

## Ask Professor Sarah Bellum

This column is a new regular feature of the Newsletter, addressing your questions on navigating the often-uncharted waters of early career development. Professor Bellum was inspired by Ms. Mentor, a column by *Emily Toth* appearing in *The Chronicle of Higher Education*, and is written by *Patricia L. Clark*, chair of the Early Careers Committee. Do you have a question for Professor Bellum? Send it to [sarah.bellum@biophysics.org](mailto:sarah.bellum@biophysics.org). Your privacy is assured!

**Q:** *I'm a fourth-year physiology grad student who got roped into helping another grad student in the lab get his project off the ground. I use "roped" because, while the project uses methods that are very similar to the ones I developed for my own project, the system is very different and I did not find the project very interesting. After lots of time and effort (taken away from my own project!), we worked out the kinks and got some interesting results; these are now being written up for publication. I assumed I would be second or third author, but I just saw the first draft, and my name is only mentioned in the acknowledgement section, under "helpful advice"! I thought at least I would get another publication out of this. What should I do??*

—Sleepless in Cell Culture-Land

**A:** An excellent question, and one I am glad to print because it addresses an all-too-common cause of graduate student insomnia: publication. And a particularly thorny variety: authorship. While authorship can also be an issue for faculty members, it is often the graduate students and post-doctoral trainees trying to pack a CV for the job market that feel the thorns most acutely.

Why do you want to be an author? Hopefully, you have a real connection to the project: you feel you made a real contribution (physical, intellectual, or preferably both); you are proud of your work on the problem; and this may be an area of research for which you want your expertise to be known. Less nobly, but perhaps no less often, the motivation for authorship may be to lengthen the list of publications on your CV, especially if the manuscript will be submitted to a 'top tier' journal.

Why would you NOT want to be an author? Perhaps you think the work is awful, with poorly designed experiments and/or flawed interpretations. Or perhaps the work is good, but you

feel your contributions were minor, and you have plenty of publications on your own plate. Perhaps you do not want to lay yourself open to having to explain the data in public, or being buttonholed at national meetings.

Who should be an author? In the biomedical sciences such as physiology, one key worker (often a graduate student or postdoc) can often be easily identified; the paper reports the results of his or her project. This person is awarded first authorship. Even this designation can get complex, such as when a project is 'inherited' from a departing student (who becomes first

author, the original student or the 'heir?'). Increasing in use is 'double asterisk' authorship, where an asterisked footnote after the first two authors' names explains, "the contributions of these authors were equal." This is all very nice, but the designation is quickly lost in later citations. And how is it

decided which one of those authors gets to be the 'real' first author?

Almost always the PI is listed as last author, although since most PIs do not work 'at the bench', the actual role of the PI can be rather more intangible: was the PI the source of guiding light and inspiration, the leader of 'bull sessions' where results were reviewed and new directions planned? The writer of

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**"...you can gather an initial assessment of your chances for authorship by comparing your contributions to those of second authors of prior publications from your lab."**

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the first draft? Or was the role more along the lines of 'procurer of funds'/ 'payer of bills'? Or even sketchier: 'provider of bench space'? An opinion on the appropriateness of PI authorship was recently published in *Nature* (1), and an accompanying ensemble of comments from editors, authors and reviewers (2) makes for very interesting reading, providing rare candid (and largely anonymous) views on the subject.

Authorship in the middle of the byline can be even more confusing:

what criteria are used for including a second author (for a total of three)? Or a third or fourth author? When does the contribution taper down far enough that a contributor is merely acknowledged, as you have been? There are no hard-and-fast rules, but since the decision ultimately rests with the PI of the lab, you can gather an initial assessment of your chances for authorship by comparing your contributions to those of second authors of prior publications from your lab. Some labs have a history of including as author everyone who touched a pipet for the project. Others require there be some intellectual contribution, in terms of project design or experimental approach, or analysis of results. The International Committee of Medical Journal Editors has developed a comprehensive, three-prong set of criteria for authorship (3), with requirements at all stages of the project, from experiment design and execution, analysis of results, and a requirement that each author sign off on the final version of the manuscript. That sounds great to me, as applying all three criteria would help address the 'ghost authorship' and 'honorary authorship' traps

that can cloud the authorship picture, as a recent article on Science's Next Wave e-zine suggest (4).

Signs that you might not be included as an author include no intellectual contribution to the project, and/or no contribution to assembling the first draft. You realized that you would not be an author only after the first draft was assembled; that suggests that you might have been a bit unrealistic as to your contributions to the publication.

As authorship standards can vary greatly from lab to lab, I favor directly questioning the PI on their in-house 'rules for authorship'. For wallflowers, this does not have to be as direct as, "Hey, Professor Big Cheese, am I going to be second author on this publication, or what?", but rather a more general question designed to start a conversation: "Professor Big Cheese, what do you consider to be the criteria for

authorship on a paper from your lab?" Imagine some complications and exceptions, such as the ones described above, and ask Big Cheese about those, too. This is something to discuss with your PI as early as possible, preferably before you agree to join the lab (do you really want to work for someone who's authorship standards are radically out of whack with your own ideas on the subject?).

What can you do now? Talk to your PI. Explain your investment in the project, and your critical role in its success. Ask, politely, if you can be included as an author. Next time, have this conversation earlier, at the point where you felt like you were making a significant investment (time, effort, ideas, analysis).

1. Lawrence, P.A. (2002) Rank injustice. *Nature* 415:835-836.
2. (2002) *Nature* 415:819.
3. <http://www.icmje.org/>
4. <http://nextwave.sciencemag.org/cgi/content/full/2002/02/27/6>

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