# Navigating peer review in 2025

Peer Review Week 2025 is just behind us, and, as always, aims to spark discussions on relevant topics. This year was no different. The theme 'Rethinking Peer Review in the AI Era' highlights how new technologies, in particular artificial intelligence (AI), are reshaping traditional peer review processes. AI is, however, only one part of a much broader and continually evolving peer review landscape. At our Journal, other important issues – such as sustainable reviewing practices and transparency – have been on our radar and remain central to current peer review discussions.

## AI in peer review: Threat or tool?

The use of AI in peer review is a topic of debate within the scholarly publishing community. Critics view it as a potential threat to the integrity of the process, noting concerns around confidentiality, accountability, and the loss of human judgement.[1] Supporters argue that – with clear guidelines, human oversight and transparency – AI can be responsibly integrated as a supporting tool.[2] Possible applications include basic manuscript screening, flagging inconsistencies or ethical issues, and assisting with reviewer selection. Several major publishers such as Wiley, Elsevier and Springer Nature have already begun adopting AI-powered tools for various tasks, including peer review assistance.[3]

While much is happening in this space, a few recent cases are worth highlighting. Barker[4] and Lo Vecchio[5] describe their recent experiences with what they believe to have been AI-generated peer reviews. Overarching issues reported were reviews that were strikingly uniform in tone, vague, lacking in detail or examples, devoid of meaningful engagement with the argument, occasionally inaccurate and in conflict with journal guidelines. These characteristics they described may be considered useful markers for authors when receiving review reports, and if unethical AI use that contravenes a journal's policy is suspected, authors should raise the matter with the editorial team.

On the flip side, we have also seen concerning cases of AI use by authors, of which editors and reviewers need to be aware. The now-retracted paper[6] featuring an AI-generated image of a rat with exaggerated reproductive organs and made-up labels underscores the need for careful scrutiny of AI-generated content. The discovery of 'keyword injections' designed to prompt AI tools to give favourable peer reviews[7], shows how some may attempt to exploit AI use in the system. In addition, the rise in low-quality and sometimes misleading papers generated by AI paper mills using openly accessible data sets[8], poses a serious threat to the integrity of the scientific record.

These accounts indicate that we are far from AI replacing human editors and reviewers; if anything, they highlight the growing importance of human oversight. Clear, comprehensive guidance for *all stages* of the peer review process, and for *all participants*, is essential, as is requiring declarations of AI use. Our Journal policies do not permit the use of AI tools to replace the work of peer reviewers or editors, but we recognise that this is an evolving area requiring ongoing review as the AI landscape changes.

## Sustainable peer review: Recognition, rewards and reviewer pools

A recent *Nature* news feature by Adam[9] describes peer review as being in a state of "crisis" due to an overloaded system. Adam attributes this crisis to significant increases in public research funding, a growing volume of manuscript submissions, and the added pressures of the COVID-19 pandemic, all of which have intensified the need for faster and more effective peer review.

As demands on researchers' time continue to grow, sustaining a healthy peer review system requires more than goodwill – it requires recognition, meaningful incentives and institutional systems that value reviewers' contributions. The Academy of Science of South Africa (ASSAf) issued a statement in 2024 on the *Recognition of the Work of Editors and*

*Peer Reviewers of Academic Journals and Books in South Africa.*[10] The statement urges universities and science councils to formally acknowledge and support editorial work, and provides recommendations for including this work in performance appraisals.

Formal recognition services such as Reviewer Credits, Web of Science Reviewer Recognition and ORCID enable reviewers to log verified reviews, receive certificates, and build a portfolio of their reviewing activity across journals and publishers. These profiles enhance CVs, support professional development, and help reviewers gain recognition within their institutions and scholarly communities. Publishers also use these tools to help find and match reviewers with manuscripts. Many journals publish an annual list of reviewers as a form of acknowledgement, and some have annual reviewer awards to acknowledge exceptional contributions. At our Journal, we publish an annual reviewer list, have an annual Outstanding Reviewer Award, and recently registered with Reviewer Credits. For reviewers who have a Reviewer Credits profile, reviews completed on our online system are automatically logged on the platform through seamless integration. We hope these initiatives help to recognise and reward the essential and hard work of our reviewers. While financial incentives are sometimes proposed as a way to reward reviewers, these raise practical and, more importantly, ethical concerns that need to be carefully considered, including increased costs, potential conflicts of interest, risks to the integrity of the review process, and the potential to make existing inequities worse.[11]

Adam[9] poses a critical question: how can we avoid overburdening a limited reviewer pool? Emerging solutions include AI-assisted reviewer matching, to help identify suitable and available reviewers, and the growing practice of "co-reviewing" in which an established academic collaborates with an early-career researcher.[9] This approach not only shares the peer review workload but also builds peer review capacity, something we encourage in our peer review policies.

## Transparency in peer review: Publication of peer review history

Scholarly publishing has seen a gradual shift towards promoting open science, including greater transparency in peer review through initiatives such as open peer review and the publication of review reports. Recently, *Nature* announced[12] their transition from voluntary to compulsory publication of reviewers' reports and author responses alongside all published original research articles. While some argue that this still falls short of full transparency as it runs the risk of turning peer review reports into "promotional endorsements" instead of critical evaluations and could distort editorial decision-making[13], we believe it is still a step in the right direction.

Our Journal follows a double-anonymous peer-review model, in line with *ASSAf's Code of Best Practice in Scholarly Journal Publishing, Editing and Peer Review.*[14] To align with broader trends towards openness, in October 2023 we introduced a policy encouraging the publication of the peer review history alongside published articles. This policy encourages reviewers and authors to allow the publication of their anonymised review reports and author responses, respectively, alongside the published articles. While we anticipated mixed reactions, we were pleased to discover that support far outweighed opposition, with 87% of authors and 75% of reviewers to date agreeing to the publication of the peer review history (Figure 1). Reasons given for not agreeing to the publication of the peer review history vary, with both authors and reviewers expressing unfamiliarity with the practice and concern that readers might misinterpret or misunderstand content within the reports.

Since implementation in October 2023, we have published the peer review histories for **81 articles**, and these have collectively been **downloaded nearly 14 000 times**. These readership metrics are
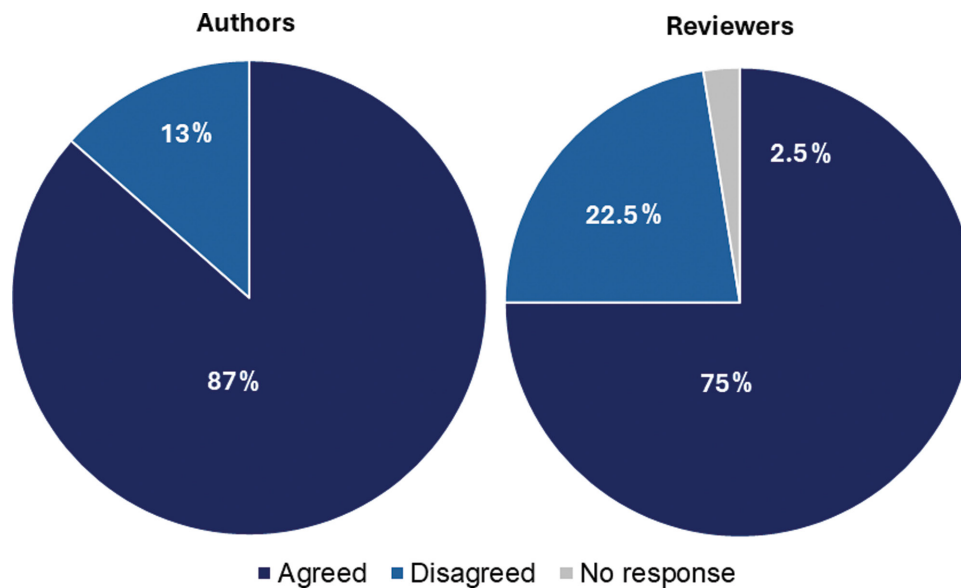
**Figure 1:** Percentage of authors and reviewers who agreed to the voluntary publication of anonymised peer review histories in the *South African Journal of Science* since adoption in October 2023.

encouraging, as one of our aims in introducing the policy was to create a learning resource, particularly for early-career researchers to benefit from seeing real examples of reviewer feedback and author responses.

It is important to acknowledge, however, that publishing peer review histories has also brought challenges for our Journal. There has been an additional administrative load in obtaining permission from authors and reviewers, and in compiling and formatting reports for publishing, as well as technical challenges with indexing the peer review histories that are yet to be resolved.

Despite these challenges, the positive outcome has exceeded expectations, and we look forward to building on this momentum in openness and transparency of peer review in the years ahead.

## References

1. Chaturvedi A. AI in peer review: A recipe for disaster or success? [webpage on the Internet]. c2024 [cited 2025 Aug 10]. Available from: https://asm.org/articles/ai-in-peer-review-recipe-for-disaster-or-success/

2. Linss M-A. Reimagining peer review: A case for innovation [webpage on the Internet]. c2025 [cited 2025 Aug 10]. Available from: https://www.researchinformation.info/viewpoint/reimagining-peer-review-a-case-for-innovation/

3. Palmer K. Publishers embrace AI as research integrity tool [webpage on the Internet]. c2025 [cited 2025 Aug 11]. Available from: https://www.insidehighered.com/news/faculty-issues/research/2025/03/18/publishers-adopt-ai-tools-bolster-research-integrity/

4. Barker TH. 'Vague, confusing, and did nothing to improve my work': How AI can undermine peer review. The Conversation Africa. 2025 March 09 [cited 2025 Aug 11]. Available from: https://theconversation.com/vague-confusing-and-did-nothing-to-improve-my-work-how-ai-can-undermine-peer-review-251040

5. Lo Vecchio N. Personal experience with AI-generated peer reviews: A case study. Res Integr Peer Rev. 2025;10, Art. #4. https://doi.org/10.1186/s41073-025-00161-3

6. Guo X, Dong L, Hao D. Cellular functions of spermatogonial stem cells in relation to JAK/STAT signaling pathway. Front Cell Dev Biol. 2024;11, Art. #1339390. https://doi.org/10.3389/fcell.2023.1339390

7. Sugiyama S, Eguchi R. 'Positive review only': Researchers hide AI prompts in papers. Nikkei Asia. 2025 July 01 [cited 2025 Aug 11]. Available from: https://asia.nikkei.com/business/technology/artificial-intelligence/positive-review-only-researchers-hide-ai-prompts-in-papers

8. Robinson D. Boffins warn that AI paper mills are swamping science with garbage studies. The Register. 2025 May 13 [cited 2025 Aug 11]. Available from: https://www.theregister.com/2025/05/13/ai_junk_science_papers/

9. Adam D. The peer-review crisis: How to fix an overloaded system. Nature News. 2025 August 06 [updated 2025 Aug 08; cited 2025 Aug 11]. Available from: https://www.nature.com/articles/d41586-025-02457-2

10. Academy of Science of South Africa (ASSAf). ASSAf statement on the recognition of the work of editors and peer reviewers of academic journals and books in South Africa [document on the Internet]. c2024 [cited 2025 Aug 10]. Available from: https://research.assaf.org.za/assafserver/api/core/bitstreams/c8fdebcf-e4f0-4908-bf26-dbf2884c4b3f/content

11. Vines T, Mudditt A. What's wrong with paying for peer review? Scholarly Kitchen. 2021 June 16 [cited 2025 Aug 11]. Available from: https://scholarlykitchen.sspnet.org/2021/06/16/whats-wrong-with-paying-for-peer-review/

12. Editorial: Transparent peer review to be extended to all of *Nature*'s research papers. Nature. 2025;642, Art. #542. https://doi.org/10.1038/d41586-025-01880-9

13. Stern B. *Nature*'s decision to publish positive peer review reports only gives half the picture [webpage on the Internet]. c2025 [cited 2025 Aug 10]. Available from: https://blogs.lse.ac.uk/impactofsocialsciences/2025/08/06/natures-decision-to-publish-positive-peer-review-reports-only-gives-half-the-picture/

14. Academy of Science of South Africa (ASSAf). ASSAf's code of best practice in scholarly journal publishing, editing and peer review. Pretoria: ASSAf; 2025. https://doi.org/10.17159/assaf.2025/117