

EDITORIAL

From bench to website

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Scientific publishing

As the foundation of its guidelines on 'Sharing Publication-Related Data and Materials', the National Research Council of the National Academies formulated a lucid definition of the scientific publishing process: 'the fundamental purpose of publication of scientific information is to move science forward. More specifically, the act of publishing is a *quid pro quo* in which authors receive credit and acknowledgment in exchange for disclosure of their scientific findings' (The National Academies Press, 2003). This definition is appealing as it entails the fundamental principles of scientific publishing: the quality of the published research; the full disclosure of the reported findings; and the attribution of appropriate credits to authors. There has recently been an increasing demand for a more traceable publishing process. At *Molecular Systems Biology*, we envision this process as the path—'from bench to website'—leading from the individual data collected in the lab to the final formal report published online. As such, we are determined to provide a more transparent account of how a published work has been evaluated, of what is being disclosed, and of who did the work.

Editorial transparency

The assessment of the quality of published research depends on the critical evaluation performed during the editorial and peer-review process. This process has traditionally, with some rare exceptions, been conducted confidentially. Last year, *The EMBO Journal* pioneered a transparent editorial process whereby anonymous referee reports, editorial decisions and author responses are published alongside published papers (Rørth, 2009). In view of the positive feedback received during this initial phase, this process is now being extended to all journals published by EMBO, including *Molecular Systems Biology*, for all articles submitted after 1 September 2010.

Importantly, referee reports will remain anonymous. Furthermore, unpublished findings that are occasionally included in the correspondence between authors, referees and editors will be removed prior to publication. Finally, authors have the option to keep the editorial process closed and we will closely monitor the feedback provided by our community on this initiative.

As a corollary to this new process, all comments pertinent to the scientific evaluation will be communicated to the authors,

while the confidential section of the referee report will be discontinued. In case of issues concerning, for instance, ethical standards, data integrity, biosecurity, or conflicts of an academic or commercial nature, the reviewers will be encouraged to contact the editor directly.

Data transparency

Improved transparency is desirable not only for the editorial process but also for the research process itself. Nowadays, scientific 'papers' are actually published as online documents and, as such, could benefit from all the technological advances available in our post Web 2.0 era. Although efforts are being made to enhance the cosmetics of online publishing, the fact remains that key data supporting the conclusions of a study are still presented almost exclusively in the form of figures—that is, pictures encoded as bitmaps. Charts, graphs or representative images certainly provide a convenient visual depiction of research data, but re-analysis or re-use of the data is often difficult, if not impossible. As a result, a quantitative biologist may be forced to measure with a ruler a published chart in order to re-extract manually the numerical values and quantitative parameters.

As a simple means to address this lack of data transparency and in line with its open access philosophy, *Molecular Systems Biology* strongly encourages authors to upload the 'source data'—for example, tables of individual numerical values and measurements—that were used to generate figures. Individual source data files can be directly downloaded from the associated figure (see for example <http://tinyurl.com/365zpej>) and are linked to specific panels (and the respective legends) in order to provide the necessary context with regard to the nature of the data. Furthermore, the files themselves need to contain sufficient information to be understandable by (human) readers familiar with the topic of the paper. Admittedly, the issue of data standardization and, crucially, of the associated metadata remains unresolved. In an ideal world, all data would be captured at the source in a standardized machine-readable format and every piece of evidence would remain traceable. It is possible that future electronic laboratory notebooks will offer a compelling solution to this challenging task. In the meantime, however, source data files represent a pragmatic and easily implemented step that integrates naturally within the normal workflow of the research process.

Authorship transparency

To improve transparency at the level of authorship as well, we will include an author contribution statement in our papers. More precise attribution will be facilitated when a system of unique identifiers for individual researchers will be operational, such as the Open Researcher and Contributor ID (ORCID), an initiative supported by many partners, including EMBO and the Nature Publishing Group (see details at <http://www.orcid.org>). Eventually, it is clear that mechanisms will be required to link research data with the respective associated experimental procedures, authors and models so that a publication unit will become a well-structured document that will be easier to search, reproduce and integrate, and will thus serve better the purpose of scientific publishing—‘to move science forward’.

Conflict of interest

The author declares that he has no conflict of interest.

Thomas Lemberger

European Molecular Biology Organization, Heidelberg, Germany
E-mail: thomas.lemberger@embo.org

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