Ten Recommended Practices for Managing Preprints in Generalist and Institutional Repositories

COAR-ASAPbio Working Group on Preprints in Repositories

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INTRODUCTION

Preprint sharing has become an increasingly common practice, one which has greatly expanded since the COVID-19 pandemic. Posting a preprint makes an article quickly and freely available to everyone (while the published version may take months and be behind a paywall) and opens the manuscript up for transparent community review. The move towards greater preprint sharing is being accompanied by other innovations that leverage the availability of these manuscripts such as open peer review and endorsement services, and the 'publish, review, and curate' approach - whereby some publishers will only review manuscripts already published as preprints. Some funders are now accepting open peer review on preprints as an alternative to traditional journals. These trends have the potential to drastically improve research communication, making it more efficient, open, and transparent. The COAR Notify Initiative, which is developing a standard protocol for interactions across distributed platforms and services, will support greater linking across services and enable these activities to scale.

There are an increasing number of dedicated preprint servers (preprint-specific repositories) that are developing new practices to support the unique needs related to managing preprints. However, there are still large gaps in geographic and domain coverage and some authors will choose to deposit their research outputs into another type of repository, such as an institutional or generalist repository. For example, many existing preprint servers only allow submissions in English, which limits the options for researchers who work in other languages. Or, researchers may want to have their preprint hosted in their own country or region to comply with national policies or other preferences. In addition, there is an open question about the long term funding for many preprint servers, as they often rely on short term grant funding, so a distributed network that can support preprint sharing across a range of platforms will contribute to the sustainability of the system. As such, it is clear that institutional and generalist repositories have an important role to play in supporting preprint sharing worldwide.

In 2021, COAR and ASAPbio undertook a survey of current practices and plans regarding the collection of preprints in institutional and generalists repositories (IRs). The results revealed that approximately two thirds of the responding repositories currently host preprints. However, it was also found that many repositories did not yet support the unique functionalities and practices that are being adopted by preprint servers. To address these gaps, COAR and ASAPbio convened a Working Group to develop recommended practices for

managing preprints[1]. The Working Group undertook an environmental scan of existing preprint server functionalities and identified priority practices that should be considered for adoption by any type of repository that is managing preprints.

The Working Group has identified ten recommended practices for managing preprints in generalist and institutional repositories across three areas: linking, discovery, and editorial processes. The practices are listed in the table below, followed by more detailed explanations and concrete examples of how they are currently being implemented. While we acknowledge that many of these practices are not currently in use by institutional and generalist repositories, we hope that these recommendations will encourage repositories around the world that collect preprints to begin to apply them locally.

SUMMARY OF RECOMMENDATIONS

Linking preprint versions, journal versions, and peer reviews

1. Offer a step in the submission process for authors to provide information about other preprint versions, accepted manuscripts, journal versions, and external peer reviews
2. When this information is available, indicate that there is related content in the repository metadata record using “dc:relation” field or "isIdenticalTo", "isVersionOf", "isPreprintOf" or "hasReview" and include the PID of the external resource
3. When the information is available, link to related versions and external peer reviews on the landing page of the preprint
4. For each new version of a preprint in the repository, assign a unique PID and include a version number that represents their updates sequentially
5. In addition to versions and reviews, enable authors to link to other related resources such as data, code or other associated outputs

Discoverability

6. Ensure preprints are integrated into domain and preprint discovery and indexing systems
7. Clearly indicate in the metadata record and on the landing page that the document is a preprint, working paper, or other domain specific term

Editorial processes

8. Include a text banner on the landing page of the preprint that informs readers that the document is a preprint
9. Clearly indicate on the landing page or on the repository website what type of moderation or screening processes has been applied to the preprints
10. If a preprint has been removed, retain the metadata and a landing page (tombstone page) that designates its status as “withdrawn”

[1]For more general good practices in repositories, please see the *COAR Community Framework for Good Practices in Repositories*

DEFINITIONS

Landing page: a human-readable webpage which normally presents most of the metadata in the metadata record and links to the resource (in this case the preprint)

PID (Persistent identifier): a long-lasting reference to a document, file, web page, or other digital object. Most PIDs have a unique identifier which is linked to the current address of the metadata or content

Preprint: A version of a scholarly or scientific paper that precedes peer review

Preprint server: A repository that collects only preprints

Repository: A system that collects and provides access to digital content

Repository record: The machine-readable metadata record

DISCUSSION AND EXAMPLES

Linking preprint versions, journal versions, and peer reviews

Recommendations

1. Offer a step in the submission process for authors to provide information about other preprint versions, accepted manuscripts, journal versions, and external peer reviews
2. When this information is available, indicate that there is related content in the repository metadata record using “dc:relation” field or "isIdenticalTo", "isVersionOf", "isPreprintOf" or "hasReview" and include the PID of the external resource
3. When the information is available, link to related versions and external peer reviews on the landing page of the preprint
4. For each new version of a preprint in the repository, assign a unique PID and include a version number that represents their updates sequentially
5. In addition to versions and reviews, enable authors to link to other related resources such as data, code or other associated outputs

Discussion

It is very important for users to know what version of a preprint they are reading, whether it has been published elsewhere, or if there are external peer reviews or endorsements related to that preprint. Wherever possible, these types of relationships should be reflected in the metadata record and the landing page of the preprint.

In order to capture such relationships, we recommend that repositories build into the deposit workflow a step whereby authors can provide information about preprint versions, author's accepted manuscripts, journal versions, peer reviews, and endorsements (as well as other types of related resources such as research data, etc.). This way the author can provide the information directly to the repository, although, in many cases, these resources will only be available after the preprint has been deposited. A number of repositories, such as HAL, the French national repository, attempt to identify related content by searching indexes and discovery services such as CrossRef, Google Scholar, and OpenAIRE and add those links into the metadata record and landing pages. The repository could also provide mechanisms for authors to add this information after the original preprint was deposited, given that many of these resources would be created after the original preprint.

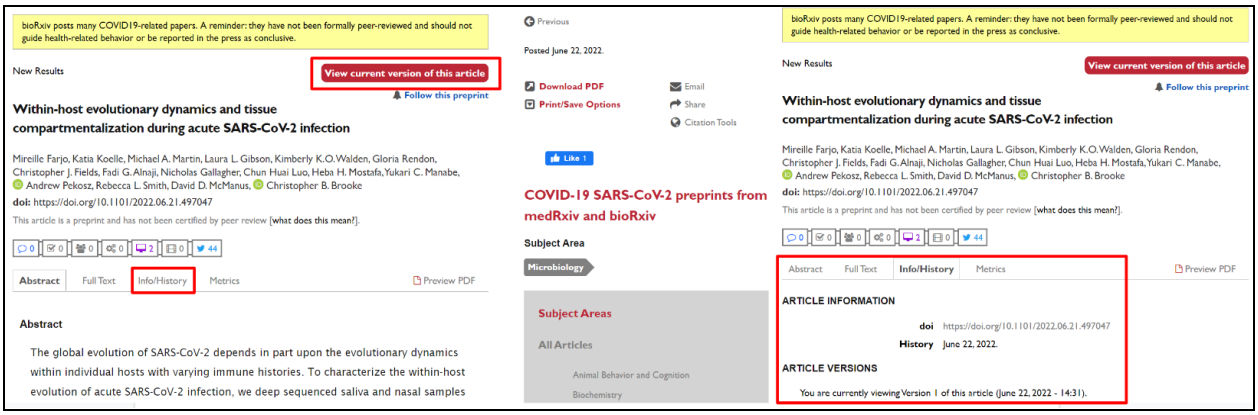
In terms of versioning, a review of current practices in preprint servers found that practices vary. Some preprint servers, such as arXiv and OSF, assign a DOI to each new version of the preprint. Others, like bioRxiv and medRxiv, maintain all versions under the same DOI, with separate URIs for each version. Zenodo assigns a DOI to each new version and uses a 'concept' DOI to represent all versions. For the purposes of citation, we recommend that a repository assign a unique URI (PID) for each version and include a version number that represents all updates sequentially.

In some cases, two identical copies of a preprint are held in more than one repository. HAL, for instance, in which many French researchers are required to deposit their preprints, maintains copies of preprints that are also held in arXiv and other preprint servers. For the purpose of indexing and user disambiguation, a repository should try to determine if a preprint is an identical copy of one hosted elsewhere, or whether it is unique to the repository. If it is an identical copy, then this should be clearly stated in the repository record and the landing page of the preprint.

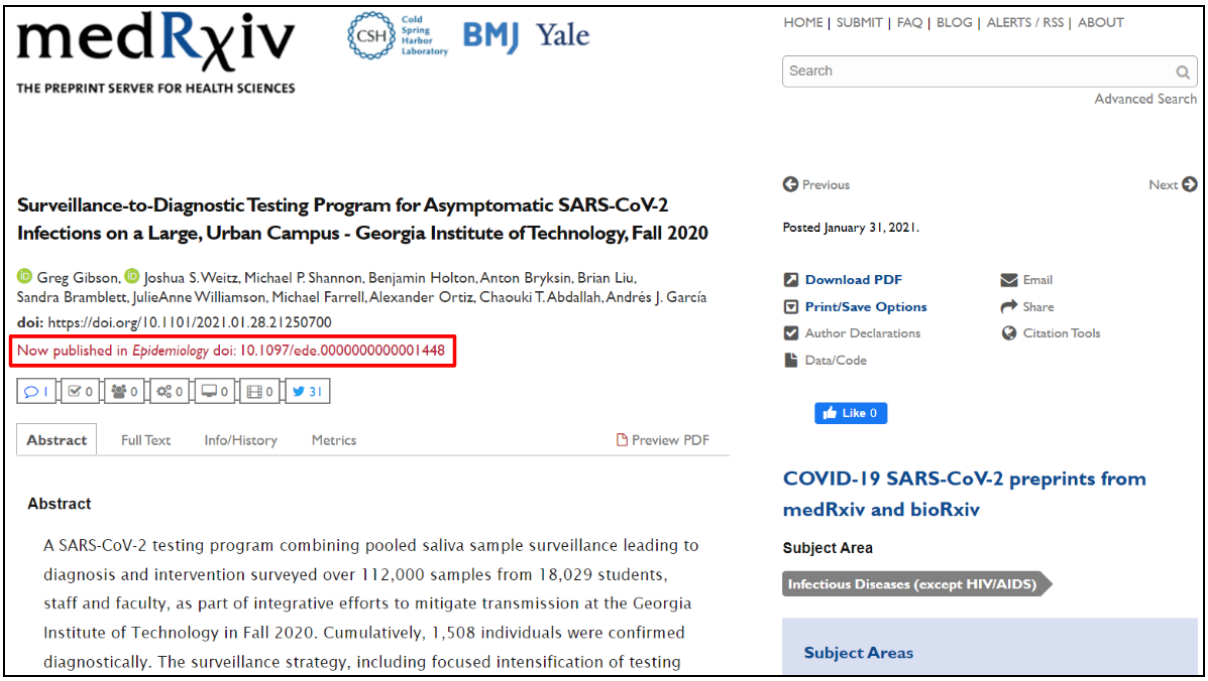
It is common practice for a preprint to be submitted to a journal for peer review and publication. Ideally, the repository record and the landing page will also link to an author's accepted manuscript or the journal version of the article. Both bioRxiv and medRxiv, for example, point to the journal versions by searching the titles in Crossref records.

Examples

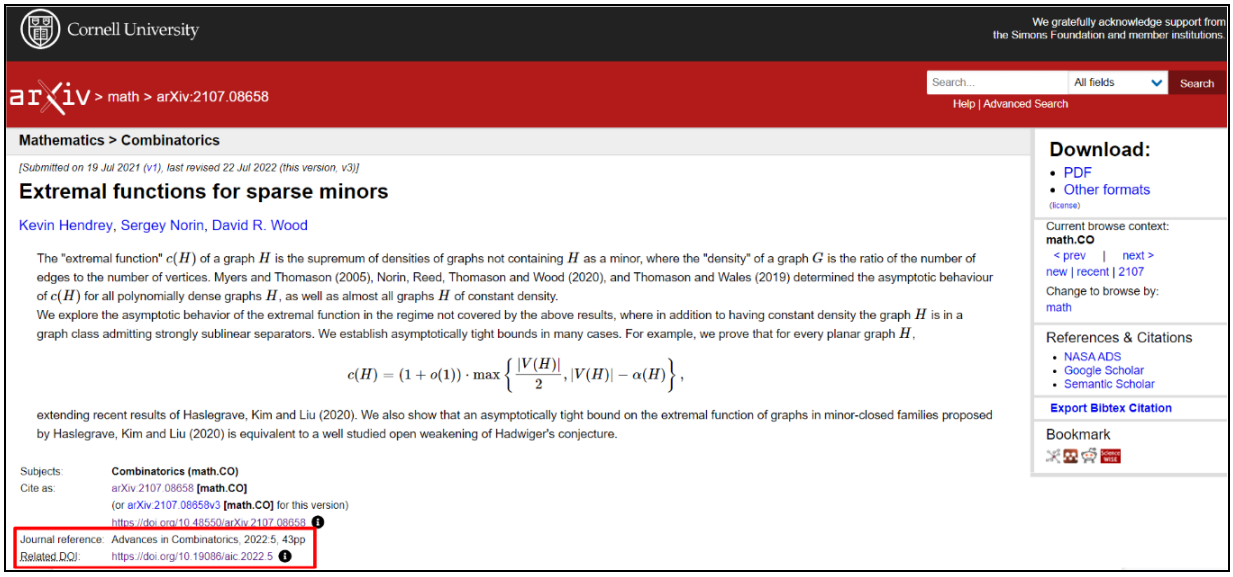
bioRxiv indicating on the landing page that there are other versions



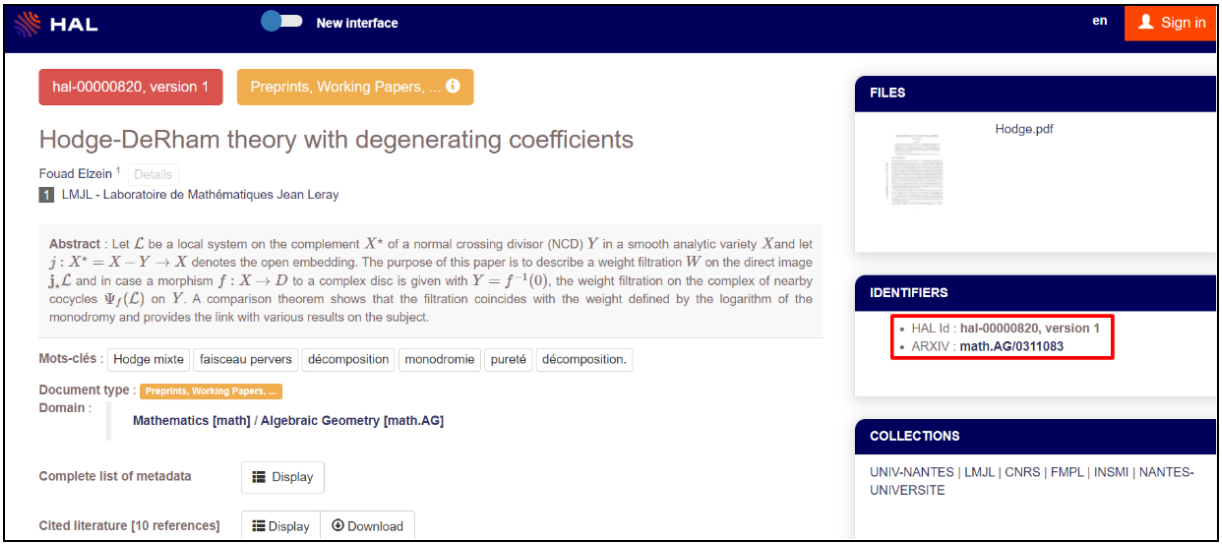
medRxiv preprint linking to the published journal article



arXiv record with link to overlay journal, *Advances in Combinatorics*



HAL record with link to identical arXiv version



Discovery

Recommendations

6. Ensure preprints are integrated into domain and preprint discovery and indexing systems

7. Clearly indicate in the metadata record and on the landing page that the document is a preprint, working paper, or other domain specific term

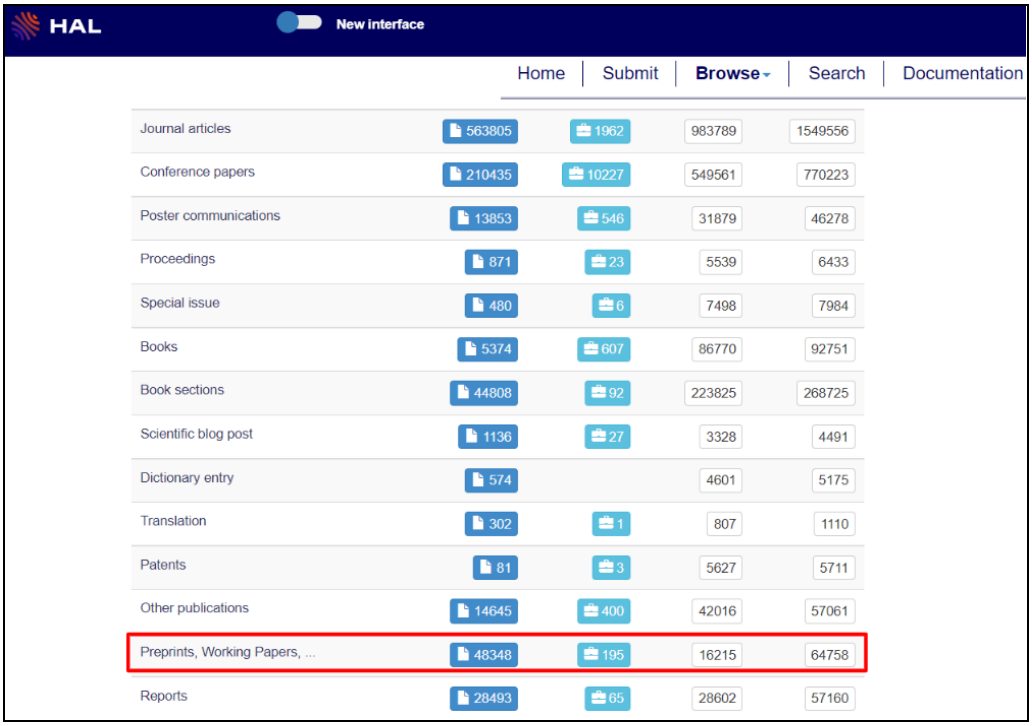
Discussion

Discovery of preprints is critical as many authors post preprints in order to share their work with their peers. To the extent possible, preprints in the repository should be integrated into relevant domain discovery systems. Repositories hosting original preprints should seek to have their preprints indexed by relevant search platforms, such as Europe PMC, which aggregates preprints in the biomedical fields. Both PubMed Central and Europe PMC have specified eligibility considerations for indexing preprints. Institutional and generalist repositories, which contain a variety of content types will need to direct these discovery systems to the relevant records only, which can be done by creating a "preprint set" in the OAI-PMH record. Many domain preprint services are minting CrossRef DOIs for preprints, enabling them to be more discoverable as they are then searchable in the CrossRef metadata.

Unambiguously labeling an article as a "preprint" (or other domain specific term such as "working paper") will ensure readers and discovery systems are aware of the status of the article and allows repositories to implement any preprint-specific features related to that item. Repositories should enable authors to tag their articles as preprints and include this information in the metadata record. This can be facilitated by integrating the COAR Resource Type controlled vocabulary into the repository platform, which standardizes the terms used and contributes to greater consistency in the repository and across the ecosystem. The COAR Resource Type vocabulary contains preferred and alternative labels for preprints and other domain specific terms, which have been translated into several languages.

Examples

HAL listing publication types in the repository



Editorial Processes

Recommendations

8. Include a text banner on the landing page of the preprint that informs readers that the document is a preprint.

9. Clearly indicate on the landing page or on the repository website what type of moderation or screening processes have been undertaken by the repository

10. If a preprint has been removed, retain the metadata and a landing page (tombstone page) that designates its status as "withdrawn"

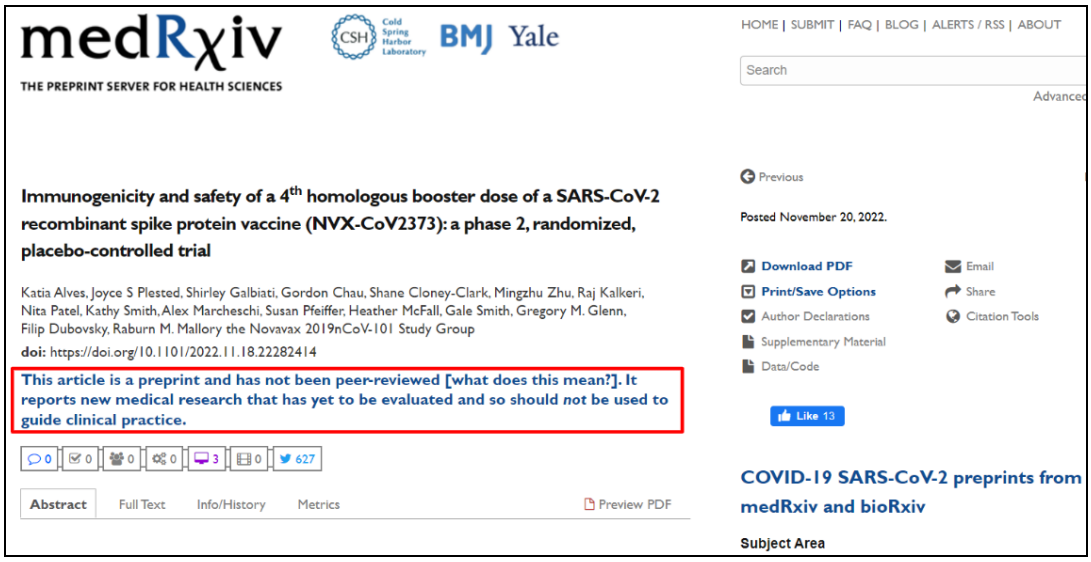
Discussion

It is important for readers to be aware of the status of a preprint and what level of screening has been carried out by the repository. The need for screening will vary greatly depending on the field. In the biomedical sciences, there is a more obvious need to have clear disclaimers that caution readers (see ASAPbio's Guiding principles for preprint servers on preprint labeling) while in other domains (physics, math) this may not be necessary. In addition, there is increasing ambiguity around whether a preprint has undergone peer review, as there are a growing number of external peer-review services and overlay journals (e.g. Peer Community In, Review Commons, Episciences). In this case, the preprint may have been peer reviewed, and may be published in a journal with little or no modifications. While it is common for institutional and generalist repositories to apply lightweight curatorial processes to check for metadata completeness, they rarely review the scientific integrity of the resources they host. Therefore we recommend that repositories include a banner indicating that the record may not have been peer reviewed. We suggest something like, **"This article has been labeled as a preprint and may not have been peer-reviewed"**. In addition, to ensure transparency around the publication process, it is also recommended that the repository provides information on its website about what type of screening (or lack thereof) is undertaken prior to posting and this information could also be linked to from the banner on the individual landing pages.

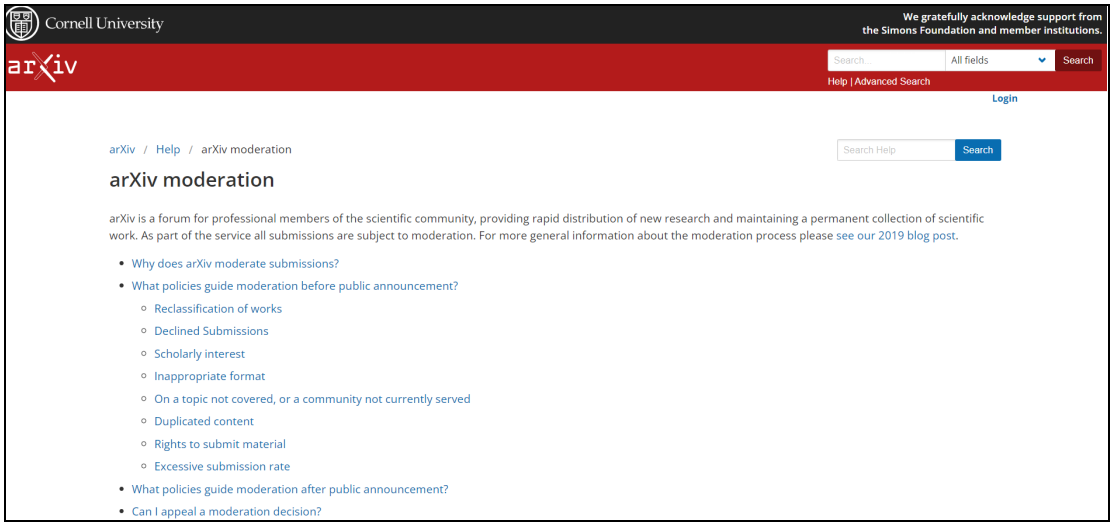
Preprints are part of the permanent research record, however, if at a later date, authors no longer stand by the scientific claims contained in a paper, it should be possible to remove it from the repository and label the preprint record as withdrawn. In this case, the repository record should remain and associated metadata should be updated to indicate the status as withdrawn. In addition, repositories should have processes in place to address situations where a posted preprint breaches the policies of the repository, represents a legal challenge, or could incur substantial risk of harm (e.g. to society, specific groups or an individual). In such rare circumstances, the full-text preprint should be removed from the repository, with an indication in the metadata record and the landing page (tombstone record) that the preprint has been removed. In addition, the repository should have a public policy related to the withdrawal and removal of resources.

Examples

medRxiv landing page disclaimer about the preprint



arXiv moderation process



Withdrawn preprint from bioRxiv

Cold Spring Harbor Laboratory

bioRxiv

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bioRxiv posts many COVID19-related papers. A reminder: they have not been formally peer-reviewed and should not guide health-related behavior or be reported in the press as conclusive.

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Abstract

The paper has been withdrawn owing to erroneous inclusion of confidential information relating to a third party.