

Light microscopy reporting for reproducibility



We announce a cross-journal pilot at Nature Portfolio journals with a goal of implementing standardized light and fluorescence microscopy reporting to improve methodological description and aid in reproducibility efforts.

At *Nature Cell Biology*, we recognize that light and fluorescence images are often crucial to research communication but are aware that reporting of the associated methods can be incomplete. This can be due to the complexity of microscopy hardware and software, nuances of sample preparation or differences in post-acquisition processing. As part of a pilot starting 1 June 2025, editors at *Nature Communications*, *Nature Cell Biology*, *Nature Methods*¹ and *Nature Structural & Molecular Biology*² have developed a reporting table summarizing key aspects of light microscopy experiments that are often under-reported.

We view this as an important step forward in our overall goal of transparency and open research. Previously, it has been shown that imaging methods are poorly described in many biology papers³, which undermines efforts to reproduce key experiments and can decrease the perceived reliability of the reported conclusions. One issue is the lack of clear guidance from publishers on what information is critical to include.

To tackle these issues, we will be asking authors with manuscripts containing light or fluorescence microscopy data to complete a

reporting table containing key information to communicate the equipment and methods used to collect the presented data. These will be requested when revision for the manuscript is invited. The goal of this table is to provide a concise, complete and easy-to-understand format for presenting crucial aspects of image collection and processing.

Our multi-journal pilot will run for one year until June 2026. The [reporting table](#) is designed by Springer Nature editors for easy use and contains important details discussed with scientists from QUAREP-LiMi⁴, the Consortium for Quality Assessment and Reproducibility for Instruments and Images in Light Microscopy. Authors will provide the reporting table with the other materials required by our journals when the revised version is submitted, and the table will be shared with reviewers. The goal is for this information to be published with the paper as a type of supplementary information, such that it can be easily referred to by the reader, and captures information not requested elsewhere. Both the authors and the reviewers will be sent a short survey to collect data and feedback regarding this initiative.

The reporting table contains five sections. ‘Hardware’ prompts the author for details about the microscope and camera, objectives and lights or filters used. The ‘Quality Control’ portion queries the validations performed on the instrument for the set of experiments described in the manuscript. ‘Methodology’ includes both sample preparation and the fluorophores or dyes chosen. ‘Acquisition’ asks for any image enhancements that were

applied to be described, as well as the software and imaging parameters for data collection. Finally, the ‘Image Processing’ portion requests the authors to describe the software used for analysis and any workflows or parameters applied to the image data presented. We hope this list will be comprehensive but not cumbersome for authors, reviewers and readers alike.

In the interest of fostering reuse of light and fluorescence microscopy data, we also encourage authors to deposit their microscopy datasets in public repositories, as is routinely expected in other fields, such as genomics and proteomics, which has expanded both the community and the value of data. For deposition, we recommend the [Image Data Resource](#), the [BioStudies](#) database, the [BioImage Archive](#) or [figshare](#), which is [integrated in our submission system](#).

We hope that authors, reviewers and readers will benefit from the increased transparency and reproducibility that will come from this pilot and agree that this is an important step forward in standardizing microscopy reporting. We look forward to comments and feedback from the community and encourage you to reach out and share them with us.

Published online: 17 June 2025

References

1. *Nat. Methods* <https://doi.org/10.1038/s41592-025-02738-8> (2025).
2. *Nat. Struct. Mol. Biol.* <https://doi.org/10.1038/s41594-025-01605-6> (2025).
3. Marqués, G., Pengo, T. & Sanders, M. A. *eLife* **9**, e55133 (2020).
4. Boehm, U. et al. *Nat. Methods* **18**, 1423–1426 (2021).