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EDITED BY
Alexa Jean Halford,
Goddard Space Flight Center (NASA),
United States

REVIEWED BY
Brett Carter,
RMIT University, Australia

*CORRESPONDENCE
Maria-Theresia Walach,
m.walach@lancaster.ac.uk

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UK magnetosphere, ionosphere and solar-terrestrial (MIST) awards taskforce: A perspective

Maria-Theresia Walach[1]*, Omakshi Agiwal [2,3], Oliver Allanson [4,5], Mathew J. Owens [6], I. Jonathan Rae [7], Jasmine K. Sandhu [7] and Andy Smith [8]

[1]Physics Department, Lancaster University, Lancaster, United Kingdom, [2]Center for Space Physics, Boston University, Boston, MA, United States, [3]Blackett Laboratory, Imperial College London, London, United Kingdom, [4]Department of Earth and Environmental Science, University of Exeter, Cornwall Campus, Cornwall, United Kingdom, [5]Department of Mathematics and Statistics, University of Exeter, Cornwall Campus, Cornwall, United Kingdom, [6]University of Reading, Reading, United Kingdom, [7]Northumbria University, Newcastle upon Tyne, United Kingdom, [8]Mullard Space Science Laboratory, University College London, London, United Kingdom

"*We don't live in a meritocracy, and to pretend that simple hard work will elevate all to success is an exercise in willful ignorance.*" (Reni Eddo-Lodge wrote in her book "Why I'm no longer talking to white people about race" (Published by Bloomsbury, London, p. 79, ISBN: PB: 978-1-4088-7)). This echoes through the academic scientific community, and can be readily seen in the demographics of physics prize winners. Prizes are extremely influential in both projecting how a community is outwardly perceived and actively shaping the community through facilitating career advancement. But how can biases in the awards process be addressed? We do not pretend to have all the answers, nor is there a single solution, but in this perspective article we explore one pragmatic approach to tackling chronic underrepresentation in the space sciences when it comes to nominations for awards and prizes.

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awards, prizes, medals, recognition, bias, inclusion, diversity, equitable

Without a ticket, you will never win the lottery

The UK's Magnetosphere-Ionosphere and Solar-Terrestrial (MIST) community is composed of approximately 500 individuals from approximately 25 institutions across the United Kingdom. The most recent survey estimates 20–30% staff are women and 90% are White, proportions that are significantly distorted compared to the general population (Massey et al., 2017). In 2019, seven members of the MIST community founded the "MIST Awards Taskforce"[1]. This was inspired by the pioneering work instigated by Dr Liz MacDonald, a heliophysicist at NASA's Goddard Space Flight Center. Macdonald

1 https://www.mist.ac.uk/students-corner/242-q-a-with-the-mist-awards-taskforce

established the "Nomination Task Force" within the American Geophysical Union's Space Physics and Aeronomy (SPA) section (Jaynes et al., 2019), upon which we modeled ourselves: We set up our own United Kingdom taskforce with the aims to 1) actively contribute towards more equal representation and a diverse range of MIST nominees for national and international awards; 2) recognise and promote the work of overlooked members of the MIST community; 3) provide a means for students and early career researchers to gain experience in preparing an effective nomination package. The MIST Awards Taskforce does not hold their own awards scheme, but rather aims to contribute to existing award and prize schemes by submitting their own and ensuring the submission of nominations.

It all starts with representation. If we want science to be more equal and more diverse, representation must happen at all levels. Awards and prizes are a crucial component of achieving this, particularly in terms of increasing visibility (e.g., prizes are a key element in Wikipedia's "notability" criterion). It has been shown by Bol et al. (2018) that scientists who win funding, especially early on in their careers, have a different career trajectory versus those who do not. This is often the case despite similar backgrounds and abilities, and is known as the "Matthew effect" (see Bol et al., 2018). A further inference from the "Matthew effect" is that winning a prize is likely to lead to another prize or more funding. For example, it was found by Ma and Uzzi (2018) that 64% of science prizewinners had won two prizes, and 14% had won five or more. Furthermore, it is well known that minorities often face extra barriers in academia (e.g. Exum et al., 1984) and systemic racialised biases lead to funding rates for White PIs increasing relative to annual overall rates with time in the sciences (Chen et al., 2022). At NASA, for example, White PI's proposals were funded at rates 1.5 times higher than those by Native American[2]/Alaska Native, Black/African American, Native Hawaiian/Pacific Islander, multiracial, and Hispanic or Latino PIs from 2014 to 2018 (Chen et al., 2022). Gender biases have also been identified; no awards were given to women physicians during 2013–2016 by the Association of Academic Physiatrists (Silver et al., 2018). The combination of systemic barriers and a small group of individuals winning prizes produces inequitable representation.

In MIST science, we lack good, reliable data on the demographics of both the whole community, those that are nominated, and the prize winners, which is a problem in and of itself. There are a number of processes that have recently been put in place to begin monitoring the overall community demographics (e.g., by the Royal Astronomical Society) and the prize nominees (e.g., by the Institute of Physics). Qualitative analysis suggests that there is reason to think that the biases reported in other fields are present in our own.

Awards, prizes and medals aim to reward excellence. As such, the same biases can arrive at every junction (i.e., from nomination to final selection). Prizes may mirror the scientific community, but they can also help shape the community, making it vital to actively tackle these biases.

We acknowledge that the Taskforce does not and cannot directly address all inherent bias in the system—there may well be fewer award candidates from diverse backgrounds that fit the sometimes narrow and exclusive definitions of "success" (Davies et al., 2021), simply because the odds have been stacked against them since school. But ensuring that there is fair representation nominated from the given demographics is something we can work towards. And our hope is that active promotion of subsequent award winners' work will mean more equitable recognition. This may then lead to our secondary hope being fulfilled, which is that students are exposed to a diverse range of role models, which may influence future generations of MIST scientists.

Even a strong candidate needs a strong sales pitch

We started out as a small group of volunteers and over time, we have lost and gained members, approximately keeping parity from all career stages: professors, postdocs, and PhD students.

Over the years, we have adapted and tried different methods. The first year, we wrote a number of nomination packages ourselves and primarily submitted to one prize-giving body. Whilst this was daunting to some of us who had never written a nomination before, it turns out to be relatively straightforward and is a valuable and rewarding experience. Often it is much easier to be able to see and understand other people's contributions than your own. And, importantly, nomination packages usually require less than two pages of writing. Since our first year, we have branched out to target several different national and international award schemes.

We also asked members of the community to nominate their colleagues and collaborators directly, thus gaining a much wider reaching approach. Mostly our role here is to raise awareness of the opportunities and the relevant work of their immediate colleagues, and develop a stronger culture of regularly nominating for awards. Responses have generally been very positive. This is crucial if we want the culture to change, but not everyone is willing or able to volunteer their time. Sometimes, reservations remain due to a lack of experience on the part of the proposer. What comes with experience is the ability to succinctly highlight why someone deserves a prize, and the knowledge that

2 Chen et al., 2022, the U.S. National Science Foundation and the U.S. Office of Management and Budget use the term American Indian instead of Native American, and define this ethnicity as: "A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment".

most nomination schemes typically require less time and effort than it may initially appear.

We have had a number of award successes and award-policy impact on both national and international levels. In particular, we have successfully lobbied for career breaks to be explicitly accounted for in award eligibility criteria. Since most awarding processes are confidential, we are not able to name specific details, but we are able to share that we have had a success rate of 20% in our first year, followed by a success rate of 66% in the second round from two separate awarding bodies, despite increasing the total number of nominations. We speculate that our increased success rate is due to increased experience and efficiency in writing nominations.

"We should not be nominating for the sake of it"

Without a nomination, a person cannot be considered by an award committee (in some cases, such as the Institute of Physics, self-nominations are permitted but generally this is not the norm). Thus, without a colleague's recommendation, there is no nomination; ultimately, unless people nominate their colleagues, there will be no prizes.

We have come across varying attitudes towards nominating colleagues. For the most part, people are willing to nominate colleagues who they personally deem most worthy, but this is a problem for two reasons. Firstly, this biases towards colleagues for whom they already have a strong familiarity with their work, i.e. biasing towards those individuals who are already most visible. Secondly, criteria for "exceptional" work and individuals are extremely subjective. This means colleagues sometimes position themselves as quality control, which can further perpetuate biases. But our job, and the community's job, is only to provide high-quality nominations. It is the award panel's job to select what they see as the most worthy nomination, which hopefully happens in a way that acknowledges the existing biases and barriers present to different individuals. This is important because we have seen cases where colleagues were reluctant to write a nomination, as the chance of success was deemed to be remote. There were a number of instances where we did prepare a nomination, despite the reservations, and the nominees did go on to win awards. This could be seen as a sign that bias is present in the community and that we should not jump to conclusions and try to take on the job of the awards committees by overly pre-judging people's worthiness. Of course, there is a balance to be struck. There is never enough time to nominate everyone eligible, and it is disheartening for a proposer to spend a huge amount of time writing many nominations that have no impact.

What changes do we need?

There is still more work to be done. The struggle of recognizing the work of underrepresented demographics starts and ends with accurate data. We know that the Royal Astronomical Society (RAS) demographics are less likely to be from minority ethnic backgrounds than the population at large in the United Kingdom (Massey et al., 2017), but we do not know if this can be extrapolated to the MIST community or prize nominees and winners.

We do not have accurate statistics on our own United Kingdom MIST community. This data is difficult to acquire but we are working towards this as part of the next RAS Demographics Survey. Our Awards Taskforce starts the process of who to consider for a nomination by attempting to survey all eligible candidates across the MIST community, but we have incomplete data as it is based on personal knowledge and often incomplete institutional websites. We then use this information to select underrepresented demographics and others on precarious contracts. It is a starting point, but it is no substitute for accurate data.

A further issue arises as most award and prize schemes are shrouded in mystery. It is the norm that nominees should not know they are being nominated. This hinders awards committees and the community in accurately knowing the demographic make-up of their nomination pool and the extent of any nomination-bias problems. So, all a panel can do is guess whether the nominations are representative of the community. And all we can do is nominate the people who we think may not be nominated by their peers, such that the panels have a diverse pool of candidates to choose from.

The only way demographic information can be reliably obtained is if the awarding bodies seek this information from the nominees directly, which includes telling the nominee that they have been nominated. This inherently makes the process less secretive but the data more reliable, which we should surely strive for as scientists. This is not as controversial as it seems, since it has already been implemented with great success by the Institute of Physics in the United Kingdom. We would suggest that this could be an effective strategy moving forward.

To make science more equitable, nominations need to be for all, and come from all. Every scientist is qualified to write a nomination, regardless of career stage. We should approach nominating our colleagues for awards as a routine part of the "community service" our jobs entail, like reviewing papers and grant applications. Writing a nomination is not as time consuming as it may at first seem, and it is a deeply rewarding exercise. We call on the scientific community to consider putting forward those "long shots," and those without obvious mentors in the field. Who you see as the best candidate may not be the same as the award panels, so do not second guess. Instead, write.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Materials, further inquiries can be directed to the corresponding author.

Author contributions

M-TW wrote the first draft of this perspective article. All authors contributed to the ideas and content of the article. All authors contributed to manuscript revision, read, and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Bol, Thijs, de Vaan, Mathijs, and van de Rijt, Arnout (2018). The Matthew effect in science funding. *Proc. Natl. Acad. Sci.* 115 (19), 4887–4890. doi:10.1073/pnas.1719557115

Chen, C. Y., Kahanamoku, S. S., Tripati, A., Alegado, R. A., Morris, V. R., Andrade, K., et al. (2022). *Decades of systemic racial disparities in funding rates at the.* Alexandria, Virginia, United States: National Science Foundation. doi:10.31219/osf.io/xb57u

Davies, S. W., Putnam, H. M., Ainsworth, T., Baum, J. K., Bove, C. B., Crosby, S. C., et al. (2021). Promoting inclusive metrics of success and impact to dismantle a discriminatory reward system in science. *PLOS Biol.* 19 (6), e3001282. doi:10.1371/journal.pbio.3001282

Eddo-Lodge, R. (2018). *Why I'm no longer talking to white people about race.* London: Bloomsbury, 79.

Exum, W. H., Menges, R. J., Watkins, B., and Berglund, P. (1984). Making it at the top: Women and minority faculty in the academic labor market. *Am. Behav. Sci.* 27 (3), 301–324. doi:10.1177/000276484027003004

Jaynes, A. N., MacDonald, E. A., and Keesee, A. M. (2019). Equal representation in scientific honors starts with nominations. *Eos* 100, 117855. doi:10.1029/2019EO117855

Ma, Y., and Uzzi, B. (2018). Scientific prize network predicts who pushes the boundaries of science. *Proc. Natl. Acad. Sci.* 115 (50), 12608–12615. doi:10.1073/pnas.1800485115

Massey, R., Drake, A., Kanani, S., and McWhinnie, S. (2017). Our scientific community in 2016. *Astronomy Geophys.* 58, 6.14–6.17. doi:10.1093/astrogeo/atx211

Silver, J. K., Blauwet, C. A., Bhatnagar, S., Slocum, C. S., Tenforde, A. S., Schneider, J. C., et al. (2018). Women physicians are underrepresented in recognition awards from the association of academic Physiatrists. *Am. J. Phys. Med. Rehabil.* 97 (1), 34–40. doi:10.1097/PHM.0000000000000792