Should scientists seek Government approval for accepting awards?

This is regarding the Office Memorandum of 4 December 2023 from the Ministry of Personnel, Public Grievances and Pensions, Government of India, concerning the guidelines on the acceptance of awards by Government servants (F. No. 11013/22/2023 – Pers. Policy (A-Ill)) from private bodies and institutions. This circular is more appropriate for administrators and policy-makers as such awards may give rise to actual or perceived conflicts of interest. However, it should not be applied to researchers and educationists. What is discomforting is that this comes after the announcement of withdrawing many well-established and prestigious awards instituted by Government Departments such as DST, CSIR, DAE, etc. Thus, the above circular is like adding insult to injury as far as scientific recognition of scientists in the country are concerned. The scientific academies of India, therefore, need to convince the Government that the scientific awards should be outside the ambit of this circular.

Researchers engage in studies that advance the frontiers of human knowledge. Peer recognition in the form of awards and honours is the only tangible recognition often associated with such endeavours, and is indeed a metric used by Government scientific funding agencies to evaluate the impact of the researchers they fund. Such recognitions are bestowed on the researchers by national and international societies and academies.

Most major international awards in science and technology are bestowed by societies such as the American Chemical Society, the American Physical Society, the Royal Society and European societies. These recognitions usually include a medal and a small monetary award, and are often prestigious. Indeed, Nobel Prizes and Fields Medal for mathematics are set up from the endowments of individuals and are considered the highest honour a scientist or mathematician can ever get.

In India, the Indian National Science Academy, the Council for Scientific and Industrial Research and the Department of Science and Technology bestow awards and fellowships. More recently, the Infosys prize has also gained importance. The awardees are selected after extensive evaluation by accomplished scientists in the field in a transparent manner. All these national awards have also gained recognition in the international arena. Besides, there is little conflict of interest involved when such recognitions are bestowed.

It appears totally misplaced that the power to allow a researcher or educator to accept any such award rests with the administration personnel with little knowledge of the way the award process takes place, or the reason for the award. It is absurd that when a Government-employed senior scientist is awarded a Nobel Prize or a Wolf Prize or a Milner Prize, he/she cannot immediately accept the same, but is required to first obtain permission of a 'competent authority', who has the right to decline permission on the grounds of Section 6d(i) that prohibits the award from carrying a monetary component. Therefore, I urge the science academies to prevail upon the concerned quarters to clarify that academic awards bestowed upon scientists should be outside the ambit of the above circular.

S. RAMASESHA

Solid State and Structural Chemistry Unit,
Indian Institute of Science,
Bengaluru 560 012, India
e-mail: ramasesha.s@gmail.com

The dangers of purely numerical rankings in the World of Science

For the past four years, researchers at Stanford University, USA have been publishing and updating the list of the world's top 2% scientists[1–4]. This list, although widely advertised and celebrated, is not an endorsement by Stanford University itself. It is generated through a computer-aided algorithm that assesses various parameters like the number of citations, *h*-index and *i*-index. While it is tempting to view these rankings as a measure of scientific achievement, there are serious concerns about their validity and the impact they have on the scientific community.

The world's top 2% scientists list, like many other ranking systems, relies solely on quantitative data. It considers factors such as citation counts and publication metrics, but overlooks the nuanced and qualitative aspects of scientific contributions. This approach undermines the rich diversity of scientific work and fails to account for the myriad ways in which researchers contribute to their fields.

One of the most glaring problems with this numerical approach is that it excludes many brilliant scientists who have made groundbreaking contributions, but may not have accrued a high number of citations or achieved a specific *h*-index. Scientific impact cannot be reduced to mere statistics, and by doing so, we risk overlooking the true value of innovative research.

In recent years, the trend of using quantitative metrics for assessing scientific worth has become increasingly prevalent. In some cases, institutions and organizations have even set arbitrary thresholds for metrics like the *h*-index in their recruitment processes. This not only narrows the pool of potential candidates, but also perpetuates a harmful emphasis on quantitative achievements over the substance and quality of scientific work.

The world is home to a vast number of researchers, and the top 2% encompasses thousands of scientists across 218 countries and 22,396 universities. Placing such importance on making it into this exclusive group can create a sense of elitism that is not necessarily reflective of true scientific excellence.

One of the critical aspects missing from these purely numerical rankings is the concept of true scholarship. Apart from their scientific contributions, how much do scientists contribute to the broader community? Are they mentors, educators and advocates for their field? Do they engage in collaborative and interdisciplinary research that pushes the boundaries of knowledge?

Unfortunately, these rankings do not consider such essential factors. If they did,

the rankings would likely change significantly. True scholarship encompasses not only what a scientist achieves individually, but also how we contribute to the collective advancement of knowledge and the betterment of society.

It is important to critically assess the value and impact of purely numerical rankings in the world of science. While it is natural to take pride in being recognized as one of the world's top scientists, we must remember that these rankings are based on algorithms that cannot fully capture the essence of scientific excellence. They may inadvertently discourage innovative and unconventional research, and discourage true scholarship.

As scientists, we should strive for a holistic and inclusive approach for evaluating our work and contributions. Our impact on the advancement of science and society should not be reduced to a number on a list. Instead, let us celebrate the diversity of research and contributions within the scientific community, and acknowledge that true scholarship goes beyond statistics.

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KISHORE M. PAKNIKAR

Department of Chemistry,
Indian Institute of Technology Bombay,
Powai,
Mumbai 400 076, India and
Nitte University Centre for Science Education and Research,
Nitte (Deemed to be University),
Mangaluru 575 018, India
e-mail: kpaknikar@gmail.com

In-house-built isothermal visual assays for rapid detection of African swine fever

African swine fever (ASF) is a highly contagious viral disease that affects both domestic pigs and wild boars, posing substantial danger to the worldwide piggery industry. More than 1,700,000 animals have died as a result of ASF, according to the World Organization for Animal Health (OIE), Paris. ASF is caused by African swine fever virus (ASFV), a member of the *Asfivirus* genus and Asfarviridae family. Since there are no effective vaccines, the present control and eradication techniques rely on early detection and strict stamping-out procedures.

Given the present ASF pandemic in India, which has escalated, rapid pen-side diagnostic assays may aid in the development of efficient biosecurity interventions and the control of infection. OIE and the European Reference Laboratory both strongly recommend ASF laboratory testing using polymerase chain reaction (PCR)/real-time PCR for detection of the ASFV genome, or enzyme-linked immunosorbent assay for confirmation of ASFV antigen or anti-ASFV antibodies.

In the present study, we have developed and compared two in-house-designed isothermal amplification-based visual tests, LAMP (loop mediated isothermal amplification) and PSR (polymerase spiral reaction), for quick and sensitive detection of ASFV viral DNA in porcine clinical samples. A provisional Indian patent application was filed on 24 April 2023, with application number 202311029459.

The analytical sensitivity for LAMP and PSR was 50 pg and 50 fg respectively. Both visual assays were found to be ASFV-specific, but not for other swine viral infections. A total of 165 suspected clinical samples were analysed utilizing the developed visual assays in conjunction with the OIE-recommended conventional PCR-based assay as a reference. The relative accuracy, specificity and sensitivity of LAMP versus PSR were determined to be 95.37% versus 102.48%, 97.46% versus 101.36% and 73.33% versus 113.33% respectively. The Cohen kappa index value was found to be higher (1.15) for PSR-based visual test for detecting ASFV in clinical samples than for LAMP-based visual assay (0.7). In the future, the developed isothermal amplification-based visual assays may be able to replace conventional or quantitative real-time PCR-based assays for rapid testing of ASF viral genetic materials in diagnostic laboratories with limited resources, or for on-the-spot disease diagnosis for improved biosecurity preparedness against ASF.

GYANENDRA SINGH SENGAR[1]
SOUMENDU CHAKRAVARTI[2,3]
RAJIB DEB[1,*]
SEEMA RANI PEGU[1]
JOYSHIKH SONOWAL[1]
SWARAJ RAJKHOWA[1]
PRANAB JOYTI DAS[1]
VIVEK KUMAR GUPTA[1]

[1]*Animal Health Laboratory,*
ICAR-National Research Centre on Pig,
Guwahati 781 131, India
[2]*ICAR-Indian Veterinary Research Institute,*
Izatnagar 243 122, India
[3]*Pirbright Institute,*
Ash Road, Pirbright, Surrey,
GU24 0NF,
United Kingdom
**e-mail: Rajib.Deb@icar.gov.in*