DESCRIPTION

*Virology* publishes the results of basic research in all branches of virology. Benefits include:

No page or color charges **Open Archive**: free access after 12 months for all articles Free access to reviews and special issues Highlighted Articles & Virology blog to promote your article online **Open Access** options available for all articles

The journal features articles on virus replication, virus-host biology, viral pathogenesis, immunity to viruses, virus structure, and virus evolution and ecology. We aim to publish papers that provide advances to the understanding of virus biology.

Please see our **Guide for Authors** for information on article submission. If you require any further information or help, please visit our **Support Center**

IMPACT FACTOR

2016: 3.353 © Clarivate Analytics Journal Citation Reports 2017

ABSTRACTING AND INDEXING

Scopus
BIOSIS
Biological Abstracts
Chemical Abstracts
Current Contents (Life Sciences, Clinical Medicine)
Excerpta Medica
Genetics Abstracts
Immunology Abstracts
MEDLINE®
Research Alert
Science Citation Index
Tropical Diseases Bulletin
Virology and AIDS abstracts
EMBASE
EDITORIAL BOARD

Editor-in-Chief:
M. Emerman, Div. of Basic Sciences, Fred Hutchinson Cancer Research Center, 1100 Fairview Ave. North, Seattle, Washington, WA 98109-1024, USA
: HIV replication; Retroviruses; Evolution of virus-host interactions; Paleovirology

Reviews Editor
D.M. Knipe, Dept. of Microbiology and Immunobiology, Harvard Medical School, 77 Avenue Louis Pasteur, Boston, Massachusetts, MA 02115, USA
: Herpes viruses; Viral chromatin; Virus-cell interactions; Innate immunity and viral evasion

Editors:
M. Alexander-Miller, Dept. of Microbiology and Immunology, Wake Forest School of Medicine, 575 North Patterson Ave., Winston Salem, California, NC 27101, USA
: human and nonhuman primate viral immunology and vaccines, immunity to respiratory infection
R.C. Condit, Dept. of Mol. Genetics & Microbiology, University of Florida, 1600 S.W. Archer Street, P.O.Box 100266, Gainesville, Florida, FL 32610-0266, USA
: Poxviruses and other cytoplasmic DNA viruses; DNA virus transcription and gene regulation; DNA Viruses of Insects
F. Goodrum, BIOS Institute, Dept. of Immunobiology, University of Arizona, 1657 E. Helen St., Tucson, Arizona, AZ 85721, USA
: herpesviruses, virus-cell interactions, vesicular trafficking, signaling
A.E. Gorbalenya, Dept. of Medical Microbiology, Ctr. of Infectious Diseases, Leids Universitair Medisch Centrum (LUMC), Albinusdreef 2, 2333 ZA, Leiden, Netherlands
: Virus Evolution
S.A. Lommel, Dept. of Plant Pathology, North Carolina State University, 2506 Gardner Hall, Raleigh, North Carolina, NC 27695-7616, USA
: DNA and RNA Plant Viruses; Viroids
M.H. Malim, Division of Immunology, Infection & Inflammatory Disease, Dept of Infectious Diseases, King's College London, London Bridge, SE1 9RT, London, UK
: HIV; Other Retroviruses
A. McBride, NIH, Lab of Viral Diseases, National Institute of Allergy and Infectious Diseases (NIAID), 33 North Drive, Bethesda, Maryland, MD 20892, USA
: Papillomaviruses; Polyomaviruses; Adenoviruses
J.J. Moloney, Molecular Genetics & Microbiology, University of Texas, 100 W 24th St, Austin, Texas, TX 78712-1095, USA
: Bacteriophages; Fungal, yeast, and algal viruses; Virus structure and Assembly
P. Sarnow, Dept. of Microbiology & Immunology, Stanford University School of Medicine, 299 Campus Dr, Stanford, California, CA 94305, USA
: Positive-stranded RNA viruses
B. Sherry, Dept. of Molecular Biomedical Sciences, North Carolina State University, 4700 Hillsborough Street, Raleigh, North Carolina, NC 27606, USA
: dsRNA viruses; Innate immunity and viral evasion
T.M. Tumpey, Div. of Influenza, Centers for Disease Control and Prevention (CDC), 1600 Clifton Rd. NE, Atlanta, Georgia, GA 30333, USA
: Orthomyxoviruses
S.P. Whelan, Dept. of Microbiology & Molecular Genetics, Harvard Medical School, 200 Longwood Avenue, Boston, Massachusetts, MA 02115, USA
: Negative-strand RNA viruses
J.L. Whitton, Dept. of Immunology and Microbial Science, The Scripps Research Institute, 10550 N Torrey Pines Rd, La Jolla, California, CA 92037, USA
: Viral pathogenesis; Immune responses to virus infection; Coxsackieviruses; Arenaviruses

Editorial board:
C. Aiken
D.S. An
M. Arnold
W.J. Atwood
S. Bachenheimer
J.D. Baines
U.B.R. Balasuriya
L. Banks
A.D.T. Barrett
D. Barton
C.F. Basler
P. Beard
D. Beasley
J. Belser
G.J. Belsham
J.M. Bergelson
H-U. Bernard
K. Bishop
C. Blair
M. Bouchard
M Brinton
J. Brojatsch
D. Brooks
D. Brown
M. Buchmeier
E.M. Campbell
J.P. Carr
R. Cattaneo
W. Chang
H. Chen
J. Chen
G. Christie
P.R. Clapham
R. Clem
D. Coen
J.I. Cohen
T. Colpitts
R. Courtney
C. Coyne
J.E. Crowe
A.C.A. Culasso
B.R. Cullen
B. Damania
A.J. Davison
J.C. de la Torre
R.M. del Angel
N. Deluca
E. Delwart
F. Diaz-Griffero
P. Digard
D. DiMaio
S.-W. Ding
D. Dittmer
E. Domingo
K. Doores
M. Dreux
J. Dubuisson
J.P. Dudley
R. Dutch
L. Enjuanes
D.T. Evans
M. Evans
K. Faaberg
B. Falk
B.A. Fane
R. Fears
M. Fischer
E. Fodor
I.H. Frazer
M Friemann
D.P.D. Friesen
I.V. Frolov
G. Fuchs
M. Gale (Jr.)
T. Gallagher
D.A. Galloway
G. Gao
GUIDE FOR AUTHORS

Your Paper Your Way
We now differentiate between the requirements for new and revised submissions. You may choose to submit your manuscript as a single Word or PDF file to be used in the refereeing process. Only when your paper is at the revision stage, will you be requested to put your paper in to a 'correct format' for acceptance and provide the items required for the publication of your article.
To find out more, please visit the Preparation section below.

INTRODUCTION

Virology publishes the results of original basic research that advances our understanding of virus biology.

We invite articles in all areas of research on viruses at both molecular and organismal level, including virus replication and gene expression, virus structure and assembly, virus-host interactions, viral pathogenesis and immunity, novel viral vectors, molecular aspects of viral ecology, virus evolution, and molecular and immunologic mechanisms of prevention and therapy of viral infections.

Types of paper

Virology publishes three forms of manuscripts: (a) regular manuscripts (b) brief communications consisting of short but complete studies; and (c) invited reviews.

Regular manuscripts present the results of original basic research in all areas of virology described above that break new ground and serve as a valuable addition to the literature in the field.

Brief Communications are short self-contained studies of significant and timely findings. Brief communications should have a maximum of 4 presentation items (combination of figures and tables). The organization of a Brief Communication is the same as that of a Regular manuscript. It is expected that the review of a Brief Communication will take into account the nature of its more limited scope. Manuscripts describing viral sequences without a significant advance in virus biology are not appropriate as Brief Communications.

Invited Reviews describe cutting-edge developments and themes of interest to virologists. The goal of a review is to focus on a sharply defined topic and to make the information accessible to researchers who work in other areas of virology. Reviews should not cover the field in question comprehensively but rather address fundamental concepts, recent findings, and important unresolved issues. We welcome submission of proposals for reviews. All review submissions should be pre-approved by invitation either by an editor or by sending a pre-submission inquiry to the Editor-in-chief or another editor of Virology with a proposed review outline.

Papers will be published in Virology under one of the following subheadings:

• Virus Replication/Gene Expression
• Virus Structure and Assembly
• Virus-Cell Biology
• Gene Therapy/Viral Vectors
• Emerging Viruses
• Unconventional Agents
• Viral Pathogenesis
• Immunity
• Technological Advances
• Genomes and Evolution

Authors should understand that space limitations make it impossible to publish manuscripts that describe work that does not break new ground conceptually, particularly if the work merely mirrors work done on a closely related virus without adding significant new knowledge, such as partial sequences of related viruses, evolutionary studies based on partial sequences, or descriptions of antigenic relationships and epitopes. Exceptions will be made, however, if these data reveal new insights into the fundamental properties of the virus.
Contact details for submission
The editors and their areas of responsibility are given here

Peer Review Process: Each editor is responsible for having manuscripts reviewed and for making the final decision concerning the disposition. Each manuscript is reviewed by at least two reviewers. All manuscripts are reviewed as rapidly as possible, and an editorial decision is usually reached within 4 to 5 weeks of the manuscript's submission.

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
Additional Information
Virology strongly encourages the correct usage and uniformity of virus names as defined by the International Committee on Taxonomy of Viruses (ICTV). The ICTV rules of orthography should be consulted at the ICTV website http://www.ictvonline.org/virusorthography.asp. Requirements for deposition of structural data
For papers describing structures of biological macromolecules from electron microscopy experiments, the 3D map should be deposited at either the EMBL-EBI (UK) or RCSB (USA) EMDB deposition site (http://www.emdatabank.org/). Once the map has been deposited, any fitted atomic coordinates should be deposited with the Protein Data Bank (PDB) by following the link provided from the EMDB deposition session. The EMDB and PDB IDs should be included in the manuscript. Both the map and the coordinate data will be made public when the associated article is published.

Ethics in publishing
Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

Policy and ethics
Publication of a research article in Virology is taken to imply that the authors are prepared to distribute freely to academic researchers for their own use any materials (e.g., viruses, cells, DNA clones, antibodies) used in the published experiments. Prior to publication, nucleotide sequences and protein
sequences must be deposited with GenBank (Web site: http://www.ncbi.nlm.nih.gov/Genbank/) and an accession number obtained for publication in the manuscript. X-ray crystallographic coordinates must be deposited with the Protein Data Bank (Web site: http://www.rcsb.org/pdb/).

DUAL USE RESEARCH OF CONCERN. Authors and reviewers must notify the editor-in-chief if a manuscript reports potential dual use research of concern. The editor-in-chief will evaluate potential dual use research of concern papers and, if necessary, will consult additional reviewers.

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 must disclose any interests in two places: 1. A summary declaration of interest statement in the title page file (if double-blind) or the manuscript file (if single-blind). If there are no interests to declare then please state this: 'Declarations of interest: none'. This summary statement will be ultimately published if the article is accepted. 2. Detailed disclosures as part of a separate Declaration of Interest form, which forms part of the journal's official records. It is important for potential interests to be declared in both places and that the information matches. More information.

Please note that online publication of a submitted article prior to acceptance (i.e. under revision) is also strictly forbidden without the written consent of the copyright holder.

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).

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.

Copyright
Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If
excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases.

For gold open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of gold 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.

**Funding body agreements and policies**
Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some funding bodies will reimburse the author for the gold open access publication fee. Details of existing agreements are available online.

**Open access**
This journal offers authors a choice in publishing their research:

**Subscription**
- Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs.
- No open access publication fee payable by authors.
- The Author is entitled to post the accepted manuscript in their institution's repository and make this public after an embargo period (known as green Open Access). The published journal article cannot be shared publicly, for example on ResearchGate or Academia.edu, to ensure the sustainability of peer-reviewed research in journal publications. The embargo period for this journal can be found below.

**Gold open access**
- Articles are freely available to both subscribers and the wider public with permitted reuse.
- A gold open access publication fee is payable by authors or on their behalf, e.g. by their research funder or institution.

Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards.

For gold open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses:

**Creative Commons Attribution (CC BY)**
Lets others distribute and copy the article, create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), include in a collective work (such as an anthology), text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation.

**Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)**
For non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

The gold open access publication fee for this journal is USD 2350, excluding taxes. Learn more about Elsevier's pricing policy: https://www.elsevier.com/openaccesspricing.
**Green open access**
Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our green open access page for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is the embargo period and it begins from the date the article is formally published online in its final and fully citable form. Find out more.

This journal has an embargo period of 12 months.

**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 WebShop.

Authors are required to submit the names and e-mail addresses of a minimum of four potential referees who are not current Editors of the journal.

**Additional information**

**Special Subject Repositories**
Certain repositories such as PubMed Central ("PMC") are authorized under special arrangement with Elsevier to process and post certain articles such as those funded by the National Institutes of Health under its Public Access policy (see http://www.elsevier.com/about/open-science/open-access/agreements for more details on our policy and specific arrangements with various funding bodies, including NIH).

As an author you retain certain rights such as making copies (print or electronic) of the article for your own personal use, including for your own classroom teaching use. See http://www.elsevier.com/copyright for an overview of all of these rights, as well as those of your employer or institution.

**Language Polishing.** Authors who require information about language editing and copyediting services pre- and post-submission please visit http://webshop.elsevier.com/languageservices or visit our Support Center for more information. Please note Elsevier neither endorses nor takes responsibility for any products, goods or services offered by outside vendors through our services or in any advertising. For more information please refer to our Terms & Conditions http://www.elsevier.com/legal/elsevier-website-terms-and-conditions.

**PREPARATION**

**NEW SUBMISSIONS**
Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process.
As part of the Your Paper Your Way service, you may choose to submit your manuscript as a single file to be used in the refereeing process. This can be a PDF file or a Word document, in any format or layout that can be used by referees to evaluate your manuscript. It should contain high enough quality figures for refereeing. If you prefer to do so, you may still provide all or some of the source files at the initial submission. Please note that individual figure files larger than 10 MB must be uploaded separately.
Streamline Reviews
If you have a manuscript that has been reviewed and rejected from a high impact journal (Impact Factor over 8 such as Nature, Science, PNAS, Cell Host Microbe, or PLOS Pathogens), you can send us the original reviews, your rebuttal, and a revised manuscript. You should include these extra items as part of your cover letter. We will consider the manuscript based on these reviews. We reserve the option of sending it for an additional assessment, in which case the additional reviewer(s) will also have access to your previous reviews. However, either way it will save you time as you don't need to start the review process all over again with new reviews. This option works best for manuscripts rejected from a high impact journal for perceived reasons of impact, novelty, or significance.

References
There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

Formatting requirements
There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions.

If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes.

Divide the article into clearly defined sections.

Material and methods
Materials and methods should provide sufficient information to permit the work to be repeated and should be kept concise by referring to previously published procedures. With increasing studies on pathogenicity of viruses, it is important that the provenance of viruses be stated clearly.

Keywords
Immediately after the abstract, provide a maximum of 10 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.

Abstract must not exceed 150 words
Follow internationally accepted rules and conventions: use the international system of units (SI). If other quantities are mentioned, give their equivalent in SI. For virus nomenclature, you are urged to consult the International Committee for the Taxonomy of Viruses (ICTV): http://www.ncbi.nlm.nih.gov/. Commonly used vernacular names may be used after viruses are first correctly identified. Genetic loci should be italicized; protein products of the loci are not italicized.

Please note that the instructions related to Graphical abstract still apply to all new submissions.

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.

REVISED SUBMISSIONS
Use of word processing software
Regardless of the file format of the original submission, at revision you must provide us with an editable file of the entire article. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). 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 - unnumbered sections
Divide your article into clearly defined sections. Each subsection is given a brief heading. Each heading should appear on its own separate line. Subsections should be used as much as possible when cross-referencing text: refer to the subsection by heading as opposed to simply 'the text'.

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

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.

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 lower-case 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.

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.

Highlights
Highlights are a short collection of bullet points that convey the core findings of the article. Highlights are optional and 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). You can view example Highlights on our information site.

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.

Database linking
Elsevier encourages authors to connect articles with external databases, giving their readers one-click access to relevant databases that help to build a better understanding of the described research. Please refer to relevant database identifiers using the following format in your article: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

For papers describing experimentally determined structures of biological macromolecules, the atomic coordinates and related experimental data (structure factor amplitudes/intensities and/or NMR restraints and chemical shifts) must be deposited in the PDB at a member site of the Worldwide Protein Data Bank (wwPDB.org). The wwPDB validation report for each structure should be provided upon manuscript submission.

For papers describing structures of biological macromolecules from electron microscopy experiments (all averaging methods, including sub-tomogram averaging), the 3D map should be deposited in EM Data Bank (EMDB: emdatabank.org). Any fitted atomic coordinates should be deposited with the Protein Data Bank (PDB). For electron tomographic studies with no averaging, deposition of one or more representative tomograms in EMDB is strongly recommended. The EMDB and PDB IDs should be included in the manuscript, together with a brief descriptive title for each accession. In cases where PDB models have been fitted into EMDB maps, the correspondences between them should be clearly stated. Both the map and the coordinate data must be made public when the associated article is published.

See http://www.elsevier.com/databaselinking for more information and a full list of supported databases.

Artwork
Electronic artwork
General points
- Make sure you use uniform lettering and sizing of your original artwork.
- Preferred fonts: Arial (or Helvetica), Times New Roman (or Times), Symbol, Courier.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Indicate per figure if it is a single, 1.5 or 2-column fitting image.
- For Word submissions only, you may still provide figures and their captions, and tables within a single file at the revision stage.
- Please note that individual figure files larger than 10 MB must be provided in separate source files.

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
Regardless of the application used, 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 the font or save the text as 'graphics'.
TIFF (or JPEG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi.
TIFF (or JPEG): Bitmapped line drawings: use a minimum of 1000 dpi.
TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required.
Please do not:
- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); the resolution is too low.
- Supply files that are too low in resolution.
- Submit graphics that are disproportionately 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) in addition to color reproduction in print. Further information on the preparation of electronic artwork.

Figure captions
Ensure that each illustration has a caption. 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.

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.

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 management software
Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley and Zotero, as well as EndNote. Using the word processor plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:
http://open.mendeley.com/use-citation-style/virology

When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

Free Reference Style
There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination
must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct. If you do wish to format the references yourself they should be arranged according to the following examples:


*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.

**AudioSlides**
The journal encourages authors to create an AudioSlides presentation with their published article. AudioSlides are brief, webinar-style presentations that are shown next to the online article on ScienceDirect. This gives authors the opportunity to summarize their research in their own words and to help readers understand what the paper is about. More information and examples are available. Authors of this journal will automatically receive an invitation e-mail to create an AudioSlides presentation after acceptance of their paper.

**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 and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. 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.

Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, 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. 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 that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page.

For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

Open data
This journal supports Open data, enabling authors to submit any raw (unprocessed) research data with their article for open access publication under the CC BY license. More information.

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. Before submitting your article, you can deposit the relevant datasets to Mendeley Data. Please include the DOI of the deposited dataset(s) in your main manuscript file. The datasets will be listed and directly accessible to readers next to your published article online.

For more information, visit the Mendeley Data for journals page.

Data statement
To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

AFTER ACCEPTANCE

Online proof correction
Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors.
If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.
We will do everything possible to get your article published quickly and accurately. 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. 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 Webshop. 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