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Preprint publications: accelerating science or spreading risk?

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Preprint publications are research articles that are made publicly available prior to formal peer review, and they are becoming more and more common in scientific circles. The ability to quickly distribute research findings has revolutionized the traditional publishing model, as seen by platforms such as arXiv, bioRxiv, and medRxiv. The emergence of preprints has generated a continuing discussion regarding their possible benefits and risks to the scientific method. It's critical to investigate the advantages and disadvantages of preprint publications in order to assess this.

Advantages of Preprint Publications

Preprint publications rapidly share research findings, allowing for early feedback, increased visibility, and open access to cutting-edge knowledge, accelerating scientific progress.

Accelerating knowledge dissemination

Preprints have several important benefits, one of which is that they facilitate the rapid dissemination of novel findings. It can take months or even years to publish a work through the lengthy, traditional peer-reviewed publication procedure. On the other hand, preprints are virtually instantly accessible, enabling the scientific community to remain current with the most recent advances. In rapidly evolving domains such as biomedicine, climate science, or artificial

intelligence, prompt dissemination of findings can significantly influence public policy, medical interventions, or technology advancements.

Democratized knowledge sharing and Open Access

Preprints are often free and open to everyone, democratizing information exchange. In contrast, many peer-reviewed journals are protected by pricey paywalls, limiting access to those who can afford subscriptions. Preprints remove these restrictions, allowing researchers in low-income countries or institutions with limited resources to continue accessing cutting-edge research.

Early opinions and community involvement

Before submitting their work to a peer-reviewed journal, researchers can gain insightful inputs from a wide audience by making it publicly available. Through this community-driven evaluation, authors can find mistakes in their work, improve their techniques, or even look into other areas of study. Furthermore, it makes it possible for the author and other scientists to communicate dynamically, which raises the calibre of the final published work.

Awareness and Reputation

Preprints give early-career scholars a chance to swiftly build their reputation and become more visible. Preprints offer proof of precedent as well, as they are timestamped, which is useful in competitive research environments where being the first to publish results is critical for funding, patent applications, and career development.

Drawback on Preprint publications

The lack of peer review for Preprint publication of research findings can lead to the spread of unverified information, increasing the risk of public misinterpretation and potential harm, especially in sensitive fields like medicine.

Insufficient peer review and quality control

The main issue with preprints is that they haven't yet been subjected to peer review, which is essential to scientific quality control. This implies that there's a chance the study has mistaken, bad methods, or even false conclusions. Peer review serves as a filter to identify serious problems

before publication, even though it cannot ensure perfection. Preprints, on the other hand, are distributed in their unprocessed state and may, therefore, spread false information.

Misinformation and Misinterpretation

Publication of preprints might provide special challenges in areas such as public health and medicine. Policymakers, the public, and the media may misunderstand unconfirmed or preliminary results if they are not properly vetted. For example, the COVID-19 pandemic witnessed a huge increase in preprints, some of which caused misunderstandings or false assumptions regarding interventions and treatments. Ignorance of peer-reviewed science can result in bad decisions that have a big impact on society.

Weighing up the advantages and drawbacks of preprint publications

Preprint publications' influence is mostly determined by how the scientific community and the general public use and understand them. Rapid dissemination and open access can have more benefits than drawbacks as long as preprints are disseminated properly, and researchers make it obvious that the results are preliminary. Preprints belong to a wider range of scientific communication, where replication and peer review are still essential for confirming findings.

Additionally, some of the risks can be reduced by raising understanding of the nature of preprints both inside and outside of the academic community. Although they are an important tool, preprints shouldn't be used in place of official peer-reviewed publications. Preprints should be handled carefully by scientists, writers, and legislators who understand their limitations and value their contribution to openness and cooperation in research.

Recommendations for responsible use of Preprints

To maximize the benefits of preprints while minimizing their risks, several measures can be adopted:

Clear labelling as preliminary research: Preprints must be clearly marked as preliminary findings to help readers understand that the research has not yet undergone peer review. This labeling should caution the audience to interpret the results with care.

Encourage post-publication peer review: Preprint platforms should foster a culture of post-publication peer review, allowing for community-driven quality control. This would enable authors to receive expert feedback even after their preprint is public, helping to address any flaws before formal journal submission.

Balance disclosure with Patent considerations: Researchers should carefully consider the timing of preprint publications, especially if they intend to seek patents. Ensuring that patent applications are filed before publicly sharing findings can help protect intellectual property.

Promote responsible citation practices: Scientists, media, and policymakers should be educated on the proper use of preprints, especially in terms of citation. Citing preprints should come with the understanding that the results are preliminary and subject to change.

Conclusion

When utilized properly, preprint publishing offers several benefits for increasing access to cutting-edge research, fostering collaboration, and speeding up the transmission of knowledge. But there are possible risks associated with not having peer review, especially when it comes to quality control and public perception. In the end, preprints are a strong instrument that needs to be managed carefully in order to maximize their positive effects and minimize any potential negative ones. They are neither intrinsically good nor harmful. Preprints' future depends on striking the correct balance so that they enhance rather than subvert the established peer-review procedure.