



What is research integrity?

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Research integrity has obviously some overlap with research ethics and both of these concepts have some overlap with, what we call in Europe, responsible research and innovation, which is the societal relevance.

To me, research integrity concerns the behavior of individual scientists, of individual investigators. I'm not saying that that behavior is not influenced by systems and climates. It is concerned with behavior and more specifically, behavior that can hamper validity through signing or trust in science or trust between scientists. That is what I mean when I say research integrity.

And research ethics is everything that concerns the ethical consideration about research with humans and animals. In most countries, we have laws for that. In most countries, we don't have laws for research integrity. And then there is the domain of the societal relevance of research and that concerns the benefits and the harms for society and also for the environment, of course.

Now when someone is pontificating, like I'm doing again today, on research integrity, you typically get this slide. There are three options. This is how the world is meant to be. We call that responsible conduct of research. It's research that's relevant, that's valid, that's reproducible and also efficient. This is the bleak downside, the deadly sins of science, in North America labeled FFP (Fabrication, Falsification, and Plagiarism).

And the gray zone in between to me most interesting, is what we call the questionable research practices - the sloppy science, the cutting corners. And in that domain, people just don't know how good science is supposed to be. People make honest errors because science is not easy and there is already dubious integrity. "I'm now cutting this corner because it's good for my career and it's not so awful for science." Then you are on a slippery slope already.

And there are about 25 surveys being done worldwide in the last ten years, all asking basically the same question: did you, in the last three year, commit FF or P? And then, amazingly, 2% of my colleagues say "yes". That's a lot. And it won't be an overestimation because this is self-reported. It's survey stuff. It will be an underestimation most likely. And that means that when I'm working in a department of 50 scientists, one of them is a fraud. Not in my department, of course. There will be two in the neighboring department, that's clear. It's an average. That's clear. But still. It's a lot. But it is more amazing even, when you look at the questionable research practices arena. One third admits to cutting a serious corner at least once during the last three years. That is a lot. And that is doing damage to science and to the reputation of science.