# Preprint Review and Post-Review Preprints: Current Status, Impact, and Library Strategies

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## Abstract

[Purpose/Significance] From the dual perspectives of preprint platform managers, operators, promoters, and librarians, this paper expounds on the current status, impact, and library response strategies regarding preprint review and post-review preprints, aiming to provide references for implementing preprint review on Chinese preprint platforms.

[Method/Process] Employing web-based research methodology, this study analyzes the concepts and emerging characteristics of preprint review and post-review preprints, as well as their impact on the traditional scholarly communication system, and subsequently examines the implications for libraries and corresponding strategies from a library perspective.

[Results/Conclusion] Although preprint review faces cultural barriers and technical challenges, it can significantly accelerate scholarly communication and optimize journal editorial workflows. Libraries should actively engage in metadata construction for preprint review, develop indexing tools, and conduct relevant training to support the healthy development of preprint review and foster a virtuous cycle in the scholarly communication ecosystem.

## Full Text

## Preamble

Preprint review and post-review preprints have emerged as significant developments in scholarly communication. Preprints—scientific manuscripts that have not undergone formal peer review—have gained widespread recognition and support within the scientific community for enabling researchers to establish priority in their field [1], increase awareness of their work [1], and attract greater attention and citations [2-3]. Although the dramatic surge in preprints during the COVID-19 pandemic has since stabilized, preprint publications in the life sciences have increased 100-fold since 2014, reaching 150,000 per year

[4], while the ratio of preprints to total journal articles has climbed to 12% [5]. However, this rapid growth has also heightened concerns among researchers about content quality, with some critics describing preprints as an "unstructured tyranny" [6]. In response, preprint review and post-review preprints have emerged as innovative solutions. To alleviate publishing pressures, several publishing organizations called for collective action from the research community (Covid-19 Publishers' Open Letter on Rapid Review), prompting a swift response: 2,170 researchers registered as volunteer rapid reviewers, forming the foundation of the preprint review platform PREreview [7]. These initiatives provide researchers with references for assessing the reliability and completeness of preprint content while accelerating, improving, and enhancing the transparency and fairness of peer review [8].

## 1.1 Conceptual Analysis of Preprint Review

In Chinese scholarship, only Huang Guobin et al. have referred to peer-reviewed preprints as "shen-ding preprints" (审定预印本), analyzing their conceptual framework, content system, and value structure [9]. However, the term "shen-ding" is problematic: "ding" implies finality, determination, or cessation, while "shen-ding" generally refers to editorial decisions made after examination. In publishing, this typically involves editors reviewing and revising manuscripts to ensure quality, compliance, and reader suitability—concepts not entirely applicable to post-review preprints. Peer-reviewed preprints may not incorporate reviewer suggestions, focus on research content rather than editorial issues like grammar or spelling, and may still be submitted to other journals. Editors do not modify or approve preprints; only peer experts evaluate the research content.

Zheng Ang et al. characterize preprint review as third-party peer review, categorizing it into three main forms: third-party platform evaluation and publishing services, third-party services adopted by preprint platforms, and third-party services adopted by academic journals. Their analysis covers evaluation objects, content presentation, quality control mechanisms, reviewer incentives, and academic community building [10].

This paper addresses two concepts: Preprint Feedback and Preprint Review (sometimes called Preprint Comments). Preprint Feedback is defined as any public comment on a preprint that contributes to scholarly discourse by providing evaluation of various aspects of the research or manuscript sections [11]. Preprint Review is a subset of preprint feedback that meets specific criteria, making it a more narrowly defined concept. Preprint Review includes three key elements: (1) rigorous, verifiable discussion of research content; (2) declaration and/or verification of reviewer conflicts of interest; and (3) disclosure and/or identification of reviewer identity, such as verification by an editor or coordination system (e.g., ORCID authentication) [12].

Preprint Review differs from Open Peer Review. Open Peer Review (or Open Peer Commentary) refers to disclosing reviewer identities to authors (open

identity) and publishing review reports alongside papers (open reports) [13]. Broader definitions include publishing review reports (sometimes including reviewer identities) together with author responses and the paper itself, occasionally encompassing the publishing system [14]. In general, open peer review is a broader concept that includes both preprint review and openness in traditional peer review processes. In other words, preprint review represents one form of open peer review.

Key distinctions between Preprint Review and Open Traditional Peer Review include: (1) Preprint review is typically not author-initiated, whereas traditional review is initiated by journal editors upon submission; (2) Most preprint reviews lack accept/reject decisions, which are standard in traditional review; (3) Traditional open peer review involves direct editor-reviewer contact, while preprint review uses coordinators (program officers or staff, who may be community experts or collaborating journal editors); (4) Traditional open peer review opens the process upon publication, while preprint review does not; and (5) Authors may choose not to revise according to preprint review suggestions, whereas they typically do so in traditional review. Both models, however, rely on peer experts and require at least two reviewer reports, with authors able to respond to reviewer comments.

Post-review preprints—preprints with public peer review—are also known as "preprint +," "preprint with review," or "refereed preprint." They offer scientists a new publishing pathway for rapid communication and access to expert-evaluated research. These may be transferred to journals, published directly on preprint servers/repositories, or displayed on journal platforms (e.g., eLife).

## 1.2 The Rise and Characteristics of Preprint Review

According to Sciety [15], preprint reviews have occurred monthly since September 2016, with the number of reviewed preprints shown in Figure 1 [Figure 1: see original paper]. The data reveals a gradual increase beginning February 2019, surpassing 100 reviewed preprints per month by April 2020, stabilizing above 200 per month from January 2022, and exceeding 300 per month from June 2023. Although fewer than 2% of biomedical preprints currently include reviews, this practice has become a priority for open science advocacy organizations [16].

Preprint review exhibits several distinctive characteristics. First, review times are significantly shorter than traditional journal publishing, with authors receiving expert feedback in days rather than months. Second, the reviewer pool is larger and more diverse. While ideally anyone can review preprints, practice typically involves peer-based evaluation with a much broader expert range than traditional peer review. PREreview [17], for instance, had recruited over 2,680 reviewers by May 2024. Preprint review also engages individuals with doctoral training who are not actively conducting research, expanding the reviewer pool [18]. Third, review content is fully public. While open peer review content is

eventually published with some delay, traditional peer review reports are typically visible only to authors and editors. Additional characteristics include journal independence and significant disciplinary/geographic variation [19,20,21].

## 2.1 Major Preprint Review Services

Preprint review is typically provided by Preprint Review Services operated by new or established groups, individuals, publishers, or professional associations [22]. The sector has grown rapidly, with three registries or aggregators emerging internationally to enhance visibility and engagement: Early Evidence Base [23], Sciety [24], and ReimagineReview [25]. These platforms develop communities of practice and adopt common metrics to measure and report peer review experiments, improving overall scientific assessment [26]. According to ReimagineReview, 63 preprint review services currently exist internationally, with commonly used services including PREreview, preLights, Peer Community In, and eLife. Since most services operate independently, frameworks linking preprint review metadata with preprint metadata have emerged, such as COAR Notify and DocMaps [27].

## 2.2 Quality Control Measures in Major Preprint Review Services

Given the open nature of preprint review, which allows anyone to comment anonymously or pseudonymously, most services employ structured review formats to ensure quality. Reviewers answer specific questions or use templates (e.g., PREreview), with some platforms like eLife establishing comprehensive review vocabularies [28]. Services typically publish Codes of Conduct or Good Reviewer Guidelines, verifying reviewer identity through ORCID, signatures, and conflict-of-interest declarations. ASAPbio has convened a working group to develop the FAST principles for preprint feedback [29,30], detailed in Table 1 .

**Table 1: FAST Principles for Preprint Feedback and Their Interpretation**

| Principle | Interpretation |
|---|---|
| **Focused** | • Focuses on preprint content • Focuses on science rather than journals • Focuses on scientific information rather than personal information |
| **Appropriate** | • Uses precise language • Reflects on potential biases • Engages in scientific discussion |
| **Specific** | • Takes responsibility and acts with integrity • Makes reviews useful • Identifies key or optional issues in the paper |

| Principle | Interpretation |
|---|---|
| **Transparent** | • Evaluates whether claims are supported by data • Signs reviews (or not) • Acknowledges oversights • Recognizes contributors' roles |

## 2.3 Challenges and Problems Facing Preprint Review and Post-Review Preprints

Despite the proliferation of preprint review services and growing numbers of post-review preprints, significant challenges remain. The foremost issue is cultural: a scientific culture of preprint review has yet to emerge, rooted in the lack of recognition for reviewers' contributions [31]. Preprints and post-review preprints are not widely recognized in research evaluation. While journal reviewers receive academic credit, preprint reviewers do not; formal publications count for evaluation, but preprints/post-review preprints generally do not. Consequently, scientists are reluctant to review preprints, and some researchers hesitate to post them. Current incentives—such as assigning DOIs to preprint reviews that automatically link to reviewers' ORCID accounts to create certifiable academic credit [32]—have proven insufficient, with reviewer shortages and recruitment challenges persisting.

Technical challenges also abound, including the lack of DOIs for reviews on some platforms and long-term preservation issues (though PREreview and preLights now assign DOIs), visibility and citability of comments, comment overload and indexing tool development, and interoperability between preprint reviews and other scholarly outputs [33]. Additional concerns include disciplinary/geographic disparities, ORCID-related access barriers creating "Matthew effects," reviewer bias and compliance challenges [34-35], seamless collaboration and trust-building with journals, and the commercial sustainability of review services [36-37].

## 3.1 Preprint Review Accelerates Scholarly Communication

Traditional journal publishing often involves redundant peer review cycles: submission, rejection, resubmission to another journal, further peer review, and revision—spanning months or even years. Research shows that graduate students in U.S. biomedical programs now take a year longer to publish their first first-author paper than three decades ago [38], while the information density of published articles has nearly doubled over two decades [39]. This redundant peer review consumes enormous researcher time, slowing scientific communication. Researchers reportedly spend approximately 15 million hours annually on redundant peer review [40].

Integrating preprint review into journal workflows can alleviate this burden. Preprint reviews are published directly after evaluation or submitted to journals,

which can use existing reviews to make decisions without additional rounds or with only minimal review (see Figure 2 [Figure 2: see original paper]). Authors may also choose to publish directly as "preprint +" (though bioRxiv notes that two-thirds of its preprints are eventually formally published [41]). This integration clearly accelerates scholarly communication. Analysis of Review Commons' first 18 months showed it reduced the median time from initial submission to journal publication from 253 to 181 days, with a median of only 71 days to publish a recommended preprint [42]. After transforming its publishing model, eLife's median time from submission to first publication with review and eLife Assessment was 91 days—more than 2.5 times faster than traditional publishing [43]. However, preprint review formats must align with journal peer review formats; otherwise, they may hinder rather than facilitate reuse [44]. Preprint review services have also spurred new models for journal publishing, peer review, and services. Taylor & Francis, for instance, offers a "fast-track" review service for over 100 biomedical journals (both OA and non-OA), costing $3,000–$7,000 depending on speed and additional services (e.g., language editing) [45].

## 3.2 Collaboration Models Between Preprint Review and Journals

Most journals and publishers now allow authors to post preprints beforehand and do not explicitly oppose feedback or comments on them [46]. Beyond direct submission mechanisms, preprint and journal platforms can connect through peer review services. bioRxiv's B2J (bioRxiv to Journal) and J2B (Journal to bioRxiv) transfer services move manuscripts between bioRxiv and independent peer review services like Peerage of Science and Review Commons [47]. Several journals have established partnerships with one or more preprint review services to transfer and reuse preprint reviews, including 28 journals affiliated with Review Commons [48], "friendly journals" for Peer Community In [49], and journals collaborating with PeerRef [50].

From a scholarly publishing perspective, review services serve as intermediaries, collaborating upstream with preprint platforms/repositories and downstream with journals through manuscript transfer mechanisms. Partnering with preprint review services can reduce journal reviewer workload [51]. The ASAPbio working group has outlined four possible models for integrating preprint reviews into editorial workflows [52]. Specific benefits include: (1) informing editors whether to send manuscripts for review or predicting likely outcomes; (2) increasing review diversity and helping editors identify issues missed by journal-based review; (3) enabling editors to solicit submissions by monitoring preprints and reviews—journals like the Royal Society and Open Biology have appointed preprint editors for this purpose [53]; and (4) using preprint reviews to identify potential reviewers and editorial board members through initiatives like the Preprint Reviewer Recruitment Network [54].

### 3.3 Preprint Review and Post-Review Preprints Support Research Integrity

Research integrity is the cornerstone of scientific innovation and part of research ethics, encompassing ethical standards for research processes, communication, and reporting [55]. Additional scrutiny before journal submission/publication can improve paper quality and reduce errors. Preprint review, with its journal-independent evaluation and broader perspectives, can identify issues in analysis, methodology, and conclusions, enabling rapid preprint updates—unlike journal corrections, which are slower and more cumbersome [56]—and preventing post-publication retractions. PubPeer [57], a platform for post-publication and preprint review, has become a benchmark for research integrity oversight. Alternative models like peer replication—where reviewers conduct experiments to verify core hypotheses [58]—are being considered, though costs may be high. It remains crucial to recognize that peer review is not infallible [59], and preprint review is no exception.

## 4 Impact of Preprint Review and Post-Review Preprints on Libraries

While preprints and preprint review primarily concern scientific journals and scholarly communication systems, libraries—as institutions that collect, organize, preserve, research, and provide access to diverse information resources—cannot remain passive observers, particularly libraries providing scientific information resources and services. Researchers, journal editors, and librarians all have significant roles to play in the preprint review ecosystem.

### 4.1 Impact on Library Resource Construction and Preservation

Data diversity challenges library data governance and services, requiring proactive management and practice [60]. Preprints and preprint reviews, as diverse forms of scholarly records, have become increasingly important in the open science and post-pandemic era. Though not yet mainstream, their growth and trajectory demand attention. Preprint reviews, post-review preprints, and author responses represent externalizations of scholarly thought and potential academic evidence. CrossRef and PREreview have begun assigning DOIs to preprint reviews, enabling automated metadata transfer to journals. Critical questions arise: Should preprint review content, post-review preprints, author responses, and revised preprints (multiple versions) be preserved? Where, by whom, and how should they be preserved? Should they be preserved long-term? How should licensing be obtained [61]? Some experts have suggested libraries might subscribe to preprint review services, much like journal packages, to support reviewer work and access to preprint reviews and post-review preprints [62].

Preprint review also informs library platform development. Preprint platforms

could integrate peer review services or collaborate with existing ones to enhance scientific dissemination and impact. Database construction should consider assigning DOIs to preprint reviews and author responses for reuse, adjusting data types (e.g., adding "Peer Review" as a document type) and optimizing multi-version preprint access. Zenodo [63], for example, had nearly 450 peer review reports by May 2024.

Another implication is that libraries effectively fund peer review, as researchers conduct reviews using library resources in their spare time. From a self-interest perspective, research institutions and libraries should prioritize peer review as a negotiating lever with publishers/journals to secure more favorable subscription agreements [64].

## 4.2 Collaboration Models Between Libraries and Preprint Review Services

Currently, libraries primarily act as funders supporting preprint review and post-review preprints. Organizations like Cambridge University Library, Research Libraries UK, and University of Bristol Library Services have committed to recognizing reviewed preprints in research assessment [65]. Libraries also actively participate in technical discussions; the ASAPbio working group on preprint review infrastructure includes Cambridge University Library, Research Libraries UK, University of Bristol Library Services, and Chinese platforms like ChinaXiv and CNKI [66]. Two research librarians serve on the technical committee for DocMaps development [67]. Further library involvement is worth exploring: recognizing and adopting preprint review services, participating in citation and reuse rule-making, and advocating for collaboration between preprint platforms and review services.

## 4.3 Can Preprint Review Coordinators Become a New Role for Librarians?

Preprint review definitions include a coordinator role responsible for reviewing conflicts of interest, verifying reviewer identities, facilitating dialogue between reviewers and authors, and liaising with journal editors to transfer post-review preprints. Coordinators serve as neutral third parties promoting constructive scholarly dialogue. Could librarians, particularly subject specialists, fulfill this role? With disciplinary training, connections to preprints and journals, and an established reputation for neutrality, subject librarians could help address reviewer shortages, build reviewer pools, and leverage existing scholar databases for reviewer recommendations.

## 5.1 Actively Participate in Preprint Review Metadata Construction and Governance

The emergence of preprints, preprint reviews, author responses, and post-review preprints poses data governance challenges. Libraries, as key metadata producers and providers with extensive experience in metadata development, management, and services [68], bear responsibility for organizing and preserving these materials. Preprint review is only one component of scholarly communication, not the final record, necessitating capture of essential metadata in machine-readable formats for sharing with preprint platforms and bibliographic databases. However, significant heterogeneity exists in preprint review metadata substance, format, and distribution channels [69].

ASAPbio established a working group comprising preprint servers, review platforms, aggregators, technical experts, and publishers to develop Preprint Review Features (PReF) for biomedicine—eight fields detailing who requested the review, who selected reviewers, public participation, author response inclusion, review outcome, coverage scope, reviewer identity disclosure, and conflict-of-interest declarations (see Table 2 ) [70]. These eight fields proved insufficient for sharing and reuse, prompting the October 2023 expansion to 13 essential metadata elements (ranked by importance, with expanded fields in red): reviewed preprint DOI, preprint version reviewed, review date, reviewer name (or anonymity indicator), reviewer ORCID, reviewing group name (e.g., journal club), reviewer conflict of interest, review license, recommendations/ratings, who selected reviewers, author response inclusion, editor/coordinator conflict of interest, and decision (binary or graded) [71]. The preprint review metadata framework welcomes input from librarians, researchers, and editors on machine readability, transmission protocols, and improvements.

Existing frameworks and services enabling preprint review metadata exchange include COAR Notify, Crossref, DataCite, DocMaps, Early Evidence Base, and Sciety [72]. Crossref collects diverse review metadata types, including review reports, editor reports, author comments, and community comments, along with review status (see Figure 3 [Figure 3: see original paper]), offering valuable models for further metadata development.

## 5.2 Explore Development of Preprint and Preprint Review Indexing and Linking Tools

The growing volume of preprints and preprint reviews creates information overload. Since preprints are posted before filtering, effective filters are essential for discovering relevant preprints (reviewed or not) and identifying them shortly after posting. Filters require discovery services using keywords, authors, social media cues, funding sources (e.g., NIH, NSF), or expert recommendations [73]. Libraries can leverage preprint review metadata to develop tools (search, indexing, summarization) that help authors and readers identify relevant comments and enhance visibility [74]. Existing tools for collecting and discovering

preprints and comments include CrossRef, Rxivist.org, search.bioPreprint, the bioRxiv dashboard [75], Early Evidence Base, and Google Scholar [76].

A major challenge is linking preprints with their reviews, which often reside on separate platforms like PREreview. Libraries could facilitate automatic transfer of preprint reviews to preprint platforms, repositories, or journal platforms. Additionally, librarians should participate in data management and cross-linking of diverse scholarly evidence types, including preprint versions, post-review preprints, version of record (VoR), and research data.

## 5.3 Training Needs in Peer Review Knowledge and Skills

Information literacy, digital literacy, and AI literacy education are core library functions [77]. Training on preprint submission and reuse, digital resource discovery, research integrity, and peer review can all be integrated into library instruction. Specialized reviewing skills are also needed, such as statistical or data review [78] and commenting on specific paper sections (e.g., Synlett's crowdsourced review [79]). Peer review training helps early-career researchers develop professionally, as peer review is an inevitable part of scientific careers. Some institutions already offer formal training: New York University and the University of California, San Francisco, both host courses [80].

In an era of rising journal publishing fees (especially OA) and subscription costs, preprints and preprint review offer valuable alternatives for scholarly communication. Library engagement can enhance their impact, encourage reuse, and foster a healthy, sustainable scholarly ecosystem. This paper has outlined the current state, impacts, and library strategies regarding preprint review. Future research should survey all stakeholders—including preprint servers, review platforms, indexing services, researchers, libraries, repositories, funders, and publishers—to comprehensively assess attitudes and implications of preprint review and post-review preprints.

*Note: Figure translations are in progress. See original paper for figures.*