Submit to the Proceedings of the National Academy of Sciences (PNAS) and have your research discovered by millions of researchers in the Biological, Physical, and Social Sciences.

About PNAS

PNAS has been at the forefront of scientific research for over a century. Established in 1914 as the official journal of the US National Academy of Sciences (NAS), PNAS is now one of the largest and most-cited multidisciplinary scientific journals in the world, with a global readership and more than 3,300 research articles published annually.

Why Submit to PNAS?

Comprehensive scientific coverage

PNAS publishes exceptional research in all branches of the Biological, Physical, and Social Sciences. We find that innovation often happens at the margins, and we are particularly interested in research that crosses disciplinary bounds, answers questions with broad scientific impact, or breaks new ground.

Broad scientific audience

With one of the largest scientific audiences in the world, PNAS articles reach millions of top researchers each year. Our developing countries and open access programs further our mission to make scientific research accessible to all.

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PNAS is edited by members of the NAS, a private, nonprofit society of distinguished scholars. Scientists are elected by their peers to membership in the NAS for outstanding contributions to research. Nearly 500 members of the NAS have won Nobel Prizes. The NAS is committed to furthering science in America, and its members are active contributors to the international scientific community.

On average, a full review takes just 45 days, and most articles publish within 6 months of submission.

High impact

PNAS publishes some of the most highly cited research in the world. Learn more about our 2019 article- and journal-level metrics.

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<th>Metric</th>
<th>Value</th>
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<tr>
<td>h-5-index</td>
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<td>Cited Half-life</td>
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<td>Immediacy index</td>
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Submitting Your Manuscript

PNAS welcomes submissions in all scientific disciplines from researchers worldwide. Information on submitting your manuscript is included below. Please contact us if you have any questions about the submission process.

PNAS Article Types

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<th>Unsolicited Article Types</th>
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<tr>
<td><strong>Research reports</strong> describe the results of original research of exceptional importance. The preferred length of these articles is 6 pages, but PNAS allows articles up to a maximum of 12 pages. A standard 6-page article is approximately 4,000 words, 50 references, and 4 medium-size graphical elements (i.e., figures and tables).</td>
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<tr>
<td>• <strong>Direct Submissions</strong>: Most PNAS articles are Direct Submissions.</td>
</tr>
<tr>
<td>• <strong>Contributed Submissions</strong>: NAS members may contribute two research manuscripts annually within their area of expertise in which they had a direct, significant role in the design and execution of the work. Learn more about the Contributed Submissions process.</td>
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<tr>
<th>Brief Reports describe observations of immediate impact that may hold potential to initiate new avenues of research, provide compelling new data on controversies of broad interest and long-standing questions, or present a concise conceptual advance.</th>
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<tr>
<td>• All Brief Report articles are published open access.</td>
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<tr>
<td>• Brief Reports are limited to 3 pages, which is approximately 1,600 words (including the manuscript text, title page, abstract, and figure legends), and 15 references. They typically include no more than 2 graphical elements.</td>
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<tr>
<td>• Supporting information (SI) is limited to essential supporting datasets and videos (no additional methods, tables, or figures).</td>
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<tr>
<td>• All Brief Reports follow the Direct Submission mode of review and are not eligible as member-contributed submissions.</td>
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<th>Letters to the Editor provide brief comments that allow readers to constructively address a difference of opinion with authors of a PNAS article.</th>
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<tr>
<td>• Letters are limited to 500 words and 10 references.</td>
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<tr>
<td>• Letters may not include requests to cite the Letter writer’s work, accusations of misconduct, or personal comments to an author.</td>
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<tr>
<td>• Letters must be submitted within 6 months of the first online publication date of the subject article.</td>
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By Invitation Only

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<th>Commentaries call attention to articles of particular note.</th>
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| Front Matter is an expanded front magazine section that tells the stories of science in interesting ways. Sections include News Features, Science and Culture, Inner Workings, Core Concepts, QnAs, Profiles, and the Science Sessions Podcast, all written by science journalists. |

| Opinions articles are succinct essays that appear in the Front Matter section. Opinions are authored by researchers, and they further the discourse on a topic via a clearly articulated argument that includes novel ideas or proposals. Submissions deemed appropriate are reviewed by an NAS member with relevant experience. |

| Perspectives present a balanced and objective viewpoint on an important area of research, focus on a specific field or subfield within a larger discipline, and discuss current advances and future directions. |

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<th>Colloquium Papers are reports of scientific colloquia held under NAS auspices.</th>
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Initial Submissions

PNAS is format-neutral at initial submission, which means that manuscripts do not need to be formatted according to specific journal guidelines to be considered for review. We do, however, require the following information in order to evaluate your manuscript:

1. A manuscript file (in any format) including the following:
   • Title page (title, author list, classification, keywords)
   • Abstract
   • Significance statement
   • Main text
   • References
   • Figures or tables with appropriate legends (may be uploaded separately)
   • SI files (may be uploaded separately)
2. Contact and competing interest information for all authors.
3. Data sharing plans (including all data, documentation, and code used in analysis).
4. Funding information, including selection of open access license to publish.
5. A list of appropriate Editorial Board, NAS members, and qualified reviewers (minimum of three each) who are experts in the paper’s scientific area.

PNAS will consider manuscripts for review as long as all components listed above are included in the submission. More granular details on manuscript formatting, including guidance on information to include in each section of the file, are included in the Manuscript Formatting Guidelines below.

For Contributed submissions, the NAS member acts as the corresponding author during the review process and must be a listed corresponding author on the published article. After completion of the review process, a coauthor may be designated to serve as corresponding author. These papers are published as “Contributed by” the responsible NAS member. Academy members who have a competing interest, financial or otherwise, that could be seen to significantly impair their objectivity or to create an unfair competitive advantage for any person or organization tied to the research should submit their work as a Direct Submission.

In addition to the five items above, Contributed submissions must include the names of at least two experts who have agreed to review the manuscript. The names and institutional affiliations of all reviewers of Contributed articles are published in a footnote. These experts must:
   • be from different institutions (from the authors and each other),
   • not have collaborated with the authors in the past 48 months, and
   • be free of any other competing interests.

The final version of the paper must be submitted by the last day of the year to count toward that year’s annual limit.

Revised Submissions

Revised papers must be received within 2 months of the revision decision or they will be treated as new submissions. If you require additional time, please notify PNAS. In addition to the information provided at initial submission, revised submissions must also include:
   • a point-by-point response to reviewer comments, and
   • a tracked-changes version of the revised manuscript.

Revised Submissions are encouraged to follow all Manuscript Formatting Guidelines, including the Publication-Ready Source File Guidelines. Please contact us if you have any questions regarding manuscript formatting or the revision process.
Manuscript Formatting Guidelines

Manuscript templates

Please use the templates below to prepare your manuscript for PNAS.

<table>
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<tr>
<th>Word</th>
<th>LaTex (Overleaf)</th>
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<tr>
<td>Research Article</td>
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<tr>
<td>Brief Report</td>
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<td>SI Appendix</td>
<td>SI Appendix</td>
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<tr>
<td>Single-column Math Article</td>
<td>Single-column Math Article</td>
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Support for LaTeX templates is provided by Overleaf. Please contact PNAS if you have questions about submitting in LaTeX and include the manuscript file as an attachment if possible.

Manuscript order

Submitting manuscript sections in the following order will allow us to locate important information more easily and may speed the review process. Number all manuscript pages starting with the title page.

1. Title page
2. Abstract
   - Explain to the general reader the major contributions of the article
   - Include no more than 250 words
   - Cite all references in the abstract in full within the abstract itself AND in the text
3. Significance statement (Direct and Contributed Submissions only)
   - Explain the significance of the research at a level understandable to an undergraduate-educated scientist outside their field of specialty
   - Include no more than 120 words
4. Main text
   - Introduction
   - Results
   - Discussion
   - Materials and methods (describe procedures in sufficient detail so that the work can be repeated)
5. Acknowledgments and funding sources
   - Spell out all abbreviations
   - Use FundRef to identify the standard name for any funders
   - Do not include dedications
6. References
7. Figure legends

Title page

Please include the following information on the title page:
Classifications

Select a major (Physical, Social, or Biological Sciences) and a minor category from the following. Dual classifications are permitted between major categories. Dual classifications within a major category are only permitted in exceptional cases and are subject to Editorial Board approval.

**PHYSICAL SCIENCES**

Applied Mathematics; Applied Physical Sciences; Astronomy; Biophysics and Computational Biology; Chemistry; Computer Sciences; Earth, Atmospheric, and Planetary Sciences; Engineering; Environmental Sciences; Mathematics; Physics; Statistics; and Sustainability Science.

**SOCIAL SCIENCES**

Anthropology; Economic Sciences; Environmental Sciences; Political Sciences; Psychological and Cognitive Sciences; Social Sciences; and Sustainability Science.

**BIOLOGICAL SCIENCES**

Agricultural Sciences; Anthropology; Applied Biological Sciences; Biochemistry; Biophysics and Computational Biology; Cell Biology; Developmental Biology; Ecology; Environmental Sciences; Evolution; Genetics; Immunology and Inflammation; Medical Sciences; Microbiology; Neuroscience; Pharmacology; Physiology; Plant Biology; Population Biology; Psychological and Cognitive Sciences; Sustainability Science; and Systems Biology.

Main text

Please take note of the following when preparing your manuscript for PNAS:

- Do not include statements of novelty or priority.
- Avoid laboratory jargon.
- Use correct chemical names.
- Specify strains of organisms.
- Display trade names with an initial capital letter only.
- Provide names of suppliers of uncommon reagents or instruments.
• Use Système International units and symbols whenever possible.
• Only link to websites that are permanent public repositories, such as self-perpetuating online resources funded by government, academia, and industry. Links to an author’s personal web page are not acceptable.
• Use standardized nomenclature for species-specific gene and protein names (See Genecards, MGI Nomenclature page, HUGO Gene Nomenclature Committee, or equivalent resources).
  o Proposed gene names must be deposited to and approved by the appropriate nomenclature committee before publication of the article.
• Ensure that abbreviations are accessible to a broad scientific audience. Define all abbreviations that are specific to a particular field at first mention in the text.
• If you believe your manuscript would benefit from professional editing, we encourage you to use an editing service (see list here) prior to submission. PNAS does not take responsibility for or endorse these services, and their use has no bearing on acceptance of a manuscript for publication.

Publication-ready Source Files Guidelines

Once your manuscript has been accepted, PNAS will request publication-ready source files. Please use the following guidelines when preparing these files. Do not make extensive edits; PNAS only allows minor edits at proofs.

Manuscript file

Manuscript files must adhere to the following:
• Word, RTF, or LaTeX format
• No embedded figures, tables, or schemes
• Equations must be editable; images are not acceptable
• In-text footnotes should be preceded by a footnote symbol, used in the order *, †, ‡, §, ¶, #, ||,**, ††, ‡‡, §§, ¶¶, ##

LaTeX

The PNAS submission system runs PDFLaTeX (Overleaf’s default). Please use the latest version of LaTeX2e to prepare your files. Using other versions or alternate engines (such as XeLaTeX or LuaLaTeX) may cause compilation issues at submission.

Basic Rules
• Upload .cls, .sty, .bib, .bst, .bbl, and .ldf files using the “LaTeX Support File” file type. The PNAS submissions system treats each LaTex submission as a single directory.
• Avoid nesting, cross-referencing, and using input commands, as these will cause compilation errors.
• Do not remove packages that are included in the Overleaf template.
• When adding packages to the template, ensure that their commands do not clash with existing packages.

Figures and Tables
• Use the \includegraphics command within the main manuscript file and upload each figure source file in the submission system separately using the ”Figure” file type.
• Include tables within the main manuscript .tex file only.

References
• Use pnas-new.bst for the current PNAS bibliography style.
• Use the Automatic Journal Title Abbreviation package provided in Overleaf to prevent references from appearing longer than they would in publication.

Resolving Compilation Problems in Submission
• To recompile the manuscript file, delete the original file from the submission and upload it again.
• Upload an alternate PDF as a “Related Manuscript File” if the system compiled PDF is incomplete or inaccurate.

Figures
Supply figures and schemes as high-resolution files whenever possible. Please review the PNAS Digital Art Guidelines before uploading images.

• Provide all images at final size. While figures may be sized conservatively to save page space, PNAS reserves the right to make the final decision on figure size in published articles and authors may be asked to shorten manuscripts that exceed the stated length requirement.
  o Small: approximately 9 cm x 6 cm
  o Medium: approximately 11 cm x 11 cm
  o Large: approximately 18 cm x 22 cm
• Ensure that all numbers, letters, and symbols are no smaller than 6 points (2 mm) and no larger than 12 points (6 mm) after reduction. Keep text sizing consistent within each graphic.
• Preassemble all composite figures.
• Submit images in these file formats: TIFF, EPS, PDF, or PPT.
• Submit 3D images as either PRC or U3D. For each 3D image, include a 2D representation in TIFF, EPS, or PDF format.

Figure legends
Include figure legends immediately after referencing the figure in the manuscript. Ensure that figure legends adhere to the following guidelines:
• For figures with multiple panels, the first sentence of the legend should be a brief overview of the entire figure. Explicitly reference and describe each panel at least once in the figure legend.
• Include clearly labeled error bars in all graphs and describe them in the figure legend.
• State whether a number that follows the ± sign is a standard error (SEM) or a standard deviation (SD).
• When applicable, provide the P value, magnification, or scale bar information.
• Indicate the number of independent data points (N) represented in a graph in the legend.
• Ensure that numerical axes on all graphs go to 0, except for log axes.

Tables
• Ensure that the table is in an editable Word, RTF, or LaTeX format
• Include a brief title (above) and footnotes (below) the table
• Avoid multipart tables (Table 1A, Table 1B)

References
References must be in PNAS style. Unpublished abstracts presented at meetings or references to “data not shown” are not permitted.

Cite references in numerical order as they appear in text, and include all references cited in the main text in the main manuscript file. Include a separate citation list for references cited in the SI. Tables and figures will be inserted in the text where first cited; number references in these sections accordingly.
• Include the full title for each cited article. Use MEDLINE/PubMed abbreviations of journal titles or use the full journal title for any journals not indexed in MEDLINE.
• If more than five authors, list the first author's name followed by et al.
• Provide volume numbers for journal articles as applicable; provide DOI numbers if volume numbers are not available.
• Provide page ranges for journal articles and book chapters.
• Provide date of access for online sources.
• When applicable, note in-press status and include a DOI number and online publication date.

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<th>Source</th>
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Supporting information

SI will be published as provided by the authors; it will not be edited or composed.

SI file formats:
• **SI Appendix**: Supply a single PDF file, combining all text, figures, tables, movie legends, and SI references. See the PNAS SI template.
• Datasets: Supply XLSX, RTF, PDF, CSV, or TXT files.
• Movies: Supply AVI, MOV, WMV, GIF, or MPEG files at the desired reproduction size and length. Movies are limited to 10 MB in size. Include a brief legend for each movie in the SI Appendix.

When preparing SI files, please note the following:
• The main text of the paper must stand on its own without the SI.
• SI is referred to in the text and cannot be altered by authors after acceptance.
• Refer to the SI Appendix in the manuscript at an appropriate point in the text. Number supporting figures and tables starting with S1, S2, etc. References should be cited in numerical order as they appear in the SI; do not cite main-text references in the SI and vice versa.

If you choose to place detailed materials and methods in an SI Appendix, you must provide sufficient detail in the main-text methods to enable a reader to follow the logic of the procedures and results. The main article text also must reference the SI methods.
If a paper is fundamentally a study of a new method or technique, then the methods must be described completely in the main text.

**Journal Cover Images**

Authors are invited to submit scientifically interesting and visually arresting images to be considered for our cover (see our archive). Illustrations need not appear in the article but should be representative of the work. Images should be original, and authors must grant PNAS a License to Publish.

To submit an image for consideration for the PNAS cover:

- Submit the image with your manuscript through the PNAS manuscript submissions system, or email the image to PNASCovers@nas.edu. Contact PNAS for instructions on submitting large files.
- Include a brief lay-language caption (50–60 words) and credit information (e.g., Image credit:...).
- Submit an image that is 21 cm wide by 22.5 cm high.
- Submit the file in EPS or TIFF format and use RGB color mode.

The deadline for cover submissions is when proof corrections are returned. If you choose to submit an image outside the online submission system, make sure you include the manuscript number, author name, phone, and email in your submission.

**Submissions Contributed by NAS Members**

NAS members may contribute up to two research manuscripts annually, which must be within the member’s area of expertise and in which the member had a direct, significant role in the design and execution of the work. The final version of the manuscript must be submitted by the last day of the year to count toward that year’s annual limit.

The submissions and peer review process for contributed submissions are described below. All authors, including NAS member authors submitting their work through the Contributed track, must adhere to PNAS editorial policies and guidelines.

**Peer Review Process**

**Tier 1: Independent Peer Review**

All research papers, including those contributed by an NAS member, must be peer-reviewed by at least two independent experts in a process overseen by a member of the Editorial Board. The contributing member submits the manuscript to PNAS along with the names of at least two experts in relevant subject areas (particularly for multidisciplinary studies) who have agreed to review the work. On submission, the Editorial Office sends the manuscript to the assigned reviewers, manages the review process, and collects the reviewer reports.

**Tier 2: Revise and Resubmit**

When the reviews are completed, the contributing member works with his or her coauthors to revise the manuscript in response to the reviewers’ comments. The revised manuscript and a point-by-point response are returned to the reviewers to ensure that their concerns have been adequately addressed.

**Tier 3: Evaluation by the Editorial Board**

The responsible member of the Editorial Board reviews the final revised version of the member’s manuscript, along with all rounds of reviewers’ comments and the authors’ point-by-point responses. The responsible Editorial Board member may suggest that additional reviews be obtained from experts who are not on the list submitted by the member who contributed the
manuscript. Only when the assigned Board member is satisfied that the work has been appropriately reviewed and suitable for PNAS is the manuscript accepted for publication.

The name of the NAS member responsible for contributing the published article, along with the names of the reviewers, appear below the author affiliation line on the title page.

Authorship

For Contributed submissions, the NAS member acts as the corresponding author during the review process and must be listed as a corresponding author on the published article. After completion of the review process, a coauthor may be designated to serve as a co-corresponding author.

Competing Interests

Academy members who have a competing interest, financial or otherwise, that could be seen as significantly impairing their objectivity or as creating an unfair competitive advantage for any person or organization tied to the research should submit their work as a Direct Submission. See Editorial and Journal Policies for further information.

Initial Submissions

As with Direct Submissions, Contributed submissions must include the following four items:

1. A manuscript file (in any format) including the following:
   - Title page (title, author list, classification, keywords)
   - Abstract
   - Significance statement
   - Main text
   - References
   - Figures or tables with appropriate legends (may be uploaded separately)
   - SI files (may be uploaded separately)
2. Contact and competing interest information for all authors
3. Data sharing plans (including all data, documentation, and code used in analysis)
4. Funding information and whether an open access license to publish has been selected

In addition to these four items, as noted above, Contributed submissions must include the names of at least two experts in relevant subject areas (particularly for multidisciplinary studies) who have agreed to review the manuscript. The names and institutional affiliations of all reviewers of Contributed articles are published in a footnote. These experts must:

- be from different institutions (from the authors and each other),
- not have collaborated with the authors in the past 48 months, and
- be free of any other competing interests.

Visit Submitting your Manuscript for full instructions on submissions and manuscript formatting.

Editorial and Journal Policies

In submitting to PNAS, all authors must agree to abide by PNAS editorial and journal policies. Manuscripts are reviewed with the explicit understanding that all authors have seen and approved of the submitted version.

Peer Review Process

Tier 1: Editorial Board assessment

The PNAS Editorial Board is made up of NAS members who are active scientists and experts in their fields. On submission, your paper is assigned to an Editorial Board member in one of the 31 NAS disciplines. If the Board member determines that the paper should proceed further, she or he assigns it to a member editor or, if the NAS membership lacks sufficient expertise, to a
nonmember guest editor to oversee the peer review process. The Board may reject manuscripts without further review, or review and reject manuscripts that do not meet PNAS standards. More than 50% of submissions are declined at initial evaluation.

**Tier 2: Member Editor or Guest Editor assessment**

A member editor is an NAS member who is an active scientist in the field most relevant to your research. The member editor manages the peer review process for papers in their field and determines suitability of your work for PNAS.

A guest editor is an active scientific researcher who is not an NAS member but is recognized by the Board as an expert in their field. Guest editors manage the peer review process in emerging and interdisciplinary fields where the NAS membership lacks sufficient expertise. With oversight from the Editorial Board, guest editors determine suitability of your work for PNAS.

**Tier 3: Independent Peer Review**

Research papers across all submission routes are peer-reviewed by at least two independent experts. If your paper is sent out for review, your member editor or guest editor selects recognized subject experts to review your work. The editors evaluate the reviewers’ comments and make a recommendation to the Editorial Board member, who makes the final decision to accept or reject your paper. The acceptance rate is currently 14%.

A member or guest editor will typically secure two independent peer reviews. However, a single negative review, with which the editor agrees, may be sufficient to recommend rejection. The names of the reviewers of Direct Submissions are confidential and not shared, unless express permission is granted by the reviewers. Contributed submissions have open peer review (named reviewers).

For all articles, the peer review track is identified below the author affiliation line on the title page of the article, along with the name of the NAS member responsible for editing or contributing the paper.

Learn more about the peer review process for member-contributed submissions.

**Editorial Policies**

- Authorship and Contributions
- Competing Interest
- Design and Analysis Transparency
- Dual Use Research of Concern
- Embargo Policy
- Errata
- Human and Animal Research
- Image Integrity
- License to Publish
- Materials and Data Availability
- Open Access
- Preprint Servers
- Previous Publication
- Recombinant DNA
- Research Misconduct
- Statistical Analysis

**Authorship and Contributions**

**Authorship** must be limited to those who have contributed substantially to the work. The corresponding author must have obtained permission from all authors for the submission of each version of the paper and for any change in authorship.

All collaborators share some degree of responsibility for any paper they coauthor. Some coauthors have responsibility for the entire paper as an accurate, verifiable report of the research. These include coauthors who are accountable for the integrity of the data reported in the paper, carry out the analysis, write the manuscript, present major findings at conferences, or provide
scientific leadership to junior colleagues. Coauthors who make specific, limited contributions to a paper are responsible for their contributions but may have only limited responsibility for other results. While not all coauthors may be familiar with all aspects of the research presented in their paper, all collaborators should have in place an appropriate process for reviewing the accuracy of the reported results.

Authors must indicate their specific contributions to the published work, which will be published as a footnote to the paper. Published contributions are taken from the submission system, not from the manuscript file. Examples of designations include:

- Designed research
- Performed research
- Contributed new reagents or analytic tools
- Analyzed data
- Wrote the paper

An author may list more than one contribution, and more than one author may have contributed to the same aspect of the work.

**ORCID**

PNAS strongly encourages all authors to use their ORCID identifier when submitting papers. ORCID provides a persistent digital identifier that distinguishes you from every other researcher. When provided, published articles display the ORCID logo and link to an author’s ORCID record. Learn more or register for ORCID.

**Corresponding authors**

Throughout submission and peer review, a single corresponding author is responsible for providing all necessary manuscript information and interactions with the editorial office. After acceptance, multiple corresponding authors, who are responsible for checking the accuracy of the proof contents and who will act as points of contact for queries about the published article, are permissible; these authors should be indicated on the title page (see Submitting Your Manuscript).

**Competing Interest**

Failure to disclose a Competing Interest at submission may result in author sanctions. Authors must disclose, at submission, any association that poses or could be reasonably perceived as posing a financial or personal competing interest in connection with the manuscript, and acknowledge all funding sources supporting the work. Disclosures must be entered directly into the submission system; providing a link to full disclosures hosted on a website is not permissible. When asked to evaluate a manuscript, members, reviewers, and editors must disclose any association that poses a competing interest in connection with the manuscript.

**PNAS Competing Interest Policy**

PNAS recognizes the multiplicity of financial and other competing interests confronting authors, referees, and editors. The PNAS policy is designed to manage, not eliminate competing interests. The most important element of our policy is that all authors, members, referees, and editors must disclose any association that poses or could be reasonably perceived as posing a financial or intellectual competing interest in connection with the manuscript. Divulging a potential competing interest usually does not invalidate the research or the comments of a referee or editor; it simply provides the reader information necessary to independently assess the work.

When a competing interest is disclosed either by the author or the editor, a descriptive footnote will be included with the published article.
PNAS reserves the right to publish an erratum disclosing competing interests related to a previously published paper. Authors, referees, or editors who have deliberately or recklessly failed to disclose a competing interest may receive sanctions, including being banned from publishing in PNAS.

This policy applies to all material published in PNAS, including research articles, Perspectives, Editorials, Reviews, Colloquium papers, and Commentaries. For further details, please contact PNAS.

**Guidance**

**Financial Competing Interest**

A financial interest in an organization whose products or services are related to the article’s subject matter and could be reasonably perceived as capable of influencing the objectivity, integrity, or interpretation of a publication should be disclosed as a competing interest.

In determining whether the financial interest meets the “reasonably be perceived as …” criterion, use your best judgment to arrive at a good-faith determination. A helpful criterion is whether a nondisclosed competing interest would embarrass you if it were to become public after publication of your work.

These financial interests may include employment, substantive ownership of stock or mutual funds*, membership on a standing advisory council or committee, service on the board of directors, public association with the company or its products, consulting fees, patent filings, compensation as a spokesperson, honoraria received in exchange for services, or financial support.

These considerations apply to financial interests held by you, your spouse or domestic partner, or your dependent children.

*For example, many US universities require faculty members to disclose interests exceeding $10,000 or 5% equity in a company.

**Personal Association Competing Interest**

A competing interest due to a personal association arises if you are asked to serve as editor or reviewer of a manuscript whose authors include a person with whom you had an association, such as a thesis advisor (or advisee), postdoctoral mentor (or mentee), or coauthor of a paper, within the last 48 months. When such a competing interest arises, you may not serve as editor or reviewer.

A competing interest due to personal association also arises if you are asked to serve as editor or reviewer of a manuscript whose authors include a person with whom you have a family relationship, such as a spouse, domestic partner, or parent–child relationship. When such a competing interest arises, you may not serve as editor or reviewer.

A personal association competing interest may exist for Academy members who submit a Contributed manuscript if a suggested reviewer was, for example, the member’s thesis advisee (or advisor), postdoctoral mentee (or mentor), or coauthor of a paper, within the last 48 months. When such a competing interest arises, an alternative reviewer must be suggested.

**Author Responsibilities**

During manuscript submission, authors are required to complete the online form, disclose any competing interests, and acknowledge all funding sources supporting the work. The corresponding author must ensure that all authors have disclosed any competing interests.

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Share a link to your article on research-sharing networks. Many disciplines use academic research-sharing and networking sites extensively. These sites include ResearchGate, Mendeley, Academia.edu, Loop, and others.

Promote your article on Twitter. An increasing number of scientific researchers use Twitter to find and share research in their fields, making Twitter a good place to promote your work. Using Twitter professionally can also help you discover new research, participate in debates, and make professional connections.
Tutorials and discussion of Science Twitter:
- Getting started on ‘Academic Twitter’
- Twitter for Academics 101 (iNSCOPIX)
- A Defense of Academic Twitter (Inside Higher Ed)
- Ten simple rules for getting started on Twitter as a scientist
- Scientists, do you want to succeed on Twitter? Here’s how many followers you need
- You should get Twitter...for science!

Create shareable, plain-language summaries. If your intended audience includes members of the general science-interested public or researchers outside your specialization, a plain-language summary will make your research more accessible. Many PNAS authors start with their significance statement or abstract and create plain-language summaries that are designed for a specific audience or medium.

Plain-language summary examples and tutorials:
- How to write a media release for your university press office or research office
- An example of a paper summary thread for a science-educated Twitter audience
- How to make a YouTube video abstract for busy clinicians and the general public
- How to create an infographic for social sharing and presentations

Blog about your article. If you already maintain or contribute to a blog in your field, write a post about your article. If not, contact blogs in your field and ask about opportunities to guest post. You might also consider posting on a long-form digital publishing site like Medium.com.

Blogging tutorials and resources:
- Why science blogging still matters
- How to write a blogpost from your journal article
- How to turn your research paper or article into a blog

Make use of your institution’s communications channels/press office. If your institution has a press office, contact them with a media release and ask for assistance in promoting your work. The press office will have access to channels such as email lists and social media, as well as contacts at news outlets or government agencies who may be able to help your research get noticed. Remember to coordinate any press releases with the PNAS News Office.

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