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Big biology projects warm up to preprints

Consortium backed by US National Institutes of Health is first major biology programme to mandate online publication of results ahead of peer review.

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Biologists have been slow to embrace preprints, but for some it's no longer a choice.

The 4D Nucleome, a major research consortium funded by the US National Institutes of Health (NIH), is now requiring that all manuscripts related to its US$120-million, five-year programme are posted to an online preprint server ahead of peer review. And a privately funded, US$600-million biomedical research initiative in California is considering whether to demand its investigators do the same.

Proponents of these mandates say that they will help to foster wider acceptance of pre-publication in the life sciences, a practice that is gaining popularity among biologists but still remains the exception rather than the rule. However, some worry that forcing scientists to use preprint servers is the wrong way to go about persuading the biomedical research community of the value of sharing papers ahead of formal journal publication.

"It is a very progressive way of promoting preprints and reasonable as a policy for a private foundation. But the hope would be that, over time, biologists grow to see the value and want to do this, just like the physicists do, rather than being forced into it," says Ron Vale, a cell biologist at the University of California, San Francisco, and the founder of the preprint advocacy group ASAPbio. "Being forced to do something is not necessarily the best way to win over someone's heart."

Thou shalt preprint

Some lab groups have voluntarily pledged to post all their papers to preprint servers such as bioRxiv. However, no funding bodies or multi-institutional initiatives had made such a measure obligatory for biologists until the 4D Nucleome programme enacted its policy this month. The project seeks to determine the genetic architecture of the cell's nucleus in space and time.

"This is the way of the future, and for a consortium effort like this, it's something we should be doing," says John Lis, a molecular biologist at Cornell University in Ithaca, New York. Lis is one of the nine voting members of the 4D Nucleome steering committee, which ruled that all of the project's 50-plus principal investigators must now share their manuscripts on a preprint server before or concurrently with submission to a peer-reviewed journal, unless granted an exception or extension to protect intellectual property.

And soon, a project funded by Facebook co-founder Mark Zuckerberg and his wife, physician Priscilla Chan, could be the first philanthropic effort to adopt a similar policy. In September, the pair unveiled the Chan Zuckerberg Biohub, a $600-million, 10-year initiative to elucidate disease mechanisms and develop new technologies. The Biohub will support around 45 investigators at 3 universities in and around San Francisco, California, all of whom may be required to post preprints on or before the date of submission to a journal.

Such a rule was included in a call for applications posted online and e-mailed to staff at member institutions. But that was done in error, according to Biohub co-director Stephen Quake, a bioengineer at Stanford University in California. "There's going to be some sort of publication policy," he says. "But we're still finalizing the details."

The NIH has no formal policy on pre-publication, but it is warming to the idea. The agency is currently soliciting feedback on how best to consider preprints in grant applications and reports. And it is supporting the 4D Nucleome programme's pre-publication mandate.

Nucleating the idea

"We're enthusiastic about open sharing," says Judy Mietz, a programme director for 4D Nucleome at the NIH's National Cancer Institute. "The NIH expects broad sharing in these tools generating groups."

But according to an internal poll of principal investigators in the consortium, about 30% oppose the publication policy. Ultimately,

however, the programme's leadership was convinced of the policy's benefits.

"There are really lots of positives to this," says Nils Gehlenborg, a bioinformatician at Harvard Medical School in Boston, Massachusetts, who co-chairs the 4D Nucleome policy working group. He points to the speedier dissemination of knowledge, earlier discussions of findings among scientists and the ability to plant a flag of priority when scientists develop a new idea. "There's no need to have unnecessary delays," Gehlenborg says.

Jessica Polka, director of ASAPbio in Cambridge, Massachusetts, commends the consortium's decision. "It's so encouraging that this is a scientist-driven choice," she says. "There may not be a complete consensus among them, but the fact that there's this sub-community that's ready to change their own culture — that, to me, is extremely exciting."

Another major NIH initiative, the Extracellular RNA Communication consortium, also encourages its members to submit manuscripts to preprint servers. But it only requires titles and abstracts to be shared on an internal database at the time of journal submission. According to Ananda Roy, a programme leader at the NIH's Office of Strategic Coordination, none of the other 30 or so programs funded by the agency's Common Fund — which supports multidisciplinary, multi-investigator initiatives — has any pre-publication policy.

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