

## Pre-prints: building a practical guide and Q&As for junior scientists

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Pre-prints of research articles [have been proposed](#) as a way to advance scientific progress, establish priority of discovery, and ameliorate some of the current shortcomings of the peer review process. All these traits are intended to accelerate the pace of innovation. Innovation, mostly, but [not invariably](#), is fueled by [new researchers](#) with [different ideas](#). However, as academic science has [become more competitive](#), junior researchers have become especially attuned to [the power of incentives](#) for career progress, which [may not be aligned](#) with increasing the pace of scientific discovery.

[Leading proponents](#) of pre-prints (many of whom are established investigators), envision junior researchers playing critical roles in the development and adoption of preprints. Many of the [potential benefits](#) of pre-prints are said to be [especially helpful for junior researchers](#). Trainees and junior investigators are also proposed to play a big role in the development of [pre-prints](#) and [post-publication peer review](#).

It seems to follow that plans for the wide adoption of pre-prints would need buy-in from junior researchers. Yet, it is not clear that the awareness of pre-prints among new scientists is anywhere close to a necessary critical mass. The subset of junior scientists that are aware of the existence of pre-prints, are likely to carefully weigh [the benefits and costs of any new publishing innovation](#) with [their career advancement prospects](#).

To reach this critical mass, junior investigators need more information to understand the impact pre-prints will have on their careers. In turn, to shepherd this change in scientific publishing, proponents, policymakers, and gatekeepers must be aware of the concerns, needs, and objectives of this key constituency. New researchers especially need to understand not only [tangible benefits, but all potential costs](#). Perceived costs can be powerful disincentives. Even if potential costs are rare ([being scooped](#), or being in the center of a highly contentious scientific debate) and very unlikely to be borne by any given researcher, from an individual perspective, non-established investigators are unlikely to jump in unless the tangible benefits are high. In the long-term, many issues will 'work themselves out' or be self-correcting, but few junior researchers are willing to be the examples and accept potential setbacks in their careers in the meantime.

In the interest of advancing discussion at the upcoming [ASAPbio Meeting](#) and beyond, I have outlined a series of potential questions that young investigators may have about pre-prints. I have devised these questions based on [personal experience](#) and reading of online discussions, and I outline the rationale for each question. The answers (and any additional questions!) should come from the community. To facilitate this exchange I have set up [an open, living document that anyone can contribute to](#), in order to aggregate collective knowledge on pre-prints and junior researchers. This document can serve as a resource for young investigators

and also for policy makers and advocates to take into account the questions and concerns of newer trainees.

In line with the goals of ASAPbio and with a vision to facilitate action beyond the conference, I hope this resource will keep the community informed and help avoid the growing pains of a new system. Providing information and aligning incentives will go a long way to boosting and sustaining innovation in science.

## Pre-print Questions from Junior Scientists

### **1. Can I publish a piece of my upcoming large paper to get credit as I go along? Or will that just spill the beans and rob the future publication of impact?**

Rationale: “Creating a New ‘Key Finding’ Format. A preprint server provides a solution for improving the ease and speed of communicating a paper, but it does not necessarily address the escalating amount of data needed for publications in journals” (Vale 2015, PNAS 2015 112 (44): 13439-13446).

Answer:

### **2. Will I get scooped?**

Rationale: Although pre-prints should logically reduce the risk of being scooped, a [harrowing tale of pre-prints and getting scooped](#) can linger in junior researchers’ minds. These issues can be resolved (as they were), but career progress can hang in the balance while they are resolved.

Answer:

### **3. How do I get credit for a pre-print?**

Rationale: It is not clear whether grant, hiring, and promotion committees will ignore work published in pre-print servers or take them as evidence of progress.

Answer:

### **4. How do I incorporate feedback received from pre-prints in the peer review?**

Rationale: If pre-prints are posted at the time of submission, how can you incorporate feedback received from the community via pre-prints? Do journals have policies on this matter? What if the advice is in conflict?

Answer: Via C. Titus Brown (personal communication): Preprints can be posted a few weeks before submission in order to get feedback and incorporate before submission.

### **5. What if someone, especially a prominent scientist, criticizes my work?**

Rationale: In a system of commentary or post-publication/posting peer review, interest in a pre-print [would scale with scrutiny](#). While this would guarantee thorough and self-correcting

coverage of popular research (or research in certain fields), the flip side is that many fields will receive less attention and be more vulnerable to targeted attacks and be much less likely to be self-corrected by the community. Of course, this could be true of published research as well, but because pre-prints are made to invite criticism, they would seem especially vulnerable.

Answer:

### **6. How do you avoid targeted attacks on your work?**

Rationale: A future of a post-pub peer review that looks like Amazon product ratings is definitely exciting, but crowd-sourced internet commentary can become a wasteland of negative and unchecked comments (e.g. YouTube comments section). See also #5 rationale.

Answer: