

Statement by Adriano Aguzzi

There cannot be any ambivalence: fabricating results is a total betrayal of what science is about. Scientific exploration can be hard and frustrating, and many researchers face pressure-cooker workplaces — yet none of that justifies dishonesty. Also, it is not a victimless crime. In my lab, we spent a year trying to advance a project built upon findings that were later found to have been fabricated by a postdoc. Nothing worked, because the reported results were not real. Resources were wasted, reputations were harmed, and the whole team experienced deep personal anguish.

Over 39 years of scientific activity, I trained 109 PhD students and postdoctoral fellows, and work from my laboratory contributed to more than 600 publications. My coworkers and I maintained a research environment committed to rigor and honesty: new results were continuously discussed and challenged, and manuscripts were scrutinized multiple times before publication. As a result, the overwhelming majority of our work was rigorous, honest, and – most importantly – true. So why was I unable to prevent misconduct? My answer is that science, in my lab and everywhere else, is a trust-based endeavor. We often criticize experimental designs, question interpretations, or request additional controls, but we generally proceed from the presumption that the data presented to us are true.

There are good reasons for this presumption. Without it, the enterprise of science would become unworkable. But while most scientists are honorable, some individuals will bend the truth – and may find ways to escape detection. Accordingly, my experience is not unique. History shows that even highly rigorous laboratories can be deceived by determined fraudsters. No research environment is immune, and those who believe otherwise may experience a rude awakening.

When concerns were brought to my attention, I retrieved archival data, reviewed laboratory records, contacted journals, prepared corrections, requested retractions where necessary, and repeated complex experiments some of which are still ongoing. The investigation confirmed that my handling of these matters conformed to good scientific practice. However, no realistic system can eliminate deliberate deception. The equivalent of the “four-eye principle” would be duplication of every experiment – which is financially unsustainable and, in the case of animal experimentation, raises serious ethical problems. Also, talented and idealistic trainees deserve to work in an atmosphere of trust, whereas a culture of routine suspicion would be corrosive.

The process of investigation and correction was careful, fair, and humane. I commend the chief investigator, Prof. Wolfgang Ernst, for his empathy in situations that were stressful for me and my coworkers. Many former trainees from the past 15 years were interviewed as part of the investigation; they confirmed that they had never experienced pressure, from me or others, to produce predetermined results. My comments on our manuscript drafts were found to urge caution, discourage overstatement, and to often request stronger evidence. Team members were instructed to maintain detailed laboratory journals, and indeed raw data, tissue specimens and genetic materials collected since the early 1990s could be retrieved several decades later.

The University is right in recommending clearer documentation, routine preservation of primary data, systematic screening of figures before submission, and independent verification of especially consequential results. I had already implemented most of these safeguards (except for artificial-intelligence based forensics which, with hindsight, I could have deployed more promptly). I even supported the “Reviewer3” initiative as an advisor, which simplifies and partially automates these processes. In addition, I have massively reduced my lab’s headcount, with the result that I am now

more deeply involved in each research project. As a side benefit, my agenda is less crowded, my life is more balanced, and for the first time in decades I was able to take some days of vacation.

I was not always a perfect institute director. I regret that some of my social-media statements were imprudent and caused unnecessary tension. This has made my laboratory a target for malevolent online attacks. In retrospect, I should have been more disciplined. Yet fairness (and common sense) requires distinguishing between those who falsified data and those who were deceived by them. Whereas I never committed, abetted, or tolerated scientific fraud, it is disturbing that those individuals who committed misconduct in my laboratory were never subjected to inquiries or sanctions.

Despite the pain endured, I take consolation from the fact that science is often self-correcting over time. False findings may do real harm, but over time they lose impact, particularly if concerns are investigated, records are reviewed, and amends are made. By contrast, most of our work has stood the test of time, has been reproduced and extended by others, and has contributed to our understanding of biology and disease.

While a small number of individuals violated the trust placed in them, I remain proud of my mentees. Almost two dozen of them are now tenured professors around the world, from California to Germany, Britain, Switzerland, Sweden and China. I am impressed by their accomplishments and grateful for the work we did together, some of which had practical consequences for the safety of patients, laboratory workers, and society. Their contributions are now a permanent part of humankind's scientific record.

Although I have reached the Swiss statutory retirement age, I am not finished with science. I have recently endowed a public-good foundation that will perform not-for-profit research in the field to which I have devoted my entire career. I look forward to continuing to work with brilliant and dedicated coworkers on some of the most difficult questions in neurodegenerative disease, and I am grateful that the University of Zurich has allowed this transition to proceed. Patients and families continue to wait for answers. If my colleagues and I can continue to contribute, even modestly, to understanding these diseases and ultimately to finding ways to treat them, then the work remains worth doing.

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