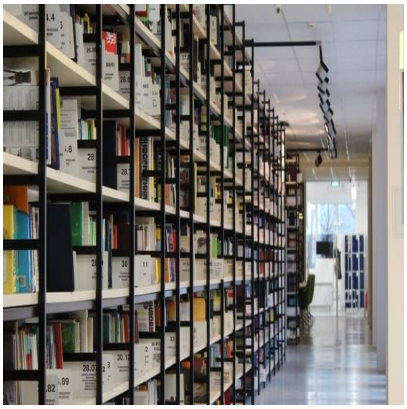

### Description

Laboratories are closed. Researchers are stuck at home. Funding is in doubt. All research work has stopped.

As with all other parts of life, the current global pandemic has greatly affected science and academia. While some research, in some countries, is able to continue—including, crucially, into COVID-19—many scientists have been forced to pause their work. Around the world, researchers and scientific institutions face many challenges.

In the midst of a pandemic, scientific publishing may at first seem to be a small concern. But, in fact, publishing high-quality scientific research is more important than ever. In particular, the results of research on COVID-19 need to be shared as soon as possible, to help with the global fight against the disease.

## Preprints = Sharing Research Quickly

Researchers sometimes choose to share their research quickly by using preprints. A preprint is a full draft of a research paper that is shared publicly before it has been peer-reviewed. Archives or servers like BioRxiv are often used to share preprints. Authors can upload their work as soon as they have finished the draft, rather than waiting for the lengthy journal peer-review process to be completed.

Preprints have a number of benefits as listed below:

- They are free to publish and to access
- They help researchers lay claim to discoveries earlier
- They allow others to cite the work earlier

In general, preprints support the move towards Open Science. However, preprints also have clear disadvantages. As they have not been peer reviewed, they risk spreading “bad science.” If the preprint does not go on to be published in a reputable journal, the value of the work is lost.

Nonetheless, preprints are an extremely useful way to share science as quickly as possible—as long as the problems are addressed.

## Preprints in a Pandemic

Global research efforts have been turned towards COVID-19; treatments, vaccines, and epidemiological surveys are just a few of the scientific goals. Since the pandemic began, preprint servers have experienced a huge increase in the numbers of papers submitted. Within just four months of the first confirmed COVID case, an incredible 16,000 scientific articles on the subject have been released. At least 6,000 of these were issued on preprint servers.

The huge number of articles was matched by huge demand. Papers on COVID were accessed at least 15 times more than non-COVID preprints. COVID preprints even seem to be designed to be produced and read at speed: they tend to be shorter, with fewer graphics, than other articles. They also often move on to peer review more quickly. All this means that an enormous amount of research on COVID is already freely available, not just to scientists but also to policy makers, journalists, and the general public.

During the pandemic, the speed of preprints means that research can be used to propel scientific progress into treatments and vaccines. Preprints also reduce the bias against negative findings (most journals typically favor positive results.) In the fight against COVID, negative findings are equally important; for example, we need to know if suggested treatments *don't* work.

## Tackling Preprint Problems

Researchers are able to access the work of others in their field almost as soon as it is available. However, it is important not to forget the main problem with preprints: they have not been peer-reviewed.

Fortunately, several preprint servers do carry out some checks on articles. MedRxiv, carries out pre-screening. This covers checks for plagiarism, ethical approval, and author consent. Authors must also disclose their funding sources and make their raw data available. Finally, experts check whether submitted articles are spam or pseudoscience or carry an obvious risk of harm (e.g. by claiming cigarettes do not cause cancer.) During the pandemic, MedRxiv and BioRxiv have also stopped publishing predictions of drugs that might treat the virus, unless substantial evidence is provided.

Some preprint servers also allow readers to comment on articles. This is one way to give useful feedback or flag bad science, especially if comments are moderated. A few journals have also started adding reviewer comments to the preprint version of articles, once they are available.

During the pandemic, some preprint servers have stepped up their scrutiny of new articles. Screeners are on the lookout for papers that might fuel conspiracy theories, for example. This was prompted by a now-withdrawn preprint that noted similarities between the new coronavirus and HIV. Despite being quickly flagged as poor science by many readers, the article triggered claims that the new coronavirus is man-made.

Several servers, including BioRxiv, have decided not to release preprints that suggest treatments for COVID based on computer models alone. This is because of the potential danger of the preprints leading to people taking untested drugs in an attempt to fight the virus. In all, it seems that many

preprint servers are trying hard to ensure that only “good” science is released during this global crisis.

## How to Submit a Successful Preprint

Are you planning to submit a preprint during the pandemic? Here are a few useful tips that should help you share your research as quickly and effectively as possible.

- Make sure that all authors and co-authors are happy with the preprint, and that it is good enough for submission to a journal, before sending it. Don’t submit a preprint if you know it has problems.
- Think about your target audience when choosing a server—where in the world are they? Which field do they work in?
- Check the server’s policies. Don’t waste your time on one that will not accept your article.
- Take care with your title and abstract. During the pandemic, your article might have a wider audience; think about how it could be interpreted by a non-scientist.
- Share your preprint to get feedback and be prepared to update it, if necessary.
- Finally, don’t forget to link your preprint to the published article, when it is available (some servers will do this for you.)

Do you normally publish your articles as preprints? What are the pros and cons of preprints, in your opinion? Share your thoughts in the comments below.

**Category**

1. Career Corner
2. PhDs & Postdocs

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