

Editorial

Maintaining the integrity of the scientific record

This issue of *The Journal of Experimental Biology* (JEB) sees our first retraction of a published article (p. 3764). To put this into context, this is only one of the >400 Research Articles published in JEB this year and is the first retraction since the journal started in 1923. Nevertheless, it is a sad landmark, and one that seems to be becoming increasingly common amongst scientific publications. As a prominent journal in its field, JEB publishes high-quality papers adhering to the accepted ethical standards of scientific publishing. Although the responsibility for the accuracy and content of each paper lies ultimately with the author, in conjunction with their employer/institution, we would like to take this opportunity to reassure authors and readers of the measures we are taking to ensure the accuracy and quality of research published in the journal and to reiterate our policies on what we do if you should discover an error in a JEB article.

The Council for Scientific Editors (CSE; <http://www.councilscienceeditors.org/>), whose mission is to promote excellence in the communication of scientific information, and The Committee on Publishing Ethics (COPE; <http://www.publicationethics.org.uk/>), a forum set up to support and advise publishers and editors on matters relating to best practice in the ethics of scientific publishing, set out clear guidelines on the steps that need to be taken by journal teams to investigate errors within their articles and allegations of research misconduct. JEB and its publisher (The Company of Biologists) follow these guidelines. Obviously, each case is unique and therefore the guidelines are advisory rather than prescriptive. In most cases, errors arise inadvertently with no suspicion of fraudulent activity. Steps taken in these cases depend on when during the publication process an error is discovered.

Many issues are picked up by either the Editor or a reviewer during the peer review process. Authors are given the chance to correct errors during the revision stage or provide further information to support their data; they may even re-run experiments to obtain further data if necessary. Should an author notice an error in their article after publication, there are a number of options, based on the severity of the error. Contrary to popular belief, we are not able to simply 'correct' online errors missed at the proofing stage. Once the issue is published online, this is the definitive version of the article and it may already have been viewed and downloaded. Therefore, if an error affects scientific meaning or author credibility but does not affect the overall results and conclusions of the paper, our policy is to publish a correction – either in the form of a Corrigendum (if the error was made by the author) or an Erratum (if the error was introduced by the journal during the editing/proofing stages). The costs of publishing a Corrigendum are charged to the author; costs relating to Errata are obviously picked up by the journal. The Erratum/Corrigendum is published as a separate article and is also appended to the PDF of the original article online; linking of online articles allows us to clearly indicate the existence of an Erratum/Corrigendum to readers of the original article.

A high proportion of errors relate to images. When preparing manuscripts, we ask authors to adhere to strict guidelines, which are clearly stated in our Information for authors (http://www.biologists.com/web/submissions/jeb_information.html):

'Adjustment of digital images with computer software is acceptable. However, the final image must remain representative of the original data, and the corresponding author will be asked to confirm this at submission. Unacceptable manipulations include the addition, alteration or removal of a particular feature of an image, and splicing of multiple images to suggest they represent a single field in a micrograph or gel. Adjustments applied to the whole image are generally acceptable if no specific feature of the original data is obscured as a consequence. If evidence of such inappropriate manipulation is detected, the journal may ask for the original data to be supplied and, if necessary, revoke acceptance of the article.'

Thus, for example, if authors have used cropped western blots in their figures, we may request original versions for the referees and Editor to view. As image software becomes increasingly sophisticated, it becomes much easier for authors to 'tidy up' images. In most cases, this does not represent fraudulent behaviour; however, the advances in image software technology make it far easier nowadays to detect any form of image interference. Cases of suspected manipulation are often checked by an independent expert in the field before being referred back to the authors and, depending on the circumstances, employers or institutions may be asked to carry out an investigation, in which we encourage them to take an educational/supportive role rather than a punitive one.

Retraction is the most extreme outcome when an author or reader identifies a problem in an article and is only invoked when a paper is felt to have one or more significant errors or inaccuracies that change some or all of the results or conclusions described therein. Retractions may be requested by the author(s), employer/institution or journal. Depending on who alerts us to the potential errors, the Editor-in-Chief may appoint an independent expert to investigate any claims made and to provide a detailed analysis of their findings. The Editor-in-Chief requests an explanation from the author(s) as to how the errors or inaccuracies occurred and may ask the employers of the authors, or some other appropriate body, to investigate and to consider the possibility of fraudulent behaviour. Retraction is not a decision that we take lightly because it has far-reaching implications not only for the journal but also, and more importantly, for the authors and institutions involved. However, in order to maintain the integrity of the scientific record, it is imperative that a journal investigates such cases and invokes such a measure where necessary.

With regard to the retraction in this issue of JEB, we ask you to read the statements and consider the issues carefully.

Hans Hoppeler
Editor-in-Chief

Michaela Handel
Publishing Editor

O. Claire Moulton
Publisher