

# The excellence question



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**F**ive months ago, when I stepped into my new role as the chief executive officer of the UK Research and Innovation (UKRI) organization, a question loomed large for me: What is excellence? After all, UKRI is the major public funder of science in the United Kingdom, spending billions of taxpayer money every year. To spend this money well, UKRI must support a portfolio of truly excellent work. So, what then is excellence?

Some years ago, I was contacted about a plan to establish a new research journal. I was asked, “Where do you submit your best work for publication?” To answer this, I had to define my best work. I ought to know how to do that, having served on the Board of Reviewing Editors for *Science*, which aims to publish the very best research across the sciences. In that role, I considered whether the work constituted a major advance and if it was of interest to a wide audience. In a similar vein, the European Research Council, which has had an extraordinary impact on research funding in Europe, uses “excellence” as the sole criterion for funding. Instructions for panel members who evaluate proposals define such excellence as ground-breaking and high-risk, high-gain.

There is no doubt that truly excellent and ground-breaking work is published in *Science* and funded by the European Research Council, but are those the only definitions of excellence?

It is worth remembering that the term “ground-breaking” comes from construction. There is often a ground-breaking ceremony, but then the building must be erected. This comes only after much preparation, from determining the ideal location to securing all the planning permissions. Likewise, for every ground-breaking discovery, a huge amount of work has paved the way, and follow-up work to solidify the evidence and demonstrate reproducibility and generality is essential. High-quality work of this sort is rarely recognized as excellent by the scientific enterprise but is excellent nonetheless, and without it, there would be no progress.

Even at the cutting edge, work that looks at things in a new or different way can be harder to recognize as valuable. It is less obviously ground-breaking in the short

term, not least because it might be wrong, but it is arguably more transformative in the long term. The systems in place for defining excellence are not sufficiently open-minded to alternative ways of looking at things.

And the desire for excellence as the only criterion for selection is often understood to mean research unrestricted by a requirement for utility—in other words, blue skies research for which applications are not immediately apparent. This contributes to the view that there is a compromise between excellence and applied research. Although there is a continuous need to emphasize the value of blue skies research, the implication that it is better than applied research is insidious.

In the United Kingdom, the question of what constitutes excellence in research is particularly pertinent with the announcement of a review of the Research Excellence Framework. This system allocates block grant funding to U.K. universities based on the excellence of their research, with assessment of a selected sample of research outputs as an important component. A high-quality portfolio should surely include a range of types of output, but universities are extremely conservative in their selection and typically focus on high-impact papers that their faculty has published, embedding a culture

of narrowly defined excellence.

It is time for assessment systems to support and value a robust portfolio of work of different sorts, and by association, a diverse range of people to do this work. Organizations such as UKRI, which supports research across sectors, have a major responsibility in this regard. UKRI was created by bringing together nine different research funders. Some argued that a “monolithic” funder would reduce diversity in funding. My view is quite the opposite. Organizations with a broad funding mandate must address the portfolio challenge by recognizing and supporting excellence in all its forms.

The world is wrestling with crises such as climate change and the coronavirus disease 2019 (COVID-19) pandemic. Let’s redefine excellence in ways that open up opportunities for projects and talent to break through the problems of today and tomorrow.

—Ottoline Leyser

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# Science

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