

Who gets to be an author?

Navigating credit and recognition in collaborative research

By the Diversity, Equity, and Inclusion in ASA, CSSA, and SSSA Committee

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Authorship is the currency of scientific careers, but who deserves to be listed as an author on a paper? This article examines common authorship pitfalls, including ghost and gift authorship, and explains the standards used to determine who should receive credit. It also shares practical guidance for making authorship decisions transparent, fair, and equitable from the start of a project.

Science is more collaborative than it has ever been. Multi-author papers are the norm, and large multi-institution projects can involve contributors at every level, from PIs to graduate students to field technicians. That is good. But it also means being more intentional about how we credit the people who make the science happen.

Authorship is not just a formality. In scientific careers, it functions as currency. Publications drive hiring decisions, promotion cases, grant applications, and professional visibility. Uncredited contributions fall hardest on those with the least power to push back.

This is a DEI issue

Authorship decisions are rarely made through a transparent process. More often they happen informally, shaped by lab culture, seniority, and who feels comfortable raising the question.

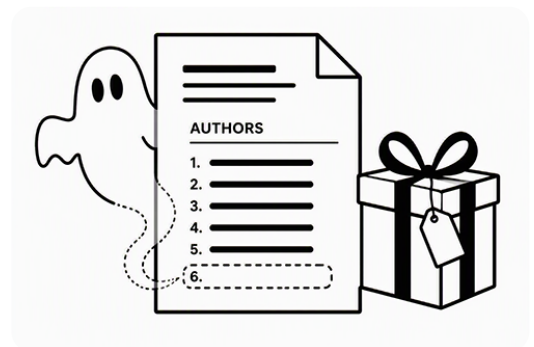
Gender is the one place we can actually put numbers to this because it is the only dimension anyone has counted systematically. In soil science, women earn nearly half of advanced degrees but hold only about a quarter of the jobs (Vaughan et al., 2019), and across 44 national soil science societies, they make up about a third of members but only a fifth of presidents (Dawson et al., 2021). Representation shrinks at every step up in seniority and visibility.

What drives this? People hate having the authorship conversation. In a survey of 8,364 researchers, Smith et al. (2020) found that scientists actively avoid it. When things go wrong, it is usually not because someone set out to be unfair. It is favoritism and no one wanting to be the person who brings it up (Smith et al., 2020).

Common patterns worth naming

Two dynamics show up often in research teams (Elliott et al., 2026):

- **Gift authorship:** adding someone to an author list for reasons of politics or professional courtesy rather than actual contribution
- **Ghost authorship:** leaving off someone who did substantial intellectual or technical work



Both ghost and gift authorship cause genuine harm. The former erases credit and the latter dilutes it.

Both cause genuine harm; one dilutes credit while the other erases it. Both are more likely to occur when authorship criteria are not

discussed. Gift authorship usually benefits people who already have standing, and it pads the same publication records that early-career researchers get measured against. Ghost authorship hits the other end. The people left off are usually the ones with the least room to object. A graduate student dropped from a paper loses a line that could have anchored a fellowship application. A technician who built and ran a dataset, then went unnamed, has no record of the contribution at all. At root, this is about power: credit goes to whoever holds it—not to whoever did the work.

So, who should be an author?

Formal guidance exists. The International Committee of Medical Journal Editors (ICMJE) criteria, the most widely cited authorship standard in science, set four requirements (ICMJE, 2024):

1. substantial contribution to the conception or design of the work or to the acquisition, analysis, or interpretation of data,
2. drafting or critically revising the manuscript for important intellectual content,
3. final approval of the version to be published, and
4. agreement to be accountable for the accuracy and integrity of the work.

The first requirement can be met through any one of several kinds of contribution, *but an author must satisfy all four requirements together: as ICMJE states, “all those designated as authors should meet all four criteria for authorship, and all who meet the four criteria should be identified as authors” (ICMJE, 2024).* Meeting just one, such as collecting data without taking part in the writing and approval, does not by itself earn authorship. The same principle anchors our own field: ASA, CSSA, and SSSA journals

require that every listed author have contributed substantially and approved the final manuscript (ASA, CSSA, and SSSA, 2023). ASA, CSSA, and SSSA don't define what "substantially" means, so this article lays out some tools to help you make that call.



These four requirements must be met to be considered an author on a paper, according to The International Committee of Medical Journal Editors. AI-generated illustration courtesy of Microsoft Copilot.

The four ICMJE criteria above double as a practical checklist: meet all four, and that person is an author. Contributors who helped in more limited ways (running equipment, managing plots, or supporting logistics), but do not meet all four, belong in the acknowledgments section. Their work should still be named specifically rather than folded into a generic thank you. Field research complicates this line. Someone who maintained a long-term experiment across seasons, stewarded a key field site, or built and curated a major dataset may have shaped the study enough to cross from acknowledgment into authorship. When a contribution is both sustained and

intellectually consequential, treat the boundary as a judgment call to discuss openly, not an automatic sort into the acknowledgments.

Understanding author order

Author position carries weight, but what each position signals is not universal: in some research cultures, the last author is the senior leader; in others, it is simply the next contributor; and in some fields, names are listed alphabetically with no hierarchy at all. When teams span institutions and countries, those unspoken differences are a predictable source of conflict, which is one more reason to make expectations explicit early.

In the U.S., in the biological sciences, the following summarizes the general author position:

First author led the study, did most of the hands-on work, and wrote the first draft. This is usually a graduate student, postdoc, or early-career researcher, and it is the position that carries the most weight in early-career hiring and promotion decisions.

Last author is the senior researcher who provided intellectual leadership, secured funding, and bears responsibility for the integrity of the work. This is a high-prestige position in the biological and agronomic sciences, which is exactly why the gap in women's last authorship representation matters.

Middle authors contributed meaningfully but in more specific roles: specialized expertise, large-scale data collection, critical manuscript review, or key resources. Middle author order is the least standardized part of the list and where gift authorship most commonly appears. Whatever the convention, name it explicitly, so everyone on the team understands it before the paper is submitted.

Corresponding author handles all journal communication and responds to readers and reviewers throughout submission and revision. It's a heavy workload. Handing it to an early-career researcher without adequate support isn't fair to them, but with that support, it's a genuine chance to build visibility. Senior researchers who hold the corresponding author role themselves sometimes hand the day-to-day reviewer correspondence to the lead author as a deliberate way to build that experience.

A tool to help you structure the conversation

The CRediT taxonomy (Contributor Roles Taxonomy; NISO, 2022) breaks research contributions into 14 distinct roles, including Conceptualization, Investigation, Formal Analysis, and Writing. CRediT documents what each person did, which makes contributions visible before anyone has to advocate for themselves, but it does not decide who clears the bar for authorship. In practice, it feeds that decision: list each contributor's roles, then weigh them against the criteria above. Used at the start of a project rather than scrambled together at the end, it gives teams a shared language for the authorship conversation. ASA, CSSA, and SSSA journals already require a CRediT contributor statement at submission (ASA, CSSA, and SSSA, 2023).

When to have the conversation and how often

Most authorship decisions happen at the submission stage, when everyone is tired and the pressure is high. That is the wrong time. Better approaches to authorship decisions include:

- **At project kickoff:** Name expected contributions explicitly. Who is doing what, and does that work meet authorship criteria? Write it down.
- **At major milestones:** Scope changes, personnel changes, and unexpected data gaps all shift who contributed what. Revisit when these happen.

- **Before submission:** Check the list one more time. Is everyone on it someone who actually contributed? Is anyone missing?



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These conversations do not need to be long. Ten minutes on a meeting agenda is enough. What matters is that they happen in the open, before anyone feels they have lost something, and that decisions are written down. Principal investigators and supervisors who build this into their team culture protect everyone from disputes later, including

themselves. Make it clear that raising authorship questions is normal and encouraged, not something to dread. And if a contributor suspects someone is being added who did not earn it, the written record from these conversations is the first recourse.

For larger or multi-institution projects, it helps to put these expectations in writing. A project authorship guidance document, agreed to by all PIs at the outset and updated as the work evolves, can settle the questions that otherwise resurface late: how author order is decided, who leads which manuscripts, how people who use shared data are credited, and what funding-acknowledgment language to use. Writing it down, and revisiting it as people and plans change, gives every collaborator the same reference point instead of relitigating credit paper by paper.

The bottom line

The conversation might feel uncomfortable at first. Have it anyway, and early, while there is still time to be fair to everyone who earned a place on the paper.

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