

VIEWPOINT

Research Integrity, Academic Promotion, and Attribution of Authorship and Nonauthor Contributions

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Guidelines for the academic promotion of university faculty members are essential for the achievement and maintenance of high academic quality. However, these guidelines and criteria vary widely around the world and in the United States, with increasing differentiation between faculty focused on careers in investigation vs those who focus on clinical care and teaching. For example, the University of Washington promotion guidelines apply 3 pertinent and widely used, fundamental criteria: scholarship, teaching, and service promoting the common good.¹ Expectations at the University of Washington are high regarding the quality and quantity of independent scholarly records, and faculty members can reach the professorial rank (instructional or research track) only if they become established as major researchers or scholars.¹ At some institutions—the University of Michigan, for example—requirements for promotion on the “clinical” track focus primarily on teaching, mentoring, and clinical service, but a substantial record of first-author publications, senior-author publications, or both in peer-reviewed journals and an associated broad peer recognition in the pertinent area of expertise are also required.²

The overarching principle should be to ensure that the value of true scientific endeavors and achievements that qualify for being an author are not equated with ancillary activities

Independent scholarly records are judged mainly on the basis of authorship of scientific articles and corresponding citations. Accordingly, many universities have guidelines defining authorship criteria.^{3,4} For example, the School of Clinical Medicine of the University of Cambridge (United Kingdom) has published a “Code of Practice on Authorship,”³ which includes the recommendations of the International Committee of Medical Journal Editors (ICMJE).⁵ According to these recommendations, authorship of a scientific article is based on

- 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
- 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.

The ICMJE recommendations are followed by most biomedical journals. The European Code of Conduct for Research Integrity includes similar criteria for authorship.⁶ The Cambridge Code of Practice on Authorship³ further determines the differences reflected by author order as follows: “the first author is the person who contributed the greatest practical work, subsequent authors may be listed by declining practical contribution; the last author (the “Senior Author”) will most commonly be the Principal Investigator.”

At the University of Athens Medical School, applicable promotion and authorship criteria are similar to those mentioned above; however, there is still need for specific guidelines for promotion committees for the evaluation of research quality, not just quantity. Faculty members submitting their curriculum vitae for promotion usually claim 100%, 50%, and 33% of the “impact points” and citations of an original or review article when listed as first or last author, second author, and third author, respectively; any other authorship position corresponds to 25% of the impact points and citations. The impact points of a scientific article coincide with the publishing journal’s impact factor⁷ at the time of the submission of the curriculum vitae. It is expected that for promotion to the professorial rank, a reasonable number of points will have been acquired since the previous promotion.

The ICMJE further defines nonauthor contributors as those who meet fewer than all 4 of the aforementioned authorship criteria.⁵ For these contributors, the ICMJE recommends that they be acknowledged but not listed as authors.⁵ For example, nonauthor contributors may be involved in enrolling patients in a multicenter trial or contributing data from an existing database or cohort in a data pooling project; consequently, apart from the acquisition or contribution of data, these individuals do not fulfill the other ICMJE authorship criteria and accordingly are not identified as authors or obliged to sign an authorship or conflict of interest form. When the article reporting the study results is published in a PubMed-indexed journal, such contributors are typically listed under the term “collaborators,” between the PubMed authors list and the abstract. Therefore, entering a collaborator’s name and “author” as PubMed search terms cannot retrieve the citation of an article, which acknowledges the collaborator’s contribution in end matter or supplementary material.

Occasionally, collaborators may help in the writing of a small part (eg, a paragraph or small subsection of

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100-150 words) of the text of a long, major article (eg, a report of international guidelines or a review). Such contributions are normally too limited to be regarded as substantial participation in the drafting of the manuscript and do not fulfill any other ICMJE authorship criterion. Other forms of help with original manuscript preparation that justify acknowledgment but not inclusion in an authors list may comprise, for example, providing insightful comments on main study findings, statistical advice, or critique on the methods.

To our knowledge, there are no specific guidelines on how to evaluate nonauthor contributions. Clearly, such contributions do not constitute independent scholarly activity and should be regarded only as evidence of effective assistance to the independent scholarly activity of others, ie, the actual authors. Therefore, nonauthor contributions could be listed and documented in a dedicated curriculum vitae subsection labeled, for instance, "Ancillary Scholarly Activity." Such activity could then be quantitatively and qualitatively evaluated according to the number of corresponding publications in high-impact journals but still with clear differentiation from true authorship.

The overarching principle should be to ensure that the value of true scientific endeavors and achievements that qualify for being an author are not equated with ancillary activities, such as simple data collection for a multicenter trial protocol. Indeed, if faculty members or researchers are promoted based on approaches that overemphasize and overvalue "collaboration" over more in-depth schol-

arly involvement, it is possible that this could have detrimental effects on the scientific and ethical standards of academic institutions.

To address the potential emerging problem, research integrity codes^{3,4,6} could be revised to (1) include a preferably harmonized and comprehensive definition of nonauthor contributions; (2) acknowledge the value of ancillary scholarly activity; (3) clearly differentiate between nonauthor contribution and authorship; and (4) define a new form of scientific misconduct, ie, the claiming of authorship by collaborators or the attribution of authorship to collaborators by members of academic promotion committees; indeed, such attribution of authorship partly corresponds to the term "invalid authorship" of the research integrity policy of McMaster University (Canada). The latter term has been defined as "attribution of authorship to persons other than those who have contributed sufficiently to take responsibility for the intellectual content, or agreeing to be listed as author to a publication for which one has made little or no material contribution."⁴ Revised research integrity codes and authorship criteria⁵ could then be incorporated in promotion policies and procedures at academic institutions. An additional measure could comprise research integrity-specific education of university personnel. Such actions and initiatives could help improve adherence to the ICMJE recommendations and other criteria in the current era of multiple nonauthor contributions to reports of multinational clinical trials and other multicenter, multidisciplinary, collaborative investigations.

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Conflict of Interest Disclosures: The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Dr Mentzelopoulos and Dr Zakyntinos each reported previously participating as elector or candidate in academic election procedures in which there was at least 1 candidate with nonauthor contributions to published research articles. However, at present, there are no unresolved issues with respect to the aforementioned academic procedures; furthermore, neither Dr Mentzelopoulos nor Dr Zakyntinos is currently participating in any academic election procedure. Consequently, at present there are no specific relationships, conditions, or circumstances that could potentially affect the contents of this article.

Disclaimer: The sole objective of this article is to define and describe a potentially emerging problem in the fairness of evaluation of scholarly records in

general. Accordingly, the current article is not aimed at questioning the overall result of any specific university election procedure.

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