**DESCRIPTION**

*Current Research in Physiology (CRPHYS)* is a new primary research, gold open access journal from Elsevier. *CRPHYS* publishes original papers and short communications that cover all aspects of all areas of basic and translational physiology and associated disciplines.

*Current Research in Physiology* is a peer-reviewed gold open access (OA) journal and upon acceptance all articles are permanently and freely available. It is a companion to the, now already, highly regarded review journal *Current Opinion in Physiology* (COPHYS: 2019 CiteScore 1.5) and is part of the *Current Opinion and Research (CO+RE) suite of journals*. All CO+RE journals leverage the *Current Opinion* legacy of editorial excellence, high-impact, and global reach to ensure they are a widely read resource that is integral to scientists workflow.

*Current Research in Physiology* topics covered include: Cellular/Molecular, Cardiovascular, Respiratory, Gastro-Intestinal, Renal, Neurophysiology, Exercise physiology, Smooth Muscle and Cell Motility, Metabolism, Endocrine, Reproductive, Nutritional, Environmental, Comparative, Control systems (including neural), Development and Ageing, Pathophysiology, Clinical physiology, Modelling and Applied AI.

*Current Research in Physiology* will seek expert peer reviewers and ask them to focus on the science in the paper, and not suggest additional experimentation unless essential for the ultimate acceptance of a paper.

*Current Research in Physiology* builds on Elsevier’s reputation for excellence in scientific publishing and long-standing commitment to communicating reproducible biomedical research targeted at improving human health. **Expertise:** Editors and Editorial Board bring depth and breadth of expertise and experience to the journal. **Speed:** Submission and peer review is fast, and publication of final manuscripts is instantaneous. **Discoverability:** Articles get high visibility and maximum exposure on an industry-leading platform that reaches a vast global audience.

**Ethics in Publishing: General Statement**

The Editor(s) and Publisher of this Journal believe that there are fundamental principles underlying scholarly or professional publishing. For more information, please refer to [https://www.elsevier.com/conflictsofinterest](https://www.elsevier.com/conflictsofinterest).
EDITORIAL BOARD

Editor-in-Chief
Susan Wray, University of Liverpool Institute of Translational Medicine, Liverpool, United Kingdom
Uterine contractility and smooth muscle research

Associate Editors
Dr. David Greensmith, University of Salford, Salford, United Kingdom
Heart, Calcium, Cardiac Myocyte, Excitation Contraction Coupling, Oxidative Stress
Justin J. Rochford, University of Aberdeen Rowett Institute of Nutrition and Health, Aberdeen, United Kingdom
Adipose tissue, diabetes, obesity, lipodystrophy
Rebecca Seal, University of Pittsburgh Department of Neurobiology, Pittsburgh, Pennsylvania, United States
Somatosensory, Pain, Basal Ganglia, Neurotransmitter Transporters

Managing Editors
Bilge San, Elsevier B.V., Amsterdam, Netherlands

Editorial Board Members
Zaina Amirat, University of Science and Technology Houari Boumediene, Algiers, Algeria
General and comparative physiology and endocrinology of desert mammals
Matthew Bailey, The University of Edinburgh, Edinburgh, United Kingdom
Kidney physiology, Kidney injury and disease, hypertension, cardiovascular physiology, vascular dysfunction
Thomas Becker, The University of Edinburgh, Edinburgh, United Kingdom
Neural development, neural regeneration
Paolo Bernardi, University of Padua, Padova, Italy
Mitochondria, permeability transition, calcium, cell death, cyclophilins
Bryndis Birnir, Uppsala University Department of Medical Cell Biology, Uppsala, Sweden
Molecular physiology, GABA, CNS
Colin Brown, University of Otago Centre for Neuroendocrinology and Department of Physiology, Dunedin, New Zealand
Neuroendocrinology
Julie Chan, Kaohsiung Medical University Chung Ho Memorial Hospital, Kaohsiung, Taiwan
Neural regulation of cardiovascular functions, redox homeostasis, mitochondria, developmental programming of adult health and disease, metabolic syndrome, neuroinflammation
Karen Elizabeth Chapman, The University of Edinburgh The Queen's Medical Research Institute, Edinburgh, United Kingdom
Actions of glucocorticoids
Sumantra Chattarji, National Centre for Biological Sciences, Bangalore, India
Systems Neuro, Learning, Disease
Felipe Court, Mayor University, Santiago, Chile
Axons, Glia and NMJ
Anthony Ebeigbe, University of Benin, Department of Physiology, Benin City, Nigeria
Vascular smooth muscle, Endothelium dependent, Vascular Calcium channels, Insulin sensitizers, Mechanotransduction
David Eisner, The University of Manchester, Manchester, United Kingdom
Cardiac calcium signalling
Faadiel Essop, Cardio-Metabolic Research Group, Stellenbosch, South Africa
Chronic stress, acute myocardial infarction, coronary artery disease, HIV, fibrosis, immune activation, brain-heart axis, cardiac metabolism, diabetes, cardio-metabolic diseases, metabolic syndrome, signaling pathways, molecular physiology
Elena Fabbri, University of Bologna Interdepartmental Research Centre for Environmental Sciences, Ravenna, Italy
Cell signalling, mechanisms of action, hormones, endocrine disruptors, emerging contaminants in the environment, biomarkers.
Adriana Girardi, Laboratory of Genetics and Molecular Cardiology, SAO PAULO, Brazil
Kidney, renal sodium transporters, sodium and glucose homeostasis, incretin hormones, hypertension, and heart failure.
Brian Glancy, National Institutes of Health, Bethesda, Maryland, United States
Exercise physiology
Livia Hool, The University of Western Australia School of Human Sciences, Perth, Australia
cardiovascular, ion channels, cardiomyopathy, mitochondria
Peter Jones, University of Otago, Dunedin, New Zealand
Ion channels, cardiac disease, arrhythmias, calcium signalling

**Sajeera Kupittayanant**, Suranaree University of Technology, Nakhon Ratchasima, Thailand
Smooth muscle, Myometrium, Calcium, Contraction, Medicinal Plant, Gestational Diabetes Mellitus

**Georges Lefthériotis**, University Hospital Centre Nice, Nice, France
Vascular remodeling focusing on the biomineralization processes

**Diane Lipscombe**, Brown University, Providence, Rhode Island, United States
Ion channels, RNA splicing, calcium signalling

**Alicia Mattiazzi**, National University of La Plata, La Plata, Argentina
Calcium signalling, excitation-contraction coupling in isolated cardiac myocytes, calcium calmodulin dependent protein kinase (CaMKII)

**Kimberley M. Mellor**, The University of Auckland, Department of Physiology, Auckland, New Zealand
Cardiac, diabetes, metabolism, heart failure

**Pika Miklavč**, University of Salford, School of Science, Engineering and Environment, Salford, United Kingdom
Lung, secretion, surfactant, vesicular traffic, cytoskeleton, calcium signalling

**Mark Morgan**, University of Liverpool Department of Cellular and Molecular Physiology, Liverpool, United Kingdom
Adhesion, Matrix, Signalling, Integrin, Growth factor

**Elizabeth Murphy**, National Heart Lung and Blood Institute, Bethesda, Maryland, United States
Mitochondria, ischemia-reperfusion, cardioprotection, S-nitrosylation. heart

**Ravi Nistala**, University of Mississippi School of Medicine Karl Nolph Division of Nephrology, Columbia, Missouri, United States
Chronic Kidney disease, Obesity, Hypertension, Metabolic syndrome, Renin Angiotensin System (RAS)

**Jane F. Reckelhoff**, University of Mississippi Medical Center, Jackson, Mississippi, United States
Mechanisms responsible for the sex differences in blood pressure control and renal disease, postmenopausal hypertension, and polycystic ovary syndrome

**Markus Rüegg**, University of Basel, Basel, Switzerland
Muscle function, Metabolism, Development, NMJ

**Amal Saeed**, University of Khartoum, Khartoum, Sudan
Nutrition, Micronutrients, Erythropoietin, Dietary fibers

**Luca Scorrano**, University of Padua, Padova, Italy
mitochondria; apoptosis; fusion-fission; endoplasmic reticulum; interorganelle communication.

**Tobias Wang**, Aarhus University, Aarhus, Denmark
Comparative physiology, evolution of physiological systems amongst vertebrates, heart function in various animals

**Yun Wang**, Peking University Health Science Centre, Beijing, China
Adverse effects of occupational and environmental factors, nanoparticles, toxicity characteristics and mechanisms

**Håkan Westerblad**, Karolinska Institute Department of Physiology and Pharmacology, Stockholm, Sweden
Skeletal muscle, Fatigue, Calcium, Reactive oxygen species, Muscle weakness

**Caitlin Wyrwoll**, University of Western Australia, School of Human Sciences, Crawley, Western Australia, Australia
Placenta, developmental programming, glucocorticoids, fetal development, pregnancy,
GUIDE FOR AUTHORS

Introduction

Current Research in Physiology is an international peer reviewed journal devoted to publishing original research and short communications resulting from research in Cellular/Molecular, Cardiovascular, Respiratory, Gastro-Intestinal, Renal, Neurophysiology, Exercise physiology, Metabolism, Endocrine, Reproductive, Nutritional, Environmental, Comparative, Control systems (including neural), Development and Ageing, Pathophysiology, Clinical physiology, Modelling and Applied AI.

Types of article

The Journal publishes Research Papers, Short Communications, Full-length Review articles, and Graphical Reviews. We support the "Your Paper Your Way" Elsevier guideline which allows authors to submit their main manuscript file without any formatting requirements.

Research Papers are not limited in size. However, we do strongly recommend to authors to be as succinct as possible in the best interest of the readers and the dissemination of the work.

Short Communications have the following soft limits. The manuscript should ideally contain no more than 4-6 Figures/Tables and 4000 words, including the title page, all sections of the manuscript (including the references), and Figure/Table legends. The abstract should be limited to 200 words.

Graphical Reviews (GRs) are a short, structured article type, which primarily use illustrative schematic summaries to convey only key concepts and novel ideas on a major research interest in the lab. GRs present an opportunity to succinctly showcase your research contributions within a wider overview of recent developments within a field. GRs are designed to communicate information in a visually appealing representation of the current state of research on a specific topic. The overall message should be accessible to a broad scientific audience. GRs have a format of 3-5 (color) schemes/figures, ideally formatted as easily downloadable (PowerPoint) slides or the like, for use by readers for educational purposes. The text body should provide the reader with 'backbone' information and context, connecting the material presented in the figures. GRs cannot include unpublished data, new hypotheses, formal mathematical models, or meta-analysis.

GR article structure: Abstract: up to 250 words Body (exclusive of figure legends): up to 2000 words, double-spaced, Arial font, size 11 3-5 color schemes/figures summarizing the state of the specific topic covered. Each figure needs to be self-explanatory, including sufficient annotations to allow the readers to quickly grasp the content of the figure. Figure legends must be straight to the point, providing additional details which deepen the message of the figure itself. Please ensure that the reader, who may not be a direct expert in the field, can easily grasp the information provided. References: no more than 25 key articles that exemplify the most significant recent advances in the field. Illustrations: Authors are expected to use their own illustration resources.

An example of GR is available here.

Current Research Review Article Type

Before submitting a review, you are encouraged to present a pre-submission proposal to the Editorial office (crphys-me@elsevier.com) for approval. This proposal would typically include a cover letter explaining the purpose and originality of your review, a tentative abstract or outline, and a planned submission date.

These are the criteria for consideration:

Length:

Typically, authors choose to submit 2-4 figures and 22-32 pages of text (standard font size and double spacing) as a full-length review. We recommend 6,000-10,000 words but leave the length entirely up to you.

Coverage:

Please feel free to decide the exact scope of your review and depth of coverage, keeping in mind that the overall message should be accessible to the broad readership of the journal. We would like to ask you to approach your review as a critical overview of the field, with a strong focus on current challenges and bottlenecks to future advances. Please make sure to adopt a
mechanistic viewpoint where possible. The review must represent a fair coverage of the most recent advances and relevant approaches and accommodate different points of view. The scope of the review should stand out from other recently published reviews on the same theme. Please also feel free to highlight areas that you think deserve more attention from the scientific community. Finally, we would encourage you to include an 'outlook' paragraph at the end of your review that proposes the future direction you personally consider the field should take and the prospects for useful applications you might expect to see in the near future and beyond.

Figures and References:

We strongly encourage the use of summary illustrations which may serve as an easy reference to readers to understand the message of the overall messages relayed in the review. We would like to discourage listing too many References, but only cite directly relevant literature published in the recent years. A primary research result used in a review should reference the original research article, not another review.

Contact details for submission
Submission for all types of manuscripts to Current Research in Physiology proceeds totally online. Via the Editorial Manager (EM) website for this journal, https://www.editorialmanager.com/crphys/, you will be guided step-by-step through the creation and uploading of the various files. Questions regarding content of a proposed submission can be directed to: crphys-me@elsevier.com

Submission checklist
You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:
- E-mail address
- Full postal address

All necessary files have been uploaded:
Manuscript:
- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print

Graphical Abstracts / Highlights files (where applicable)
Supplemental files (where applicable)

Further considerations
- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the Reference List are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)
- A competing interests statement is provided, even if the authors have no competing interests to declare
- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements

For further information, visit our Support Center.

BEFORE YOU BEGIN

Ethics in publishing
Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.
Studies in humans and animals
If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. The manuscript should be in line with the Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals and aim for the inclusion of representative human populations (sex, age and ethnicity) as per those recommendations. The terms sex and gender should be used correctly.

Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

All animal experiments should comply with the ARRIVE guidelines and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, EU Directive 2010/63/EU for animal experiments, or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed. The sex of animals must be indicated, and where appropriate, the influence (or association) of sex on the results of the study.

Declaration of interest
All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors should complete the declaration of interest statement using this template and upload to the submission system at the Attach/Upload Files step. If there are no interests to declare, please choose: ‘Declarations of interest: none’ in the template. This statement will be published within the article if accepted. More information.

Submission declaration and verification
Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see ‘Multiple, redundant or concurrent publication’ for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service Crossref Similarity Check.

Preprints
Please note that preprints can be shared anywhere at any time, in line with Elsevier’s sharing policy. Sharing your preprints e.g. on a preprint server will not count as prior publication (see ‘Multiple, redundant or concurrent publication’ for more information).

Author contributions
For transparency, we encourage authors to submit an author statement file outlining their individual contributions to the paper using the relevant CRediT roles: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Roles/Writing - original draft; Writing - review & editing. Authorship statements should be formatted with the names of authors first and CRediT role(s) following. More details and an example

Changes to authorship
Authors are expected to consider carefully the list and order of authors before submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only before the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the corresponding author: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed.
Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors after the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.

**Article transfer service**
This journal is part of our Article Transfer Service. This means that if the Editor feels your article is more suitable in one of our other participating journals, then you may be asked to consider transferring the article to one of those. If you agree, your article will be transferred automatically on your behalf with no need to reformat. Please note that your article will be reviewed again by the new journal. More information.

**Copyright**
Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (see more information on this). Permitted third party reuse of open access articles is determined by the author's choice of user license.

**Author rights**
As an author you (or your employer or institution) have certain rights to reuse your work. More information.

*Elsevier supports responsible sharing*
Find out how you can share your research published in Elsevier journals.

**Role of the funding source**
You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

**Open access**
Please visit our Open Access page for more information.

*Elsevier Researcher Academy*
Researcher Academy is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The "Learn" environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.

**Language (usage and editing services)**
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's Author Services.

**Submission**
Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

**Referees**
Please submit the names and institutional e-mail addresses of several potential referees. For more details, visit our Support site. Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.

**PREPARATION**
Peer review
This journal operates a single blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. More information on types of peer review.

Use of word processing software
It is important that the file be saved in the native format of the word processor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the word processor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork.
To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

Article structure
Subdivision - numbered sections
Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction
State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods
Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

Theory/calculation
A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

Results
Results should be clear and concise.

Discussion
This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions
The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information
• Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
• **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lowercase superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

• **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**

• **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

**Highlights**

Highlights are mandatory for this journal as they help increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.

Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

**Abstract**

A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

**Graphical abstract**

Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site.

Authors can make use of Elsevier's Illustration Services to ensure the best presentation of their images and in accordance with all technical requirements.

**Keywords**

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

**Abbreviations**

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

**Acknowledgements**

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

**Formatting of funding sources**

List funding sources in this standard way to facilitate compliance to funder's requirements:
Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Math formulae
Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

Footnotes
Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

Artwork
Image manipulation
Whilst it is accepted that authors sometimes need to manipulate images for clarity, manipulation for purposes of deception or fraud will be seen as scientific ethical abuse and will be dealt with accordingly. For graphical images, this journal is applying the following policy: no specific feature within an image may be enhanced, obscured, moved, removed, or introduced. Adjustments of brightness, contrast, or color balance are acceptable if and as long as they do not obscure or eliminate any information present in the original. Nonlinear adjustments (e.g. changes to gamma settings) must be disclosed in the figure legend.

Electronic artwork
General points
• Make sure you use uniform lettering and sizing of your original artwork.
• Embed the used fonts if the application provides that option.
• Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
• Number the illustrations according to their sequence in the text.
• Use a logical naming convention for your artwork files.
• Provide captions to illustrations separately.
• Size the illustrations close to the desired dimensions of the published version.
• Submit each illustration as a separate file.
• Ensure that color images are accessible to all, including those with impaired color vision.

A detailed guide on electronic artwork is available. You are urged to visit this site; some excerpts from the detailed information are given here.

Formats
If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format.

Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

EPS (or PDF): Vector drawings, embed all used fonts.
TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.
TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.
Please do not:
• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
• Supply files that are too low in resolution;
• Submit graphics that are disproportionally large for the content.

Color artwork
Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article. Please indicate your preference for color: in print or online only. Further information on the preparation of electronic artwork.

Illustration services
Elsevier's Author Services offers Illustration Services to authors preparing to submit a manuscript but concerned about the quality of the images accompanying their article. Elsevier's expert illustrators can produce scientific, technical and medical-style images, as well as a full range of charts, tables and graphs. Image 'polishing' is also available, where our illustrators take your image(s) and improve them to a professional standard. Please visit the website to find out more.

Figure captions
Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables
Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

References
Citation in text
Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Reference links
Increased discoverability of research and high quality peer review are ensured by online links to the sources cited. In order to allow us to create links to abstracting and indexing services, such as Scopus, CrossRef and PubMed, please ensure that data provided in the references are correct. Please note that incorrect surnames, journal/book titles, publication year and pagination may prevent link creation. When copying references, please be careful as they may already contain errors. Use of the DOI is highly encouraged.

A DOI is guaranteed never to change, so you can use it as a permanent link to any electronic article. An example of a citation using DOI for an article not yet in an issue is: VanDecar J.C., Russo R.M., James D.E., Ambeh W.B., Franke M. (2003). Aseismic continuation of the Lesser Antilles slab beneath northeastern Venezuela. Journal of Geophysical Research, https://doi.org/10.1029/2001JB000884. Please note the format of such citations should be in the same style as all other references in the paper.

Web references
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.
**Data references**

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

**References in a special issue**

Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

**Reference style**

**Text:** Indicate references by number(s) in square brackets in line with the text. The actual authors can be referred to, but the reference number(s) must always be given.

Example: '..... as demonstrated [3,6]. Barnaby and Jones [8] obtained a different result ....'

**List:** Number the references (numbers in square brackets) in the list in the order in which they appear in the text.

**Examples:**

Reference to a journal publication:


Reference to a journal publication with an article number:


Reference to a book:


Reference to a chapter in an edited book:


Reference to a website:


Reference to a dataset:


Reference to a preprint:

[7] Posted preprints may be included in the Reference list with appropriate identification of the object type (e.g. Preprint) and the Digital Object Identifier (DOI).


**Journal abbreviations source**

Journal names should be abbreviated according to the List of Title Word Abbreviations.

**Video**

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.
Data visualization
Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

Supplementary material
Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

Research data
This journal encourages you to share data that supports your research publication in an appropriate data repository, and enables you to interlink the data with your published articles. If you are sharing data, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation.

Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project.

For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

Data Linking
If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data.

Mendeley Data
This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. The datasets.

Data in Brief
You have the option of converting any or all parts of your supplementary or additional raw data into one or multiple data articles, a new kind of article that houses and describes your data. Data articles ensure that your data is actively reviewed, curated, formatted, indexed, given a DOI and publicly available to all upon publication. You are encouraged to submit your article for Data in Brief as an additional item directly alongside the revised version of your manuscript. If your research article is accepted, your data article will automatically be transferred over to Data in Brief where it will be editorially reviewed and published in the open access data journal, Data in Brief. Please note an open access fee of 600 USD is payable for publication in Data in Brief. Full details can be found on the Data in Brief website. Please use this template to write your Data in Brief.

MethodsX
You have the option of converting relevant protocols and methods into one or multiple MethodsX articles, a new kind of article that describes the details of customized research methods. Many researchers spend a significant amount of time on developing methods to fit their specific needs or setting, but often without getting credit for this part of their work. MethodsX, an open access journal, now publishes this information in order to make it searchable, peer reviewed, citable and reproducible. Authors are encouraged to submit their MethodsX article as an additional item directly alongside the revised version of their manuscript. If your research article is accepted, your methods article will automatically be transferred over to MethodsX where it will be editorially reviewed. Please note an open access fee is payable for publication in MethodsX. Full details can be found on the MethodsX website. Please use this template to prepare your MethodsX article.

AFTER ACCEPTANCE
Proofs
One set of page proofs (as PDF files) will be sent by e-mail to the corresponding author (if we do not have an e-mail address then paper proofs will be sent by post) or a link will be provided in the e-mail so that authors can download the files themselves. To ensure a fast publication process of the article, we kindly ask authors to provide us with their proof corrections within two days. Elsevier now provides authors with PDF proofs which can be annotated; for this you will need to download the free Adobe Reader, version 9 (or higher). Instructions on how to annotate PDF files will accompany the proofs (also given online). The exact system requirements are given at the Adobe site. If you do not wish to use the PDF annotations function, you may list the corrections (including replies to the Query Form) and return them to Elsevier in an e-mail. Please list your corrections quoting line number. If, for any reason, this is not possible, then mark the corrections and any other comments (including replies to the Query Form) on a printout of your proof and scan the pages and return via e-mail. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. We will do everything possible to get your article published quickly and accurately. It is important to ensure that all corrections are sent back to us in one communication: please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

Offprints
The corresponding author will, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on ScienceDirect. The Share Link can be used for sharing the article via any communication channel, including email and social media. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's Author Services. Corresponding authors who have published their article gold open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

AUTHOR INQUIRIES
Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch. You can also check the status of your submitted article or find out when your accepted article will be published.

© Copyright 2018 Elsevier | https://www.elsevier.com