

## EDITORIAL

Clin. Invest. (2014) 4(3), 199–200



“Through evaluating a wide variety of researchers, and not just limiting examination to those who have already been reported for misconduct, we will gain a broad understanding on why research misconduct occurs and can ultimately focus on counseling, training and education to address these causes.”

Department of Dermatology, Massachusetts General Hospital, 50 Staniford Street, Suite 240, Boston, MA 02114, USA

\*Author for correspondence:

Tel.: +1 617 726 6755

Fax: +1 617 507 3096

marisa.garshick@gmail.com

## Research integrity in the modern era: current gaps in our knowledge and thinking

Marisa Kardos Garshick\* & Alexa Boer Kimball

Threats to research integrity are a continuing problem among the scientific community and clinical trialists have borne a substantial amount of scrutiny and regulatory bureaucracy as scandals have been uncovered. However, this reactionary approach misses many key areas that bear further evaluation. The emphasis has been primarily on financial affiliations; however, major areas of conflict, such as promotion pressure and other stresses, are likely being overlooked. Moreover, the types of incentives and pressures encountered by basic and translational scientists can be equally intense and equally problematic, yet exceptions are sometimes made for other types of researchers that may not be consistent with the standards clinical trialists are expected to uphold. Lastly, it is important to also understand the motivations that may lead to misconduct in order to prevent them, rather than simply policing them once they have already occurred.

Traditionally, misconduct has been defined by the White House Office of Science and Technology (OSTP) as fabrication, falsification or plagiarism in proposing, performing, or reviewing research or in reporting research results [1]. Although many believe in the strict definition of misconduct recognized by the OSTP, scientists have self-reported multiple practices, including changing the design, methodology or results of a study in response to pressure from a funding source, failing to present data that contradict one's own previous research and dropping observations or data points from analyses based on gut feeling of inaccuracy [2], which still have the potential to undermine research integrity.

However, studies such as these on research integrity have not distinguished whether basic scientists are tempted to engage in the same misbehaviors as clinical researchers and if there are differences, whether they are based on divergent perceptions of risk and gain in these two different settings. While most research integrity and conflict of interest policies do not distinguish between these types of research, they are performed in substantially different environments with varying degrees of oversight. For example, the involvement of human subjects in clinical research may make certain consequences seem potentially graver. On the other hand, clinical research is also more heavily scrutinized in terms of design and results through required reviews from the Institutional Review Board and other regulatory agencies, and therefore the perceptions of discovery or penalties for misconduct may be higher and make misbehavior less likely to occur. However, the rewards of success in the clinical scenario may also seem immediately higher and, therefore, the inducements may be greater. Moreover, while economic incentives have been the focus of most conflict of interest policies, it is also clear that there are many other reasons why researchers may be tempted to engage in research misconduct.

**Keywords:** basic science • clinical trials • misconduct • research ethics  
• research integrity

There is little research on the motivating factors for wrongdoings in scientific research. One study evaluated case files from the Office of Research Integrity and identified causal factors of misconduct from 92 reported actual cases of misconduct [3]. In a previous study, having a sense of entitlement was found to be related to doctoral students' likelihood of engaging in questionable research practices [4]. In addition to personality traits, personal or family situations may arise that influence misconduct. Among these situations, a new baby, loss of family members, and emotional difficulties due to a relationship breakup were cited by individuals who had previously committed scientific misconduct [5]. The workplace environment, including the pressures of 'publish or perish' or internal pressures for tenure track faculty, may lead to competition that ultimately drives research misconduct [5]. Other previously recognized causes of misconduct included insecure position, insufficient supervision and mentoring, lack of control, desire to succeed and please and laziness [5].

Is there an intervention that could be used to combat these issues? Some research has been dedicated to understanding how aspects of the research environment, including mentoring and type of funding influence scientific integrity. Among early career researchers, personal, ethical and research mentoring was associated with decreased problematic behaviors, while professional survival and financial mentoring was associated with more problematic behaviors, suggesting that the type of mentoring can influence scientific integrity [6]. Researchers with involvement with private firms were more likely than those without private interests to report engaging in misconduct and were less likely to always disclose financial relationships, while those with federal research funding were more likely to report inappropriate or careless peer review and were less likely to guide and monitor trainees to ensure responsible research conduct [7].

However, if the risks are different in two different research settings, how we educate and mitigate them may also be different. If, for example, there is a 'gateway' behavior, that tends to be common and associated with increasing risk of committing other research fraud, it is important to identify and monitor for these types of actions more vigilantly. An essential step to achieve prevention is to understand what the motivating forces driving basic science versus clinical researchers to commit wrongdoings are and how the difference in research settings contribute to the motivating forces. Finally, while economic motives are fairly obvious motivators, little systematic investigation has evaluated other factors that may be important.

We propose that further research into the motivating forces driving researchers to commit wrongdoings is imperative. Instead of regulating, we should also be preventing. Among the possibilities that influence misconduct are fear of losing funding or admitting error, desire for prestige, fame, funding or publication, promotion, and impressing superiors. Through evaluating a wide variety of researchers, and not just limiting examination to those who have already been reported for misconduct, we will gain a broad understanding on why research misconduct occurs and can ultimately focus on counseling, training and education to address these causes.

# Financial & competing interests disclosure

*The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.*

*No writing assistance was utilized in the production of this manuscript.*

## References

- 1 OSTP Federal Policy on Research Misconduct. Research Misconduct – a new definition and new procedures for federal research agencies. [http://clinton3.nara.gov/WH/EOP/OSTP/html/9910\\_20\\_2.html](http://clinton3.nara.gov/WH/EOP/OSTP/html/9910_20_2.html)
- 2 Martinson BC, Anderson MS, de Vries R. Scientists behaving badly. *Nature* 435, 737–738 (2005).
- 3 Davis MS, Riske-Morris M, Diaz SR. Causal factors implicated in research misconduct: evidence from ORI case files. *Sci. Eng. Ethics* 13, 395–414 (2007).
- 4 Davis MS, Wester KL, King B. Narcissism, entitlement, and questionable research practices in counseling: a pilot study. *J. Couns. Dev.* 86(2), 200–210 (2008).
- 5 Davis MS, Riske ML. Preventing scientific misconduct: insights from convicted offenders. In: *Investigating research integrity: Proceedings of the first ORI research conference on research integrity*. Steneck NH, Scheetz MD (Eds). Office of Research Integrity, MD, USA, 143–151 (2002).
- 6 Anderson MS, Horn AS, Risbey KR, Ronning EA, De Vries R, Martinson BC. What do mentoring and training in the responsible conduct of research have to do with scientists' misbehavior? Findings from a national survey of NIH-funded scientists. *Acad. Med.* 82(9), 853–860 (2007).
- 7 Martinson BC, Crain AL, Anderson MS, De Vries R. Institutions' expectations for researchers' self-funding, federal grant holding and private industry involvement: manifold drivers of self-interest and researcher behavior. *Acad. Med.* 84(11), 1491–1499 (2009).