

Seeking an International Dialogue on Research Integrity

Scientific misconduct is a global problem, yet protocols for addressing it remain highly fragmented and uneven. A conference held last month in Lisbon aimed to encourage international efforts to promote research integrity and to prevent misconduct.

High-profile cases of scientific misconduct such as that of disgraced South Korean stem cell researcher Hwang Woo Suk have focused new attention on efforts to promote ethics in scientific research. At the time that Hwang published his now infamous research, South Korea lacked a formal policy for reporting scientific misconduct, and the country had no policies in place to protect whistle blowers, says David Resnik, a bioethicist at the National Institute of Environmental Health Sciences in Durham, North Carolina. With science becoming an increasingly global pursuit, international efforts to promote research integrity have gained momentum. "There's no need to panic or say the sky is falling," says Stefan Michalowski, executive secretary at the Organization for Economic Cooperation and Development (OECD) Global Science Forum in Paris, France. "But on a practical level, there's a need to acknowledge the international dimension of the problem," he says. The OECD's Global Science Forum (GSF) comprises science policy officials from OECD countries who cooperate at a government level on issues related to basic scientific research.

In an effort to encourage organizations and governments to consider implementing standard protocols for dealing with scientific misconduct, the GSF has prepared a draft report to provide a starting point for discussions (<http://www.oecd.org/sti/gsf>). This report helped to catalyze organization of the first world conference on research integrity, which was held last month in Lisbon, Portugal (<http://www.esf.org/conferences/researchintegrity>). Co-organized by Nicholas Steneck at the Office of Research

Integrity (ORI) of the U.S. Department of Health and Human Services in Rockville, Maryland and Tony Mayer of the European Science Foundation (ESF) in Strasbourg, France, the conference brought together representatives from 52 countries around the globe. "It was the first time we've gathered this many people together to discuss integrity in research," says Mayer. "We had people from all walks of life in the research world—funders, universities, administrators and researchers." Sponsored by ESF and ORI, the meeting was also supported by other prominent organizations including the International Council for Science (ICSU), the North Atlantic Treaty Organization (NATO), the European Molecular Biology Organization (EMBO), and the Committee on Publication Ethics (COPE).

Promoting Cross-Border Communication

The aim of the Lisbon meeting was not to produce a one-size-fits-all approach to solving issues of scientific misconduct—there was widespread agreement that solutions must be individualized to the needs of each country and institution. Instead, the forum focused on jumpstarting cross-border discussion of the problem, says Mayer. "Science, as it's practiced, is increasingly international and a lot of research structures are international, so if misconduct occurs, it can easily have international implications," says Michalowski. "You need to get data and testimony and you need to get the facts and that may require getting those data from another country," he says. Investigating misconduct can be difficult enough in one's own country, but the problem becomes

even more challenging when the misconduct involves researchers from another country. "Someone may have authority to investigate misconduct in their own country, but they have no such authority in other countries and they may not know who to talk to," says Michalowski.

Meeting attendees all concurred on certain tenets, notes Mayer. "Everyone can agree that fabrication, falsification and plagiarism is wrong—that goes across cultures." Likewise, there was wide agreement that those types of blatant scientific misconduct are rare, he says. But other forms of scientific misconduct are less easy to define, says Mayer. Pressure to publish and new technology have made it easier and perhaps more tempting for scientists to push the envelope a bit. "People sort of touching up their gels—things like that are a lot easier now than it used to be," says Tim Hunt of Cancer Research UK, a speaker at the meeting. "There's a bell curve with absolutely exemplary practice at one end and misconduct at the other and a big bell in the middle representing degrees of questionable practice," says Mayer. "How do we address that? How do we ensure that people don't slide down one side of the bell into the misconduct side?"

Ordinary People, Extraordinary Pressure

One proposed solution that is becoming clear is the need to make changes to the research environment. "There are environmental factors that have a bearing on the way researchers behave, and these factors are definitely addressable and changeable," says ORI's Steneck. As an example, Resnik points to grant review pro-

cesses that pressure researchers to produce preliminary data, which he says can encourage researchers, especially those who depend on soft money, to lie or stretch the truth on grant applications. “Pressure is probably at an all-time high, and a lot of [misconduct] is probably people responding to this pressure,” says Resnik. Convicted fabricators often point to external pressures as the tipping point for their misdeeds. Eric Poehlman, who fabricated and falsified nearly a decade’s worth of work while at the University of Vermont, explained his behavior by saying he felt pressure to continue securing grants so that he could fund the numerous postdocs and graduate students who depended on his support to continue their careers.

While many, like Hunt, argue that a lab leader would have to be crazy to commit an ethical breach with so much at stake, Resnik believes that most cases involve ordinary people who gave in to extraordinary pressure. “There’s evidence that if you make small compromises that leads to larger compromises,” says Steneck. “Some people get caught in the timing of submitting things and they rush, and because they rush they take shortcuts that they might not otherwise take,” says Peggy Fischer, associate inspector general of the National Science Foundation in Arlington, Virginia. Institutions can relieve pressure or provide guidance on how to cope with it, but this won’t entirely eliminate the problem, says Fischer.

Effective solutions depend on leadership, says Fischer. “An individual has to believe that that system has integrity. You have to have a culture where people feel the administration feels, breathes and walks integrity,” she says. “There’s no magic solution,” agrees Michalowski. “But you need strong leaders,” he emphasizes. Likewise, vigilant, meaningful education must be built into the system. “You should have clear rules where people understand what’s expected and required,” says Fischer. Furthermore, people must be familiar with the rules and trust them to work.

One priority discussed in the OECD GSF draft report is the need to strengthen the first link in the chain of response to scientific misconduct. “If you’re a graduate student and you’re working late in the lab and going through the data and you’re beginning to suspect that your esteemed research advisor is faking data, what do you do?” says Michalowski. Unless a person who detects misconduct feels safe blowing the whistle, the problem may go unreported.

Dealing with Misconduct

The Lisbon meeting did not attempt to find an ideal method for handling misconduct but instead provided a forum for delegates to exchange ideas for how to deal with it. Some countries still lack a formalized, documented, publicized process for dealing with misconduct. “They deal with this problem in an ad-hoc basis and when an allegation is made, maybe it gets into the press, then people scramble and they put together a committee composed of trusted prestigious people, and they deliberate and make some sort of decision,” says Michalowski. Other countries have formal processes for receiving and handling allegations. “There really is a spectrum of systems, from improvisation to a quasi-legal system,” he says.

But even if a formal process for dealing with misconduct exists in the country or institution of the scientist suspected of misdeeds, that scientist’s culture may not consider the behavior unethical. For instance, some Asian countries don’t view individuality and individual rights and responsibilities in the same way that Western countries do, and this difference of values can create problems regarding authorship and plagiarism, says Resnik. “Some people may think it’s a common piece of research and it doesn’t matter so much who takes credit for that.” Likewise, “some countries don’t have the same regard for human rights as we do and while we have international codes and standards for human research it’s not always clear how well other countries are adhering,” says Resnik. “Politics is always a potential factor here.”

Steneck considers culture gaps a surmountable obstacle. “There are cultural differences that are going to make the process difficult but every country needs to think about what their cultural differences are, and whether they can be justified,” he says. “You will hear, for example, that we have different attitudes toward authorship in [the US]—we tend to give senior people more credit,” he says. “But you wouldn’t say, well in our country, we just don’t believe in double blind experiments. Does authorship fall into the same realm? It is misleading to put someone on a paper who really didn’t contribute anything, and I don’t think that cultural differences should stand in the way of this,” Steneck says.

Perhaps even more challenging than cultural differences is a shared tendency to view science as a noble pursuit immune to fraud. Many countries and organizations still subscribe to the notion that science is a brotherhood of gentlemen who can’t lie, says Michalowski. “This idea goes back to when science was a much smaller institution and it has survived long after science changed,” says Michalowski. “We don’t believe that science is a special case—in any profession you can have some dishonesty.”

Resnik says that much of the misconduct that turns up in science is simply spill over from problems facing society as a whole. “Surveys consistently show that the incidence of cheating in high school and college is very high, well over 50 percent and it’s unreasonable to expect that these people who were cheating in college will never cheat again,” says Resnik. “It’s not surprising that you find fraud in science—scientists are people too—but we tend to hold scientists up on a pedestal,” he says.

Even with the apparent rise in high-profile cases of research misconduct, many in the scientific community have been reluctant to discuss the problem publicly. “I honestly think it’s better to just quietly deal with a person than to bring in the SWAT team and start some huge public investigation,” says

Hunt. A heavy-handed approach, he says, reinforces the idea in the public's mind that scientists are dishonest. "Every time the whistle is blown, the public says scientists can't be trusted," says Hunt. Michalowski disagrees with this argument. "People may worry that even if your motives are pure, you risk doing harm to the system by exposing fraud, but when the public learns that data were faked in a drug trial, the damage is even greater," he says.

Those who handle scientific misconduct report a rise in the number of cases in recent years, but this may be a sign of better surveillance, rather than an increase in actual incidence. "Our numbers have gone up significantly in the past few years, but we don't know what the baseline is," says Fischer. Misconduct can easily slip under the radar if whistle blowers don't feel safe reporting it, she says. "The system has to have a way to receive allegations in which the person submitting the allegation feels comfortable doing that, so that the fears inherent in reporting—like losing funding or retaliation are reduced to the lowest level possible," she says. Fischer believes that misconduct is underreported but says that no good

comprehensive studies of scientific misconduct exist and without them, it's difficult to quantify the number of actual cases.

International and National Solutions

The Lisbon meeting and GSF draft report provide first steps toward international cooperation on maintaining scientific integrity and preventing research misconduct. However, individual countries are also moving forward with their own policies. For example, Germany has implemented an innovative ombudsman system meant to address problems before they blow up. The system consists of ombudsmen at both the national and institutional level, says Ulrike Beisiegel, chair of the DFG Ombudsman. The national ombudsman is an independent, neutral person trained to mediate and navigate ethical challenges. "Every researcher in Germany can contact us if he has information about someone who might have done something wrong," says Beisiegel. The ombudsman can advise whistle blowers, conduct preliminary investigations, and try to mediate the problem and settle it in an amicable way, if possible. So far, the national ombudsman office has handled about 60 to 70 cases per year, says Beisiegel.

The system has safeguards in place to protect both the whistle blower and the alleged perpetrator of the misconduct. "Our goal is to go in early," says Beisiegel. "Most of the people come to us too late. If it's an authorship issue, it's after the paper is published. So we're setting up a curriculum for students so they know how they should behave and what they should do," says Beisiegel.

The Lisbon conference has encouraged decision-makers to think about the big issues facing them. "The conversations have started, and now we can continue these conversations—that's what we're hoping will come out of the world conference. It's a first step," says Steneck. During the meeting, some suggested that the logical next step should be a series of regional meetings, for instance a group of Asian nations coming together to discuss scientific integrity, says Mayer. "There is a feeling we need to come together again, but where and when is still up for debate."

"I'm optimistic," Steneck says. "Five or six years ago there was very little global interest and that's changed. I think there are significant components of the research community who realize we do need to take these issues seriously."

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