

The insider's guide to plagiarism

Scientific plagiarism—a problem as serious as fraud—has not received all the attention it deserves.

Reduced budgets are affecting research just as they are every sector of the economy. So, how can struggling scientists increase their chances of securing their share of financial resources in these tough times? Publish, of course!

What? You don't have the resources to do the experiments? Don't worry! A little creative writing might be all you need to sail through the financial crisis. Here's how: use a solid paper as your base; carry out a parallel set of experiments in your favorite model; tweak the data so that the numbers are not identical but remain realistic; and, when you're ready to write it all up, paraphrase the original paper *ad libitum*. Last, submit your new manuscript to a modest journal in the hopes that the authors of the paper you used as 'inspiration' won't notice your 'tribute' to their work—even though imitation is supposed to be the sincerest form of flattery, their approval of your 'reworking' of their paper cannot be guaranteed. If all goes well, getting a couple of these manuscripts under your belt might make all the difference when you apply for that elusive grant.

Does this strategy work? Unfortunately, all too often it does, even though many eyes examine every paper before it ends up on a printed page. And when scrutiny identifies cases of potential plagiarism, serious corrective action doesn't always take place. Consider a recent report (*Science* 323, 1293–1294, 2009) in which software tools and manual comparison helped identify cases of suspected plagiarism. When the authors of 163 suspicious studies were contacted, about 30% disavowed misconduct, and over 20% of coauthors claimed no involvement in writing the papers.

Journals' responses aren't necessarily better. Not long ago, we learned that a recent paper in another journal (which we will call Journal B) looked a lot like a *Nature Medicine* article from six years ago. Upon side-by-side comparison, we found that the experimental design and organization of the new paper, including many of the figures and much of the text, closely resembled those of our original report, yet our article wasn't even among the references.

Our authors asked us to get involved after receiving a rather unsatisfactory explanation from the authors of the new report. When we approached them, they acknowledged that the papers were indeed similar, but claimed that they had not read our paper prior to initiating their project. Given the extraordinary similarity between the two manuscripts and their virtually identical concluding statements, this assertion was, to say the least, unexpected.

But even more unexpected was that Journal B did not seem to be in a hurry to get to the bottom of the problem. Thus, our authors got no response from Journal B when they contacted it. And when we informed Journal B's editors of the similarities, their response at times was along the lines of "Please keep us informed of the progress of your investigation"—seemingly forgetting that the troublesome paper had appeared in their own journal.

To its credit, Journal B ultimately carried out its own investigation and retracted the work; but why was the process so tortuous? Setting aside the obvious fact that nobody welcomes accusations of plagiarism or having to retract a paper, we must acknowledge that plagiarism can be much more subtle than, say, data fabrication and therefore much harder to prove.

Think, for example, about how many different ways there are to describe a standard method or the basic function of a given protein. Think about the number of times you have encountered the phrase "These results suggest that X is critical for Y and open new avenues for the treatment of Z." In fact, clichés like this one account for a good number of cases of plagiarism and what has been referred to as 'self-plagiarism'—taking parts of your own previous papers to put together the newest one. Some scientists might not even regard these examples as misconduct.

Another complicating factor is language. For scientists whose native language is not English, it can be tempting to 'lift' entire passages from other works because it's simply too difficult for them to effectively organize sophisticated scientific thoughts in another language.

A third factor to consider is the process of paraphrasing. At what point does rephrasing someone's idea become plagiarism? Moreover, crediting someone by citing their work does not provide a bulletproof defense against accusations of plagiarism. Unless you use quotation marks to emphasize that you're quoting someone, you could easily end up in the hot seat.

Journals have a vested interest in protecting their rights over what they publish. It is therefore not surprising that online tools, such as iThenticate, designed to spot similarities between an input text and the published literature, are becoming popular among publishers. But as with every other type of scientific misconduct, it is ultimately the community that needs to set appropriate standards and penalties to fight plagiarism.