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EDITORIAL

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# Sluggishness and defensiveness helped enable an executive order on research integrity

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In the last week, *Science* has published commentary condemning and supporting the Restoring Gold Standard Science executive order from the Trump administration that purports to strengthen research integrity in the United States through greater government oversight. The scientific community has largely reacted negatively to the directive, fearing that the way oversight by political appointees is specified in the order will lead to interference in the curiosity-driven process of science. This distress is understandable given the administration's abrupt and arbitrary actions to cut research funding and curtail or even stop the participation of foreign students in research. The United States has been a global leader in science because of high levels of funding, less government interference, and participation of the best talent from around the world. These aspects appear to be in danger, and it is logical to suspect that the executive order is another mechanism for weakening the scientific enterprise

The administration's view, as articulated on this page by Michael Kratsios, director of the White House Office of Science and Technology Policy, is that the struggles that parts of the scientific community have with research integrity justify this action. The so-called "replication crisis," which began mostly in psychology studies that were statistically underpowered, has created the impression that unreliable research is widespread and not reproducible. The steady stream of papers with problematic images revealed by sleuths has been interpreted as a sign that large numbers of life sciences papers are questionable. And the concentration of many of these errors in Alzheimer's disease research, where the stakes are high and the investigators are prominent, has created a perfect target for political attack.

The scientific community needs to face up to the extent to which its own actions have fed this perspective. Although science is driven by data, politics and public opinion are shaped by anecdotes and storytelling. Thus, pointing out that many of these incidents are the result of a small number of actors does nothing to change the political narrative. The sluggishness of journals and institutions to respond to problems in research integrity is also fodder for criticism. But more important, the defensiveness of investigators and institutions in responding to problems severely heightens the suspicion. Rather than filing lawsuits and hiding behind carefully crafted statements, the scientific community should be engaging in a conversation about problems and potential solutions.

The reaction of the Alzheimer's research community to problems with papers on amyloid proteins is a case in point. Investigations of numerous studies across multiple laboratories raised substantial doubt about their validity. The reaction of amyloid researchers largely has been to characterize the situations as "rare fraudulent research," rather than owning the fact that in the public eye, these incidents are persuasive and easily used for political attacks. In another case, a prominent neuroscientist went to great lengths to show that he personally "did not engage in any fraud or falsification of scientific data," even though the problematic papers came from the lab that he ran. This appears to the public as an effort to absolve himself and blame junior members of his group. Indeed, Kratsios seized on this incident in a recent public statement.

A remedy for this situation is for the scientific enterprise to reaffirm its values and hold its members to them, irrespective of actions from a government entity in the United States or elsewhere. Scientific papers should be carefully written not to extend beyond what the evidence supports; adequate amounts of supporting data should be available to researchers who want to repeat analyses and experiments; corrections and retractions to the scientific record should be posted quickly and collaboratively; safeguarding trainees should be prioritized over powerful actors in the system; and sleuths and journalists who turn up problems in research should be recognized as improving science rather than vilified. Although most of the scientific enterprise does live up to these values, the community itself should be the one to hold transgressors accountable without provocation from the federal government. Only then will the message that the vast majority of findings are correct be taken by skeptics as genuine.

It is possible to support science and hold it accountable at the same time. The adherence to a false choice that only one or the other is possible has made it easier for anecdotally driven attacks to succeed politically and for reforms to be externally imposed. It is within the collective control of the scientific enterprise to change the response and the perception.

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