Correspondence

Stifled by budgets, not irrelevance

Daniel Sarewitz constructs a stereotype of scientists who are left to their own devices and whose research is disconnected from potential applications (*Nature* **547,** 139; 2017). As president of the Federation of American Societies for Experimental Biology (FASEB), I argue that this misrepresents both US researchers and their funders.

Most federal funding for basic research comes from mission-oriented agencies such as the US National Institutes of Health (NIH), the Department of Energy and the Department of Defense (see go.nature.com/2i2ta6j). Funding applicants must respond to strict agency priorities. For NIH funding, for example, they have to describe the relevance of their research to public health and respond to a specific funding-opportunity announcement, which is often targeted to a narrow goal. The US National Science Foundation evaluates its grant applications in terms of broader social impacts as well as on intellectual merit. The general research-funding system is clearly directed at societal needs, with levels set by congressional appropriation committees that are responsible for discrete areas of national interest.

As for the risible claim that scientists are shielded from accountability, one need only glance at the application and review process for federal research grants. Those fortunate enough to survive this gauntlet must then operate under a crushing system of regulations (see go.nature.com/29afkwd).

The threat to US science does not come from scientists' assumptions, their commitment to investigator-initiated research or the research community's failure to tackle problems of public concern. It comes from an unrealistic system of draconian budget caps that stifle investment in the future.

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Danish dairy farmer delivers data coup

Neither the name Peder V. Thellesen nor the *Danish Ornithological Society Journal* will resonate with most *Nature* readers. In a striking example of citizen science, the Danish journal has just published 45 years of Thellesen's breeding data from his studies of starlings (*Sturnus vulgaris*) in 27 nesting boxes on his dairy farm (P. V. Thellesen *Dansk Ornitol. Foren. Tidsskr.* **111,** 87–95; 2017). As far as we know, this data set provides a world-class example of the effects of climate change on the natural world.

The starlings advanced the date of their egg-laying by 1 day every 5.0 years for the first clutch and every 4.7 years for the second clutch. Thellesen found that this change in breeding onset significantly correlated with the mean rise in local April temperatures over those periods. Clutch size and hatch rate remained constant, although nesting-box occupancy has fallen by 40% since 2004, in line with the bird's decline nationally and regionally.

Thellesen ringed a total of 12,450 starlings, or 1 in 16 of all starlings ever ringed in Denmark. Although he has no formal scientific training, his patient and systematic observations far exceeded the duration of any funded research project. As the language gap between scientists and the public widens, we find this work an inspiring reminder of the might of human curiosity.

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Spot data glitches before publication

Deposition of raw data into publicly available databases — now a condition of publication in many journals (*Nature* **537,** 138; 2016) — needs to involve more than just another checkbox for the senior author. Before accepting a manuscript, journals should verify that the data will be immediately useable after publication.

Our group frequently uses published next-generation sequencing data for cancer genomics studies. We are often forced to spend months going back and forth with the original authors, for example tracking down corrupted files, mislabelled samples and missing data. We have yet to find any instances of malicious intent, and in all cases the study authors devoted considerable time to helping us to sort out the errors. However, these delays could have been avoided had the mix-ups been caught before their papers were published.

Such intervention would ensure that raw data are complete and accurate when deposited, and that sufficient detail is available in the paper to identify and link raw data back to individual samples or experiments. The data sets would then serve as useful, high-quality, interpretable resources for future researchers.

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PhD students: living wage key to diversity

In our view, your report on side jobs for scientists paints a naive and insensitive picture of the financial and social realities facing many graduate students and other early-career researchers (*Nature* **549,** 297–299; 2017). For a group already burdened with enormous undergraduate debt, we find it irresponsible to imply that success in graduate school could hinge on having two jobs.

In reality, academia is not populated solely by young graduate students who are supported by wealthy families. Low graduate-student pay is a real barrier to a career in research, particularly for underrepresented groups and those who have child-care commitments. To help make research attractive to a diverse community, you should give more voice to those promoting serious structural solutions that will resolve financial burdens and inequities in science education.

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PhD students: side jobs are no solution

As a graduate student at a US university, I object strongly to any implication that PhD students should take other jobs on top of their already demanding research (*Nature* **549,** 297–299; 2017). That is not, nor should it be, a viable solution to academia's funding problems.

I am pleased that this option seemed to work for the scientists you feature. Yet the real issue is that graduate students and junior researchers are often not paid a living wage, even though they routinely work in excess of 40 hours per week.

It should not be our responsibility to find extra external work, which, incidentally, would violate the terms of employment at my own and many other universities. As a community, we should be ashamed that side jobs are even considered necessary for anyone working in academia.

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