

Changing scientific communication

Transformando a comunicação científica

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Making the results of performed research accessible to the greatest number of people - in the shortest possible time - and allow the scientific community to judge the relevance of the article after its publication. This innovative idea guided the creation of the PLoS One journal, in 2006, and is transforming scholarly communication worldwide.

The evaluation was made by Eric Martens, senior editor of the journal, during a conference presented at the 28th Annual Meeting of the Federation of Experimental Biology Societies (Fesbe) held in Caxambu (MG) between 21 and 24 August.

According to Martens, in 2012 PLoS One published 24,000 articles, with an acceptance rate of 70%. On average, 200 submissions are received and 140 articles are posted daily.

“While many journals reject up to 90% of submitted articles to raise their impact factor, the PLoS One has a unique philosophy: all research consistent from ethical and scientific principles, that contribute in some way to the knowledge of a given area must be published and have free access. We do not reject an article based on its alleged impact”, said Martens.

As the PLoS One aims to disseminate research from all fields of science and medicine, there is no risk of an article, a result of interdisciplinary study be rejected as not fit into the scope of a particular area of study. Studies with negative results, i.e., those that do not prove the hypothesis initially proposed are also welcome.

“There are areas with few options of open access journals, like Paleontology. PLoS One is a good option in these cases”, said Martens.

The editor, however, points out that there are criteria that must be met for the study to be accepted. Besides not having been published earlier and provide new knowledge to the area, it needs to rely on experiments, statistics and analysis of high technical level. All data should be described with a degree of detail that allows its reproduction by anyone interested.

The findings should be presented properly and be supported by the data obtained in the experiments and assessments. The

article must be written in an intelligible form, according to the standard of English language. The research should follow the international standard of ethics and integrity in research.

According to Martens, the reasons for rejection of an article in PLoS One are generally related to fundamental problems of methodology and interpretation of results. “Factors such as poorly designed experiments, insufficient samples, lack of statistical power of the results and improper technique analysis”, exemplified.

In addition to the journal's staff, participate in the review process - which lasts on average 40 days - the so-called academic publishers, experts in various fields who act as collaborators fixed. They decide whether there is need for external reviewers.

“To ensure transparency of the process, a letter of acceptance or rejection of an article is always signed by the responsible academic publisher and this information is also published. The external auditors are also encouraged to sign the evaluation” said Martens.

The model of judgment based on the consistency of the research and its impact has not been shown to be successful in Martens' opinion. But, according to him, there is a number of crucial tools to the successful of such model. The journal's website offers, for example, a comment section and a series of indicators that show how many times the article was accessed and cited, with graphs showing its evolution over time.

Furthermore, the scope of study among the general public is measured by the number of times it has been shared on blogs and social networks.

“We believe that this model of individual metric is a good alternative to the impact factor based on the journal. This is changing the way people think and evaluate scientific research”, he said.

The problem with the concept of impact factor, according to Martens, is the fact that it is based on the average number of citations that articles in a journal receive in a given period - which masks the variations that exist within each journal.

“Nature, for example, has an impact factor greater than 30. But if we analyze the distribution of citations of the journal we will find that it is highly variable. There are some articles that

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have much impact and are cited until today, like the Human Genome Project. And there are others who have been cited only once or twice throughout its history”, he said.

Successful model

For a journal to be considered truly open access (open access), two criteria must be met: the content needs to be available for free on the Internet, without requiring registration or subscription, and readers must have copyright permission to republish or reuse the content as they wish. The only condition is the accreditation of the study to the authors and publishers.

According to his evaluation, Martens states that this model has proven successful and is growing rapidly, driven primarily by institutions such as the European Commission, UK Research Councils, the National Institutes of Health (NIH) in the United States, and the Organization United Nations Educational, Scientific and Cultural Organization (UNESCO).

“These bodies have determined that all the research funded by them should be freely accessible. Some major universities

have also adopted policies to encourage the practice, such as Harvard, Columbia, Duke, Princeton, Stanford and MIT [Massachusetts Institute of Technology]”, he said.

Martens, however, recognizes that currently the cost of publication for those who choose the open access model rests with the researcher. In the case of PLoS One, it necessary to spend about \$1300 for each item. In the journals in which the rejection rate is higher the cost of publication is also usually higher.

“We want to get to the point that the institutions that fund research to understand that make their results accessible freely is an essential part of the process and to assume that cost”, he argued.

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