

EDITORIAL

So long, and thanks for all the papers about fish (and other organisms too)

Steven Kelly, Editor-in-Chief, Biology Open

I took over as Editor-in-Chief at Biology Open (BiO) in 2018. Before I got stuck into making changes at the journal, I reflected on the changes in the publishing landscape in the biological/biomedical sciences since I started my scientific career. I wanted to understand how publishing was changing from the author's perspective and how these changes were manifest around the world. I wrote about how science was becoming more international, how we were working more collaboratively than ever before, and how we were asking important questions in a broader range of species (Kelly, 2018). I also wrote about the challenges of promoting equality and equity in scientific publishing, how publishers could reduce the barriers to publication, and what I hoped the future of publishing might look like. After five years as Editor-in-Chief of BiO (Fig. 1), the time has come for me to hand over the baton to someone else. However, before doing so I want to reflect on what we have achieved and on the challenges we have faced over the last five years.

The meteoric rise and fall of paper-mill papers

For some reason, my first Editorial as incoming Editor-in-Chief had a giant picture of my face with a big cheesy grin beaming out at the readers. I thought about posing for the same photo "five years after" (I think I still have the same jumper in a drawer), but the almost complete loss of hair colour, the enormous bags under my eyes, and the furrowed lines on my face might give the false impression that the Editor-in-Chief role was somewhat taxing. There certainly were great challenges, perhaps none more difficult than the torrent of fake "paper-mill" papers that attempted to flood BiO around the time I took over (Kelly, 2018). Unfortunately, we didn't see it coming, and our approach to give the authors the benefit of the doubt meant that we were deceived before we realised what was happening (Hackett and Kelly, 2020). Moreover, our adherence to the COPE core practices on publishing means that it can be slow and difficult to undo the damage caused by these fake papers, with authors almost infinitely delaying the process if they are so inclined.

Dealing with paper-mills has been a sobering process (Hackett and Kelly, 2022; Kelly, 2022). I've often wondered about the motivation and incentives that ultimately lead authors to attempt to publish fake papers. I'm sure they didn't start out their scientific careers looking to deceive, and I truly feel heartbroken when I imagine what it must be like to be in a position where it feels like there is no option but to try to publish fraudulent science. Although we are experts at spotting likely fake papers now, and to the best of our knowledge and ability none ever get sent to review, we can also see that the application of this strong selection pressure is leading to

rapid evolution in the quality of fake papers. Over the last few years, they have been getting more sophisticated, more believable, and harder to spot. Moreover, I am concerned about the increased use of language models to generate entirely fabricated papers. How will ethical publishers rise to the new challenges that this revolution creates?

My co-author is a chatbot

Although I am concerned about the use of language models (and other AI tools) to generate fake text, I fully support the use of these tools to help researchers better communicate their results. Writing is hard. This Editorial, for example, has been a work in progress for several weeks as I dive in and out, adding bits and pieces between teaching, research and other activities. I often know what I want to say, but find it difficult to find the right order of words to communicate these ideas effectively – I must have re-written that last sentence three or four times in the last few weeks. If English wasn't my first language, I can't imagine how hard it would be to write clear and coherent sentences about complicated biological phenomena. I believe that AI will be a fantastic tool that will help researchers communicate their work more efficiently and more effectively. Already, it is quite good at turning bullet points into paragraphs, paraphrasing and correcting grammatical errors in text. I am very hopeful that AI will forever banish the phrase "The authors should have their manuscript checked by a native English speaker" from reviews, and that it will reduce global inequality in scientific publication.

Supporting Future Leaders in the biosciences

One of the most inspirational aspects of working for The Company of Biologists is their dedication to supporting and empowering early-career researchers. They offer a range of funding opportunities, from small travel grants to larger fellowships, to help young scientists pursue their research goals. They also organize workshops to help researchers collaborate with other scientists in their field. This was one of the reasons why I was excited to take up the role of Editor-in-Chief of BiO. I wanted to expand the journal to better support the early-career researcher community by providing a platform for early-career researcher content, by highlighting their work, and by providing career-development opportunities. I also wanted to build on The Company of Biologists' legacy of support for early-career researchers to find new ways to make scientific publication more equitable, fairer and more accessible. To achieve this, I launched two early-career research focused initiatives: the Future Leader Review series and the A Year at the Forefront series (Kelly, 2021; Kelly and Johnson, 2022).

These initiatives were inspired by a problem that many early-career researchers face as they set out to establish their own research identity – demonstrating independence. This is often difficult to achieve when working in a lab led by someone else because hiring committees can fall into the trap of assuming that research projects

Department of Biology, University of Oxford, South Parks Road, Oxford OX1 3RB, UK.

Author for correspondence (steven.kelly@biology.ox.ac.uk)

 S.K., 0000-0001-8583-5362

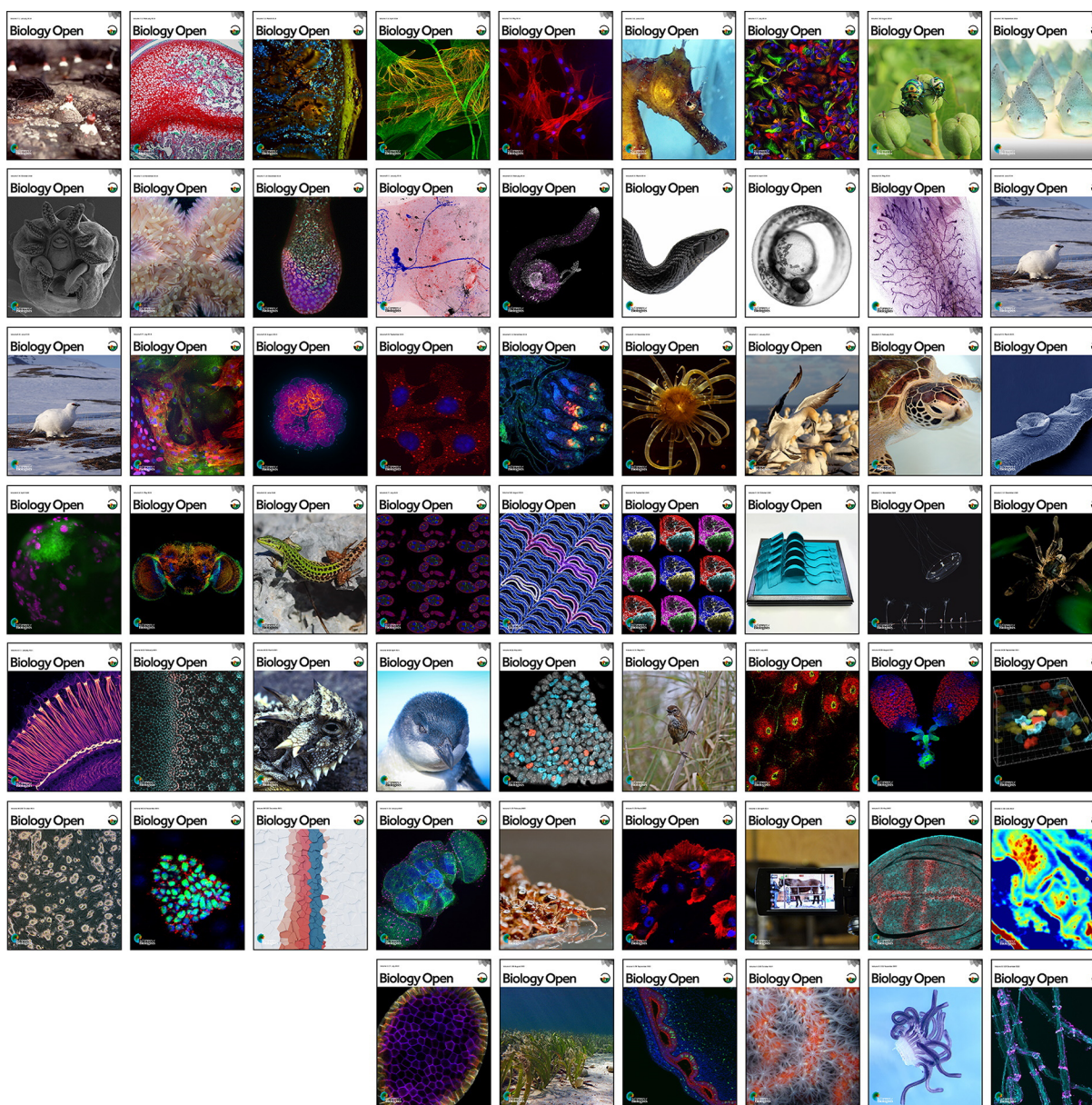


Fig. 1. A selection of cover images from my tenure as BiO Editor-in-Chief.

were the sole idea of the PI. It can then be difficult to develop a unique identity that is distinct from the research group in which you are working. Both the Future Leader Review and A Year at the

Box 1. Feedback from Future Leader Review authors

- It helped me with independent fellowship applications where I could showcase that I can write reviews without my supervisor.
- It was the lab's first independent review and the students involved got a sense of accomplishment and learnt a lot in the process.
- It has provided an opportunity to highlight to the community that I am an independent thinker.
- It was my first corresponding author review and it helped with year 1 evaluations.
- It helped immensely with team building.
- It's a great way to get others to know you and to learn about your field of research and future ideas.

Forefront programs solve this problem by providing a platform for early-career researchers to publish a substantial piece of work that expresses their own views and ideas on their chosen field of research. Feedback from the early-career scientists who have contributed to these series has been overwhelmingly positive (Box 1). Writing a Future Leader Review has helped our authors to demonstrate independence, build networks, and advance their careers. For me, this has been one of the most rewarding aspects of being Editor-in-Chief and I will really miss working with BiO early-career authors.

Making a small change can result in a big impact

The clue to the drive behind The Company of Biologists' commitment to supporting and inspiring biological research is in the name. At every level in the organization, there are passionate biologists who are dedicated to making an impact, whether it be through the journals or through the community sites such as the

Node, FocalPlane, or preLights. However, being biologists, we are also acutely aware of the impact of our activities on biology, through climate change and biodiversity loss. Accordingly, The Company of Biologists has taken important steps towards supporting biologists to continue to communicate productively while minimising their impact on the environment. For example, through the Sustainable Conferencing Initiative, The Company of Biologists has been experimenting with ways to promote virtual interactions, and adopting virtual conference technologies to support hybrid or hub conferences. Also, The Company of Biologists' Sustainable Conferencing Grant offers funding to assist with the cost of innovative ideas that will enable events to become more sustainable. By providing these opportunities, The Company of Biologists has been creating new ways for all of us to share research in a more sustainable way.

As Editor-in-Chief of BiO, I wanted to integrate the journal into the wider sustainability activities of The Company of Biologists. The idea for how to do this was relatively simple – what if every paper that we publish in one of the Company's journals could make a small positive impact on biodiversity. When you take this small impact and scale it up by the number of articles that they publish, then this tiny change could result in a tangible real-world positive impact on biodiversity. Fortunately, the idea gathered support from the other Editors-in-Chief and from the Board of Directors, and after a couple of years of research and development, the Forest of Biologists was launched earlier this year (Moulton and Freeman, 2023) (Fig. 2). Already, the project has resulted in the planting of over 500 trees on the site of an abandoned open-cast mine in Derbyshire and has resulted in the protection of over 1400 trees in an ancient temperate rainforest on the shores of Lake Windermere in the Lake District. I really believe that, as a biology-focused publisher, it is right that we take action on biodiversity loss because we need to ensure that there will be biology left for future generations to study. Moreover, as David Attenborough eloquently put it “Never has there been a more important time to invest in our own wildlife”. I really hope that other publishers follow The Company of Biologists' lead!

Time to say goodbye

The Company of Biologists serves as an inspiring example of how a scientific publishing organization can not only advance the field of biology, but also support and empower the next generation of scientists and have a positive impact on biodiversity. I am genuinely sad to say goodbye to friends and colleagues, but I am also excited to see where the journal goes to next. I am enthusiastic to be handing over the role to Daniel Gorelick (Associate Professor at Baylor College of Medicine, Houston, TX, USA), who will guide and develop the journal into the future. I am eager to see how Dan will develop the journal to better support and inspire the biological sciences community and look forward to following Dan's journey.



Fig. 2. Representation of the Forest of Biologists (<https://forest.biologists.com/>).

Finally, I can't leave without expressing my heartfelt appreciation for the support and commitment of Managing Editor Rachel Hackett, Senior Editorial Administrator Sue Chamberlain, all of the Editors and Advisory Board members at BiO, and the board of directors at The Company of Biologists. Their commitment and expertise have been instrumental to the journal's success, and enabled the journal not only to provide an excellent Open Access home for research, but also to introduce initiatives that are making a real impact. It is with a heavy heart that I bid farewell to BiO, as I will genuinely miss being part of this community.

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