EDITORIAL

Translated from *Rev Prescrire* **June 2006; 26 (273): 457-458**

Scientific misconduct in biomedical research

The National Institutes of Health (NIH), the main public-sector medical research institution in the United States, finances about 30% of all biomedical research in the country (about half the amount of research funded by the private sector) (1).

In the 1970s and 1980s, a series of cases involving scientific fraud in public-sector biomedical research led to the creation, in 1992, of the Office of Research Integrity (ORI), whose principal mission is to prevent misconduct (a) in scientific research financed by public institutions (NIH, Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), etc.), and to protect whistleblowers who report misconduct (2).

In 2005 the first results of a large ORI survey of researchers whose work had been financed by NIH between 1999 and 2001 was published in the journal *Nature* (3).

A total of 7760 researchers in early or mid-career were asked to anonymously complete a questionnaire that mainly focused on the constraints of daily research but also included a yes/no question on whether they had engaged in one or more of 16 types of scientific misconduct in the past 3 years (3). Ten of these types of misconduct could be considered 'serious', as the researchers knew they were punishable offences.

The response rates were 52% (1768/ 3600 questionnaires) for researchers in mid-career and 43% (1479/4160 questionnaires) for researchers beginning their careers.

One-third of the respondents declared that they had engaged in serious scientific misconduct at least once. **Two types of misconduct were each declared by about a dozen researchers (0.3%): 'cooking' data and concealing conflicts of interest involving the tested product's manufacturer. About fifty researchers (less than 2%) admitted using colleagues' ideas without giving them credit.**

Nearly 200 researchers (6%) said they had concealed research data that conflicted with their own results. Nearly 250 researchers (about 8%) confessed they had failed to respect ethical rules applying to human experimentation. More than 400 researchers (12.5%) said they had turned a blind eye when colleagues produced biased data or overinterpreted their results. Finally, more than 500 researchers (15.5%) admitted having modified the design, methodology or results of a study under pressure from a sponsor.

In total, one-third of researchers who responded to this survey said they had committed at least one of the ten most serious types of misconduct in the previous three years.

Probable underestimate. **The most serious types of misconduct were committed by 28% of researchers who were just beginning their careers (mean age 35 years) and by 38% of researchers in mid-career (mean age 44 years).**

The situation may even be worse than this survey suggests: the researchers who responded to the questionnaire probably failed to declare all types of misconduct, and those who did not respond (58% of those questioned) may have been the worst offenders.

According to the report, the medical research environment in the United States, especially its highly competitive nature, exerts so much pressure on researchers that they are literally forced to err: misconduct allows them to obtain the funds necessary to pursue their careers.

In practice, whether research funding is private or public, a critical mind is a necessary attribute for all end users.

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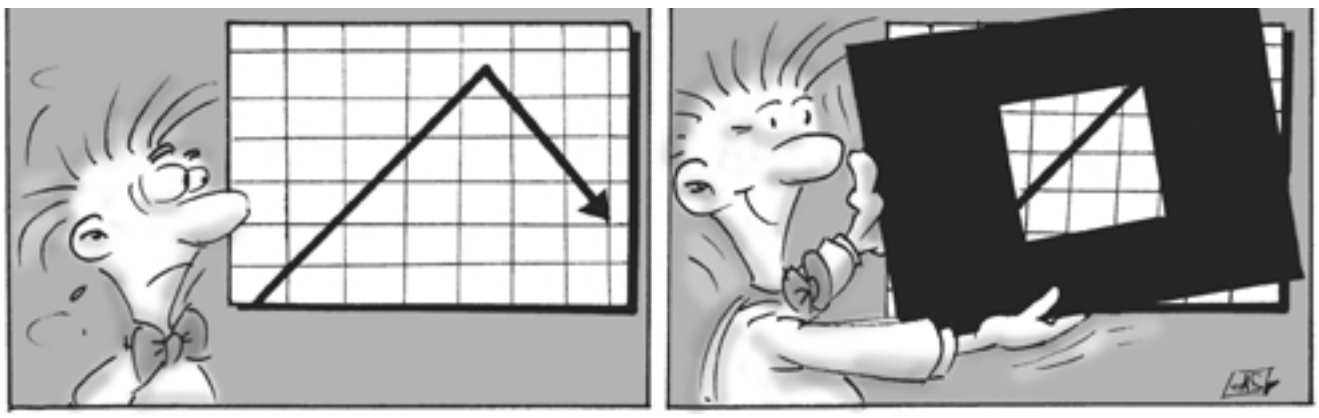
a- In the United States, since June 2005, the official definition of misconduct in scientific research has been "fabrication, falsification, or plagiarism in proposing, performing, or reviewing research or in reporting research results" (2).

1- Moses H et al. "Financial anatomy of biomedical research" *JAMA* 2005; **294** (11): 1333-1342.
2- Office of Research Integrity "Misconduct regulations. Frequently asked questions" Website http://ori.dhhs.gov accessed 17 March 2006.
3- Martinson BC et al. "Scientists behaving badly" *Nature* 2005; **435** (7043): 737-738.



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