

Personal, public costs of scientific misconduct calculated

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This is Dr. Ferric Fang in his microbiology lab at the University of Washington. In addition to being a laboratory medicine physician and a researcher, Fang also studies the reasons behind, and the consequences of, scientific misconduct.

Credit: Brian Donohue

Much has been assumed about the private and public damage of scientific misconduct. Yet few have tried to measure the costs to perpetrators and to society.

A recent study calculated some of the career impacts, as well as federal funding wasted, when biomedical [research papers](#) are retracted. The results appear in the Aug. 15 issue of the journal *eLife*.

In questioning common assumptions, the study authors determined that scientific misconduct typically, but not always, exacts a personal toll in derailing careers. On the public side, the cost to [federal funding](#) sources for retracted research was much lower than they expected.

The authors emphasized that scientific misconduct does more than ruin professional careers and waste funding. False data can jeopardize patient safety, betray trust in the scientific community, and slow research progress.

The rise in misconduct is a troubling sign of problems in the high-pressure scientific enterprise in the United States and some other countries, according to Dr. Ferric Fang, a University of Washington professor of microbiology and laboratory medicine.

Fang is senior author of the study, "Financial Costs and Personal Consequences of Research Misconduct Resulting in Retracted Publications." He explained that dishonesty, such as fabricated or falsified data, is behind most paper retractions, but added that sometimes honest retractions correct a previously undetected error.

A research group consisting of Andrew M. Stern of Perelman School of Medicine at the University of Pennsylvania, Arturo Casadevall of Albert Einstein College of Medicine at Yeshiva University, R. Grant Steen of MediCC Medical Communications Consultants, and Fang analyzed several open databases to answer these questions: What happens to the productivity and funding of discredited biomedical researchers? What is the price of retracted studies for the National Institutes of Health, the largest source of basic and clinical research grant funding?

With a few exceptions of scientists weathering an earlier failure, those proven guilty of misconduct experienced a sharp drop in their research productivity, according to the investigators' review of the publication histories of those named in Office of Research Integrity findings. Being listed in an Office of Research Integrity misconduct filing also correlated with a significant, sustained drop in funding.

Lately, criminal charges for making false statements to the NIH in order to obtain [research funding](#) have been levied in at least one prominent case.

Using publicly available data for 1992 to 2012 and various analytical approaches, Fang, Steen, Casadevall and Stern estimated the direct attributable financial costs to the NIH for retracted studies. In a sample group of 43 retracted articles in which all funding was accounted for, the mean attributable cost was \$425,073 per article. The researchers also estimated the total funding for all NIH grants that in any way supported research reported in papers retracted for misconduct. Their initial figure was \$1.67 billion in actual dollars, which, after adjusting for inflation to 2012 dollars, came in at \$2.32 billion.

Overall, the researchers found that funding for research reported in retracted articles accounted for less than 1 percent of the NIH budget during the period reviewed.

Further analysis suggested that the direct cost to the NIH is higher for retracted papers published in high-impact journals – those with articles that are the most cited in other research papers within two years of publication.

They acknowledged the difficulty in calculating the attributable costs of each retracted study, because funding sources are diverse and not uniformly reported in scientific papers or in research project databases.

The researchers tried to find reasons why they may have underestimated or overestimated, and pointed to additional sources of bias.

Even with such corrections, Fang said, "Our study suggests that research misconduct does not involve a large percentage of research [funding](#) in the United States."

He stressed that this study looks at only a small part of the full financial loss from research misconduct. It did not include the steep expenses incurred in investigating scientific misconduct, or a drop in support for institutions or colleagues with reputations tarnished by association. Nor did it include time and money other scientists spent in unproductive work based on false data.

"The reverberations of fraud throughout the research community might even be greater than the cost of the retracted [research](#) itself," the authors noted.

Fang and his co-authors singled out the greatest immeasurable cost of [scientific misconduct](#): preventable illness or the loss of human life due to misinformation in the medical literature.

Provided by University of Washington

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