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Submission Guidelines

About the Journal

PLOS Genetics publishes original research that clearly demonstrates novelty, importance to a particular field, biological significance, and conclusions that are justified by the study.

Our aim is to make the editorial process rigorous and consistent, and to offer the best possible support to our authors throughout this process. Authors are encouraged to decide how best to present their ideas, results, and conclusions, but all research should be presented in a form that is readable to those in the field, easily understood by scientists outside of the immediate discipline, and comprehensible to readers whose first language is not English. The writing style should therefore be concise and accessible. Care should be taken to define abbreviations clearly and to use correct genetic and systematic nomenclature.


We strongly encourage authors to seek input from their co-authors and colleagues with different expertise when preparing their manuscript for submission to ensure that the style of writing, clarity of meaning, and spelling, punctuation, and grammar are at a very high level. A variety of style and writing guides are available, including *The Elements of Style* (New York: bartleby.com, 1999) and the [Manuscript Preparation recommendations](#) of the International Committee of Medical Journal Editors (ICMJE). Editors and/or reviewers may also make suggestions for how to achieve optimal quality and clarity of presentation, as well as potential cuts or additions that could strengthen the manuscript.

Related information for authors

- › [PLOS Writing Center](#)
- › [Submission system](#)
- › [Journal scope and publication criteria](#)
- › [Getting started guide](#)
- › [Guidelines for other article types](#)
- › [Guidelines for revisions](#)
- › [Publication fees](#)

Style and Format

PLOS Genetics accepts initial submissions of manuscripts in a single PDF file which can include text and figures. If you are submitting a [revised manuscript](#), upload separate files for your text, figures, and supporting information. The editor will then assess your submission.

 When you first submit to the journal, providing you include all the necessary information needed for editorial assessment and review, we will not ask you to make any formatting changes. During resubmission, we may ask you to meet formatting requirements.

File format	<p>Manuscript files can be in the following formats: DOC, DOCX, RTF or PDF. Microsoft Word documents should not be locked or protected.</p> <p>LaTeX manuscripts must be submitted as PDFs. Read the LaTeX guidelines.</p>
Length	<p>Manuscripts can be any length. There are no restrictions on word count, number of figures, or amount of supporting information.</p> <p>We encourage you to present and discuss your findings concisely.</p>
Font	<p>Use a standard font size and any standard font, except for the font named "Symbol". To add symbols to the manuscript, use the Insert → Symbol function in your word processor or paste in the appropriate Unicode character.</p>
Headings	<p>Limit manuscript sections and sub-sections to 3 heading levels. Make sure heading levels are clearly indicated in the manuscript text.</p>
Layout and spacing	<p>Manuscript text should be double-spaced.</p> <p>Do not format text in multiple columns.</p>
Page and line numbers	<p>Include page numbers and line numbers in the manuscript file. Use continuous line numbers (do not restart the numbering on each page).</p>
Tables	<p>Insert tables immediately after the first paragraph in which they are cited.</p>
Supporting Information	<p>Upload Supporting Information (SI) files separately.</p>
Footnotes	<p>Footnotes are not permitted. If your manuscript contains footnotes, move the information into the main text or the reference list, depending on the content.</p>
Language	<p>Manuscripts must be submitted in English.</p> <p>You may submit translations of the manuscript or abstract as supporting information. Read the supporting information guidelines.</p>
Abbreviations	<p>Define abbreviations upon first appearance in the text.</p> <p>Do not use non-standard abbreviations unless they appear at least three times in the text.</p> <p>Keep abbreviations to a minimum.</p>
Reference style	<p>PLOS uses "Vancouver" style, as outlined in the ICMJE sample references.</p> <p>See reference formatting examples and additional instructions below.</p>
Equations	<p>We recommend using MathType for display and inline equations, as it will provide the most reliable outcome. If this is not possible, Equation Editor or Microsoft's Insert→Equation function is acceptable.</p> <p>Avoid using MathType, Equation Editor, or the Insert→Equation function to insert single variables (e.g., "a² + b² = c²"), Greek or other symbols (e.g., β, Δ, or ' [prime]), or mathematical operators (e.g., x, ≥, or ±) in running text. Wherever possible, insert single symbols as normal text with the correct Unicode (hex) values.</p> <p>Do not use MathType, Equation Editor, or the Insert→Equation function for only a portion of an equation. Rather, ensure that the entire equation is included. Equations should not contain a mix of different equation tools. Avoid "hybrid" inline or display equations, in which part is text and part is MathType, or part is MathType and part is Equation Editor.</p>
Nomenclature	<p>Use correct and established nomenclature wherever possible.</p> <p><i>Units of measurement</i> Use SI units. If you do not use these exclusively, provide the SI value in parentheses after each value. Read more about SI units.</p> <p><i>Drugs</i> Provide the Recommended International Non-Proprietary Name (rINN).</p> <p><i>Species names</i> Write in italics (e.g., <i>Homo sapiens</i>). Write out in full the genus and species, both in the title of the manuscript and at the first mention of an organism in a paper. After first mention, the first letter of the genus name followed by the full species name may be used (e.g., <i>H. sapiens</i>).</p>

Genes, mutations, genotypes, and alleles

Write in italics. Use the recommended name by consulting the appropriate genetic nomenclature database (e.g., [HUGO](#) for human genes). It is sometimes advisable to indicate the synonyms for the gene the first time it appears in the text. Gene prefixes such as those used for oncogenes or cellular localization should be shown in roman typeface (e.g., v-fes, c-MYC).

Allergens

The systematic allergen nomenclature of the World Health Organization/International Union of Immunological Societies (WHO/IUIS) Allergen Nomenclature Sub-committee should be used for manuscripts that include the description or use of allergenic proteins. For manuscripts describing new allergens, the systematic name of the allergen should be approved by the WHO/IUIS Allergen Nomenclature Sub-Committee prior to manuscript publication. Examples of the systematic allergen nomenclature can be found at the [WHO/IUIS Allergen Nomenclature site](#).

Copyediting manuscripts

Prior to submission, authors who believe their manuscripts would benefit from in-depth professional copyediting are encouraged to use language-editing and copyediting services. Obtaining this service is the responsibility of the author and should be done before initial submission. These services can be found on the web using search terms like “scientific editing service” or “manuscript editing service”.

Note that if your manuscript is accepted, PLOS will not perform a detailed copyediting step. Therefore, please carefully review your manuscript, paying special attention to spelling, punctuation, and grammar, as well as scientific content.

Manuscript Organization

Most manuscripts should be organized as follows. Instructions for each element appear below.

- › Title
- › Authors
- › Affiliations
- › Abstract
- › Author Summary
- › Introduction
- › Results
- › Discussion
- › Materials and Methods (also called Methods or Models)
- › Acknowledgments
- › References
- › Supporting information captions.

Uniformity in format facilitates the experience of readers and users of the journal. To provide flexibility, however, authors are also able to include the Materials and Methods section before the Results section or before the Discussion section. Please clarify the reasons for including your Materials and Methods section before the Results or Discussion sections in your cover letter when submitting your manuscript files.

Please also note that the Results and Discussion can be combined into one Results/Discussion section.

Manuscripts submitted as Methods articles may be organized as follows:

- › Title
- › Authors
- › Affiliations
- › Abstract
- › Author Summary
- › Introduction
- › Description of the Method
- › Verification and Comparison
- › Applications
- › Discussion
- › Acknowledgements
- › References
- › Supporting Information captions

To use this alternative structure, please choose ‘Methods’ when selecting an article type during the submission process.

**Ready to format your provisionally accepted manuscript?**

Refer to our downloadable sample files to ensure that your submission meets our formatting requirements:

- › [Download sample title, author list, and affiliations page \(PDF\)](#)
- › [Download sample manuscript body \(PDF\)](#)

**Viewing Figures and Supporting Information in the compiled submission PDF**

The compiled submission PDF includes low-resolution preview images of the figures after the reference list. The function of these previews is to allow you to download the entire submission as quickly as possible. Click the link at the top of each preview page to download a high-resolution version of each figure. Links to download Supporting Information files are also available after the reference list.

Parts of a Submission

Title

Include a full title and a short title for the manuscript.

Title	Length	Guidelines	Examples
Full title	200 characters	Specific, descriptive, concise, and comprehensible to readers outside the field	Impact of cigarette smoke exposure on innate immunity: A <i>Caenorhabditis elegans</i> model Solar drinking water disinfection (SODIS) to reduce childhood diarrhoea in rural Bolivia: A cluster-randomized, controlled trial
Short title	70 characters	State the topic of the study	Cigarette smoke exposure and innate immunity SODIS and childhood diarrhoea

Titles should be written in sentence case (only the first word of the text, proper nouns, and genus names are capitalized). Avoid specialist abbreviations if possible. For clinical trials, systematic reviews, or meta-analyses, the subtitle should include the study design.

Author list

**Authorship requirements**

All authors must meet the criteria for authorship as outlined in the [authorship policy](#). Those who contributed to the work but do not meet the criteria for authorship can be mentioned in the Acknowledgments. [Read more about Acknowledgments](#).

The corresponding author must provide an ORCID iD at the time of submission by entering it in the user profile in the submission system. [Read more about ORCID](#).

Author names and affiliations

Enter author names on the title page of the manuscript and in the online submission system.

On the title page, write author names in the following order:

- › First name (or initials, if used)
- › Middle name (or initials, if used)
- › Last name (surname, family name)

Each author on the list must have an affiliation. The affiliation includes department, university, or organizational affiliation and its location, including city, state/province (if applicable), and country. Authors have the option to include a current address in addition to the address of their affiliation at the time of the study. The current address should be listed in the byline and clearly labeled “current address.” At a minimum, the address must include the author’s current institution, city, and country.

If an author has multiple affiliations, enter all affiliations on the title page only. In the submission system, enter only the preferred or primary affiliation. Author affiliations will be listed in the typeset PDF article in the same order that authors are listed in the submission.



Author names will be published exactly as they appear in the manuscript file. Please double-check the information carefully to make sure it is correct.

Corresponding author

The submitting author is automatically designated as the corresponding author in the submission system. The corresponding author is the primary contact for the journal office and the only author able to view or change the manuscript while it is under editorial consideration.


The corresponding author role may be transferred to another coauthor. However, note that transferring the corresponding author role also transfers access to the manuscript. (To designate a new corresponding author while the manuscript is still under consideration, watch the video tutorial below.)

Only one corresponding author can be designated in the submission system, but this does not restrict the number of corresponding authors that may be listed on the article in the event of publication. Whoever is designated as a corresponding author on the title page of the manuscript file will be listed as such upon publication. Include an email address for each corresponding author listed on the title page of the manuscript.

Consortia and group authorship

If a manuscript is submitted on behalf of a consortium or group, include its name in the manuscript byline. Do not add it to the author list in the submission system. You may include the full list of members in the Acknowledgments or in a supporting information file.

PubMed only indexes individual consortium or group author members listed in the article byline. If included, these individuals must qualify for authorship according to our [criteria](#).

 [Read the group authorship policy.](#)

Author contributions

Provide at minimum one contribution for each author in the submission system. Use the CRediT taxonomy to describe each contribution. [Read the policy and the full list of roles.](#)

Contributions will be published with the final article, and they should accurately reflect contributions to the work. The submitting author is responsible for completing this information at submission, and we expect that all authors will have reviewed, discussed, and agreed to their individual contributions ahead of this time.

PLOS Genetics will contact all authors by email at submission to ensure that they are aware of the submission.

Cover letter

Upload a cover letter as a separate file in the online system.

The cover letter should address the following questions:


- › Why is this manuscript suitable for publication in *PLOS Genetics*?
- › Why will your study inspire other members of your field, and how will it drive research forward?

You may recommend a suitable Academic Editor to handle your submission; however, the editors reserve the right to contact an alternative—either from the board or a guest editor.

The cover letter will only be available to the editor and the journal staff.

Title page

The title, authors, and affiliations should all be included on a title page as the first page of the manuscript file.

 [Download our sample title, author list, and affiliations page \(PDF\).](#)

Abstract

The Abstract comes after the title page in the manuscript file. The abstract text is also entered in a separate field in the submission system.

The Abstract should be succinct; it must not exceed 300 words. Authors should mention the techniques used without going into methodological detail and should summarize the most important results.

While the Abstract is conceptually divided into three sections (Background, Methodology/Principal Findings, and Conclusions/Significance), do not apply these distinct headings to the Abstract within the article file.

Do not include any citations. Avoid specialist abbreviations.

Author Summary

We ask that all authors of research articles include a 150-200 word non-technical summary of the work as part of the manuscript to immediately follow the abstract. This text is subject to editorial change, should be written in the first-person voice, and should be distinct from the scientific abstract.

Aim to highlight where your work fits within a broader context; present the significance or possible implications of your work simply and objectively; and avoid the use of acronyms and complex terminology wherever possible. The goal is to make your findings accessible to a wide audience that includes both scientists and non-scientists.

Authors may benefit from consulting with a science writer or press officer to ensure they effectively communicate their findings to a general audience.

Example Author Summaries

[Complex Seizure Disorder Caused by *Brunol4* Deficiency in Mice](#)

[Genome-Wide Association Scan Shows Genetic Variants in the *FTO* Gene Are Associated with Obesity-Related Traits](#)

[A Mutation in the Myostatin Gene Increases Muscle Mass and Enhances Racing Performance in Heterozygote Dogs](#)

Introduction

The introduction should put the focus of the manuscript into a broader context. As you compose the Introduction, think of readers who are not experts in this field. Include a brief review of the key literature. If there are relevant controversies or disagreements in the field, they should be mentioned so that a non-expert reader can delve into these issues further. The Introduction should conclude with a brief statement of the overall aim of the experiments and a comment about whether that aim was achieved.

Results

The Results section should provide details of all of the experiments that are required to support the conclusions of the paper. There is no specific word limit for this section, but details of experiments that are peripheral to the main thrust of the article and that detract from the focus of the article should not be included. The section may be divided into subsections, each with a concise subheading. The section should be written in the past tense.

PLOS journals require authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception. When submitting a manuscript online, authors must provide a *Data Availability Statement* describing compliance with PLOS's policy.

Large data sets, including raw data, may be deposited in an appropriate public repository. [See our list of recommended repositories.](#)

For smaller data sets and certain data types, authors may provide their data within [supporting information files](#) accompanying the manuscript. Authors should take care to maximize the accessibility and reusability of the data by selecting a file format from which data can be efficiently extracted (for example, spreadsheets or flat files should be provided rather than PDFs when providing tabulated data).

For more information on how best to provide data, read our [policy on data availability](#). PLOS does not accept references to “data not shown.”

Discussion

The Discussion should spell out the major conclusions of the work along with some explanation or speculation on the significance of these conclusions. How do the conclusions affect the existing assumptions and models in the field? How can future research build on these observations? What are the key experiments that must be done?

The Discussion should be concise and tightly argued.

The Results and Discussion may be combined into one section, if desired.

Materials and Methods

The Materials and Methods should provide enough detail to reproduce the findings. Submit detailed protocols for newer or less established methods. Well-established protocols may be referenced.

Details of algorithms and protocol documents for clinical trials, observational studies, and other **non-laboratory** investigations may be uploaded as supporting information. These are not included in the typeset manuscript, but are downloadable and fully searchable from the HTML version of the article. [Read the supporting information guidelines](#) for formatting instructions.

We recommend and encourage you to deposit **laboratory protocols** in [protocols.io](#), where protocols can be assigned their own persistent digital object identifiers (DOIs).

To include a link to a protocol in your article:

1. Describe your step-by-step protocol on protocols.io
2. Select **Get DOI** to issue your protocol a persistent digital object identifier (DOI)
3. Include the DOI link in the Methods section of your manuscript using the following format provided by protocols.io:
[http://dx.doi.org/10.17504/protocols.io.\[PROTOCOL DOI\]](http://dx.doi.org/10.17504/protocols.io.[PROTOCOL DOI])

At this stage, your protocol is only visible to those with the link. This allows editors and reviewers to consult your protocol when evaluating the manuscript. You can make your protocols public at any time by selecting **Publish** on the protocols.io site. Any referenced protocol(s) will automatically be made public when your article is published.

PLOS ONE offers an option for publishing peer-reviewed Lab Protocol articles, which describe protocols hosted on protocols.io articles. Read more [information on Lab Protocol articles](#).

Consult our [reporting guidelines](#), and include an ethics statement in the Materials and Methods section when reporting results from [human subjects research](#) and [animal research](#).

Acknowledgments

Those who contributed to the work but do not meet our authorship criteria should be listed in the Acknowledgments with a description of the contribution.

Authors are responsible for ensuring that anyone named in the Acknowledgments agrees to be named.

! PLOS journals publicly acknowledge the indispensable efforts of our editors and reviewers on an annual basis. To ensure equitable recognition and avoid any appearance of partiality, do not include editors or peer reviewers—named or unnamed—in the Acknowledgments.

Do not include funding sources in the Acknowledgments or anywhere else in the manuscript file. Funding information should only be entered in the financial disclosure section of the submission system.

References

Any and all available works can be cited in the reference list. Acceptable sources include:

- › Published or accepted manuscripts
- › Manuscripts on preprint servers, providing the manuscript has a citable DOI or arXiv URL.

Do not cite the following sources in the reference list:

- › Unavailable and unpublished work, including manuscripts that have been submitted but not yet accepted (e.g., “unpublished work,” “data not shown”). Instead, include those data as supplementary material or deposit the data in a publicly available database.
- › Personal communications (these should be supported by a letter from the relevant authors but not included in the reference list)
- › Submitted research should not rely upon retracted research. You should avoid citing retracted articles unless you need to discuss retracted work to provide historical context for your submitted research. If it is necessary to discuss retracted work, state the article’s retracted status in your article’s text and reference list.

Ensure that your reference list includes full and current bibliography details for every cited work at the time of your article’s submission (and publication, if accepted). If cited work is corrected, retracted, or marked with an expression of concern before your article is published, and if you feel it is appropriate to cite the work even in light of the post-publication notice, include in your manuscript citations and full references for both the affected article and the post-publication notice. Email the journal office if you have questions.

References are listed at the end of the manuscript and numbered in the order that they appear in the text. In the text, cite the reference number in square brackets (e.g., “We used the techniques developed by our colleagues [19] to analyze the data”). PLOS uses the numbered citation (citation-sequence) method and first six authors, et al.

Do not include citations in abstracts.

Make sure the parts of the manuscript are in the correct order *before* ordering the citations.

Formatting references

! Because all references will be linked electronically as much as possible to the papers they cite, proper formatting of references is crucial.

PLOS uses the reference style outlined by the International Committee of Medical Journal Editors (ICMJE), also referred to as the “Vancouver” style. Example formats are listed below. Additional examples are in the [ICMJE sample references](#).

A reference management tool, EndNote, offers a current [style file](#) that can assist you with the formatting of your references. If you have problems with any reference management program, please contact the source company’s technical support.

Journal name abbreviations should be those found in the [National Center for Biotechnology Information \(NCBI\) databases](#).

Source	Format
Published articles	<p>Hou WR, Hou YL, Wu GF, Song Y, Su XL, Sun B, et al. cDNA, genomic sequence cloning and overexpression of ribosomal protein gene L9 (rpL9) of the giant panda (<i>Ailuropoda melanoleuca</i>). <i>Genet Mol Res</i>. 2011;10: 1576-1588.</p> <p>Devaraju P, Gulati R, Antony PT, Mithun CB, Negi VS. Susceptibility to SLE in South Indian Tamils may be influenced by genetic selection pressure on TLR2 and TLR9 genes. <i>Mol Immunol</i>. 2014 Nov 22. pii: S0161-5890(14)00313-7. doi: 10.1016/j.molimm.2014.11.005.</p> <p>Note: A DOI number for the full-text article is acceptable as an alternative to or in addition to traditional volume and page numbers. When providing a DOI, adhere to the format in the example above with both the label and full DOI included at the end of the reference (doi: 10.1016/j.molimm.2014.11.005). Do not provide a shortened DOI or the URL.</p>
Accepted, unpublished articles	Same as published articles, but substitute “Forthcoming” for page numbers or DOI.
Online articles	Huynen MMTE, Martens P, Hilderink HBM. The health impacts of globalisation: a conceptual framework. <i>Global Health</i> . 2005;1: 14. Available from: http://www.globalizationandhealth.com/content/1/1/14

Source	Format
Books	Bates B. Bargaining for life: A social history of tuberculosis. 1st ed. Philadelphia: University of Pennsylvania Press; 1992.
Book chapters	Hansen B. New York City epidemics and history for the public. In: Harden VA, Risse GB, editors. AIDS and the historian. Bethesda: National Institutes of Health; 1991. pp. 21-28.
Deposited articles (preprints, e-prints, or arXiv)	Krick T, Shub DA, Verstraete N, Ferreiro DU, Alonso LG, Shub M, et al. Amino acid metabolism conflicts with protein diversity. arXiv:1403.3301v1 [Preprint]. 2014 [cited 2014 March 17]. Available from: https://128.84.21.199/abs/1403.3301v1 Kording KP, Mensh B. Ten simple rules for structuring papers. BioRxiv [Preprint]. 2016 bioRxiv 088278 [posted 2016 Nov 28; revised 2016 Dec 14; revised 2016 Dec 15; cited 2017 Feb 9]: [12 p.]. Available from: https://www.biorxiv.org/content/10.1101/088278v5 doi: 10.1101/088278
Published media (print or online newspapers and magazine articles)	Fountain H. For Already Vulnerable Penguins, Study Finds Climate Change Is Another Danger. The New York Times. 2014 Jan 29 [Cited 2014 March 17]. Available from: http://www.nytimes.com/2014/01/30/science/earth/climate-change-taking-toll-on-penguins-study-finds.html
New media (blogs, web sites, or other written works)	Allen L. Announcing PLOS Blogs. 2010 Sep 1 [cited 17 March 2014]. In: PLOS Blogs [Internet]. San Francisco: PLOS 2006 - . [about 2 screens]. Available from: http://blogs.plos.org/plos/2010/09/announcing-plos-blogs/ .
Masters' theses or doctoral dissertations	Wells A. Exploring the development of the independent, electronic, scholarly journal. M.Sc. Thesis, The University of Sheffield. 1999. Available from: https://papers.cumincad.org/cgi-bin/works/Show?2e09
Databases and repositories (Figshare, arXiv)	Roberts SB. QPX Genome Browser Feature Tracks; 2013 [cited 2013 Oct 5]. Database: figshare [Internet]. Available from: http://figshare.com/articles/QPX_Genome_Browser_Feature_Tracks/701214
Multimedia (videos, movies, or TV shows)	Hitchcock A, producer and director. Rear Window [Film]; 1954. Los Angeles: MGM.

Supporting information

Authors can submit essential supporting files and multimedia files along with their manuscripts. All supporting information will be subject to peer review. All file types can be submitted, but files must be smaller than 20 MB in size.

Authors may use almost any description as the item name for a supporting information file as long as it contains an "S" and number. For example, "S1 Appendix" and "S2 Appendix," "S1 Table" and "S2 Table," and so forth.

Supporting information files are published exactly as provided, and are not copyedited.

Supporting information captions

List supporting information captions at the end of the manuscript file. Do not submit captions in a separate file.

The file number and name are required in a caption, and we highly recommend including a one-line title as well. You may also include a legend in your caption, but it is not required.

Example caption

S1 Text. Title is strongly recommended. Legend is optional.

In-text citations

We recommend that you cite supporting information in the manuscript text, but this is not a requirement. If you cite supporting information in the text, citations do not need to be in numerical order.



Read the [supporting information guidelines](#) for more details about submitting supporting information and multimedia files.

Figures and Tables

Figure files

You can include figures in the main manuscript file at initial submission. If the manuscript reaches the revise stage, prepare and submit each figure as an individual file.

Cite figures in ascending numeric order at first appearance in the manuscript file.



For detailed instructions, [read the guidelines for figures](#).

Figure Captions


If you are submitting a new or revised manuscript, embed figure captions within the manuscript text after their first mention, or group together at the end of the manuscript.

After editorial acceptance, insert captions in read order in the manuscript text, immediately following the paragraph where the figure is first cited. Don't include captions as part of the figure files themselves or submit them in a separate document.

At a minimum, include the following in your figure captions:


- › A figure label with Arabic numerals, and "Figure" abbreviated to "Fig" (e.g. Fig 1, Fig 2, Fig 3, etc). Match the label of your figure with the name of the file uploaded at submission (e.g. a figure citation of "Fig 1" must refer to a figure file named "Fig1.tif").
- › A concise, descriptive title

The caption may also include a legend as needed.


 For detailed instructions, [read the guidelines for figures](#).

Data presentation in graphs

To better illustrate your results and to improve the reader's understanding and interpretation of your data, we discourage the use of bar graphs and line plots for continuous data, particularly for studies with small sample sizes ($n \leq 9$ independent observations per group).

 See this Perspective for more information about our position on data presentation in graphs: Weissgerber TL, Milic NM, Winham SJ, Garovic VD (2015) Beyond Bar and Line Graphs: Time for a New Data Presentation Paradigm. *PLoS Biol* 13(4): e1002128. doi:10.1371/journal.pbio.1002128

- › We recommend that continuous data is presented in such a way that the reader can evaluate the distribution of the individual data points. Scatterplots, boxplots, and histograms are more informative than bar or line charts.
- › If there is a particular reason that bar or line graphs are preferred, these must include inferential error bars: SD - standard deviation of the population, or CI - confidence intervals.
- › Paired or non-independent data should be presented to include information about whether changes are consistent across individuals.
- › Figures presenting small sample size data ($n \leq 9$ independent observations per group) should show the full distribution of the data, as opposed to summary statistics.
- › All numerical values used to generate graphs must be provided as per the [PLOS Data Availability policy](#).

 For more information about our Data Availability policy, see this Editorial: Bloom T, Ganley E, Winker M (2014) Data Access for the Open Access Literature: PLOS's Data Policy. *PLoS Biol* 12(2): e1001797. <https://doi.org/10.1371/journal.pbio.1001797>


For *PLOS Genetics*-specific guidance, read: Barsh GS, Cooper GM, Copenhaver GP, Gibson G, McCarthy MI, Tang H, et al. (2015) PLOS Genetics Data Sharing Policy: In Pursuit of Functional Utility. *PLoS Genet* 11(12): e1005716. <https://doi.org/10.1371/journal.pgen.1005716>

Tables

Cite tables in ascending numeric order upon first appearance in the manuscript file.


Place each table in your manuscript file directly after the paragraph in which it is first cited (read order). Do not submit your tables in separate files.

Tables require a label (e.g., "Table 1") and brief descriptive title to be placed above the table. Place legends, footnotes, and other text below the table.


 [Read the guidelines for tables](#).

Data reporting

All data and related metadata underlying the findings reported in a submitted manuscript should be deposited in an appropriate public repository, unless already provided as part of the submitted article.

 [Read our policy on data availability](#).

Repositories may be either subject-specific (where these exist) and accept specific types of structured data, or generalist repositories that accept multiple data types. We recommend that authors select repositories appropriate to their field. Repositories may be subject-specific (e.g., GenBank for sequences and PDB for structures), general, or institutional, as long as DOIs or accession numbers are provided and the data are at least as open as CC BY. Authors are encouraged to select repositories that meet accepted criteria as trustworthy digital repositories, such as criteria of the Centre for Research Libraries or Data Seal of Approval. Large, international databases are more likely to persist than small, local ones.

 [See our list of recommended repositories.](#)

To support data sharing and author compliance of the PLOS data policy, we have integrated our submission process with a select set of data repositories. The list is neither representative nor exhaustive of the suitable repositories available to authors. Current repository integration partners include [Dryad](#) and [FlowRepository](#). Please contact data@plos.org to make recommendations for further partnerships.

Instructions for PLOS submissions with data deposited in an integration partner repository:

- › Deposit data in the integrated repository of choice.
- › Once deposition is final and complete, the repository will provide you with a dataset DOI (provisional) and private URL for reviewers to gain access to the data.
- › Enter the given data DOI into the full Data Availability Statement, which is requested in the Additional Information section of the PLOS submission form. Then provide the URL passcode in the Attach Files section.

If you have any questions, please [email us](#).

Accession numbers

All appropriate data sets, images, and information should be deposited in an appropriate public repository. [See our list of recommended repositories.](#)

Accession numbers (and version numbers, if appropriate) should be provided in the Data Availability Statement. Accession numbers or a citation to the DOI should also be provided when the data set is mentioned within the manuscript.

In some cases authors may not be able to obtain accession numbers of DOIs until the manuscript is accepted; in these cases, the authors must provide these numbers at acceptance. In all other cases, these numbers must be provided at full submission.

Identifiers

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