# Research Integrity and AI: A Conversation with Springer Nature's Chris Graf

Chris Graf is the Research Integrity Director for Springer Nature where he drives the development and implementation of research integrity strategy and process. With a wealth of experience in publishing acquired through various editorial, business development, and managerial roles, he specializes in research integrity. Chris brings over 15 years of voluntary service with the Committee on Publication Ethics, including a tenure as Co-Chair. Currently, he contributes as a member of the program committee for the World Conferences on Research Integrity.

Chris participated in GUIRR's webinar titled "Research Integrity: A Multi-Sector Imperative," where he discussed how publishing firm Springer Nature is working to address and maintain research integrity. Following the webinar, numerous participants raised publishing-related queries, which we forwarded to Chris for detailed responses to be shared within the GUIRR community. In case you missed the webinar, you can access the recording here.

*Generative AI presents challenges to research integrity, but it may also offer opportunities, such as writing in English for non-native English speakers. Who should be part of the determination of where and how Gen AI might appropriately be used in scientific publications?*

Publishers have always been at the forefront of technological innovation, and most of us have been using and incorporating technologies such as machine learning and artificial intelligence (AI)— increasingly including large language models (LLMs) and generative AI tools—to enhance access, quality, and integrity and to accelerate innovation.

A recent survey undertaken by our colleagues at *Nature* showed that:

- More than 50% believe AI tools will become very important or essential to them in their work;
- Two-thirds believe that AI provides faster ways to process data for example;
- And over half already think AI has the potential to save scientists time and money.

As part of its opportunity it can support and improve the quality of published material for non native speakers - writing up research takes 51% more time for non native speakers - so it can support more researchers in being able to publish, diversifying where research is published from and supporting a more equitable landscape. It can also help with the speed of publication and improvements for all stakeholders across the publishing process - as we have seen at Springer Nature with the introduction of our in-house and AI supported peer

review platform. We have actively embraced AI, and have done for some time, in order to take friction out of publishing research and make publishing, finding and using research quick and simple.

But alongside its many opportunities, there are barriers that need to be overcome and concerns are very prevalent. The same *Nature* survey showed that 58% of respondents believe it could entrench bias or discrimination in data, can it make fraud easier (55%). An additional challenge is that current integrity-checking tools are not adapted to GenAI, and developing that capability is going to be difficult.

As the landscape for AI grows, there is an increased need for guidelines and support to ensure its appropriate use for publishing and scientific communication. And whilst I would say GenAI and its wider use within scholarly communication is something that we all have to take ethical responsibility for to ensure its effective use whilst maintaining the integrity and quality expected of scientific publication, increasingly the community is looking towards publishers to provide support and guidance.

One way in which we have been looking to do that at Springer Nature is through the creation of our AI governance process. Made up of internal staff, alongside feedback from partners, the governance process and team is there to guide and work alongside our innovation process to make sure we go at the right pace and always have a human in the driving seat. The output of this, has to date included the implementation of policies, training and guidelines (alongside those issued by the sector) to

support our community of authors and editors, and to guide its use.

AI is moving quickly, and so as individuals and as a sector, we need to remain nimble and adaptive to its change. Industry bodies such as the STM Association continue to publish sector wide guidance and recommendations. It is our responsibility as a collective whole to continue to monitor ongoing developments in this area closely and review and update our policies and approach to AI as appropriate. Ensuring clear advice, guidance and support, to maintain both the quality and integrity expected of scientific publication.
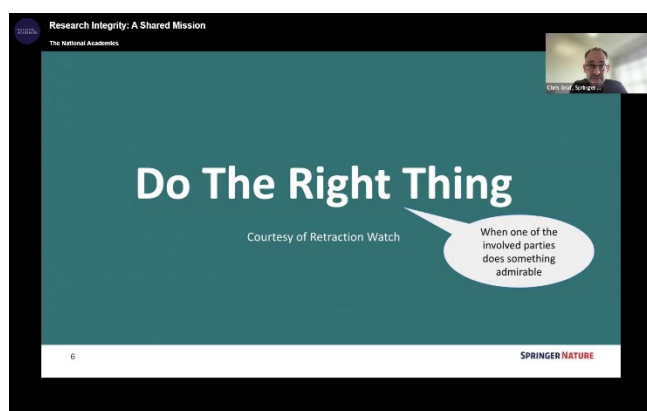


*What can researchers and peer reviewers do to combat plagiarism beyond the current actions of publishers? Are AI plagiarism detection tools, like Geppetto, available and being used by peer reviewers or only by publishers?*

It goes without saying that the most trustworthy, robust research emerges when researchers adopt best practices from the outset and peer reviewers play an essential role in the publication process and the publication of sound ethical and high quality research.

I think, however, with the continued changes in research publishing and the increasing ways in which the academic record is being circumvented, we do need to ask ourselves whether the expectations on peer reviewers and the process are realistic - do they include expectations to "detect fraudulent and erroneous research" or to effectively address concerns about plagiarism and reproducibility?

Ultimately we all have a role to play in ensuring research is robust and researchers have behaved ethically, however there is a considerable difference in the tools that publishers, institutions, journals, peer reviewers have at their disposal to be able to do this. Peer reviewers and authors as experts within their fields will naturally spot and be able to investigate simpler matters in plagiarism

and ethical conduct, but when it comes to more complex cases, being able to combat those requires access to more documents and the need for careful and impartial investigations, which most will not have access to, or be able to do.

Our role as publishers is to work collaboratively with our community to ensure we understand and correctly support their needs as research publishing continues to change. At Springer Nature we have an ongoing research project to understand the integrity-related needs of researchers, undertaken first in Australia, then the US, UK, and India, now in Japan, and soon in further countries. This research equips institutions and funding agencies with insights into their researchers' and communities' understanding of research integrity and training needs, helping them to support their academics and deliver better research practices.

We have also created resources, including online, free-to-access training to equip researchers with what they need to adopt best practice in their research, and these will be updated on a regular basis. Our own editorial policies are continuously reviewed and updated to promote best research practice and encourage researchers to share data, increase transparency and reproducibility, improve citation diversity and promote responsible authorship practices, as well as to take into account developments that are rapidly changing the research landscape, such as AI.

And we can and continue to do more. This is and should be a collaborative effort across all stakeholders, sharing knowledge, best practice, ensuring ethical standards are there from the start, and providing training, investment in better tools, and supporting each stakeholder in the effective role that they can play in maintaining the integrity of the academic record.

*As an aside - It is also worth saying that at Springer Nature, despite the progress generative AI tools have made, they still have considerable limitations: they can lack up-to-date knowledge and may produce nonsensical, biased or false information. Manuscripts may also include sensitive or proprietary information that should not be shared outside the peer review process. For these reasons we ask that, while we explore providing our peer reviewers with access to safe AI tools, peer reviewers do not upload manuscripts into generative AI tools. If any part of the evaluation of the claims made in the manuscript were in any way supported by an AI tool, we ask peer reviewers to declare the use of such tools transparently in the peer review report.*

*Can you dive into the publisher's perspective on retractions?  What is the impact on the publishers when this happens? How can we ensure that versions of inaccurate articles that reside in repositories, e.g. accepted manuscripts or preprints, are also corrected or retracted?*

Retractions can be for honest errors, or for research misconduct, or for something in-between. Whilst there can be a negative stigma around retractions, often people look to retractions as a marker for quality in research integrity and publishing ethics. Retractions give us a sign that publishers are working with researchers when problems arise, either with integrity or with ethics (or with both), to address those problems in a robust and increasingly transparent way.

By correcting the scholarly record transparently and responsibly, our role as a publisher is to uphold the credibility of research, the academic record and build trust in science – which in the age of fake news and digital manipulation is paramount. They are a key part of our commitment not only to science and the quality of research, but to the community at large who use, re-use and build upon knowledge to tackle issues that have real life impact for you and I.

*The National Science and Technology Council's Subcommittee on Scientific Integrity, has drawn a distinction between Research Integrity (the actual conduct of research) and Scientific Integrity, which can include communicating about, managing, or using scientific info in policy and decision making. Can you comment on this topical overlap within publishing?*

Integrity in how research is translated from research itself into policy and innovation is a topic being explored in great depth by participants at the upcoming World Conference on Research Integrity, with the goal of issuing a statement after the conference is over. A core group formed of members of the Conference Programme Committee have put together thoughts to provoke conversation at the conference, at this link https://wcri2024.org/focus-track/. Discussion will prove stimulating, and I'm sure the resulting publication will be insightful.