



Authorship and the importance of the author contribution statement

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Scientists universally agree that scientific articles and authorship are critically important. Ethical guidelines have been established for best practices and transparency in authorship. Nonetheless, it is not uncommon to see significant errors in authorship practices in published papers. The purpose of this article is to clarify whose names should be listed as authors on a Plant Cell Reports paper and to give some practical guidelines when writing the authorship contribution statement.

In short, the corresponding author and the team of authors are responsible to avoid two critical potential errors in authorship. The first type of error happens when a person who made key contributions to a study and manuscript is not named as an author: someone is inadvertently omitted from the author list. The second type of error happens when a person who did not make a substantial contribution is listed as an author: people are unnecessarily added to the author list. This second type of error occurs when favors are granted to people (gift authorship) or senior scientists, administrators, or famous scientists are granted authorship (honorary authorship). Both types of errors, but especially gift and honorary authorship, could conceivably warrant the rejection of a submitted manuscript.

For many years, Plant Cell Reports has adhered to authorship criteria of the International Committee of Medical Journal Editors (ICMJE; <https://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>).

In short, the four ICMJE criteria for authorship are:

1. Substantial contributions

- Conception/design of the research *or*
 - Collection of data *or*
 - Data analysis/interpretation AND
2. Drafting the manuscript or making intellectual contributions on text/revisions AND
 3. Final approval of the manuscript AND
 4. Agreeing to be held accountable for the work.

Please note that accountability is an important concept in science that is a point of emphasis these days as research misconduct appears to be on the rise. It is critical that scientists be aware of the importance of research integrity from the lab bench to publication. Not only should the content of a scientific research paper be accurate, but the author list should be accurate as well.

The authorship contribution statement plays an important role in authorship and accountability. Ideally, the statement should be able to be mapped back to the ICMJE criteria. Figure 1 shows a good example of an ICMJE-mapped author contribution statement.

In submissions to the journal, sometimes we see certain words and phrases in authorship contribution statements that do not belong there: assisted, gave advice, provided funding, made coffee, translated to English, and helped are some examples. None of these words or phrases can be found in the ICMJE criteria and should be avoided in authorship contribution statements.

Given that paper mills are known to buy and sell authorship, and that honorary and gift authorship is also problematic and widespread in science, we, the editors, are increasingly wary of very long author lists and vague authorship contribution statements. It should not be challenging for the editors and peer reviewers to determine if authors meet the criteria for authorship. Also, it should be noted that ChatGPT and other large language models do not fit the criteria for authorship and should also not be listed as authors.

Below are additional resources and tips for authorship:

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Fig. 1 To the left is a fictional author contribution statement that serves here as a model. The statement is sufficiently detailed to paint a picture of each author's role in the study and manuscript. The statement can also be mapped to the ICMJE criteria for authorship (to the right) as depicted by the arrows

Author contribution statement

AA analyzed sequence data, participated in determining the experimental design, engineered plants, performed stress experiments, analyzed data, created figures and drafted the manuscript. BB cloned genes and made the transformation vectors and also participated in experimental design. CC performed data analysis and interpretation of the data. DD produced the transgenic plant gene expression data and analyzed it. EE co-conceived the study, participated in its design and interpreted the results. FF co-conceived the study, participated in designing the study, and participated in data interpretation. All authors participated in contributing to text and the content of the manuscript, including revisions and edits. All authors approve of the content of the manuscript and agree to be held accountable for the work.

ICMJE criteria

1. Substantial contributions to design OR acquisition, analysis OR interpretation of data
2. Drafting text/providing intellectual input
3. Approval of the work
4. Agreeing to be held accountable

- No changes to authorship can be made after acceptance of a manuscript.
- Authors might find that the Contributor Roles Taxonomy (CRediT; <https://credit.niso.org/>) is useful in thinking about roles of authors and when writing author contribution statements.
- For articles that are based primarily on the student's dissertation or thesis, it is recommended that the student is listed as the first author.
- Authors are asked to use their Open Researcher and Contributor ID (ORCID; <https://orcid.org/>) when submitting manuscripts to Plant Cell Reports. If authors don't have an ID yet, it can be acquired during the submission process.
- If authors become deceased or incapacitated during the writing, submission, or peer-review process, and the co-authors agree that it is appropriate to include the deceased or incapacitated person as an author, co-

authors should obtain approval from a (legal) representative, which may be a direct relative of the deceased or incapacitated contributor.

In conclusion, most submissions to Plant Cell Reports are in good faith and appear to be honest in content and intent. We scientists must be vigilant, however, to guard our scientific pursuits and outputs for the benefit of the profession and society. The leadership of Plant Cell Reports remains dedicated to these pursuits, which include assessing the veracity and appropriateness of authorship lists and contribution statements.

Data availability There are no data available.

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