

# World view



By Ivan Oransky

## Retractions are increasing, but not enough

**Retraction Watch has witnessed a retraction boom since its founding 12 years ago. But the scientific community must do much more.**

**W**hen my colleague Adam Marcus, editorial director at Medscape, and I launched the blog Retraction Watch in 2010, we didn't realize we were riding a wave. At the time, we thought journals were issuing about three retractions per month. But that hadn't been true for a decade. In 2010, they were averaging about 45 a month. Last year saw nearly 300 a month. Our database of retractions, launched in 2018, is up to nearly 35,000 entries. The oldest of those – a recanted critique of Benjamin Franklin's work in the *Philosophical Transactions of the Royal Society* – dates back to 1756.

On its face, the increase in retractions is good: a sign that science is becoming more scrutinized and rigorous, and that scientific publishing is doing its job. But it's not that simple: journals publish more papers than they did in 1756, or even 2016. A higher proportion is now being retracted, but we estimate – on the basis of evidence from surveys, studies and reports from sleuths – that one in 50 papers would meet at least one of the criteria for retraction from the Committee on Publication Ethics, a non-profit collective in Eastleigh, UK. These include "clear evidence that the findings are unreliable", whether because of falsified data, plagiarism, faked peer review or just 'major error', which might involve contaminated cell lines or another non-fraudulent problem. Yet the rate of retraction is still under 0.1%.

Retraction Watch has seen the retraction process change dramatically over the past decade. We've come to feel that the community is falling short.

Formal retractions already feel dated, similar to the stubbornly inefficient letters to editors that formed the bulk of efforts to correct the record in years past. Today, rather than sending a letter, critics take to social media, PubPeer.com and the larger media to voice their concerns. It is no longer easy for journal editors and publishers to hide criticism or correct the record quietly.

This noise has forced action. Some journals have hired full-time staff members to stay on top of criticism. Major publishers collaborate through the STM Integrity Hub, a tool from the International Association of Scientific, Technical and Medical Publishers in The Hague, the Netherlands, to share detection techniques and scan manuscripts for scientific misconduct – although no results have been shared publicly yet. But this is a game of Whac-A-Mole. Miscreant researchers continue to find creative ways to game the publication system: they make fake e-mail addresses to impersonate reviewers, use paper mills, sell authorships and more.

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**Ivan Oransky** is co-founder of Retraction Watch, distinguished writer in residence at New York University's Arthur L. Carter Journalism Institute in New York City, and editor-in-chief of *Spectrum*. e-mail: [ivan@retractionwatch.com](mailto:ivan@retractionwatch.com)

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Meanwhile, the process of retracting a paper remains comically clumsy, slow and opaque – often taking years, if it ever happens at all. That's caused by publishers, who frequently act as if admitting to accepting flawed papers threatens their reputations and bottom lines.

Often, corrections to the literature don't take place because of lawyers, who are not afraid to threaten litigation when their clients are accused of error or wrongdoing. Such actions rarely succeed, but they strike fear into publishers and slow down efforts to correct the record.

Even if a paper is retracted, the record can still be harmed. Retraction should stop researchers from building on unreliable work. A retracted paper should never be cited without noting the retraction. A study of almost 400 anaesthesiologists, published this month, found that nearly 90% were unaware that papers they'd cited had been retracted (A. De Cassai *et al. Anesthesiology* [https://doi.org/h6gx;2022](https://doi.org/10.1093/anaesthesiology/h6gx;2022)) – just the latest in a series of studies showing that researchers continue to cite retracted papers.

The story of Scott Reuben, which Adam was first to report on in 2008 and 2009, is illustrative. Reuben, an anaesthesiologist studying painkillers, was found to have faked data in clinical trials, and eventually went to prison for charges related to scientific misconduct. Twenty-five of his papers have been retracted. But, in the decade after his story came to light, those papers were cited hundreds of times. Only 40% of those citations noted that the work was retracted (I.-S. Szilagyi *et al. Scientometrics* **127**, 2611–2620; 2022).

This is bound to happen when publishers fail to flag retracted papers on their own sites or communicate consistently with indexing services. To combat this, authors should use services such as EndNote, Papers, Third Iron or Zotero, all of which integrate with our database and automatically flag retractions.

Cleaning up the literature will take more than just alerts to authors who are pulling together citation lists. Publishers should incorporate reliable retraction checks into their submission and review workflows.

Retractions must be supported as an essential part of healthy science. Sleuths should be compensated and given access to tools to improve the hunt for errors and fraud – not face ridicule, harassment and legal action. Publishers could create a cash pool to pay them, similar to the 'bug bounties' that reward hackers who detect flaws in computer security systems. At the same time, institutions should appropriately assess researchers who honestly aim to correct the record. Retractions should not be career killers – those correcting honest errors should be celebrated.

Of course, failing to prioritize these issues will ensure that Retraction Watch is around for at least another dozen years – which we are confident will come to pass. We have never been short of material.