



Science/AAAS Authorship Form and Statement of Conflicts of Interest

Each author must complete the following form prior to acceptance of their paper.

1. Authorship

Authorship Criteria

Authors in *Science* Journals must fulfill the criteria described below that are informed by the International Committee of Medical Journal Editors definition of authorship. Specifically,

- Each author is expected to have made substantial contributions to the conception or design of the work;
- OR the acquisition, analysis, or interpretation of data;
- OR creation of new software used in the work;
- OR have drafted the work or substantially revised it;
- AND has approved the submitted version (and any substantially modified version that involves the author's contribution to the study;
- AND agrees to be personally accountable for the author's own contributions and for ensuring that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and documented in the literature.

I meet the criteria for authorship as defined above

☒ Yes
☐ No

Corresponding Author Responsibilities

- Ensure that all listed authors have received and approved the manuscript prior to submission, and fulfill the authorship criteria listed above.
- Receive all substantive correspondence with editors as well as full reviews.
- Verify that all data, materials (including reagents), and code, even those developed/provided by other authors, comply with the transparency and reproducibility standards of both the field and the journal.
- Ensure that original data/materials/code upon which the submission is based are preserved and retrievable for reanalysis.
- Confirm that the presentation in the paper of the data/materials/code accurately reflects the original.
- Foresee and minimize obstacles to the sharing of data/materials/code
- Ensure the entire author group is fully aware of and in compliance with best practices.
- Operational responsibilities, including signing off on galleys, vouching for other authors where necessary, ensuring all authors complete the COI declaration and license forms.

Select one of the following statements:

☒ I am not a corresponding author
☐ I am a corresponding author on a perspective or book review that does not include data/materials/code
☐ I am a corresponding author and I agree to the responsibilities listed above
☐ I am a corresponding author but I can't agree to assume the responsibilities for the following reasons:

2. Contributions

I contributed to this manuscript as listed below:

Contributor Role Taxonomy (CRediT)	Role Definition	YES	No
Conceptualization	<i>Ideas; formulation or evolution of overarching research goals and aims.</i>	X	
Methodology	<i>Development or design of methodology; creation of models.</i>	X	
Software	<i>Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components.</i>		X
Validation	<i>Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs.</i>		X
Formal Analysis	<i>Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data.</i>		X
Investigation	<i>Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.</i>		X
Resources	<i>Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools.</i>		X
Data Curation	<i>Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse.</i>		X
Writing – Original Draft Preparation	<i>Creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation).</i>		X
Writing – Review & Editing	<i>Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages.</i>		X
Visualization	<i>Preparation, creation and/or presentation of the published work, specifically visualization/data presentation.</i>		X
Supervision	<i>Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team.</i>		X
Project Administration	<i>Management and coordination responsibility for the research activity planning and execution.</i>		X
Funding Acquisition	<i>Acquisition of the financial support for the project leading to this publication.</i>		X

3. Conflict of Interest Disclosure:

All authors must disclose their own affiliations, funding sources, or financial holdings that might be perceived as sources of bias so that readers can evaluate the data and opinions presented in *Science* journals. Authors' disclosure of financial and other interests provides transparency. To achieve transparency in this regard, all published research and commentary articles are accompanied by a statement that clearly discloses all interests that may be perceived to be at odds with unbiased presentation of data or analysis.

Current institutional affiliations: Affiliations on the title page should include the current academic, corporate, and/or industrial affiliations of all authors.

- ☒ All my affiliations are listed on the title page of the paper.
- ☐ I have additional affiliations that are disclosed in the acknowledgments.
- ☐ I have additional affiliations that I will provide to the corresponding author for inclusion in the final version. **They are included in the disclosure statement at the end of this form.**

Funding Sources, including in-kind contributions

- ☒ All my sources of funding for this study are listed in the acknowledgement section of the paper.
- ☐ Additional funding sources not noted in the manuscript have been provided to the corresponding author for inclusion in the final version. **They are included in the disclosure statement at the end of this form.**

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4. Data Policies:

I affirm that all data necessary for a reader to understand and evaluate the conclusions of the paper are provided in the manuscript and supplementary material or are archived in an approved public database. The name of the database and accession numbers are included in the data accessibility statement in the acknowledgment section.

☐ Not applicable as this is a commentary piece and does not include data.

☒ Yes, I affirm.

☐ No, I can't affirm compliance. I defer to the senior author on this question.

☐ No, I can't affirm compliance due to the constraints listed below.

The senior author from each lab or group must have personally checked all the original data that was generated by her/his lab or group.

☐ Not applicable as this is a commentary piece and does not include data.

☐ I am not a senior author.

☐ I am a senior author representing a lab or group and have checked all the original data that were generated by my lab. The data generated by my team are presented in the figures and tables (including Supplementary Material) listed:

☐ I am a senior author and I have not checked all the original data that were generated by my lab for the following reasons:

5. Materials sharing:

I affirm that after publication, all reasonable requests for materials, data and code will be fulfilled.

☐ Not applicable as this is a commentary piece.

☒ Yes, I affirm.

☐ No, I don't affirm. I am not a senior author and do not have control of materials, data or code.

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Materials Transfer Agreements (MTAs). *The senior author from each lab or group must disclose whether there are any restrictions associated with the materials or code that was used by her/his lab or group, for example if materials are subject to a MTA.*

☐ Not applicable as this is a commentary piece.

☐ I am not a senior author

☐ I am a senior author representing a lab or group and I affirm there are not MTAs or restrictive patents.

☐ I am a senior author and there are MTAs or other restrictions on the use of materials and code. I have provided a copy of the MTA or details of any restrictions to the editorial office. Details of the restrictions have been provided to the corresponding author and are disclosed in the acknowledgments.

____ I am a senior author and there are MTAs, but I have not provided the agreement for the following reason:

6. Summary Declaration:

I confirm that I have read all the questions, responded to the best of my ability, and provided information as required. In addition, all my declarable relationships are either currently in the acknowledgment or have been provided to the corresponding author. The relationships are listed below for inclusion in the final version of the paper.

Additional Affiliations not on the title page: _____

Data Availability not already listed in acknowledgements (list database and unique identifiers):

Funding not already listed in acknowledgements:

Competing Interests not in acknowledgements:

Patents: not listed in acknowledgements:

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