

Authorship Down. Tackling Misguided Incentives.

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Feature Image

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Assuring Appropriate Authorship.

Appropriate authorshipIn our day-to-day work at *GigaScience* many of the most common and reoccurring problems we keep encountering relate to appropriate authorship. In this "publish or perish" world of science, getting authorship right is of course important. There are many issues that underlie the appropriateness of authorship, but fortunately there are internationally recognised norms and guidelines to help determine these. To pre-empt and reduce the problems we've been seeing we have recently made some efforts to better explain these issues. Investigating why some misunderstandings may occur, we've noticed some of our authors from China come to us with preconceptions and expectations that may differ from these international guidelines. To try to tackle this we've recently expanded our author instructions and published an Editorial on the topic in both [English](#) and [Chinese](#). We've also attempted to educate and lobby further by publishing [Comment in the Chinese policy space](#) and [OpEds in the Hong Kong press](#). In this blog we summarise and link to these materials, and give some insight into why we think this miscommunication may have arisen.

Because there is no reason to reinvent the wheel concerning the details of authorship roles, *GigaScience* wholeheartedly embraces the excellent authorship guidelines issued by the [ICMJE \(AKA the Vancouver guidelines\)](#). These are quoted and expanded upon in our editorial policies and [detailed authorship guidelines page](#), but as we all know from skipping so many online terms and condition documents its may be hard for most readers to take this detail in.

Appropriate authorship guidelines from ICMJEWith large consortia becoming increasing ubiquitous it is becoming increasingly difficult to determine order or capture useful information from unwieldy author lists. In medicine there has been [talk of moving](#) from co-authorship to contributorship, which allows readers to more accurately assess credit and accountability. We strongly agree with this, and we now capture contributorship details in the authors contribution sections, as well as [CASRAI contributorship](#) taxonomy information in the submission process. [With BioMed Central we experimented](#) presenting this via Mozilla badges, and we are now collecting this information on submission and working with Oxford University Press to better display this on our our papers. You can see in the ["Authors' Contributions" section](#) of our Editorial how this information can be displayed in a tabular form.

While the increase in transparency and detail helps, unfortunately until contributorship becomes a more accepted practice there are are a few authorship positions that get most of the attention. Most biological and biomedical journals list authors according to an author-rated level of contribution: the first author is considered the individual who contributed more than the second author, and so forth until reaching the author in the last position. Generally the first authors and corresponding authors are the ones most prominently listed on the paper, and to a lesser extent the "senior" author or "principal investigator" can be highlighted at the end of the paper (which we've attempted to highlight with a ‡ – double-dagger symbol).

Given the special significance of the first author, it is understandable that for some authors it is tricky to decide who should go first, especially for projects that require distinctly different areas of expertise to complete the work. It can be appropriate to indicate that multiple authors

contributed in equal measure to a manuscript. However, generally speaking, the likelihood that shared first authorship is warranted seems to decrease with the number of joint first authors. In light of all this we now allow a maximum of three joint first authors, and their roles must be made clear and justification must be given as to how they have carried out equivalent amounts of intellectual contribution.

The other prominent role highlighted on scientific papers is the corresponding author. But being a corresponding author is not necessarily the most senior author or project lead, as they for the most part act as a secretary. Being primary contact for the journal and respond to all manuscript queries, both before and after publication. Therefore we suggest choosing the most suitable author or authors who has the time to contact all the other authors, can explain the vast majority of the research in detail, and—can respond in a timely manner. Sometimes it is reasonable that two authors share the role of "corresponding author", but we do not allow more than that.

To balance limiting the number of first and corresponding authors we are encouraging better use of citation for more granular contributions. This is why we credit data producers through [Data Note](#) articles, and software producers through Technical Note articles. Furthermore, we also go more granular by individually citing and crediting (as first class objects of research) the different Research Objects contributing to the paper. Even including the peer reviews (see [blog](#)). Giving these DOIs in our GigaDB database or other platforms means we can credit different combinations of people through data citations, software citations and method citations.

The [ICJME/Vancouver guidelines](#) explain these issues in some detail, but we have increasingly seen misunderstanding of what the role of first and corresponding author is, particularly from authors from China. This lack of context and understanding from funders and policy makers is likely a driver on their funded authors to inflate the number of first and corresponding authors, seeming to directly counter [ICJME/Vancouver guidelines](#). Doing some research into this we've seen that one of the big factors has been the increasing commoditisation of authorship. An issue that needs addressing to reduce systematic fraud and ultimately a loss of trust in science itself.

****Why we think these problems have arisen? Authorship as a commodity.**

****Gift and [ghost authorship](#) are long running phenomena, but a more industrialised version of this has cropped up in recent years: "paper mills". On top of the "academic bazaar" system where authorship can be bought, a wider and more systematic network of Chinese companies that produce ghostwritten papers to order has been exposed. The recent mass-retractions of papers from a number of publishers [linked to the hacking](#) of the peer-review system is a direct side effect of this. This large-scale gaming of the system has been driven by skewed incentive systems, where authorship of papers in SCI-indexed (Science Citation Index, the commercial database responsible for the dreaded impact factor) journals is worth huge amounts of money. Chinese universities offer [cash rewards](#) of up to \$165,000 USD for papers published in the top SCI indexed journals, and medics are required to publish in impact factor journals for promotion. This is particularly a problem in mainland China, where companies have been [openly offering](#) ghostwritten publications in impact factor 1-2 journals for \$10,000 USD.**

It doesn't help that in China (and other countries bitten by the SCI-bug) this misunderstanding has spread to higher levels, and the role of corresponding author is awarded with financial and other benefits. Like with the inflationary designation of shared first authorship, adding another asterisk above a name on the title page can have disproportionate benefits. Placing this weight on the correspondent's secretarial role is an abuse, and it makes the already conflicted discussions about authorship more cumbersome.

The pressures to do this are a likely confusion of the senior author role, and the guidance and pressure authors are under in China to be a corresponding author is an example that directly contradicts [ICMJE guidelines](#).

There is a lack of guidance on what constitutes authorship in China, and the only instruction that authors are given is that first and corresponding authors are the ones that can get SCI-related cash rewards. Even the scientist with the best intentions can be seriously tempted by these. Looking at examples of internal documents from Chinese Academy of Sciences institutes at how cash rewards are divided, we have seen them stating that first authors receive 40% of the cash, corresponding authors 30%, and subsequent co-authors 10%. In Shenzhen, for example, in 2014 the updated "National leading talent" and "[Peacock](#)" scheme for recruiting overseas high-level talent offered 3M RMB (about \$500,000 USD) to the first and corresponding authors of papers published in *Nature* or *Science*. The notorious He Jiankui of CRISPRbabies fame being a [notable recipient](#) of one of these one of these "few questions asked" grants. As *GigaScience* ranks as a "JCR Q1" journal under the scheme, authors can still receive cash rewards about half of this, which is obviously leading to a lot of the "joint-authorship inflation" pressure we and other journals are seeing.

We have written [Op-Eds in the Hong Kong press](#) stating the skewed incentive systems that led to corrupt practices on the mainland could lead to the same problems in Hong Kong. Shortly after writing this OpEd we, discovered a Hong Kong registered company (thankfully now disappeared) that, when pretending to be a researcher, offered us "guaranteed impact factor 2" publications for approximately \$8,000 USD. While the mass-fraud is hopefully only the rare extreme end of the spectrum, the "publish or perish" demands placed on all academics are increasing the pressure to be counted, and the pressures on how you are ranked as authors. All of which may not be compatible with the ICMJE guidelines.

****The Fightback Starts Now.**

****Journals are one of the only players with any leverage in changing these messed up practices in science. With great power comes great responsibility, and through these efforts we have tried our best to promote best practice. On top of our strict policies limiting first and corresponding authors we have been promoting this move towards contributorship rather than co-authorship. We ask authors to provide as much detail as possible when completing the [CASRAI authors roles](#) upon submission. This information and as much context as possible is encouraged in the 'Authors' contributions" and optional "Authors' information" sections in the paper. We also encourage and provide more granular and precise credit via data, software, and method/ protocol citations. Like us, [we encourage people](#) to sign DORA (Declaration on Research Assessment: <https://sfdora.org/>) and to stop using journal-based metrics as a surrogate**

measure of the quality of research articles, or authorship in them to assess an individual scientist's contributions.

Educating on authorship in China On top of these technical approaches we've also been carrying out as much outreach and education as we can. Especially in mainland China and Hong Kong where we've carried a number of presentations discussing these matters at conferences and research institutions across the country. To get the word out even further we've now been publishing articles in both English and Chinese language. Starting with our [recent Editorial](#) that has a more detailed supplementary version [in Chinese](#). And culminating in an [adapted version](#) of this in the *Bulletin of National Natural Science Foundation of China*. This journal being a particularly useful venue to make these arguments, being published by one of the major funders in China, and targeting policy makers, research managers and their fund applicants.

These efforts are hopefully very timely, as it is encouraging to see the [announcement from the Ministry of Science and Technology](#) last year of new upcoming reforms to address the issues of research misconduct in China. As they state there will be a focus on deepening the reform of scientific research evaluation systems, we hope this will prohibit bad practices such as SCI-related cash rewards. A deeper system needs to move the evaluation process beyond just measuring co-authorship and a gameable impact factor, to promote international best practices that are compliant with the [ICMJE guidelines](#). We look forward to seeing how these new rules will be implemented in China, and on top of assisting with education and providing our views on this matter, we welcome feedback on how this affects authors and how we can continue to promote appropriate authorship and improve the process.

**Further Reading

**Zauner H, Nogoy NA, Edmunds SC, Zhou H, Goodman L. Editorial: We need to talk about authorship. *Gigascience*. 2018 Dec 1;7(12). doi: 10.1093/gigascience/giy122. ([English/Chinese](#)).

Zauner H, Nogoy NA, Edmunds SC, 周洪, Goodman L. 最佳实践（Best practices for determining authorship）. *Bull. Ntnl. Nat. Sci Foundation China*. 2018 (6) p560-61. doi:[10.16262/j.cnki.1000-8217.2018.06.001](#)

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