

# Men more likely than women to commit scientific fraud

Male scientists are far more likely to commit fraud than females and the fraud occurs across the career spectrum, from trainees to senior faculty. The analysis of professional misconduct was co-led by a researcher at Albert Einstein College of Medicine of Yeshiva University and was published this week in the online journal *mBio*.

"The fact that misconduct occurs across all stages of career development suggests that attention to ethical aspects of scientific conduct should not be limited to those in training, as is the current practice," said senior author Arturo Casadevall, M.D., Ph.D., professor and chair of microbiology & immunology and professor of medicine at Einstein, as well as editor-in-chief of *mBio*.

He added, "Our other finding—that males are overrepresented among those committing misconduct—implies a gender difference we need to better understand in any effort to promote the integrity of research."

In a previous study, Casadevall found that misconduct is responsible for two-thirds of all retractions of scientific papers. The finding was unexpected, since earlier research had suggested that errors account for the majority of retracted scientific papers.

Researchers embarked on the current study to better understand those who are guilty of scientific fraud. They reviewed 228 individual cases of misconduct reported by the United States Office of Research Integrity (ORI) from 1994 through 2012. ORI promotes the responsible conduct of research and investigates charges of misconduct involving research supported by the Department of Health and Human Services.

An analysis determined that fraud was involved in 215 (94%) of the 228 cases reported by the ORI. Of these, 40% involved trainees, 32% involved faculty members, and 28% involved other research personnel (research scientists, technicians, study coordinators, and interviewers).

Overall, 65% of the fraud cases were committed by males, but the percentage varied among the academic ranks: 88% of faculty members who committed misconduct were male, compared with 69 percent of postdoctoral fellows, 58% of students, and 43% of other research personnel. In each career category, the proportion of males committing misconduct was greater than would have been predicted from the gender distribution of scientists. The gender difference was surprisingly large among faculty, said Casadevall, who also holds the Leo and Julia Forchheimer Chair in/of Microbiology & Immunology. Of the 72 faculty who committed fraud, just 9 were female—one-third of the expected 27 if females had

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committed fraud at the same rate as males.

The study did not examine why men are more likely to commit fraud. One possibility is that misconduct is biologically driven. "As research has shown, males tend to be risk takers, more so than females, and to commit fraud entails taking a risk," said Casadevall. "It may also be that males are more competitive, or that women are more sensitive to the threat of sanctions. I think the best answer is that we don't know. Now that we have documented the problem, we can begin a serious discussion about what is going on and what can be done about it."

The researchers had hypothesized that the majority of cases of misconduct would involve trainees, who face intense pressure to publish—a critical step toward obtaining research funds. But they found that misconduct was spread rather evenly across the career spectrum. "You might think that as scientists go up the career ladder, they would feel more secure. But the bigger the lab you run, the more grants you need, which increases the pressures to publish and the temptation to cheat," said Casadevall.

While calling for more research to understand the motives for scientific misconduct, Casadevall recommends periodic ethics training for scientists at all levels of academia. "Right now we target trainees for ethics training," he added. "We don't do anything after they are hired. It might help if universities required refresher courses in ethics, as they do with courses to prevent sexual harassment in the workplace. It won't stop all misconduct, but it's one place to start."

The paper is titled "Males Are Overrepresented among Life Science Researchers Committing Scientific Misconduct." Additional authors are Ferric Fang, M.D., at the University of Washington School of Medicine, Seattle, Washington, and Joan W. Bennett at Rutgers University, New Brunswick, New Jersey.

The authors report no conflict of interest.

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