Cybrarians Journals Issue 78, April 2026

Article

https://doi.org/10.70000/cj.2026.78.718

Research Agora: from hidden data to dynamic, reproducible knowledge

Isabel Barriuso-Ortega [1], **Pablo Hernández-Malmierca** [1]

[1] Research Agora Collective, S.L., Málaga, Spain

Isabel.barriuso@researchagora.com https://orcid.org/0000-0003-1351-5575

Pablo.hernandez@researchagora.com https://orcid.org/0000-0003-4529-384X

Article info

Keywords
Research waste; reproducibility crisis; Research Agora; new publication models; Marbles; Open Science, research assessment

Abstract

Publication bias and the reproducibility crisis are rooted in outdated evaluation practices and erode trust in science. Research assessment reform focuses on the quality and impact of research, as opposed to article counts and journal impact factors. Research Agora emerged as an open science platform that provides the tools for this new assessment, by providing a new publication model, Marbles: short, open, peer-reviewed reports that are linked to published research articles and that are designed for sharing replications, negative results, among others. Marbles tackle the reproducibility crisis while reducing research waste and publication bias. This initiative enriches the scientific record and gives credit for the invisible work of researchers and reviewers, an approach that benefits researchers, institutions, and society.

1. The 'dark matter' of research

Publication bias is a long-standing problem referring to the tendency of publishing research results based on the direction or strength of the findings (Dickersin and Min, 1993). Negative or null results often fail to be published for several reasons: they are rejected by editors or by reviewers, or authors do not consider these results 'publishable'.

In the 'publish-or-perish' culture, this bias is amplified. Null and negative results remain unpublished, but they are not the only ones: if results are not deemed impactful enough, they are not worth publishing. Traditional evaluation systems preferentially value publications in high-impact journals for funding allocation and promotion opportunities, and thus, it de-incentivises sharing research outputs that do not fit this brief. As a

consequence, replications, alternative methods, exploratory analyses, and 'small' findings are stowed away in file drawers and hard drives, contributing to publication bias.

This hidden knowledge is part of avoidable research waste, which it is estimated to be up to 85% in biomedical research (Chalmers and Glasziou, 2009). Specifically, the abovementioned research is part of invisible waste, one subtype of research waste according to the MINUS framework (Rosengaard et al., 2024). However, invisible waste affects other subtypes, such as negligible waste (i.e., redundant research done because there was no knowledge of previous attempts), or structural waste (i.e., poor collaboration and duplication of efforts due to lack of information).

An incomplete scholarly record hinders progress, as key information is lost. This generates an inefficient research system in which experiments are unnecessarily duplicated, and data cannot be reused for future analyses. Ultimately, it makes the research process more opaque, which facilitates bad scientific practises and disconnects research from society, increasing distrust in science.

2. The reproducibility crisis as an information gap

The opacity of the research process also affects the knowledge that is published. Several replication studies have reported low reproducibility rates in the biomedical sciences (Errington et al., 2021; Amaral et al., 2025). A field-wide survey of 1500 researchers points to a similar issue across disciplines: 70% of researchers reported failing to reproduce others' work, and 50% could not replicate their own results (Baker, 2016). Even when results could be reproduced, the effects observed were smaller than what was reported in the original articles (Amaral et al., 2025).

The causes leading to this reproducibility crisis are diverse. One of them is underreported waste (Rosengaard et al., 2024). When preparing a manuscript, authors need to make results as attractive as possible to succeed in publishing in a high-impact journal. This sometimes leads to reporting only those results that match the 'picture-perfect' story, while hiding 'under the carpet' the failed experiments and those results that do not completely align with the reported findings.

Other causes contributing to the reproducibility crisis are gaps in methods and lack of data sharing, which make verification of results difficult. Open science practises have increased transparency in this aspect, but many times, authors try to do the minimum possible and hide the 'know-how' just enough so that they can stay ahead and publish more on this topic in the future.

Once again, the reason behind these malpractices is an evaluation system that pushes researchers to publish regularly in high-impact journals, while commitment to transparent reporting and FAIR (findable, accessible, interoperable and reusable) data sharing is hardly ever rewarded.

3. Research Agora: an infrastructure for reproducible research

In this environment, many researchers advocate for the end of the 'publish-or-perish' era. In the last decade, multiple initiatives have proposed new ways to increase the transparency of research, and new publishing models have arisen with the objective of minimizing publication bias and increasing the transparency of the whole research process, such as preprint servers, data repositories, post-publication reviews or micropublications.

Research Agora (www.researchagora.com) is a particularly interesting initiative that tackles the reproducibility crisis while reducing research waste for the benefit of the scientific community. Created by former biomedical researchers, it is an open science platform in which researchers can share all those 'invisible' results, contribute to the assessment of the reproducibility of published literature, and get credit for all their work.

4. Marbles: from invisible data to an organised knowledge hub

Research Agora created a new type of publication, Marbles, which consists of short, peer-reviewed, open-access research reports linked to published research articles. Marbles have a structure that is shorter than research articles, as they rely on the context of the linked article. These reports focus mainly on transparent reporting of methods and results, streamlining the writing and revision process. They are limited to one figure, as they are designed for reporting results from individual experiments, ensuring that smaller pieces of information can be reported in a modular way.

There are five types of Marbles, which are organized in two main groups: those focused on reproducibility of experiments reported in the linked article (replicate, flag, and confirmation), and those that explore new hypotheses that stem from the linked article's findings (build on and dead end). Each type is thought for a specific case:

- Replicate: repeating an experiment from the linked article and obtaining the same results.
- Flag: repeating an experiment from the linked article and obtaining the same results.
- Confirmation: using alternative methods to confirm findings reported in the linked article.
- Build on: testing an exploratory hypothesis stemming from the linked article that is confirmed.
- Dead end: testing an exploratory hypothesis stemming from the linked article that is refuted (i.e., negative or null results).

Marbles are assigned unique identifiers and are organized around their linked article, making previously hidden research findable, citable, and interoperable with existing scholarly infrastructure. Multiple Marbles of different types can cluster around the same linked article, providing additional information about the article's reproducibility, quality of methods, and impact in future research. This transforms published articles from inert pieces of scientific literature into a "living knowledge hub" that documents confirmations, disputes, extensions, and dead ends around that work.

5. Small building blocks for a complete research story

By providing a format for unpublished research, Research Agora reduces publication bias and invisible waste. Marbles encourage reporting replication attempts and negative results in a modular, streamlined manner, reducing the workload that researchers normally invest in writing a full article. Besides, this format allows the publication of small findings and 'side stories' which do not usually fit the article format. This knowledge can now be shared as Marbles, enriching the evidence around key findings, filling the gaps in the scholarly record, and achieving a more complete picture on a particular topic.

Besides, these short publications support reproducibility in practice: readers, librarians, and evaluators can see at a glance whether a result has been replicated, challenged, or expanded, instead of relying only on the original paper. It gives a data-based measure of the quality and impact of the work, in contrast to outdated metrics such as the number of articles, the journal impact factor, and the number of citations. Moreover, by measuring the replicability of a published article, authors who commit to transparent reporting and a full documentation of methods and/or data will be rewarded for their good practices.

6. Open peer review: a cornerstone of Research Agora

Unlike other post-publication quality assessment methods, Marbles are supported by peer-reviewed data. The peer review of Marbles follows an innovative model designed to avoid biases and ensure full transparency of the process.

Research Agora counts with a growing community of reviewers specialised in different fields, and that spreads across 15 countries and more than 40 institutions. Any researcher (including early-career researchers like PhD candidates) can voluntarily sign up to become a reviewer. However, after joining, a thorough verification process is conducted to ensure the reviewers' identity, affiliation, and field expertise.

After a Marble is submitted, it is reviewed by three reviewers with proven expertise in that topic, who are selected from the pool of reviewers of Research Agora's community. The peer review is double-blind during this phase: authors' and reviewers' identities are not disclosed, to avoid possible biases in the evaluation based on gender, race, seniority, or institution's prestige, among others (Silbiger and Stubler, 2019; Gerwing et al., 2020).

The review is slightly different from that of a classical research article: it does not evaluate the novelty of the findings, but only the soundness of science and the transparency of the reporting. All Marbles must undergo at least one round of revisions, and their publication is conditional to a majority of acceptance by the reviewers, who may request changes to the authors. Of note, each review may be signed by one or several authors, encouraging collaborative reviews and fair recognition of junior researchers in the review process.

After acceptance, reviewers' names and review comments are published alongside the Marble, but not directly linked. This approach ensures transparency of the entire peer

review process and recognition of reviewers' work, while allowing for freedom for critical feedback by preserving anonymity to some extent, a common concern about open peer review (Cosgrove and Flintoft, 2017; Bravo et al., 2019).

7. Aligned with research assessment reform

Research Agora adheres to open science standards, gives a place for invisible waste, and ensures proper credit for authors of Marbles and linked articles, as well as reviewers. It introduces a new way to assess the quality and impact of published research that does not involve a greater bureaucratization of the evaluation process. Instead, it 'upcycles' the work that is already done.

However, for this initiative to be adopted by researchers, the evaluation system must evolve to reward transparency and quality of research instead of relying on article counts and journal impact factors. And that is exactly what is happening. Several research assessment reform movements have gained traction in the last decade, such as the Leiden Manifesto for research metrics (Hicks et al., 2015), the Declaration on Research Assessment (DORA) (American Society for Cell Biology, 2012), and the Coalition for Advancing Research Assessment (CoARA, promoted by the European Commission) (2022). These movements call for evaluation systems that value a wider range of research contributions, such as peer review, multidisciplinary work, and contributions to policy. Besides, this evaluation reform rewards commitment to open science practices, FAIR data sharing, and early sharing of results, and focuses on the quality and impact of the research work.

Research Agora aligns with the aforementioned reform movements and benefits researchers, institutions, and the scientific community at different levels.

First, it benefits researchers involved in all the parts of the Marble publication. Authors of the linked article obtain an objective measure of their research's quality and impact, and are rewarded for their commitment to transparent reporting and reproducibility. Authors of the Marble get credit for their invisible work, which can now be assessed for its quality. These contributions further demonstrate their commitment to open science practices and reproducibility, early sharing of results, and FAIR data sharing. Early career researchers may also use it as a demonstration of key skills, which may be helpful for their career progression. Senior researchers supporting this type of publication may attract talented researchers to their laboratories who seek mentors that support their workers' careers and commit to open science practices beyond the minimum requirements. Furthermore, peer review work is visible as a scholarly contribution, and reviewers can get credit for their (often invisible) work, something especially important for early-career researchers.

Second, research institutions are benefited by Research Agora, as it provides an open infrastructure and information source to support quality-focused research assessment that

is based on data, reducing the subjective assessment from referees. Institutions can implement these measures as part of their action plan for advancing research assessment. Besides, library services would have a complete record of the research performed in their institution, which may subserve future generations of researchers and avoid duplication of efforts and redundant research.

Third, the scientific community will be able to access a complete mosaic of knowledge, while having a quick tool to find out the robustness of results from a particular article. Ultimately, it benefits society as it allows for a more efficient, collaborative, and transparent scientific progress.

8. Milestones and concluding remarks

Since the platform's launch in 2025, Research Agora has been recognised by several honours and awards, including the certification as an emerging company by ENISA, Spain's national innovation agency, validating the platform's potential in open science innovation. The first Marble was published in January of 2026, marking the beginning of open peer review and publication of invisible research outputs.

Platforms like Research Agora help close the gap between what is done and what is visible, something essential to move towards a more efficient, transparent way of doing research. It benefits researchers and the scientific community, which can get full credit for their work and discern the replicability of published literature. Its alignment to DORA and CoARA commitments makes Research Agora a useful tool for defining new internal assessment criteria for research institutions, as well as a way to have a complete record of the research performed at their institution. Thus, institutions should discuss how to recognize Marbles and peer review work, and explore institutional collaboration models to implement a full research record within their institution and beyond.

In summary, Research Agora is an open science platform that has the potential to transform the way we share and evaluate research, while tackling current problems of publication bias, research waste, and reproducibility in a way that benefits researchers and institutions. It is a step towards a more collaborative, efficient, and transparent research ecosystem.

References

Amaral OB et al. (2025) Estimating the replicability of Brazilian biomedical science. biorXiv.

American Society for Cell Biology (2012) San Francisco Declaration on Research Assessment (DORA). Retrieved from https://sfdora.org/.

Baker M (2016) 1,500 scientists lift the lid on reproducibility. Nature 533:452–454.

Bravo G, Grimaldo F, López-Iñesta E, Mehmani B, Squazzoni F (2019) The effect of publishing peer review reports on referee behavior in five scholarly journals. Nat Commun 10:322.

Chalmers I, Glasziou P (2009) Avoidable waste in the production and reporting of research evidence. The Lancet 374:86–89.

Cosgrove A, Flintoft L (2017) Trialing transparent peer review. Genome Biol 18:173.

Dickersin K, Min YI (1993) NIH clinical trials and publication bias. Online J Curr Clin Trials Doc No 50.

Errington TM, Mathur M, Soderberg CK, Denis A, Perfito N, Iorns E, Nosek BA (2021) Investigating the replicability of preclinical cancer biology. eLife 10.

European Commission & CoARA signatories (2022) Agreement on Reforming Research Assessment and launch of the Coalition for Advancing Research Assessment (CoARA). Retrieved from https://coara.eu/.

Gerwing TG, Allen Gerwing AM, Avery-Gomm S, Choi C-Y, Clements JC, Rash JA (2020) Quantifying professionalism in peer review. Res Integr Peer Rev 5:9.

Hicks D, Wouters P, Waltman L, de Rijcke S, Rafols I (2015) Bibliometrics: The Leiden Manifesto for research metrics. Nature 520:429–431.

Research Agora. Available at: www.researchagora.com [Accessed January 22, 2026].

Rosengaard LO, Andersen MZ, Rosenberg J, Fonnes S (2024) Five aspects of research waste in biomedicine: A scoping review. J Evid Based Med 17:351–359.

Silbiger NJ, Stubler AD (2019) Unprofessional peer reviews disproportionately harm underrepresented groups in STEM. PeerJ 7:e8247.