

NARRATIVES OF RESEARCH INTEGRITY AMONG BIOLOGISTS AND PHYSICISTS IN THE UK AND INDIA

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Introduction

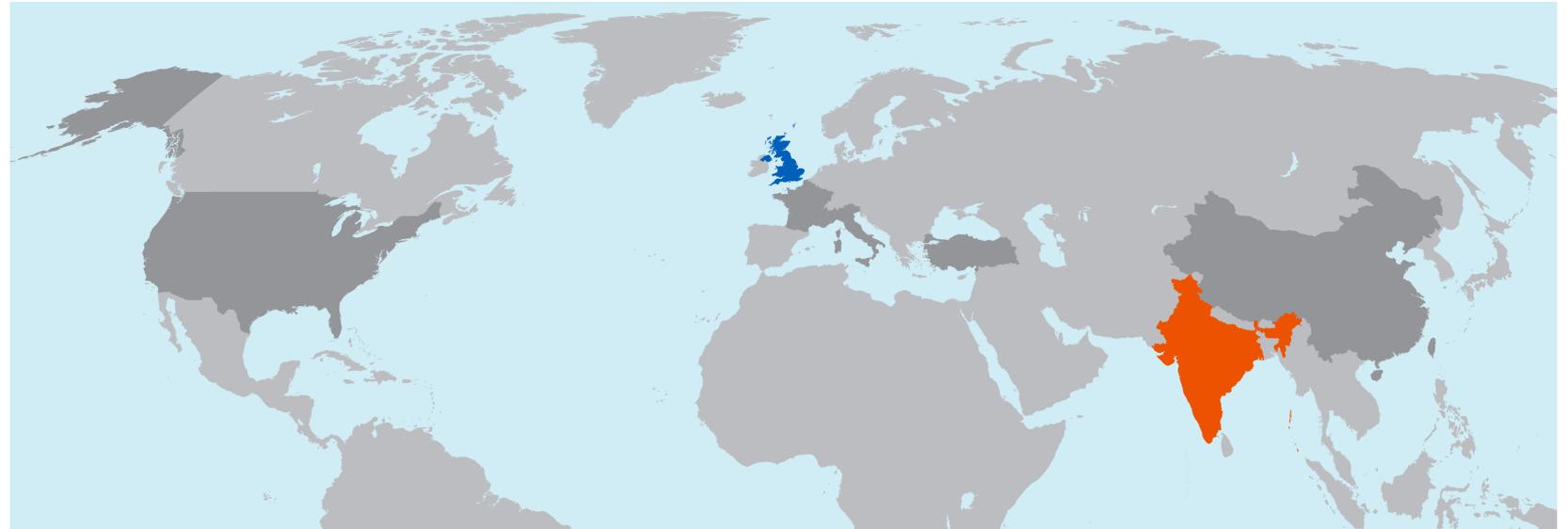
In spring 2014 the stem cell community was rocked again by controversy arising from the fabrication of data on an alternative treatment to create induced pluripotent stem cells. The field was already scrutinized in 2005, after Hwang fabricated several publications on human somatic cell nuclear transfer. Are fraud and other unethical conduct a part of the stem cell and biomedical fields or are these just isolated cases that received excessive media attention? Diverse groups in science, industry, and the public sphere are engaged in ongoing debates about irreproducible results, conflicts of interest and pressure to publish research that encourage scientific fraud. Such tensions are especially significant for biologists. However, biologists are rarely compared to other disciplines to see if the particular issues they face related to responsible conduct of research are really unique.

In this presentation we examined: how biologists compare to physicists in the way they perceive the meaning of research integrity and misconduct and under what conditions biologists think they are obliged to act when research misconduct has occurred.

Methods and Results

The initiative includes a survey of approximately 22,000 biologists and physicists in nine countries or regions and more than 700 follow-up interviews. Scientists were randomly selected from elite (top tier) and non-elite institutions (based on publication histories) and include all level of researchers: graduate students, junior faculty and senior professors. Chosen scientists were asked complete a 60 minute online survey. After completion of the survey, respondents were identified for follow-up interviews to obtain more insight into the reasoning behind answers and gain more details on scientific life and experiences.

Figure 1: Science in an International Context (SIIC)



REGIONS UNITED STATES UNITED KINGDOM FRANCE ITALY TURKEY INDIA CHINA* HONG KONG TAIWAN

The SIIC initiative is a research project to help understand how scientists view religion, ethics, family life and other social and public factors and how these factors impact the work and work environment. For this presentation, we focus on the first two countries completed, India and the UK, and the questions related to ethical difficulties in science.

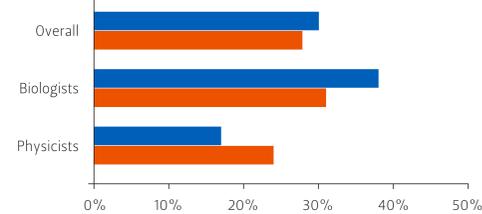
Figure 2: UK and India Survey and Interview Data Collection

For this poster, we analyzed data from more than 3000 surveys and approximately 200 interviews with scientists in the UK and India.



Figure 3: Ethical Difficulties in Research

Scientists were asked in the survey if they had any ethical difficulties in their work. In both the UK and in India more biologists than physicists responded 'yes.'



“... between biology and medicine, there seems to be a lot of falsification of data going on... I think [it] is less prevalent [in physics] because the chances to get away with it are zero... the incentive is less and so the most unethical research, so to speak, you will find is basically just being sloppy.”
—UK05, Phys, R

Conclusions

Our research found that physicists and biologists rarely encountered what they saw as traditional ethics violations: falsification, fabrication and plagiarism, although Indian scientist mentioned plagiarism. However, scientists often cite numerous lesser violations including issues with authorship, reviewer confidentiality and honesty, and irresponsible conduct of supervisors.

Although the two groups of scientists identified similar issues, physicists, in contrast to biologists, tended to see ethical issues as irrelevant to them, perhaps because there are fewer ethical discussions in their training. Similar ethical issues arose in the UK and India, although UK scientists focused more on pressures to publish while Indian scientists addressed institutional issues including accountability and excessive bureaucracy. And under certain conditions, both Indian and UK biologists and physicists utilize religious and spiritual frameworks to think through ethical approaches to science.

Acknowledgements

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Further Information

For more information on this or related projects, please contact Kirstin Matthews at krwm@rice.edu or visit the Baker Institute Science and Technology Policy website at www.science.bakerinstitute.org. A PDF version of the poster is also available at www.bakerinstitute.org/isscr2015-integrity. Follow us on Twitter @stpolicy.



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Figure 4: Narratives of Research Integrity and Ethical Issues Personally Identified by Scientists

While scientists usually associated unethical behavior with fabrication, falsification and plagiarism, most mentioned 'gray' areas. Most common were issues related to 'publish or perish' including irreproducible data and overextended conclusions. Other areas involved manipulation or abuse of the peer-review process, mentorship, and authorship.

Falsification
“Cherry-picking” data is okay because “the devices were unreliable” and “the data subsequently submitted for the paper was real.”
—UK77, Physics, E

Publish or Perish
“So, I think we do live in a world where scientists have to bullshit, which I think is a shame...you never really get a chance to do things properly, because you're always under pressure to produce publishable data and to answer the big questions, which I think is quite hard.”
—UK35, Biology, R

Overstating Conclusions
“Because it is a world of marketing, you always find that people are projecting what they are not, so this is actually killing the spirit of science.” In the attempt to add “glare and the glitter” to one's results, “you are just losing your grip from the basic sciences.”
—IND34, Biology, R

Peer Review
“Suppose if they want some paper to get accept[ed], they send to their peers... [if] they feel that this one has to [be] reject[ed], so you select the sort of referees so that paper... always [gets] rejected, so this is predetermined, sort of thing, that is happening, all around the world.”
—IND52, Physics, R

Author- and Mentorship
“...one of my [student] colleagues who had worked a lot on a project... basically the project [lead] student got the credit for what work was done by my colleague.”
—IND02, Biology, R