages is generally not permitted, but in some cases may be warranted. Reasons for changes in authorship should be explained in detail. Please note that changes to authorship cannot be made after acceptance of a manuscript.

*All of the above are guidelines and authors need to make sure to respect third parties' rights such as copyright and/or moral rights.

Upon request, authors should be prepared to send relevant documentation or data in order to verify the validity of the results presented. This could be in the form of raw data, samples, records, etc.

Sensitive information in the form of confidential or proprietary data is excluded.

If there is suspicion of misbehavior or alleged fraud the Journal and/or Publisher will carry out an investigation following COPE guidelines. If, after investigation, there are valid concerns, the author(s) concerned will be contacted under their given e-mail address and given an opportunity to address the issue. Depending on the situation, this may result in the Journal's and/or Publisher's implementation of the following measures, including, but not limited to:

If the manuscript is still under consideration, it may be rejected and returned to the author. If the article has already been published online, depending on the nature and severity of the infraction:

- an erratum/correction may be placed with the article
- an expression of concern may be placed with the article
- or in severe cases, retraction of the article may occur.

The reason will be given in the published erratum/correction, expression of concern, or retraction note.

Please note that retraction means that the article is **maintained on the platform**, watermarked

“retracted” and the explanation for the retraction is provided in a note linked to the watermarked article.

The author's institution may be informed

A notice of suspected transgression of ethical standards in the peer review system may be included as part of the author's and article's bibliographic records.

Fundamental errors

Authors have an obligation to correct mistakes once they discover a significant error or inaccuracy in their published article. The author(s) is/are requested to contact the journal and explain in what sense the error is impacting the article. A decision on how to correct the literature will depend on the nature of the error. This may be a correction or retraction. The retraction note should provide transparency on which parts of the article are impacted by the error.

Suggesting/excluding reviewers

Authors are welcome to suggest suitable reviewers and/or request the exclusion of certain individuals when they submit their manuscripts. When suggesting reviewers, authors should make sure they are totally independent and not connected to the work in any way. It is strongly recommended to suggest a mix of reviewers from different countries and different institutions. When suggesting reviewers, the

The corresponding Author must provide an institutional email address for each suggested reviewer, or, if this is not possible to include other means of verifying the identity such as a link to a personal homepage, a link to the publication record, or a researcher or author ID in the submission letter. Please note that the Journal may not use the suggestions, but suggestions are appreciated and may help facilitate the peer review process.

VI. Authorship principles

These guidelines describe authorship principles and good authorship practices to which prospective authors should adhere.

Authorship clarified

The Journal and Publisher assume all authors agreed with the content and that all gave explicit consent to submit and that they obtained consent from the responsible authorities at the institute/organization where the work has been carried out **before** the work is submitted.

The Publisher does not prescribe the kinds of contributions that warrant authorship. It is recommended that authors adhere to the guidelines for authorship that are applicable to their specific research field. In the absence of specific guidelines, it is recommended to adhere to the following guidelines*:

All authors whose names appear on the submission

- 1) made substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data; or the creation of new software used in the work;
- 2) drafted the work or revised it critically for important intellectual content;
- 3) approved the version to be published; and
- 4) agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

* Based on/adapted from:

ICMJE, Defining the Role of Authors and Contributors,
Transparency in authors' contributions and responsibilities to promote integrity in scientific publication, McNutt et al, PNAS February 27, 2018

Disclosures and declarations

All authors are requested to include information regarding sources of funding, financial or nonfinancial interests, study-specific approval by the appropriate ethics committee for research involving humans and/or animals, informed consent if the research involved human participants, and a statement on the welfare of animals if the research involved animals (as appropriate). The decision whether such information should be included is not only dependent on the scope of the journal but also the scope of the article. Work submitted for publication may have implications for public health or general welfare and in those cases, it is the responsibility of all authors to include the appropriate disclosures and declarations.

Data transparency

All authors are requested to make sure that all data and materials as well as software application or custom code support their published claims and comply with field standards.

Please note that journals may have individual policies on (sharing) research data in concordance with disciplinary norms and expectations. Please check the Instructions for Authors of the Journal that you are submitting for specific instructions.

Role of the Corresponding Author

One author is assigned as the Corresponding Author and acts on behalf of all co-authors and ensures that questions related to the accuracy or integrity of any part of the work are appropriately addressed.

The Corresponding Author is responsible for the following requirements:

- ensuring that all listed authors have approved the manuscript before submission, including the names and order of authors;
- managing all communication between the Journal and all co-authors, before and after publication;*
- Provide transparency on the re-use of material and mention any unpublished material (for example manuscripts in press) included in the manuscript in a cover letter to the Editor;
- make sure disclosures, declarations, and transparency on data statements from all authors are included in the manuscript as appropriate (see above).

* The requirement of managing all communication between the journal and all co-authors during submission and proofing may be delegated to a Contact or Submitting Author. In this case please make sure the Corresponding Author is clearly indicated in the manuscript.

Author contributions

Please check the Instructions for Authors of the Journal that you are submitting for specific instructions regarding contribution statements.

In the absence of specific instructions and in research fields where it is possible to describe discrete efforts, the Publisher recommends authors to include contribution statements in the work that specifies the contribution of every author in order to promote transparency. These contributions should be listed on a separate title page.

Examples of such statement(s) are shown below:

- Free text:

All authors contributed to the study's conception and design. Material preparation, data collection, and analysis were performed by [full name], [full name], and [full name]. The first draft of the manuscript was written by [full name] and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Example: CRediT taxonomy:

- Conceptualization: [full name], ...; Methodology: [full name], ...; Formal analysis and investigation: [full name], ...; Writing - original draft preparation: [full name, ...]; Writing - review and editing: [full name], ...; Funding acquisition: [full name], ...; Resources: [full name], ...; Supervision: [full name],....

For **review articles** where discrete statements are less applicable a statement should be included who had the idea for the article, who performed the literature search and data analysis, and who drafted and/or critically revised the work.

For articles that are based primarily on the **student's dissertation or thesis**, it is recommended that the student is usually listed as the principal author:

A Graduate Student's Guide to Determining Authorship Credit and Authorship Order, APA Science Student Council 2006

Affiliation

The primary affiliation for each author should be the institution where the majority of their work was done. If an author has subsequently moved, the current address may additionally be stated. Addresses will not be updated or changed after the publication of the article.

Changes to authorship

Authors are strongly advised to ensure the correct author group, the Corresponding Author, and the order of authors at submission. Changes of authorship by adding or deleting authors, and/or changes in the Corresponding Author, and/or changes in the sequence of authors are **not** accepted **after acceptance** of a manuscript.

• **Please note that author names will be published exactly as they appear on the accepted submission!**

Please make sure that the names of all authors are present and correctly spelled, and that addresses and affiliations are current.

Adding and/or deleting authors at the revision stage is generally not permitted, but in some cases, it may be warranted. The reasons for these changes in authorship should be explained. Approval of the change during revision is at the discretion of the Editor-in-Chief. Please note that journals may have individual policies on adding and/or deleting authors during the revision stage.

Author identification

Authors are recommended to use their ORCID ID when submitting an article for consideration or acquire an ORCID ID via the submission process.

Deceased or incapacitated authors

For cases in which a co-author dies or is incapacitated during the writing, submission, or peer-review process, and the co-authors feel it is appropriate to include the author, co-authors should obtain approval from a (legal) representative who could be a direct relative.

Authorship issues or disputes

In the case of an authorship dispute during peer review or after acceptance and publication, the Journal will not be in a position to investigate or adjudicate. Authors will be asked to resolve the dispute themselves. If they are unable the Journal reserves the right to withdraw a manuscript from the editorial process or in case of a published paper raise the issue with the authors' institution(s) and abide by its guidelines.

Confidentiality

Authors should treat all communication with the Journal as confidential which includes correspondence with direct representatives from the Journal such as Editors-in-Chief and/or Handling Editors and reviewers' reports unless explicit consent has been received to share information.

VII. Compliance with Ethical Standards

To ensure objectivity and transparency in research and to ensure that accepted principles of ethical and professional conduct have been followed, authors should include information regarding sources of funding, potential conflicts of interest (financial or non-financial), informed consent if the research involved human participants, and a statement on the welfare of animals if the research involved animals.

Authors should include the following statements (if applicable) in a separate section entitled “**Declarations**” when submitting a paper:

- Competing interests
- Ethics approval and consent to participate
- Consent for publication
- Acknowledgements
- Authors’ contributions
- Funding
- Data availability
- Declaration of generative AI in scientific writing
- Authors’ information (optional)
- Preprint sharing

The corresponding author should be prepared to collect documentation of compliance with ethical standards and send it if requested during peer review or after publication.

The Editors reserve the right to reject manuscripts that do not comply with the above-mentioned guidelines. The author will be held responsible for false statements or failure to fulfill the abovementioned guidelines.

1. Competing interests

Authors must disclose all relationships or interests that could influence or bias the work. Although an author may not feel there are conflicts, disclosure of relationships and interests affords a more transparent process, leading to an accurate and objective assessment of the work. Awareness of real or perceived conflicts of interest is a perspective to which the readers are entitled and is not meant to imply that a financial relationship with an organization that sponsored the research or compensation for consultancy work is inappropriate.

Examples of potential conflicts of interest **that are directly or indirectly related to the research** may include but are not limited to the following:

- Research grants from funding agencies (please give the research funder and the grant number)
- Honoraria for speaking at symposia
- Financial support for attending symposia

- Financial support for educational programs
- Employment or consultation
- Support from a project sponsor
- Position on an advisory board or board of directors or other types of management relationships
- Multiple affiliations
- Financial relationships, for example, equity ownership or investment interest
- Intellectual property rights (e.g. patents, copyrights, and royalties from such rights)
- Holdings of spouse and/or children that may have a financial interest in the work

In addition, interests that go beyond financial interests and compensation (non-financial interests) that may be important to readers should be disclosed. These may include but are not limited to personal relationships or competing interests directly or indirectly tied to this research, professional interests, or personal beliefs that may influence your research.

The corresponding author collects the conflict of interest disclosure forms from all authors. In author collaborations where formal agreements for representation allow it, it is sufficient for the corresponding author to sign the disclosure form on behalf of all authors. Examples of forms can be found here:

The corresponding author will include a summary statement **on the title page that is separate from their manuscript**, that reflects what is recorded in the potential conflict of interest disclosure form(s).

See below examples of disclosures:

Competing Interest: Author A has received research grants from Company A. Author B has received a speaker honorarium from Company X and owns stock in Company Y. Author C is a member of Committee Z. This study was funded by X (grant number X).

If no competing interest exists, the authors should state:

Competing interest: Author A, Author B, and Author C (note: Please mention names of all authors here) declare that they have no competing interests.

2. Ethical approval

Ethics approval

When reporting a study that involved human participants, their data, or biological material, authors should include a statement that confirms that the study was approved (or granted exemption) by the appropriate institutional and/or national research ethics committee (including the name of the ethics committee) and certify that the study was performed in accordance with the ethical standards as laid down in the Declaration of Helsinki and its later amendments or comparable ethical standards. If doubt exists whether the research was conducted in accordance with the Helsinki Declaration or comparable standards, the

authors must explain the reasons for their approach, and demonstrate that an independent ethics committee or institutional review board explicitly approved the doubtful aspects of the study. If a study was granted exemption from requiring ethics approval, this should also be detailed in the manuscript (including the reasons for the exemption).

Retrospective ethics approval

If a study has not been granted ethics committee approval prior to commencing, retrospective ethics approval usually cannot be obtained and it may not be possible to consider the manuscript for peer review. The decision on whether to proceed to peer review in such cases is at the Editor's discretion.

Ethics approval for retrospective studies

Although retrospective studies are conducted on already available data or biological material (for which formal consent may not be needed or is difficult to obtain) ethics approval may be required dependent on the law and the national ethical guidelines of a country. Authors should check with their institution to make sure they are complying with the specific requirements of their country.

Ethics approval for case studies

Case reports require ethics approval. Most institutions will have specific policies on this subject. Authors should check with their institution to make sure they are complying with the specific requirements of their institution and seek ethics approval where needed. Authors should be aware to secure informed consent from the individual (or parent or guardian if the participant is a minor or incapable) See also section on **Informed Consent**.

Cell lines

If human cells are used, authors must declare in the manuscript: what cell lines were used by describing the source of the cell line, including when and from where it was obtained, whether the cell line has recently been authenticated, and by what method. If cells were bought from a life science company the following need to be given in the manuscript: name of the company (that provided the cells), cell type, number of cell lines, and batch of cells. It is recommended that authors check the NCBI database for misidentification and contamination of human cell lines. This step will alert authors to possible problems with the cell line and may save considerable time and effort.

Further information is available from the International Cell Line Authentication Committee (ICLAC).

Authors should include a statement that confirms that an institutional or independent ethics committee (including the name of the ethics committee) approved the study and that informed consent was obtained from the donor or next of kin.

Research Resource Identifiers (RRID)

Research Resource Identifiers (RRID) are persistent unique identifiers (effectively similar to a DOI) for research resources. This journal encourages authors to adopt RRIDs when reporting

key biological resources (antibodies, cell lines, model organisms, and tools) in their manuscripts.

Examples:

Organism: *Filip1^{tm1a(KOMP)Wtsi}* **RRID:MMRRC_055641-UCD**

Cell Line: RST307 cell line **RRID:CVCL_C321**

Antibody: Luciferase antibody DSHB Cat# LUC-3, **RRID:AB_2722109**

Plasmid: mRuby3 plasmid **RRID:Addgene_104005**

Software: ImageJ Version 1.2.4 **RRID:SCR_003070**

RRIDs are provided by the Resource Identification Portal. Many commonly used research resources already have designated RRIDs. The portal also provides authors links so that they can quickly register a new resource and obtain an RRID.

Clinical Trial Registration

The World Health Organization (WHO) definition of a clinical trial is "any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes". The WHO defines health interventions as "A health intervention is an act performed for, with, or on behalf of a person or population whose purpose is to assess, improve, maintain, promote or modify health, functioning or health conditions" and a health-related outcome is generally defined as a change in the health of a person or population as a result of an intervention.

To ensure the integrity of the reporting of patient-centered trials, authors must register prospective clinical trials (phase II to IV trials) in suitable publicly available repositories. For example www.clinicaltrials.gov or any of the primary registries that participate in the WHO International Clinical Trials Registry Platform.

The trial registration number (TRN) and date of registration should be included as the last line of the manuscript abstract.

For clinical trials that have not been registered prospectively, authors are encouraged to register retrospectively to ensure the complete publication of all results. The trial registration number (TRN), date of registration and the words 'retrospectively registered' should be included as the last line of the manuscript abstract.

Purely observational trials will not require registration.

Standards of reporting

Springer Nature advocates complete and transparent reporting of biomedical and biological research and research with biological applications. Authors are recommended to adhere to the minimum reporting guidelines hosted by the EQUATOR Network when preparing their manuscripts.

Exact requirements may vary depending on the journal; please refer to the journal's

Instructions for Authors.

Checklists are available for a number of study designs, including:

Randomized trials (CONSORT) and Study protocols (SPIRIT)

Observational studies (STROBE)

Systematic reviews and meta-analyses (PRISMA) and protocols (Prisma-P)

Diagnostic/prognostic studies (STARD) and (TRIPOD)

Case reports (CARE)

Clinical practice guidelines (AGREE) and (RIGHT)

Qualitative research (SRQR) and (COREQ)

Animal pre-clinical studies (ARRIVE)

Quality improvement studies (SQUIRE)

Economic evaluations (CHEERS)

Once and if the paper is accepted for publication, the production department will put the respective statements in a distinctly identified section clearly visible to readers.

Please see the various examples of wording below and revise/customize the sample statements according to your own needs.

- Provide “**Ethics approval**” as a heading (see template)

◆ **Examples of ethics approval obtained:**

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Bioethics Committee of the Medical University of A (No. ...).

- This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of University B (Date.../No. ...).
- Approval was obtained from the ethics committee of University C. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.
- The questionnaire and methodology for this study were approved by the Human Research Ethics Committee of the University of C (Ethics approval number: ...).

◆ **Examples of a retrospective study:**

- Ethical approval was waived by the local Ethics Committee of University A in view of the retrospective nature of the study and all the procedures being performed were part of the routine care.

- This research study was conducted retrospectively from data obtained for clinical purposes. We consulted extensively with the IRB of XYZ who determined that our study did not need ethical approval.

An IRB official waiver of ethical approval was granted from the IRB of XYZ.

- This retrospective chart review study involving human participants was in accordance with the ethical standards of the institutional and national research committee and with the

Helsinki Declaration and its later amendments or comparable ethical standards. The Human Investigation Committee (IRB) of University B approved this study.

◆ **Examples of no ethical approval required/exemption granted:**

- This is an observational study. The XYZ Research Ethics Committee has confirmed that no ethical approval is required.
- The data reproduced from Article X utilized human tissue that was procured via our Biobank AB, which provides de-identified samples. This study was reviewed and deemed exempt by our XYZ Institutional Review Board. The BioBank protocols are in accordance with the ethical standards of our institution and with the 2013 Helsinki Declaration and its later amendments or comparable ethical standards.

If any of the sections are not relevant to your manuscript, please include the heading and write '**Not applicable**' for that section.

Authors are responsible for the correctness of the statements provided in the manuscript. See also Authorship Principles. The Editor-in-Chief reserves the right to reject submissions that do not meet the guidelines described in this section.

3. Informed consent

All individuals have individual rights that are not to be infringed. Individual participants in studies have, for example, the right to decide what happens to the (identifiable) personal data gathered, to what they have said during a study or an interview, as well as to any photograph that was taken. This is especially true concerning images of vulnerable people (e.g. minors, patients, refugees, etc) or the use of images in sensitive contexts. In many instances, authors will need to secure written consent before including images. Identifying details (names, dates of birth, identity numbers, biometrical characteristics (such as facial features, fingerprint, writing style, voice pattern, DNA, or other distinguishing characteristics) and other information) of the participants that were studied should not be published in written descriptions, photographs, and genetic profiles unless the information is essential for scholarly purposes and the participant (or parent or guardian if the participant is incapable) gave written informed consent for publication. Complete anonymity is difficult to achieve in some cases. Detailed descriptions of individual participants, whether of their whole bodies or of body sections, may lead to the disclosure of their identity. Under certain circumstances, consent is not required as long as the information is anonymized and the submission does not include images that may identify the person.

Informed consent for publication should be obtained if there is any doubt. For example, masking the eye region in photographs of participants is inadequate protection of anonymity. If identifying characteristics are altered to protect anonymity, such as in genetic profiles, authors should provide assurance that alterations do not distort scientific meaning.

Exceptions where it is not necessary to obtain consent:

- Images such as x-rays, laparoscopic images, ultrasound images, brain scans, pathology slides unless there is a concern about identifying information in which case, authors should ensure that consent is obtained.
- Reuse of images: If images are being reused from prior publications, the Publisher will assume that the prior publication obtained the relevant information regarding consent. Authors should provide the appropriate attribution for republished images.

Consent and already available data and/or biological material

Regardless of whether material is collected from living or dead patients, they (family or guardian if the deceased has not made a pre-mortem decision) must have given prior written consent. The aspect of confidentiality, as well as any wishes from the deceased, should be respected.

Data protection, confidentiality, and privacy

When biological material is donated or data is generated as part of a research project authors should ensure, as part of the informed consent procedure, that the participants are made what kind of (personal) data will be processed, how it will be used, and for what purpose. In the case of data acquired via a biobank/biorepository, it is possible they apply a broad consent which allows research participants to consent to a broad range of uses of their data and samples which is regarded by research ethics committees as specific enough to be considered “informed”. However, authors should always check the specific biobank/biorepository policies or any other type of data provider policies (in the case of non-bio research) to be sure that this is the case.

Consent to Participate

For all research involving human subjects, freely given, informed consent to participate in the study must be obtained from participants (or their parent or legal guardian in the case of children under 16) and a statement to this effect should appear in the manuscript. In the case of articles describing human transplantation studies, authors must include a statement declaring that no organs/tissues were obtained from prisoners and must also name the institution(s)/clinic(s)/department(s) via which organs/tissues were obtained. For manuscripts reporting studies involving vulnerable groups where there is the potential for coercion or where consent may not have been fully informed, extra care will be taken by the editor and may be referred to the Springer Nature Research Integrity Group.

Provide “**Consent to participate**” as a heading

Sample statements consent to participate:

Informed consent was obtained from all individual participants included in the study.

Informed consent was obtained from legal guardians.

Written informed consent was obtained from the parents.

Verbal informed consent was obtained prior to the interview.

The patient has consented to the submission of the case report for submission to the journal.

Consent for publication

Individuals may consent to participate in a study, but object to having their data published in a journal article. Authors should make sure to also seek consent from individuals to publish their data prior to submitting their paper to a journal. This is, in particular, applicable to case studies. A consent to publish form can be found here. (Download docx, 36 kB)

Provide **“Consent for publication”** as a heading

The authors affirm that human research participants provided informed consent for the publication of the images in Figure(s) 1a, 1b, and 1c.

The participant has consented to the submission of the case report to the journal.

Patients signed informed consent regarding publishing their data and photographs.

Sample statements if identifying information about participants is available in the article:

Additional informed consent was obtained from all individual participants for whom identifying information is included in this article.

Additional informed consent was obtained from all individual participants for whom identifying information is included in this article.

If any of the sections are not relevant to your manuscript, please include the heading and write 'Not applicable' for that section.

4. Summary of requirements

The above should be summarized in a statement and included on **a title page that is separate from the manuscript** with a section entitled **“Declarations”** when submitting a paper.

Having all statements in one place allows for a consistent and unified review of the information by the Editor-in-Chief and/or peer reviewers and may speed up the handling of the paper. Declarations include Competing interests, Ethics approval and consent to participate, Consent for publication, Acknowledgements, Authors' contributions, Funding, Data availability, Declaration of generative AI in scientific writing statements, authors' information (optional) and preprint sharing.

Once and if the paper is accepted for publication, the production department will put the respective statements in a distinctly identified section clearly visible to readers.

Authors are responsible for the correctness of the statements provided in the manuscript. See also Authorship Principles. The Editor-in-Chief reserves the right to reject submissions that do not meet the guidelines described in this section.

Images will be removed from publication if authors have not obtained informed consent or the paper may be removed and replaced with a notice explaining the reason for removal.

VIII. Research Data Policy

The journal encourages authors, where possible and applicable, to deposit data that support the findings of their research in a public repository. Authors and editors who do not have a preferred repository should consult Springer Nature's list of repositories and research data policy.

List of Repositories
Research Data Policy

General repositories - for all types of research data - such as figshare and Dryad may also be used.

Datasets that are assigned digital object identifiers (DOIs) by a data repository may be cited in the reference list. Data citations should include the minimum information recommended by DataCite: authors, title, publisher (repository name), and identifier.

DataCite

Springer Nature provides a research data policy support service for authors and editors, which can be contacted at **researchdata@springernature.com**.

This service provides advice on research data policy compliance and on finding research data repositories. It is independent of journal, book, and conference proceedings editorial offices and does not advise on specific manuscripts.

Helpdesk

IX. After Acceptance

Upon acceptance of your article, you will receive a link to the special Author Query Application at Springer's web page where you can sign the Copyright Transfer Statement online and indicate whether you wish to order OpenChoice and offprints.

Once the Author Query Application has been completed, your article will be processed and you will receive the proofs.

Copyright transfer

Authors will be asked to transfer the copyright of the article to the Publisher (or grant the Publisher exclusive publication and dissemination rights). This will ensure the widest possible protection and dissemination of information under copyright laws.

Offprints

Offprints can be ordered by the corresponding author.

Color illustrations

Publication of color illustrations is free of charge.

Proofreading

The purpose of the proof is to check for typesetting or conversion errors and the completeness and accuracy of the text, tables, and figures. Substantial changes in content, e.g., new results, corrected values, title, and authorship, are not allowed without the approval of the Editor.

After online publication, further changes can only be made in the form of an Erratum, which will be hyperlinked to the article.

Online First

The article will be published online after receipt of the corrected proofs. This is the official first publication citable with the DOI. After the release of the printed version, the paper can also be cited by issue and page numbers.

Open Choice

Open Choice allows you to publish open access in more than 1850 Springer Nature journals, making your research more visible and accessible immediately on publication.

Article processing charges (APCs) vary by journal – view the full list

Benefits:

- Increased researcher engagement: Open Choice enables access by anyone with an internet connection, immediately on publication.
- Higher visibility and impact: In Springer hybrid journals, OA articles are accessed 4 times more often on average, and cited 1.7 more times on average*.
- Easy compliance with funder and institutional mandates: Many funders require open-access publishing, and some take compliance into account when assessing future grant applications.

It is easy to find funding to support open access – please see our funding and support pages for more information.

*Within the first three years of publication. Springer Nature hybrid journal OA impact analysis, 2018.

Open Choice
Funding and Support pages

Copyright and license term – CC BY

Open Choice articles do not require the transfer of copyright as the copyright remains with the author. In opting for open access, the author(s) agree to publish the article under the Creative Commons Attribution License.

Find more about the license agreement

X. Self-archiving policy

Self-archiving for articles in subscription-based journals

Springer Nature permits self-archiving, and most importantly we are fully transparent about your rights.

Springer journals' policy on preprint sharing.

By signing the Copyright Transfer Statement you still retain substantial rights, such as self-archiving:

Author(s) are permitted to self-archive a pre-print and an author's accepted manuscript version of their Article.

a. A pre-print is the author's version of the Article before peer-review has taken place ("Pre-Print"). Prior to acceptance for publication, Author(s) retain the right to make a Pre-Print of their Article available on any of the following: their own personal, self-maintained website; a legally compliant preprint server such as but not limited to arXiv and bioRxiv. Once the Article has been published, the Author(s) should update the acknowledgment and provide a link to the definitive version on the publisher's website: "This is a pre-print of an article published in [insert journal title]. The final authenticated version is available online at: [https://doi.org/\[insert DOI\]](https://doi.org/[insert DOI])".

b. An Author's Accepted Manuscript (AAM) is the version accepted for publication in a journal following peer review but prior to copyediting and typesetting that can be made available under the following conditions:

(i) Author(s) retain the right to make an AAM of their Article available on their own personal, self-maintained website immediately on acceptance,

(ii) Author(s) retain the right to make an AAM of their Article available for public release on any of the following 12 months after first publication ("Embargo Period"): their employer's internal website; their institutional and/or funder repositories. AAMs may also be deposited in such repositories immediately upon acceptance, provided that they are not made publicly available until after the Embargo Period.

An acknowledgment in the following form should be included, together with a link to the published version on the publisher's website: "This is a post-peer-review, pre-copyedit version of an article published in [insert journal title]. The final authenticated version is available online at: [http://dx.doi.org/\[insert DOI\]](http://dx.doi.org/[insert DOI])".

When publishing an article in a subscription journal, without open access, authors sign the Copyright Transfer Statement (CTS) which also details Springer's self-archiving policy.

See Springer Nature terms of reuse for archived author-accepted manuscripts (AAMs) of subscription articles.

Publishing open access

If you publish your article open access, the final published version can be archived in institutional or funder repositories and can be made publicly accessible immediately.

XI. English Language Editing

For editors and reviewers to accurately assess the work presented in your manuscript you need to ensure the English language is of sufficient quality to be understood. If you need help with writing in English you should consider:

- Ask a colleague who is a native English speaker to review your manuscript for clarity.
- Visiting the English language tutorial which covers the common mistakes when writing in English.
- Using a professional language editing service where editors will improve the English to ensure that your meaning is clear and identify problems that require your review. Two such services are provided by our affiliates Nature Research Editing Service and American Journal Experts. Springer authors are entitled to a 10% discount on their first submission to either of these services, simply follow the links below.

English language tutorial
Nature Research Editing Service
American Journal Experts

Please note that the use of a language editing service is not a requirement for publication in this journal and does not imply or guarantee that the article will be selected for peer review or accepted.

If your manuscript is accepted it will be checked by our copyeditors for spelling and formal style before publication.