

Guidelines for authors

Writing and formatting

Title

The title should be concise, omitting terms that are implicit and, where possible, be a statement of the main result or conclusion presented in the manuscript. Abbreviations should be avoided within the title.

Witty and creative titles are welcome, but only if relevant and within measure. Consider if a title meant to be thought-provoking might be misinterpreted as offensive or alarming. In extreme cases, the editorial office may veto a title and propose an alternative. Authors should avoid:

- titles that are a mere question without giving the answer
- unambitious titles, for example starting with 'Towards,' 'A description of,' 'A characterization of' or 'Preliminary study on'

For authors

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example the taxonomic affiliation apart from species name.

Abstract

As a primary goal, the abstract should make the general significance and conceptual advance of the work clearly accessible to a broad readership. The abstract should be no longer than a single paragraph and should be structured, for example, according to the **IMRAD format**. For the specific structure of the abstract, authors should follow the requirements of the article type or journal to which they're submitting. Minimize the use of abbreviations and do not cite references, figures or tables. For clinical trial articles, please include the unique identifier and the URL of the publicly accessible website on

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bibliography. Please indicate the number of words and the number of figures and tables

SECTIONS

The manuscript is organized by headings and subheadings. The section headings should be those appropriate for your field and the research itself. You may insert up to 5 heading levels into your manuscript (i.e. 3.2.2.1.2 Heading Title).

For Original Research articles, it is recommended to organize your manuscript in the following sections or their equivalents for your field.

Introduction Succinct, with no subheadings.

Materials and methods This section may be divided by subheadings and should contain sufficient detail so that when read in conjunction with cited references, all procedures can be repeated. For experiments reporting results on animal or

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and limitations on their interpretations,

tested in the future.

For further information, please check the descriptions defined in the journal's 'Article types' page, in the 'For authors' menu on every journal page.

Templates

If working with Word please use our **Word templates**. If you wish to submit your article as LaTeX, we recommend our **LaTeX templates**. For LaTeX files, please ensure all relevant manuscript files are uploaded: .tex file, PDF, and .bib file (if the bibliography is not already included in the .tex file).

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specify this on the first page of your manuscript. For any questions regarding style, Frontiers recommends authors to consult the **Chicago Manual of Style**.

Inclusive language

Frontiers is an inclusive publisher and we ask that all submissions are in line with our inclusive language policy. When preparing your manuscript for submission, take a mindful approach towards personal biases and a concerted effort to limit their influence. Authors should remove any suggestion or implication of superiority or inferiority of one person over another based on age, gender, race, ethnicity, culture, sexual orientation, disability, religion, or socio-economic class. We ask authors to

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disability, or health conditions, where they are not critically relevant to the discussion.

- any form of language that suggests a particular culture or group as the default or standard.

And where feasible:

- proactively ask individuals or groups how they would prefer to be referenced.
- adhere to the SAGER guidelines for reference to sex and gender in research.

Remember, the language we use can influence perceptions, evoke emotions, and shape perspectives. Let's work together to nurture an inclusive, respectful, and empowering discourse in science.

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- Use the maximum amount of keywords in the first two sentences of the abstract

Alt text

As part of our commitment to make science open for all, we are dedicated to accessibility in our publications. One way you can make your manuscript more accessible is by including alternative text (alt text) with all figures or images.

What is alt text?

Alt text is a short visual description of the contents of an image. Alt text is not the same as a caption, as it provides a description of the entire image. It is included in the manuscript alongside the image, but in the background, not visible on the page.

Good alt text will be specific, concise, and not overly descriptive. It should include any

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readers with visual impairments. This is also useful for anyone else who can't view the

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Guidelines for artificial intelligence

These guidelines cover acceptable uses of generative AI technologies such as Large Language Models (ChatGPT, Jasper) and text-to-image generators (DALL-E 2, Midjourney, Stable Diffusion) in the writing or editing of manuscripts submitted to Frontiers.

Use of AI to create written or visual content

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generative AI technology. This includes, but

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The entire document should be single-spaced and must contain page and line numbers in order to facilitate the review.

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giving a list of non-standard abbreviations

Italicize gene symbols and use the approved gene nomenclature where it is available. For human genes, please refer to the HUGO Gene Nomenclature Committee (**HGNC**). New symbols for human genes should be submitted to the HGNC **here**. Common alternative gene aliases may also be reported, but should not be used alone in place of the HGNC symbol. Nomenclature committees for other species are listed **here**. Protein products are not italicized.

We encourage the use of Standard International Units in all manuscripts.

Chemical compounds and biomolecules should be referred to using systematic nomenclature, preferably using the recommendations by the International Union of Pure and Applied Chemistry (IUPAC).

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the code section of our **policies and publication ethics**.

formatting references

Submissions to Frontiers must be grounded in relevant and up to date peer-reviewed, academic research, and this should be reflected in the accompanying reference lists.

Authors are welcome to use online referencing tools in preparation of their manuscript. Some useful resources include **RefMe**, **Zotero**, and **Mendeley**.

- The citation of non-academic and non-peer-reviewed sources (e.g. blog posts, website content), as well as anonymous sources or commercial websites should be avoided or kept to a minimum
- Authors should avoid citing content that is not directly relevant to the scope of the article and the journal
- Reference lists should reflect the current

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Vancouver (numbered). Please check our

- The names of the first six authors followed by et al. and the DOI (when available) should be provided
- Given names of authors should be abbreviated to initials (e.g., Smith, J., Lewis, C.S., etc.)
- The reference list should only include articles that are published or accepted
- Unpublished data, submitted manuscripts, or personal communications should be cited within the text only, for article types that allow such inclusions
- For accepted but unpublished works use 'in press' instead of page numbers
- Data sets that have been deposited to an online repository should be included in the reference list. Include the version and unique identifier when available
- Personal communications should be

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referencing system; to find the correct reference style and resources for the journal you are submitting to, please visit our [help center](#). Reference examples are found below, for more examples of citing other documents and general questions regarding the Harvard reference style, please refer to the [Chicago Manual of Style](#).

- References should include the full last name and first name initials of the first six authors, followed by et al. and the year of publication in brackets.
- Alphabetical order is followed for the reference list.

Reference examples

Article in a print journal Sondheimer, N., and Lindquist, S. (2000). Rng1: an

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Approaches to Neural Development. New York: Oxford University Press.

Gerontology database. (ACCESSION NO. 50360869)

Website World Health Organization. (2018). E. coli. <https://www.who.int/news-room/fact-sheets/detail/e-coli> [Accessed March 15, 2018].

Patent Marshall, S. P. (2000). Method and apparatus for eye tracking and monitoring pupil dilation to evaluate cognitive activity. U.S. Patent No 6,090,051. Washington, DC: U.S. Patent and Trademark Office.

Data Perdiguero P, Venturas M, Cervera MT, Gil L, Collada C. Data from: Massive sequencing of Ulms minor's transcriptome provides new molecular tools for a genus under the constant threat of Dutch elm disease. Dryad Digital Repository. (2015) <http://dx.doi.org/10.5061/dryad.ps837>

Theses and dissertations Smith, J. (2008)

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Reference examples are found below, for more examples of citing other documents and general questions regarding the Vancouver reference style, please refer to [Citing Medicine](#).

In-text citations

- In-text citations in the Vancouver reference style should be numbered consecutively in order of appearance in the text and identified by Arabic numerals in parenthesis
- Use square brackets for physics and mathematics articles
- The abbreviation 'Ref' should not be used, e.g.: [e.g., (1)] should NOT read [e.g. Ref. (1)]
- Style for comparing a citation should follow the number format, e.g. [cf. (1)]

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Wang Y, Birke DD. Anabolic effects of IGF-1

Raton, FL: CRC Press (1998). p. 375-405.

Book Cowan WM, Jessell TM, Zipursky SL. Molecular and Cellular Approaches to Neural Development. New York: Oxford University Press (1997). 345 p.

Abstract Christensen S, Oppacher F. An analysis of Koza's computational effort statistic for genetic programming. In: Foster JA, editor. Genetic Programming. EuroGP 2002: Proceedings of the 5th European Conference on Genetic Programming; 2002 Apr 3–5; Kinsdale, Ireland. Berlin: Springer (2002). p. 182–91.

Website World Health Organization. E. coli (2018). <https://www.who.int/news-room/fact-sheets/detail/e-coli> [Accessed March 15, 2018].

Patent Pagedas AC, inventor; Ancel Surgical

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relative to phenomenological pursuits in the deconstructivist arena.

March 15, 2018).

Citation of retracted articles

Authors are responsible for ensuring the integrity of the references they cite, including verifying whether any article they intend to cite has been retracted. Citing retracted articles can undermine the credibility of your manuscript and should only occur where it is essential for the context of your discussion.

Guidelines for citing retracted articles:

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article in the manuscript, explaining its

and ensures that all references within the manuscript contribute validly to the scholarly discourse. Ensuring the accuracy and transparency of citations protects authors from inadvertently perpetuating misinformation and supports the overall trustworthiness of research publications.

Acknowledgments

This is a short text to acknowledge the contributions of specific colleagues, institutions, or agencies that aided the efforts of the authors. Should the content of the manuscript have previously appeared online, such as in a thesis or preprint, this should be mentioned here, in addition to listing the source within the reference list.

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labels (A), (B), (C), (D), etc. However, do not embed the part labels over any part of the

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To upload more than one figure at a time, save the figures (labeled in order of appearance in the manuscript) in a zip file and upload them as 'Supplementary Material Presentation.'

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Captions should be preceded by the appropriate label, for example 'Figure 1.' Figure captions should be placed at the end

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dpi at final size. Check the resolution of your figure by enlarging it to 150%. If the

viewed at actual size.

Solid lines should not be broken up. Any lines in the graphic should be no smaller than two points wide.

Please note that saving a figure directly as an image file (JPEG, TIF) can greatly affect the resolution of your image. To avoid this, one option is to export the file as PDF, then convert into TIFF or EPS using a graphics software.

Format and color image mode

The following formats are accepted: TIF/TIFF (.tif/.tiff), JPEG (.jpg), and EPS (.eps) (upon acceptance). Images must be submitted in the color mode RGB.

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font, Arial; size, 8 pt

Table requirements and style guidelines

Tables should be inserted at the end of the manuscript in an editable format. If you use a word processor, build your table in Word. If you use a LaTeX processor, build your table in LaTeX. An empty line should be left before and after the table.

Table captions must be placed immediately before the table. Captions should be preceded by the appropriate label, for example 'Table 1.' Please use only a single paragraph for the caption.

Kindly ensure that each table is mentioned in the text and in numerical order.

Please note that large tables covering

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effective use of color can help people with

2.1), the standard for web accessibility best practices.

Ensure sufficient contrast between text and its background People who have low visual acuity or color blindness could find it difficult to read text with low contrast background color. Try using colors that provide maximum contrast.

WC3 recommends the following contrast ratio levels:

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- Level AAA, contrast ratio of at least 7:1

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Data that are not of primary importance to the text, or which cannot be included in the article because they are too large or the current format does not permit it (such as videos, raw data traces, and PowerPoint presentations), can be uploaded as supplementary material during the submission procedure and will be displayed along with the published article. All supplementary files are deposited to figshare for permanent storage and receive a DOI.

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Such as the derivation of an equation, short

Appendix content **longer** than one page should be included in the supplementary material section instead.

File type requirements

The supplementary material can be uploaded as:

- data sheet (Word, Excel, CSV, CDX, FASTA, PDF or Zip files)
- presentation (PowerPoint, PDF or Zip files)
- image (CDX, EPS, JPEG, PDF, PNG or TIF/TIFF),
- table (Word, Excel, CSV or PDF)
- audio (MP3, WAV or WMA)
- video (AVI, DIVX, FLV, MOV, MP4, MPEG, MPG, WMV)

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- Laboratory, Institute, Department, Organization, City, State abbreviation (only for United States, Canada, and Australia), and Country (without detailed address information such as city zip codes or street names).

Example: Max Maximus¹ Department of Excellence, International University of Science, New York, NY, United States.

Correspondence

The corresponding author(s) should be marked with an asterisk in the author list. Provide the exact contact email address of the corresponding author(s) in a separate

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Example: Max Maximus 1†, John Smith2† and Barbara Smith1 †These authors contributed equally to this work and share first authorship

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citation, and in the copyright. If provided, the consortium/group members will be

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Example: John Smith, Barbara Smith and The Collaborative Working Group. In cases where work is presented by the author(s) on behalf of a consortium/group, it should be included in the author list separated with the wording 'for' or 'on behalf of.' The consortium/group will not retain authorship and will only appear in the author list.

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