Guest authorship as research misconduct: definitions and possible solutions

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To advance healthcare and promote public trust, the integrity of medical research must be a high priority.1 Guest authorship (here encompassing gift, honorary, courtesy and coercive authorship) lists as ‘authors’ people who have not made substantial contributions to the work. It can occur, as fealty to supervisors, such as department chairs, laboratory directors or grant coordinators, who become authors on articles without making substantive contributions; as a means to enhance the esteem a paper receives by adding a preeminent name to the author list; or as a means to hide the publication’s origin in industry, as when a drug/device company designs, executes and writes a study’s report—without identifying its employees as authors in the resulting journal publication—then invites prominent physician(s) to serve as lead ‘author(s).’2,3 Here, the physicians are guest authors while company employees are ghost authors.

Although both guest and ghost authorship are roundly decried,3–8 previous publications have deemed them detrimental research practices that nevertheless are not quite research misconduct. Here, we focus on guest authorship, arguing that it falls squarely within the definition of ‘research misconduct.’ We then present options for academic institutions and medical journals to discourage guest authorship, thereby reinforcing integrity in medical science.

Scope of the problem
Among major, peer-reviewed medical journals, guest and ghost authorship are disturbingly common. Across multiple studies, approximately one in every five articles had evidence of guest authorship and one in nine articles indicated ghost authorship.3–9 Studies of guest authorship show, for example, an average 44% across five high-impact surgery journals, and 60% of articles in one prominent general medical journal.10 Finally, a survey of Cochrane review articles showed 39% with evidence of guest authorship, 9% with ghost authors, and 2% with evidence of both.11 Whereas ghost authorship is denounced as a largely corporate phenomenon,12–14 guest authorship is ordinaril committed by individual scientists. Further, although guest authorship is necessary to make ghost authorship possible, it has received relatively limited attention.

Guest authorship has been criticised as ‘a detrimental research practice,’1 ‘authorship fraud,’13 ‘academic misconduct’ or ‘academic dishonesty,’14 a ‘serious breach of research ethics,’14 ‘scientific misbehaviour,’15 ‘a bit naughty’15 and ‘unbelievably corrupt and horrible.’15 But guest authorship has not formally been dubbed research misconduct. Bosch and Ross suggest it ‘approximates’ plagiarism (narrowly defined as ‘copying’ text without consent),16 but in the end deny it meets the US government definition of research misconduct. Jones and McCullough suggest guest authorship meets a dictionary definition of ‘plagiarism,’ but decline to conclude it is research misconduct.17 This essay remedies these failures, because labelling guest authorship as research misconduct has important implications for scientific research, integrity and publishing.

Definitions
Demonstrating that guest authorship directly meets accepted criteria for research misconduct requires defining both authorship and research misconduct.

Among various definitions of authorship most, though not all, major medical journals follow the International Committee of Medical Journal Editors (ICMJE) criteria18:

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis or interpretation of data for the work; (2) drafting the work or revising it critically for important intellectual content; (3) final approval of the version to be published; and (4) 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.

Admittedly, defining ‘substantial’ contribution may be difficult, although a contribution scoring system may be helpful.19 That said, ICMJE explicitly rejects solely data-gathering, funding, general supervision and editing—activities comprising a large proportion of guest authorship.

In turn, the US government defines research misconduct as ‘fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results.’20 This definition is adopted by virtually every developed nation, although with additional elements in some instances, such as abuse of human subjects.21 Here we emphasise the first and fourth components: proposing research and reporting research results. More specifically:

* falsification is ‘manipulating research materials, equipment, or processes, or changing or omitting data or results such that...
the research is not accurately represented in the research record; 
"plagiarism is appropriation of another person’s ideas, processes, results, or words without giving appropriate credit."^21

Research misconduct also requires a ‘significant departure from accepted practices of the relevant research community,’ committed ‘intentionally, knowingly or recklessly.’^21

Guest authorship as research misconduct
First, guest authorship is plagiarism: authors claim to have substantially contributed when, in fact, they have only appropriated—personally claimed a portion of credit for—the ideas, processes, results and/or words of the actual authors. The concept is not limited to copying others’ text verbatim. Moreover, except where someone has unwittingly been added to the author list by others, guest authorship is virtually always intentional—for example, as a senior investigator demands to be listed as author on any paper emerging from his/her department or lab.^3

Second, guest authorship can be falsification, both in proposing research and in reporting research results.

Proposing research: In US federal grant applications, falsifying credentials is direct research misconduct: ‘misrepresentation of a researcher’s qualifications or ability to perform the research in grant applications or similar submissions may constitute falsification or fabrication in proposing research.’^23 Assessment of investigator qualifications commonly relies heavily on one’s curriculum vitae (CV) and thereby on such metrics as number of publications or composite indices such as the ‘h-index’ and ‘i10-index.’ Each of these metrics can be artificially inflated when articles list non-authors as authors. Thus, a CV claiming publications for which one has not met authorship criteria is falsification of credentials, hence research misconduct.

Reporting results: Guest authorship also is research misconduct in reporting research results. From an analogy: a well-recognised form of research misconduct is for a publication falsely to state that the study is Institutional Review Board (IRB) approved, when it is not: one falsifies an important process—namely, having secured IRB approval, ‘such that the research is not accurately represented in the research record.’^23 Comparably, a guest author falsifies the research record by falsely reporting about the project’s process, namely that she/he personally made significant contributions to the design or performance, and to the research write-up. That misconduct is exacerbated where, as required by many major journals, someone signs a journal’s affidavit of authorship, falsely attesting to having satisfied that journal’s criteria for authorship and then allowing oneself to be listed as author in the research report.

Culpability for guest authorship runs along the same spectrum as authorship. Just as some authorship contributions are highly ‘substantial’ while others are barely so or not at all, guest authorship can be more versus less serious. Arguably, two of the worst forms are associated with ghost authorship, as an academician actively helps to obscure a study’s origins in industry, and with coercive authorship, in which high-powered senior figures co-opt the work of more junior researchers. Accordingly, penalties for guest authorship should be attuned to the seriousness of the offence.

Practical complexities in labelling guest authorship as research misconduct
Transforming the current state in which authorship fraud is disturbingly common, to one in which it is labelled and appropriately sanctioned as research misconduct, is a difficult proposition. Hypothesise a forty-site collaborative, retrospective cohort study. Such a project should be encouraged, as the generalisability and power of multisite research is likely to produce better conclusions. However, participation in such a study will be time-consuming and likely unfunded. The only compensation in many circumstances is authorship in the eventual published product.

Such a project will face multiple potential difficulties in maintaining an author list. Journals to which the manuscript might be submitted may have differing criteria for authorship, so that someone deemed an author by one journal would not meet the criteria of another. Moreover, although one may need forty site leaders to conduct such a study, it would be extremely difficult and likely chaotic for the writing process to expect every one of them to provide meaningful critical revisions ‘for important intellectual content,’ as required by ICMJE criteria.

In a second practical complexity, the definition of research misconduct also requires ‘a significant departure from accepted practices of the relevant research community.’^22 Hence, we must consider whether a practice that occurs 20%-40% of the time can be considered a departure from accepted practice. On one hand, if we embrace a purely empirical definition of standard practice, based on what is commonly done, then we might suppose guest authorship is acceptable, not a departure. But the alternative standard, both ethical and empirical, emphasises prevailing agreement regarding what should be done. In fact guest authorship is uniformly condemned as harmful to the integrity of science, hence should be rejected regardless of its popularity.^1

Still, because guest authorship is so rampant, labelling and penalising it as research misconduct should not proceed via heavy-handed tactics.¹ Too many investigators indulge, perhaps without fully recognising its detriment. Hence, by no means do we propose ‘declare this is research misconduct, then throw them all to the wolves.’ Structural changes must happen first, from complementary directions.

A path forward for multiple stakeholders
The first step (box 1) is to urge an alternative to the binary notion of authorship. Nearly a quarter-century ago Drummond Rennie proposed removing the concept of authorship entirely within biomedical science, in favour of contributorship: a complete list

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<th>Box 1 Recommendations to discourage research misconduct by authorship fraud</th>
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<tr>
<td>1. Authors should discuss authorship at the planning stage of the project and use the Contribution Roles Taxonomy (CRediT) or similar metric when submitting the manuscript.</td>
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<tr>
<td>2. Journal editors ideally should replace authorship with a ‘contributorship’ format such as CRediT, and require a signed attestation by all authors/contributors.</td>
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<tr>
<td>3. Institutions should replace traditional metrics for promotion with incentives that better recognise research contributions and discourage false claims of authorship.</td>
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<tr>
<td>4. Institutions and journals should follow the Committee on Publication Ethics guidelines when guest authorship is suspected.</td>
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Created by the authors
of who did what. Concretely, a Contributor Roles Taxonomy (CRediT) has emerged, listing 14 distinct ways in which an individual can contribute to scholarly work, including conceptualisation, methodology and various other factors.

Although authorship has not yet been replaced, many leading medical journals now require authors to specify who did what. Journals should review authors’ stated contributions and, if any individual’s contributions do not constitute authorship, the journal should require either a richer description of that author’s contributions or ask that the individual be removed from authorship.

At the least, if conventional ‘authorship’ is to be retained, the concept needs greater clarity. All, not just some, journals should specify their definitions of authorship—including that merely data-gathering, funding, general supervision, and editing do not constitute authorship—because the question whether someone has falsified his/her authorship attestation can only be fairly judged by that journal’s own criteria. And all, not just some, journals should require that every author personally sign an attestation of authorship.

Journals’ editorial policies should additionally state that, if evidence of guest authorship emerges, they will refer the matter to the appropriate institution for inquiry into research misconduct.

And where investigation concludes research misconduct (here, via guest authorship) occurred, editorial policies must make clear that, per internationally accepted ICMJE and the Committee on Publication Ethics (COPE) standards, there is but one appropriate response: retraction.

Concomitantly, academic institutions need to step up. They should educate students, residents and also faculty on authorship criteria, particularly ICMJE standards. They also should reconsider using authorship tallies as a core metric for hiring, promotion and tenure. The utilisation of calculated metrics such as number of publications, ‘h-index,’ and ‘i10-index’ provides perverse incentives toward guest authorship and should be replaced with a more holistic approach recognising various kinds of contribution to biomedical science. Even the practice of giving differential weighting to first, last and middle authorship could be improved by recognising individual contributions to a paper, as multiple authors often could reasonably hold authorship priority. Eventually institutions need to monitor authorship practices and, where appropriate, discipline those who commit guest authorship.

Finally, until such systemic changes are made, it falls to research institutions and individual scholars to uphold the integrity of authorship and contribution. The National Institutes of Health’s field guide for collaboration and team science includes multiple principles including transparent communication, written agreements and proactive contingencies. Project leaders should clearly lay out the criteria for authorship and authorship order, as early in the project as possible, and ask all prospective authors for written agreement to meet those criteria. If someone is failing to keep authorship obligations, it is best to offer a chance for correction as early as possible or remove that person from the author list if remediation is unsatisfactory.

Conclusion

Guest authorship interferes with integrity and accountability in biomedical research. It should expressly be recognised as research misconduct, running along a spectrum of seriousness just as proper attribution of authorship likewise runs along a spectrum. Doing so will help us confront perverse incentives that make guest authorship so disturbingly common and will promote the systemic change needed to curb it. Even in the current system, institutions and journals can take proactive steps to ensure responsible authorship practices and empower individual project teams to take proactive steps toward ensuring the integrity of authorship.

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Contributors EHM is professor in the College of Medicine (University of Tennessee), focusing on health law and bioethics. Her recent article (J Law & Biosciences 2021; 8(1):1–30) arguing, for the first time anywhere, that organisations such as corporations are capable of directly committing research misconduct—by the definition—set the stage for this article. JCW has served as Academic Clinical Quality Director, directly overseeing multiple collaborative scholarly projects. EHM and JCW contributed to the conceptualisation, investigation, original draft writing, and review and editing the draft. EHM is the named guarantor of the article, both authors agree 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.

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References

2 Morreim EH. Corporations, high-stakes biomedical research, and research misconduct: Yes they can (and sometimes do). J Law Biosci 2021;8:lsa014.


13 Reisig MD, Holtfreter K, Berzofsky ME. Assessing the perceived prevalence of research fraud among faculty at research-intensive universities in the USA. *Account Res* 2020;27:457–75.


19 Recommendations for the conduct, reporting, editing, and publication of scholarly work in medical journals. *International Committee of Medical Journal Editors* 2019.


26 What to do if you suspect fabricated data (B) suspected fabricated data in a published manuscript: Committee on publication ethics. Available: http://publicationethics.org/files/Suspected%20fabricated%20data%20in%20a%20published%20manuscript%20(1).pdf