Online Ethics Center
FOR ENGINEERING AND SCIENCE

Topics: Authorship

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Description

A guide that provides information and resources on teaching responsible conduct of research that focuses on the topic of authorship. Part of the Resources for Research Ethics Education collection.

Body

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Summary

- **Credit and responsibility**
  While the list of authors identifies those who deserve credit for the work being published, those authors also bear responsibility for any deficits in the integrity or quality of the work.

- **Who should be an author?**
  Because authorship is a matter of public credit and responsibility, those and only those who have met accepted criteria for authorship should be included as authors.

- **Transparency**
  Research groups and collaborators should be clear about the criteria and plans for authorship; individual scientists should discuss authorship during the planning of any collaboration and continue those discussions as the research project evolves.

Background

Authorship is the most visible form of academic recognition and credit. However, because credit for publication is also important in disputes and allegations of research misconduct, it is worth considering why authorship credit is more than a matter of personal gratification. Indeed, attribution of credit and responsibility is central to the structure of science.

The framework of science depends in part on the ability of institutions, policymakers, and the public to identify who is responsible for the work and its interpretation.

Funding agencies consider past success, as evidenced by authorship, in the allocation of research grants. Research institutions often use authorship as evidence of creative contributions that warrant promotion. Scientists themselves may use credit for past work as a mechanism to attract both new trainees and willing collaborators. Finally, in an era of increasing emphasis on commercialization, authorship and credit help to define intellectual property rights. These and other reasons explain scientists' desire for the credit of authorship, and also make clear why the assignment of authorship is central to the responsible conduct of research.

Regulations and Guidelines

Despite the importance of authorship credit, nearly all aspects of authorship and publication are covered only by guidelines and unspoken customs. One consequence of this is that authorship practices can vary dramatically among disciplines and institutions, and often between labs and departments in the same discipline and institution.

ICMJE Guidelines

One definition of authorship accepted by many medical journals is that adopted by the International Committee of Medical Journal Editors (ICMJE) [2021]. Under this definition, someone is an author if and only if they have done all of the following:

1. made substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work;
2. drafted the article or revised it critically for important intellectual content; and
3. approved of the final version to be published,
4. agreed 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.

The ICMJE definition specifically excludes authorship for anyone whose contributions consist solely of arranging funding, collecting data, or supervising the research group. Although this definition is a valuable guideline because of its specificity, it is at odds both with common practice and with other views of authorship (Yank and Rennie, 1999).

Contributorship

In recent years, a new model of authorship was proposed by an Authorship Task Force of the Council of Biology Editors (now the Council of Science Editors). This model is now also endorsed by the ICMJE (2006). For the community of scientists, transparency about authorship contributions is accomplished simply by publishing the way in which individual authors contributed to the work. The 'contributorship' model is less restrictive than the ICMJE model in defining authorship, but the contributions of each author are identified to the journal and published with the manuscript (Horton and Smith, 1996; Smith, 1997; Rennie et al., 2000; Authorship Task Force, 2000). Several medical journals now use this model.

Discussion

Case Study 1

Suzanne Booth is recruited as a postdoctoral to a laboratory where research is centered on the cell biology of a specific mammalian cell type. Suzanne's training has been in eucaryotic gene cloning and molecular genetics; no such technology is available in this laboratory. Suzanne completely trains a senior-level graduate student working in the group. Under Suzanne's supervision, the student proceeds to build a cDNA library and isolates it by molecular cloning a gene for a membrane protein. Several months later a manuscript describing this work is prepared for submission. The principal investigator of the laboratory, Professor Jack Taylor, and the student are listed as co-authors. Suzanne is listed in the acknowledgment section of the paper. She is upset with this disposition and confronts Dr. Taylor. Taylor that he has strict rules about authorship and that Suzanne's contribution was a technical one that does not merit authorship. Taylor quotes from several different standards of conduct documents indicating that authorship must be strictly based on intellectual and conceptual contributions to the work being prepared for publication. Technical assistance, no matter how complex or broad in scope, is not grounds for authorship. Does Suzanne have a case for authorship?

Case Study 2

Dr. Colleen May is a participating neurologist in a clinical trial to assess the efficacy and toxicity of a new anticonvulsant medication. For the duration of the two-year study, each neurologist is to meet with each of his or her patients for an average of

30 minutes each month. In Dr. May's case, this amounts to an average of 20 hrs/month. During each visit, the physicians administer a variety of specialized tests, requiring judgments dependent on their experience and training in neurology. At the completion of the study, the results are to be unblinded and analyzed by the project leaders. It is anticipated that at least 2 publications will be prepared for the New England Journal of Medicine. Dr. May has just learned that she will be listed in the acknowledgments, but not as an author of the manuscript. Dr. May argues that she has provided nearly 500 hours of her expert time, far more than needed to complete a publishable study in her experimental laboratory. Does Dr. May have a case for authorship?

Case Study 3

Melvin Evans, a cell biology graduate student, has purified two recombinant proteins as part of his dissertation research. These proteins differ only at a few key amino acid positions. Based on other biochemical data, Melvin believes the proteins are virtually identical. Following a discussion with Jeff Lee, a biochemistry graduate student, Melvin concludes that it would be reasonable to compare these two purified proteins by circular dichroism. Jeff offers to collaborate on the project by analyzing the two proteins by this technique. Dr. Dawson, Jeff's advisor approves of this and he alerts Melvin's advisor that this will be a fruitful collaboration that should result in a co-authored publication. He argues that his rationale for this is based on: 1)Jeff's intellectual contribution in presenting the data and operating highly technical instrumentation; and 2) on his own intellectual and financial support of the circular dichroism instrument facility. Melvin's advisor is opposed to a co-authored paper, arguing that Jeff's contribution is largely technical and does not merit co-authorship. He suggests that Jeff and Dr. Dawson be acknowledged in the paper along with the grants used to support the circular dichroism facility. Discuss the relevant issues of authorship in this case.

Discussion Questions

1. List and describe the advantages of authorship. Are there circumstances under which it would be disadvantageous to be an author? If so, why?

2. When and how have the criteria for authorship been discussed in your research group? What are the criteria? If this is not clear, then what steps could you take to better define the criteria for yourself and others?
3. List and describe responsibilities of authorship.
4. Describe the ICMJE guidelines and the contributorship model for authorship. What are the advantages and disadvantages to these two different approaches?

Additional Considerations

Authorship might be justified by significant contributions to the ideas that preceded the work, design of the study, execution of the study, data analysis, or drafting of the manuscript. Yet some questions about who deserves authorship are not easily answered. Can simply performing the data collection ever be enough to justify authorship? Should it be necessary that every author be able to defend all aspects of a manuscript or only some? Correspondingly, should all authors bear equal responsibility if any part of a manuscript is later found to depend on falsified or fabricated data?

- **Credit**: Institutions, funding agencies, and researchers assess scientists in light of their publications. Thus, including someone among the list of authors for a publication is taken to mean that they deserve credit for that publication.

- **Responsibility**: Credit for authorship is highly valued, but researchers sometimes forget that the privilege of authorship also comes with responsibility. If the work is later found to be irresponsible or misrepresented, then all authors will be associated with the work. Thus, all authors share responsibility for assuring that the studies and findings have been represented truthfully.

- **Variable criteria**: Methods of assigning authorship vary greatly in academia, even within the same institution or discipline. While it is widely agreed that authorship should be based on a substantial contribution, reasonable people can differ considerably over the definitions of both 'substantial' and 'contribution.' Some emphasize the importance of having done the work as a criterion, or the only criterion, for authorship. Others put more emphasis on ideas, experimental design, and data interpretation. In some research groups, decisions about authorship are made solely at the discretion of the principal

investigator, while in other groups, decisions are made collectively by all who have had a significant role in the project. Some investigators expect authorship in return for providing access to key equipment, samples of an unusual reagent or cell line, or assistance with statistical methods or experimental design. Others argue that these contributions warrant only an acknowledgment, not authorship. However authorship is determined for a particular group, the methods of assigning authorship should be communicated early and often, and with a commitment to transparency.

- **Minimal criteria**: Although criteria for authorship vary, an author ought at least minimally to have:
  - made a substantial and new contribution to the research
  - agreed to take responsibility for at least some of the content of the manuscript, including a review of the relevant raw data
  - read and agreed to the manuscript before publication, and agreed to be named as an author

- **Acknowledgment**: Many elements essential for a publication should be credited, but do not warrant authorship. People who provide facilities or resources, for instance, should be credited in the Acknowledgments section. Authors have the ethical responsibility to acknowledge those who made the research and manuscript possible. Because agreement with the contents of a manuscript might be inferred, it is good practice, and sometimes required, that anyone who is acknowledged has given his or her permission to be listed.

Resources

- Best Practices for Publishing Your Research
  An excellent online tutorial that discusses all aspects of preparing research for publication, including issues of authorship, conflicts of interest, data management, overlapping publications, and preparing a text for publication.

- OEC Publication Ethics Bibliography
  A bibliography of materials on the ethics of publication, including authorship. Includes guidelines, websites, books, and journal articles.

- Publication Ethics Subject Aid
  A short guide to some key resources and readings on the topic of publication ethics, including authorship, peer review, and collaboration.

Cited Sources

- Authorship Task Force (2000): Is it time to update the tradition of authorship in scientific publications? Council of Science Editors (formerly Council of Biology Editors) http://www.councilscienceeditors.org/i4a/pages/index.cfm?pageid=3376
- Horton R, Smith R (1996): Signing up for authorship. Lancet 347(9004):780.
- International Committee of Medical Journal Editors (2021): Uniform Requirements for Manuscripts Submitted to Biomedical Journals. http://www.icmje.org
- Rennie D, Flanagin A, Yank V (2000): The contributions of authors. JAMA 284(1): 89-91.
- Smith R (1997): Authorship is dying: long live contributorship. British Medical Journal 315(7110): 696.
- Yank V, Rennie D (1999): Disclosure of researcher contributions: a study of original research articles in The Lancet. Annals of Internal Medicine 130(8): 661-70.

Notes

The Resources for Research Ethics Education site was originally developed and maintained by Dr. Michael Kalichman, Director of the Research Ethics Program at the University of California San Diego. The site was transferred to the Online Ethics Center in 2021 with the permission of the author.

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Resource Type

Instructor Materials

Parent Collection

Resources for Research Ethics Education

Topics

Authorship
Publication Ethics

Discipline(s)

Research Ethics