

## **Written evidence submitted by the British Pharmacological Society to the APPG on Diversity in STEM inquiry: Equity in the STEM workforce**

### **About us**

The British Pharmacological Society (BPS) is the primary UK learned society concerned with research into drugs and the way they work. The Society has around 4,000 members working in academia, industry, regulatory agencies, and the health services, and many are medically qualified. The Society covers the whole spectrum of pharmacology, including laboratory, clinical, and toxicological aspects. Pharmacology is a key knowledge and skills base for developments in the pharmaceutical and biotech industries, and is therefore fundamental to a thriving UK industry and R&D. These skills allow members of the Society to identify therapeutic areas of clinical need, develop novel treatments that target these areas and ensure these new treatments are incorporated into healthcare practice bringing benefit to patients. The Society publishes three scientific journals: the British Journal of Pharmacology, the British Journal of Clinical Pharmacology, and Pharmacology Research and Perspectives.

### **Executive Summary**

As a sponsor of the APPG on Diversity and Inclusion in STEM<sup>1</sup>, the Society welcomes the opportunity to submit evidence to the inquiry. Our key message is that current lack of equity in the STEM workforce must be addressed at a systems level, with coordination and collaboration between all actors involved – coalescing around a common vision of an inclusive STEM workforce. Further:

- We welcome the government's commitment to developing a People and Culture Strategy as part of delivering the UK R&D roadmap<sup>2</sup>. A forward-thinking diversity data strategy, and bold ambitions for a positive and inclusive research, and workplace culture should be at the heart of this strategy.
- We have included input from our members on the impacts COVID-19 has had on them and their peers, concluding that the pandemic has exposed and compounded existing inequities and insecurities. We are calling for additional focused support for those at the early stages of their careers.

The Society has recently launched our Vision for Equality, Diversity and Inclusion (EDI) in Pharmacology<sup>3</sup>, which commits us to placing equality, diversity and inclusion at the heart of pharmacology, in terms of the opportunity for a successful career and to benefit from pharmacology research. The Society is committed to supporting progress in line with our Vision and would welcome the opportunity to contribute to cross-sector action. Please contact Dr Anna Zecharia, Director (Policy & Public Affairs) via [anna.zecharia@bps.ac.uk](mailto:anna.zecharia@bps.ac.uk) to discuss this.

### **1. What are the demographics of STEM workers in your organisation or sector? Are there gaps in the quality of evidence, monitoring or reporting?**

1.1 The Society has explored the challenges involved with collecting, monitoring and reporting diversity data for pharmacology as a discipline. There are currently limitations on the Society's understanding of the diversity of the pharmacology community. This is in part because not all pharmacologists are members of the Society. Further, pharmacologists work across a range of sectors so it is complex to collate and track them:

- this data may be held in the HR records of individual companies;
- the Standard Occupational Codes (SOC) are not specific enough;
- and, the data collected by the Higher Education Statistics Agency (HESA) combines pharmacology and pharmacy.

The limitations are also because Society membership data collection and reporting needs improving. Within the Society's membership, only 37% of our members

identify as female, females are under-represented on our committees, and we have limited data on other characteristics:

- 70% of members have provided data on their gender, 0.3% choose not to disclose their gender and 30% of member records hold no response. As a higher proportion of members provide data on gender than on any other aspect of diversity, this means that almost one in three members have not provided any diversity data at all.
- Just one third of members provide data on ethnicity (33%), of these:
  - White, 71%
  - Asian, 12%
  - Black, 6%
  - Arab, 4%
  - Chinese, 4%
  - Mixed White and Asian, 3%
  - Other 1%
- Just one in five members (20%) provide information on their religion, of these:
  - No religion, 47%
  - Christian, 33%
  - Muslim, 12%
  - Hindu, 4%
  - Buddhist, 1%
  - Jewish, 1%
  - Sikh, 1%
  - Other, 0.5%
  - Spiritual, 0.25%
- Just one in five members (20%) provide information on sexual orientation, of these:
  - Heterosexual, 80%
  - Prefer not to say, 12%
  - Bisexual, 3%
  - Gay man, 3%
  - Gay woman/lesbian, 1%
  - Other, 2%

We are unable to determine what proportion of this dataset are international members. For this reason we have not benchmarked ethnic origin, religious belief or sexual orientation against datasets for the UK population.

One of our current strategic objectives is to collect meaningful membership diversity data, which will be important in helping the Society track progress and understand the impact of the interventions we make. Many other organisations and employers are also considering their approach to diversity data, and there is an opportunity to improve consistency of data collection and reporting in line with good practice, for example, the 'Diversity And Inclusion Survey' (DAISY) guidance developed by Wellcome<sup>4,5</sup>. Data harmonisation would also help give meaningful sample numbers from a number of smaller organisations across the sector, which can currently be disparate and interfere with a clear shared narrative on the problems the sector faces.

- 1.2 Alignment at the individual organisation level would be powerful, but the Society would also advocate for a parallel approach that unites the sector and government behind a common goal. The Society will focus on getting the best possible data for pharmacologists via our membership, but a different approach may be needed at

a sector level. Given the current limitations on data, a better use of resource may be to approach the challenge through a sector lens rather than a discipline lens. That is, to consider the environments in which pharmacologists work (e.g. life sciences) and then to work collaboratively with other partners to set measures that are pragmatic and meaningful to the sector as a whole, which may require some compromise on the granularity of discipline level data. The UK government's "R&D Roadmap" is an opportunity to unite the sector at an overall STEM level - and by its component parts, such as the life sciences. The government has stated its ambition<sup>6</sup> "to be a science superpower and invest in the science and research that will deliver economic growth and societal benefits across the UK for decades to come." This roadmap identifies improving diversity as an opportunity, recognising that there are currently challenges: "we want science to be for everyone no matter what their background... [we want] to attract and retain a diverse pool of talent". The Society welcomes the government's commitment to a 'People and Culture Strategy' as part of delivering the roadmap: development of this strategy should include a forward-thinking, integrated diversity data strategy (see 1.3 and 1.4), set bold ambitions for positive culture and inclusive working environments, and be clearly linked to education and widening participation initiatives (see 2.2). There is appetite within the sector for such an approach, the main challenge will be the availability of centralised resource for its development. Further, the overall People and Culture strategy should be developed in collaboration with the sector, fully involving the organisations and networks already committed to this work. For example, the Society is a member of EDIS Group (Equality, Diversity and Inclusion in Science and Health)<sup>7</sup>, a coalition working for equal and better health outcomes - this organisation would be a powerful ally. The People and Culture strategy should also be used to inform sector-specific policy, for example, a holistic approach to workforce strategy that supports life sciences industrial strategy.

- 1.3 Specifically, regarding diversity data strategy, whilst the Society understands the use of SIC/SOC methodology for the data briefing published in conjunction with this inquiry, we support the view that "SOC is uni-dimensional and static, and so captures neither the variety of skills used in different jobs, nor the changing nature of skills over time"<sup>8</sup>. Whilst it is helpful for the purposes used here, i.e., to provide a high-level snapshot of the diversity in the STEM workforce to describe the problem, we caution against SOC being used as the methodology of choice going forwards. Our view is that current approaches to demographic and skills data are outdated, inconsistent and do not serve the needs of the sector. A refreshed approach to data collection and reporting should start by considering what the research questions are, and from that, what information is needed - not just what is available. An example of a more forward-thinking approach is the O\*NET Content Model<sup>9</sup>. The purpose of data monitoring should be to track and report on goals, not solely to describe the problem. The more data are developed to be granular enough so they can be used for a clear purpose, the more likely they are to be meaningfully analysed and reported - and not seen as a tick-box exercise. There are of course, important practicalities to address regarding making central resource available in order to truly advance this as a sector-wide initiative.
- 1.4 The Society recognises that the need to make comparisons with previous datasets and the desire for consistency can be in conflict with one another, and that this will take time, clear goals and resource to resolve. We would also like to note that whilst demographic data is important, the use of other data should also be considered as part of future strategy. This could include experiential data<sup>10</sup> and other metrics that may signal investment in developing inclusive environments. For example, the Society is progressing work on inclusive pharmacology education: our ambition is that an inclusive approach to education will raise awareness of the needs of different groups, leading to both more inclusive research - and increased belonging to the discipline and sector.

## **2. Where is there inequity across the different protected characteristics and how are different communities impacted across different:**

- **STEM disciplines or sector/subsectors**
- **types of organisation (e.g. private, public, non-profit)**
- **type of STEM activity (e.g. academic research, education, engagement, commercial, funding)**
- **job levels and/or qualification.**

- 2.1 There are many reports examining inequality within the STEM workforce, and the Society does not have additional data to add. However, we would note that there is value in developing a unified narrative to enable the sector to focus on solutions rather than defining the problem. These reports often look at the impact of protected characteristics in isolation. The Society supports an intersectional approach but would also note that there are common themes that underly why different communities are negatively impacted. The Society has previously drawn attention to reasons for this<sup>11,12</sup>, including the narrow incentives that operate within academia (including the 'pressure to publish') and we strongly advocate for the development of inclusive research culture, underpinned by strong organisational frameworks to support inclusive working practices. We also continue to call for reform in reward systems (particularly in academia) that recognise the breadth of contributions to STEM, as part of redefining the meaning of 'excellence'.
- 2.2 Research commissioned by the Society indicated that 27% of pharmacology students came from the highest socioeconomic bracket in 2014<sup>13</sup>, compared to 22% in 2007. Only 5% of students accepted onto pharmacology courses are from the lowest socioeconomic bracket. This is reflective of trends in comparable subjects and indicates that the life sciences are not reaching the full range of talent through graduate entry. Building 'science capital' through awareness and experience of a pathway, and engagement with role models within it, are pre-requisites to following any career path, as shown at a school level by the SPIRES projects<sup>14,15</sup>. It is imperative that any recommendations about the workforce are integrated with initiatives in STEM education.

## **3. Where are there evidenced inclusive behaviours and policies within different organisations, subsectors, sectors and countries on:**

- **Recruitment; and/or**
- **Retention**

- 3.1 The majority of support for inclusive recruitment and retention are case study-based reports on good practice<sup>16,17,18</sup>, that have in some instances been formalised into guidance and/or frameworks, for example, the Athena SWAN charter<sup>19</sup> and the Employers Network for Equality and Inclusion<sup>20</sup>. This can be helpful and appropriate, but it can also result in challenges when it comes to dissemination and evolution of good practice – and when these are not developed in collaboration with the affected community. EDIS Group, of which the Society is a member (see paragraph 1.2), has demonstrated how change can be realised through sharing experience and guidelines semi-formally through networks (e.g. guidance on name change policies<sup>21</sup>) demonstrating that such networks can be used as important nodal points in the sector. It is important to note that many interventions (e.g. shared parental leave, flexible working, inclusive recruitment/retention, positive action) apply to sectors beyond STEM. A cross-government inclusive employment taskforce may be best-placed to address some of these common issues, particularly regarding the unequal impact of COVID-19 and the levelling up agenda.

**4. Are there policies or activities undertaken by the UK Government, or its agencies, that advance or inhibit equity and inclusive cultures within the STEM workforce?**

- **Where could policy change or sector action lead to addressing the equity of opportunity within the UK's STEM workforce?**

4.1 The Society welcomes the commitment to improving equality, diversity and inclusion made by UK Research and Innovation (UKRI) and looks forward to the publication of their five-year plan<sup>22</sup>. Significant action by funders will be critical to driving change. At the Society's annual conference in December 2020, the Government Chief Scientific Advisor, Professor Sir Patrick Vallance, emphasised the importance of diversity in research, noting that it is central to success<sup>23</sup>. As mentioned in our response to Q1, the UK R&D Roadmap<sup>24</sup> outlines the government's commitment to ensuring a diverse, equal and inclusive workforce, including development of a new R&D People and Culture Strategy and a commitment to making R&D for everyone. The Society welcomes the clear message on diversity at the heart of government and looks forward to being part of the development of this work on a practical level.

**5. What are the impacts of COVID-19 on equity for STEM workers (including job and income security, contract type etc) in the short- and medium-term? Which communities, groups, organisations or sectors are being most impacted?**

5.1 The Society is concerned about the impact of the COVID-19 pandemic on early career researchers and our clinical members. The effects of immediate uncertainty (for example, due to the pausing of non-COVID-19 related research) are still unfolding, but it is certain to have a medium – and potentially long-term, effect on career progression and job security. The early career stage is known to be a critical point for loss of diversity in the sector, and the Society is concerned that the impact of the pandemic<sup>25</sup> will have a compounding detrimental effect. Further, our clinical members have been under the pressure of the front-line. In addition to impact on mental health, we are aware that the pressure of the pandemic has disrupted training programmes, and we are also concerned about the impact on medical students who have taken on significant responsibilities<sup>26</sup> at an earlier stage than would normally be expected.

5.2 Working with our Early Career Pharmacology Advisory Group, the Society collected experiences of early career members during the first few months of the pandemic, exploring both the immediate impacts they have seen and their concerns:

- **Study/training limitations.** Early career education and training has been reduced or is uncertain. We heard:
  - Concern and confusion over whether studies would be impacted or cut short, indicating a need for improved communication.
  - Doubt for those on apprenticeship schemes and whether they would be able to complete their qualifications.
  - Undergraduate and masters students are missing out on lab experience: some research projects are completely unobtainable for them to be a part of, or they have reduced numbers of available places. This makes it more competitive and reduces the ability to develop skills in depth and/or breadth of skills. In one example, a University had been planning to take 5 undergraduates and 2 MRes students onto laboratory projects, which was ultimately not possible.
- **Funding instability.** Early career stages in academia are often marked by a series of short-term contracts:
  - Some universities are offering time extensions, but not necessarily ensuring that funding is also extended.

- Certain roles have had their timings pushed back, therefore there are funding gaps between when an individual comes to the end of a PhD and when they begin post-doctoral positions.
- Medical research charities are particularly struggling with funding. Since the start of the COVID-19 pandemic, charities belonging to the Association of Medical Research Charities (AMRC) have seen a 38% loss in fundraising income and a 41% decrease in medical research spend over the coming year (2021)<sup>27</sup>. As such, the AMRC is calling on the government to establish a Life Sciences-Charity Partnership Fund<sup>28</sup>.
- **Scientific impact.** Experiments often take a long time from start to finish, not only is there the issue of time lost during lockdown, but previously spent preparation time, of experiments that will now not happen, has been lost.
  - Similarly, the closure of animal laboratories/units mean that many institutes/centres lost years' worth of research<sup>29</sup> so this impact upon the time it takes to rebuild.
  - The move to having lab groups working in shifts to accommodate social distancing measures made carrying out longer-time dependent experiments more difficult or not possible for some members.
  - At the Society's annual conference, we received half the usual number of abstract submissions – 443 in 2019 compared with 241 in 2020. This was despite delegate numbers remaining about the same. It is difficult to explicitly determine the reasoning behind this, but it is likely it is due to impact on research from the COVID-19 pandemic e.g., many studies were forced to halt due to lockdowns.
- **Career progression.** Due to many labs temporarily closing, and almost all non-COVID-19 research being paused during the first lockdown, career progression has seen a knock-on effect. The slowing of progress in research and studies for the duration of this lockdown meant development or completion of publications has been hindered. During subsequent lockdowns, non-COVID research was/is still facing difficulties, but there are now contingency plans in place, for example the National Institute for Health Research published a 'Restart Framework'<sup>30</sup>. Similarly, in their recent report, the Association of the British Pharmaceutical Industry highlighted the need for a strategy to restart non-COVID-19 research<sup>31</sup>. The Society heard concerns about potential international disparity if the UK's research recovery falls behind that of other countries. Early career members have expressed concern that:
  - There is likely to be a dip in early career research papers in coming years.
  - This has implications for those searching for jobs and/or trying to build their research portfolio<sup>32</sup>.
  - Reporting/writing up first year reviews of research progress are based on limited lab time for those who have recently started their studies.
  - The loss of opportunities to build connections and networks face-to-face has been cited frequently. Networking helps early career researchers discover new opportunities and collaborations. For those at the end of their PhD, presenting at meetings is key for networking and meeting new collaborators/employers. Losing this opportunity is likely to lead to a narrower set of options when it comes to next steps. This is likely to persist due to reduced travel, particularly internationally – and international connections must be a priority, particularly now that the UK has left the EU.
- **Recruitment freezes.** Limitations on recruitment across the sector are having an impact on first steps, and progression<sup>33</sup>:
  - Insecurity for those directly coming out of BSc and MSc hoping to go directly into industry are less likely to find a job due to recruitment freezes – the 6 months post-graduation is the best time to get employed.
  - Some universities are not renewing university-funded temporary contracts – this may see a loss of research expertise within labs, and the same issues with training opportunities of early career researchers will persist.

- **Mental health and wellbeing.** Uncertainty and financial pressures have increased reports of stress and anxiety in the members we have spoken to. We have not yet formally surveyed members, but would anticipate this bearing out in any data – particularly for those with additional (e.g. caring) responsibilities and needs.
  - Educators (including, but not limited to early career members) have noted the additional pressures caused by the need to move learning and teaching online.
  - Students are already at a high risk of poor mental health<sup>34,35,36</sup> due to work pressures. Increased isolation combined with uncertainty and financial pressures may exacerbate this.
  - The lockdown – and wider pandemic - has had an impact on family life. For some individuals, this has been a positive, they have had the opportunity to spend more time at home, and with their family – and would like to consider additional flexibility in working patterns in the future. The flip side of the coin is that for many, it is harder to get work done because they are juggling home-schooling, childcare, working and any number of other responsibilities. We are concerned that this will in turn have an impact on the careers and progression of those who have caring responsibilities, often likely to be women<sup>37</sup>. Therefore, this is likely to compound existing disparities<sup>38</sup>.
  - We are also aware of the additional impact and burden of shielding on individuals in the sector and disabled people.
- **Reduced salary.** We heard that at least one university reduced wages to 0.8 FTE, and there are concerns both about how long this will persist for – and whether other Universities will follow suit.

5.3 It is notable that many of these points expose and magnify many of the known challenges of a scientific career, and these challenges are known to affect women and other under-represented groups more markedly. It is critical that early career researchers be given additional support (in terms of funding, or post-hoc normalisation of any CV gaps) so that under-represented groups are not over-represented when it comes to negative impacts of the pandemic on scientific careers. The pandemic should cause the sector to reflect – and more importantly, act – on long-standing issues that result in precarious scientific careers.

## **6. What are the implications and opportunities of new policies and employer action in the next 5-10 years following COVID-19 and Brexit? What will the future impacts be for communities, groups, organisations or sectors?**

- 6.1 The pandemic forced a change in working patterns, this may have positive benefits in terms of a lasting shift in attitudes towards flexible approaches to working. Increased work flexibility allows those who have additional caring responsibilities or health concerns (for example) to work in a way that works for them and their responsibilities, as well as giving more autonomy and balance with regard to wellbeing and mental health. There has been much general media attention on how this may shape the future of office-based roles, but it will be important to explore in research-based environments. As discussed in paragraph 2.1, there is strong cultural and systems pressure within research (particularly academia) against such changes, so such learnings should be explicitly reviewed as part of the government’s upcoming People and Culture Strategy for R&D – with a focus on how to realise the benefits of inclusive workplaces for all.
- 6.2 Similarly, a shift towards online training and conferences has led organisations to examine their delivery strategies. Virtual formats can increase accessibility and result in reaching a wider audience (including internationally) - but accessibility cannot be taken for granted, and in-person networking is still valuable. The Society

is exploring a 'hybrid approach' going forward and has committed to an accessibility review as part of this.

- 6.3 As noted in paragraph 5.3, it will also be important to acknowledge that the pandemic has had an unequal impact and ensure that funding and career support in the coming years appropriately reflects this. Understanding the impact of the pandemic on individual researchers should be made explicit (e.g. by funders, employers) as part of assessment and taking action, in a way that is adaptable for individual needs and experience.
- 6.4 The COVID-19 pandemic should hasten our collective examination of the research system, with the aim of moving away from dependence on short-term metrics and short-term contracts, and towards valuing people as part of a long-term, collaborative and interdisciplinary approach to investing in research.

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<sup>4</sup> EDIS (2020) *Diversity monitoring data collection: tips and downloads guidance*. Available at: <https://edisgroup.org/diversity-monitoring-data-collection-tips-and-downloadable-guidance/> (Accessed 19 January 2021).

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<sup>6</sup> Department for Business, Energy and Industrial Strategy (2020) *UK Research and Development Roadmap*. Available at: <https://www.gov.uk/government/publications/uk-research-and-development-roadmap/uk-research-and-development-roadmap> (Accessed 19 January 2021).

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<sup>10</sup> Institute of Physics, Royal Astronomical Society and Royal Society of Chemistry (2019) *Exploring the workplace for LGBT+ physical scientists*. Available at: [https://www.rsc.org/globalassets/04-campaigning-outreach/campaigning/lgbt-report/lgbt-report\\_web.pdf](https://www.rsc.org/globalassets/04-campaigning-outreach/campaigning/lgbt-report/lgbt-report_web.pdf) (Accessed 19 January 2021).

<sup>11</sup> British Pharmacological Society (2017) *Written submission by the British Pharmacological Society to the Research Integrity inquiry of the Science and Technology Committee, House of Commons*. Available at: <https://www.bps.ac.uk/about/policy-positions-and-statements/consultation-responses/articles/2017/response-to-the-research-integrity-inquiry-of-the> (Accessed 19 January 2021).

<sup>12</sup> British Pharmacological Society (2017) *Written submission by the British Pharmacological Society to the Industrial Strategy Green paper*. Available at: <https://www.bps.ac.uk/about/policy-positions-and-statements/consultation-responses/articles/2017/response-to-industrial-strategy-green-paper> (Accessed 19 January 2021).

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<sup>14</sup> King's College London (2013) *ASPIRES Young people's science and career aspirations, age 10-14* <https://www.kcl.ac.uk/sspp/departments/education/research/aspires/ASPIRES-final-report-December-2013.pdf> (accessed 11 April 2017)

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