

Addressing Ethical Standards: Authorship

When you get right down to it, is anything in scholarly publishing more problematic than figuring out how to appropriately acknowledge all the various contributors who help bring to fruition the results of a research project? We all know of cases in which authorship has been hotly disputed. For example, a graduate student successfully defends his or her thesis and moves on to a postdoctoral position. The paper derived from the student's thesis work is submitted to a journal but is rejected because the reviewers and editor say it requires additional experiments to fully support the claims it makes. The ex-student is not in a position to do the necessary work, so a new person is recruited to the project. And then the dispute over authorship begins. Often Solomonic wisdom is insufficient to satisfy all the participants.

In this article on authorship, the third in the *ASPB News* series on "Addressing Ethical Standards," we attempt to give guidance on when colleagues should be listed as authors versus when they should be acknowledged as contributors, and we outline the responsibilities that come with authorship.

"Ethics in Publishing: ASPB Policies and Procedures for Handling Allegations of Author Misconduct" (www.aspb.org/publications/ethics.cfm) states that "All authors of articles submitted for publication assume full responsibility, within the limits of their professional competence, for the accuracy of their paper." Perhaps more instructive are these passages

from the Instructions for Authors from ASPB's two journals, *Plant Physiology* and *The Plant Cell*.

From *Plant Physiology* (<http://www.plantphysiol.org/misc/ifora.shtml>): "Authorship credit should be based only on substantial contributions to (a) conception and design, or analysis and interpretation of data; and to (b) drafting the article or revising it critically for important intellectual content; and on (c) final approval of the version to be published. Conditions a, b, and c must all be met. Any part of an article critical to its main conclusions must be the responsibility of at least one author. Each author should have participated sufficiently in the work to take public responsibility for the content." [This statement is adapted from the authorship policy adopted by the International Committee of Medical Journal Editors (ICMJE) and published in the Uniform Requirements for Manuscripts Submitted to Biomedical Journals, 1994 (<http://www.icmje.org/index.html>).]

And from *The Plant Cell* (<http://www.plantcell.org/misc/ifora.shtml>): "Contribution to a manuscript must be substantive in order to justify authorship. An author is responsible for major aspects of the research that is presented. All other contributors should instead be acknowledged appropriately in the Acknowledgments section. The corresponding

author is responsible for ensuring that all authors have made bona fide, substantive contribution to the research and have seen and approved the manuscript in final form prior to submission."

In keeping with past articles in this series, we refer readers to related articles of interest on the web. Reprinted here is the section entitled "Ethical Considerations in the Conduct and Reporting of Research, Authorship and Contributorship" in the ICMJE Uniform Requirements for Manuscripts Submitted to Biomedical Journals (October 1994) that is referenced in the *Plant Physiology* Instructions for Authors. To read the full document, please visit <http://www.icmje.org/index.html>.

Each author should have participated sufficiently in the work to take public responsibility for the content.

Another article readers might find interesting is the report of the Bioengineering Consortium of the National Institutes of Health (BECON): "Catalyzing Team Science," specifically the section on pages 8–9 (PDF version) entitled "Recommendations Regarding Credit, Ownership, and Dissemination Issues." This document can be viewed at <http://www.becon.nih.gov/symposium2003.htm>. 🌟

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ICMJE Uniform Requirements for Manuscripts Submitted to Biomedical Journals

II. Ethical Considerations in the Conduct and Reporting of Research

II.A. Authorship and Contributorship

II.A.1. Byline Authors

An "author" is generally considered to be someone who has made substantive intellectual contributions to a published study, and biomedical authorship continues to have important academic, social, and financial implications. (1) In the past, readers were rarely provided with information about con-

tributions to studies from those listed as authors and in acknowledgments. (2) Some journals now request and publish information about the contributions of each person named as having participated in a submitted study, at least for original research. Editors are strongly encouraged to develop and

implement a contributorship policy, as well as a policy on identifying who is responsible for the integrity of the work as a whole.

While contributorship and guarantorship policies obviously remove much of the ambiguity surrounding contributions, it leaves unresolved the question of the quantity and

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quality of contribution that qualify for authorship. The International Committee of Medical Journal Editors has recommended the following criteria for authorship; these criteria are still appropriate for those journals that distinguish authors from other contributors.

Authorship credit should be based on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3.

When a large, multi-center group has conducted the work, the group should identify the individuals who accept direct responsibility for the manuscript (3). These individuals should fully meet the criteria for authorship defined above and editors will ask these individuals to complete journal-specific author and conflict of interest disclosure forms. When submitting a group author manuscript, the corresponding author should clearly indicate the preferred citation and should clearly iden-

tify all individual authors as well as the group name. Journals will generally list other members of the group in the acknowledgments. The National Library of Medicine indexes the group name and names of individuals the group has identified as being directly responsible for the manuscript.

Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship.

All persons designated as authors should qualify for authorship, and all those who qualify should be listed.

Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

Some journals now also request that one or more authors, referred to as “guarantors,” be identified as the persons who take responsibility for the integrity of the work as a whole, from inception to published article, and publish that information.

Increasingly, authorship of multi-center trials is attributed to a group. All members of the group who are named as authors should fully meet the above criteria for authorship.

The order of authorship on the byline should be a joint decision of the co-authors. Authors should be prepared to explain the order in which authors are listed.

II.A.2. Contributors Listed in Acknowledgments

All contributors who do not meet the criteria for authorship should be listed in an acknowledgments section. Examples of those who might be acknowledged include a person who provided purely technical help, writing assistance, or a department chair who provided only general support. Financial and material support should also be acknowledged.

Groups of persons who have contributed materially to the paper but whose contributions do not justify authorship may be listed under a heading such as “clinical investigators” or “participating investigators,” and their function or contribution should be described—for example, “served as scientific advisors,” “critically reviewed the study proposal,” “collected data,” or “provided and cared for study patients.”

Because readers may infer their endorsement of the data and conclusions, all persons must give written permission to be acknowledged. 🌟