

# «Trust, but verify»: easier said than done

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Few weeks after the journal *Science* published a very unusual investigation by science journalist John Bohannon showing how many open access journals – among those asking for a submission or publication fee – don't really care about quality and accept for publication studies containing obvious and macroscopic mistakes, collecting money from all over the world [1], the British newsmagazine *The Economist* devoted its cover story to a long analysis on «How Science Goes Wrong», listing many reasons why many scholars think – based on scientific evidence – that the system currently in use to distinguish good science from bad science deserves to be fixed. In particular, the British weekly reminded that «A simple idea underpins science: “trust, but verify”. Results should always be subject to challenge from experiment», and noticed that «Modern scientists are doing too much trusting and not enough verifying - to the detriment of the whole of science, and of humanity» [2].

Both articles were criticized. Some objected that John Bohannon's long article was not scientific enough, because it sometimes used as synonyms “open access” and “fee-based”, with the result that the criticism towards the “predatory publishers” looking for authors' fees reflected badly on the open-access movement, which didn't deserve the blame [3]. In a way, *Science* was criticised for publishing in its pages a sting written in a journalistic style,

which at times requires to sacrifice precision for the sake of readability. But Bohannon subsequently rebutted, in an interview to the website “Scholarly kitchen” [4], all the objections, adding that out of the 157 journals that accepted for publication the fake study with the self-evident elementary mistake (some of which are published by top publishers) only one appeared to have been closed [5].

The wider-ranging analysis by *The Economist* also caused a strong reaction in the scientific community, well summarised by neuroscientist Jared Cooney Horvath in a guest blog on *Scientific American*: «It is a possibility that public faith will dwindle if it becomes common knowledge that scientists are too-often incorrect and that science evolves through a morass of noise. However, it is equally possible that public faith will decline each time this little secret leaks out in the popular press. [...] Many of my colleagues worry that honesty and full disclosure will tarnish the reputation of science. I fear, however, that dishonesty will accomplish this much faster. In the end, we must trust that the public and granting bodies can handle the truth of our day-to-day reality. The story of legitimate science may not live up to the ideal - but at least it is the truth. Isn't that what science purports to be all about?» [6].

Two more events of the last three months, both involving bad science and articles' retractions, provide strong enough evidence

that the emphasis on verification, in the search for a more reliable truth, can be expensive, and end up in courts.

In November, the editor of the journal Food and Chemical Toxicology announced online that the controversial paper by Eric Gilles Seralini and colleagues that associated the consumption of genetically modified corn with an increase in the incidence of cancer in mice was being retracted from the journal: «Unequivocally, the Editor-in-Chief found no evidence of fraud or intentional misrepresentation of the data» the retraction notice read. «However, there is legitimate cause for concern regarding both the number of animals in each study group and the particular strain selected. [...] This retraction comes after a thorough and time-consuming analysis of the published article and the data it reports, along with an investigation into the peer-review behind the article» [7]. The scientists – who had been strongly criticised at the time of publication also for the

non-disclosure agreement they imposed to journalists barring them to seek commentary from scientists not involved in the study [8,9] - replied by threatening to sue the journal «to require financial compensation for the huge damage» [10].

A different use of courts was envisaged against the US blog RetractionWatch, by science journalists Ivan Oransky and Adam Marcus, that has been collecting retraction notices and investigating on them since 2010: someone in India first copied some posts that specifically mentioned one researcher, and then pretended to own the copyright on those posts, obtaining a take-down notice based on the Digital Millennium Copyright Act (DMCA). Luckily enough, in was a Pyrrhic victory, since the Internet company running the wordpress blog platform - Automattic – decided to side with RetractionWatch and strike back, suing the perpetrators to fight false copyright claims that hide attempts at censorship [11]. A fight science should probably be grateful for.

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