

## All about Image Integrity at IJC

### Why does IJC check the integrity of images in their publications?

The journal has introduced a quality control procedure of checking manuscripts to ensure the integrity of the data presented in figures. This procedure has proven very useful, as we regularly detect inaccuracies in the figures that can easily be corrected before publication. Only rarely do we face more serious problems or cases of real data manipulation. Authors and readers appreciate this service, particularly as it improves reliability and reproducibility of the data published, and prevents possible damage to their careers or reputations if the issues are handled ahead of publication.

### When are manuscripts checked?

Usually, manuscripts containing images are screened when a revised version of a paper is submitted. At the latest, images and figures are examined before final acceptance of a paper. Already published articles will undergo image scrutiny at the Editorial Office whenever we are alerted that there might be problems with figure images or data presentation.

### Which kind of images are checked?

We check digital photographic images from electrophoretic gels/immunoblots, microscopic images and experimental animals/tumors. Occasionally, also figures including e.g. scatter plots and bar diagrams are examined for integrity. Figures in the main manuscript as well as in the supplementary material are inspected.

### What are we looking for?

We make sure that possible modifications and processing of images comply with our guidelines and are disclosed. Information present in the original images should not be eliminated, and adjustments of brightness, contrast, or color can be accepted only if applied to the whole image. We check if inappropriate image duplication occurs. When the same data are repeatedly presented, we ensure that this is clearly stated. Correct marking of magnified sections from microscopic images is also inspected. When immunoblot images from different gels or different parts of a gel are grouped, we verify that this is appropriate and explicitly labelled. We also make sure that proper immunoblot loading controls are presented.

### When do authors need to provide original source data?

In case figures in a manuscript contain immunoblot images we ask the authors to submit uncropped original blots as supporting material along with the revised version of their paper. It is important that original loading controls from the same gel/blot of the experimental samples are provided as well, even when in the final manuscript figure only one representative loading control is shown. We may ask for additional original data or images at any time during the review process or at the stage of final quality control.

**Which kind of errors are most frequently found?**

The main issues we regularly find are duplicated panels (copy and paste errors), inappropriate splicing of gel sections together with incorrect use of loading controls, and magnification errors in microscopic images.

**What happens when errors in images are found?**

In case of inconsistencies, we distinguish between minor issues that can be clarified in the final version of the paper and more serious matters that need to be addressed right away. Minor issues will be communicated to the authors with the decision letter and are corrected in the final manuscript version. In more serious cases we contact the corresponding author immediately and ask for an explanation and for source data if applicable. In most of the cases the mistakes in figures can be resolved, authors are given the opportunity to revise the figure, and the reviewing process will go on. In very rare cases authors themselves ask to withdraw the paper until they have clarified the issue or we feel obliged to reject the paper and inform all authors and the author's institution because serious image manipulation has been revealed.

**Which procedure is in place when inconsistencies in already published articles are identified?**

Already published articles will undergo image scrutiny as detailed above whenever we have a reliable source that informs us that there might be problems with figure images or data presentation. We have a procedure in place for handling image integrity cases and keep track of any suspected aberrations following the relevant flowcharts issued by the Committee on Publication Ethics (COPE). The corresponding author of the manuscript in question is contacted and, depending on the case, all authors on the paper and the author's institution will be involved as well. Generally, authors collaborate with us to clarify issues. To rectify the publication, a correction in form of an Erratum, an Expression of Concern or a Retraction is then published. Occasionally, we are compelled to publish a correction without the author's agreement and request an institutional investigation when there is clear evidence of scientific misconduct.

**For details about post publication corrections please see our FAQ section about IJC's correction policy.**