

Who is an author? (ICMJE – International Committee of Medical Journal Editors)

The ICMJE recommends that authorship be based on the following 4 criteria:

- Substantial* contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; **AND**
- Drafting the work or revising it critically for important intellectual content; **AND**
- Final approval of the version to be published; **AND**
- Responsibility (i.e., agreement) to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

*Someone who has made a significant contribution to the work should at a minimum be able to draft or revise the portion of the manuscript in which that contribution is described. On the other hand, individuals who have made ancillary contributions will be unable to describe those contributions within the intellectual context of the manuscript (Strange, 2008).

The criteria are not intended for use as a means to disqualify colleagues from authorship who otherwise meet authorship criteria by denying them the opportunity to meet criterion # 2 or 3. Therefore, all individuals who meet the first criterion should have the opportunity to participate in the review, drafting, and final approval of the manuscript.

The first author is responsible for identifying who meets these criteria and ideally should do so when planning the work, making modifications as appropriate as the work progresses.

Examples of activities that alone (without other contributions) do not qualify a contributor for authorship are acquisition of funding; general supervision of a research group or general administrative support; and writing assistance, technical editing, language editing, and proofreading.”

Should technicians be included as authors in scientific publications?

Yes, as long as they have contributed to the paper in an intellectually significant way. A technician may be a co-author of a publication if, in the opinion of the first author the said individual has made a substantive contribution to the work over and above actually performing required tasks. If the technical staff (support) person has performed studies prescribed by the PI, but has not made contributions to the experimental design, data analyses, data interpretation, or rationale for the study, then co-authorship is not automatically earned (Strange, 2008).

Authorship order

The benefit and responsibility conferred to a specific position on an authorship list are not worldwide recognized.

As suggested by Strange (2008):

1. The first author is the person who has carried out a majority of the experimental work described in the paper.
2. The last person on an authorship list is the individual who as individuals who “generally direct, oversee, and guarantee the authenticity of the work reported” and “implicitly take responsibility for the work's scientific accuracy, valid methodology, analysis, and conclusions”. This person cannot do this if he/she was not actively engaged in all aspects of the study, including checking and analyzing the data and writing the manuscript.
3. The corresponding author is an individual charged with communicating with editors and readers. The corresponding author needs to be extensively involved with the work to address the concerns/questions of editors, reviewers, and readers and to provide information on coauthor contributions. Corresponding authorship should not be used simply to resolve conflicts over senior authorship.
4. Other coauthors should be listed on the basis of their relative contribution to the work, as proposed by the first author.

How to solve the problem of excessively high number of authors in a scientific paper?

The D-index, D for Diogenes, would be the fraction of a paper assigned to the author by dividing one (1) by the number of authors. Thus, if there were 10 authors, each would get credit for one-tenth (0.1) of a paper. This approach could be modified by asking each author what fraction of the paper they “own”. In other words, if the first and last of 12 authors take credit for 0.4 of the paper each (0.8 total), the remaining 10 authors each get that fraction of the remaining 0.2, or 0.02 of a paper (Lichtman, 2016).

How to prevent authorship problems?

Everything, including who will work on what tasks and authorship, should be established at the outset of a collaboration.

When authorship disputes cannot be resolved by the authors themselves, the institution in which the work was performed needs to engage in some sort of conflict resolution. The oversight body

- should be composed of both senior and junior investigators including senior graduate students and/or postdoctoral fellows
- should ensure that such involvement is **free of conflicts of interest and institutional and interpersonal politics.**