All-Party Parliamentary Group on Diversity and Inclusion in STEM: Equity in the UK STEM workforce

Submission by the Society for Applied Microbiology

Introduction

1. The Society for Applied Microbiology (SfAM) welcomes the opportunity to respond to the All-Party Parliamentary Group (APPG) on Diversity and Inclusion in STEM's inquiry into Equity in the UK STEM workforce.

2. As a sponsor of the APPG on Diversity and Inclusion in STEM, SfAM is pleased that the APPG is continuing to investigate barriers and opportunities to STEM researchers throughout their careers following their previous inquiry on ED&I in STEM Education. It is important to recognise that some of the issues outlined in this response may be a continuation of or a consequence of issues raised in STEM Education.

3. This response was produced by SfAM's membership, with input drawing from our Committees and end of year membership survey. As such, SfAM's response seeks to provide as diverse and robust a response as possible to better highlight issues and opportunities in the UK's STEM workforce. The concerns raised in this response reflect SfAM's commitment to diversity and inclusion, which are core values that underpin all of SfAM's activities.

Key questions

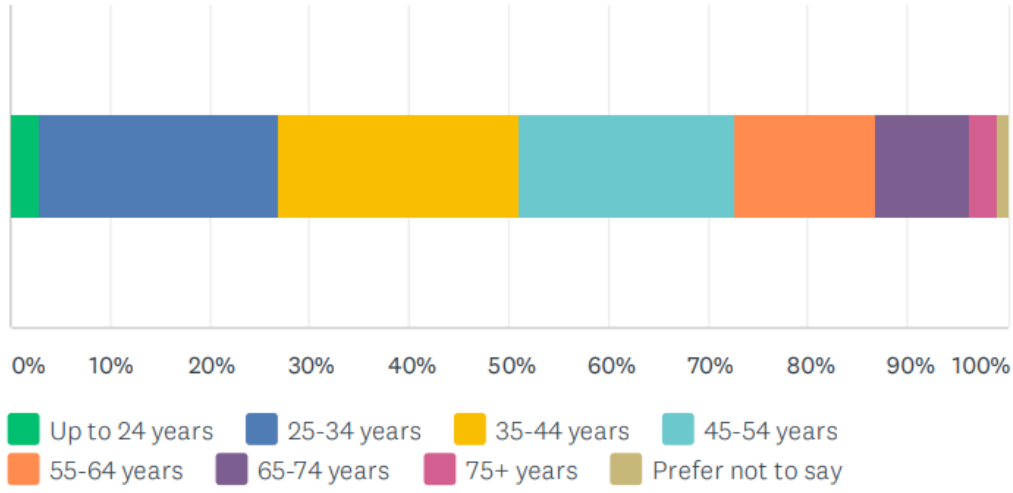
1. What are the demographics of STEM workers in your organisation or sector? Are there gaps in the quality of evidence, monitoring or reporting.

- In 2019, SfAM previously monitored the gender composition of staff and committees. In recognising that other characteristics lack diversity in STEM, SfAM sought to extend this diversity data monitoring to incorporate multiple diversity characteristics across the entire SfAM membership.
- One of the common reasons for collecting diversity monitoring data is to benchmark against existing statistics, which means care must be taken when designing questions to ensure comparability. As this was the first time other characteristics beyond gender was collected, SfAM used Wellcome's Diversity And Inclusion Survey (DAISY) guidance, provided by Equality Diversity and Inclusion in Science and Health (EDIS). The society has also been advised to note any diversity/equality trends from the Health and Care Professions Council (HCPC) and possibly the Institute for Biomedical Sciences.
- The DAISY guidance was very useful in helping identify the reason for collecting diversity monitoring data of SfAM's membership, and how the findings could inform decision making, policies and practice. SfAM disclosed to its membership that the findings from the diversity monitoring questions, would be used in our response to the APPG's inquiry into Equity in the UK STEM workforce.
- The timing for issuing diversity monitoring surveys is crucial as response rates are key to the value of the diversity monitoring data collected. SfAM decided to include the diversity monitory questions as part of SfAM's annual membership survey in

December 2020 to motivate members who would not normally consider completing a diversity survey to do so. As only 217 members of 1773 responded to our diversity monitoring survey, which equates to approximately 8% of SfAM's membership, we welcome any suggestions for increasing response rates for future data collection. Suggestions have been received in response to this inquiry, including potentially linking diversity monitoring data collection with membership subscriptions and to perhaps sought experience of professional survey organisations.

- It is also important to note, that our diversity monitoring survey data was collected from the complete SfAM membership, including both our UK and international members.
- A problem we have observed when monitoring the diversity of our membership, is that it becomes extremely difficult to use the data effectively when there are gaps in the data collection for example when survey respondents have skipped particular diversity questions or simply selected the "prefer not to say" option. Interestingly, we observed inconsistencies in the number of questions skipped by respondents, which appeared to be dependent on the nature of the diversity question itself and the response options available.
- Further, we have addressed each characteristic in isolation while we appreciate that the diversity and representation within our membership is dependent on a combination of the multiple diversity characteristics for example the intersection of gender and ethnicity. It would then be beneficial to compare the diversity monitoring data collected to Government national census statistics from the Office for National Statistics (ONS).
- Another characteristic we have not yet considered is regional disparity. This was discussed at a Royal Society of Biology (RSB), Diversity and Inclusion Working Group (DIWG) meeting in 2020. We have not yet explored the regional disparity of diversity within our membership, but hope to achieve this prior to the next annual membership renewal.
- We also intend to examine the impact of other factors such as, career stage and type of institute relative to the demographics of the SfAM membership, as it would be interesting to see whether there is any regional, career stage and institutional variations.
- The following statistics are the demographics of STEM workers within SfAM, based on the diversity monitoring data obtained from membership survey issued in December 2020:

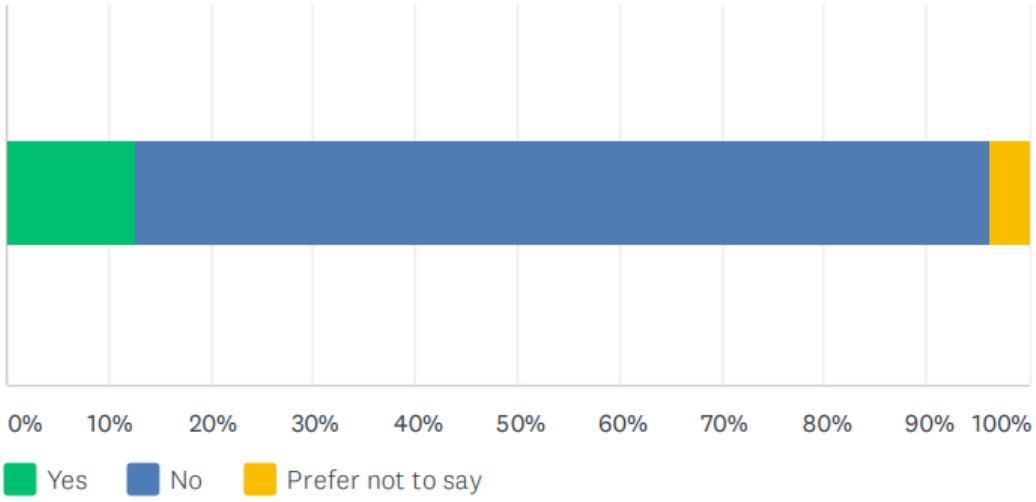
Age



- Almost half (48.12%) of survey respondents fell within the age categories of 25-34 and 35-44 years 24.06% respectively with 0.94% of respondents preferring not to say. The age diversity question was skipped by 5 respondents.
- According to the data analysis brief published by the APPG on the diversity and representation in the STEM, it was found that STEM workers are less likely to be aged 50 or over. However, 26.41% of survey respondents were over 55 years and only 5.29% respondents stated that they had retired.

Answer Choices	Responses	
Up to 24 years	2.83%	6
25-34 years	24.06%	51
35-44 years	24.06%	51
45-54 years	21.70%	46
55-64 years	14.15%	30
65-74 years	9.43%	20
75+ years	2.83%	6
Prefer not to say	0.94%	2
Total		**212**
Skipped		**5**

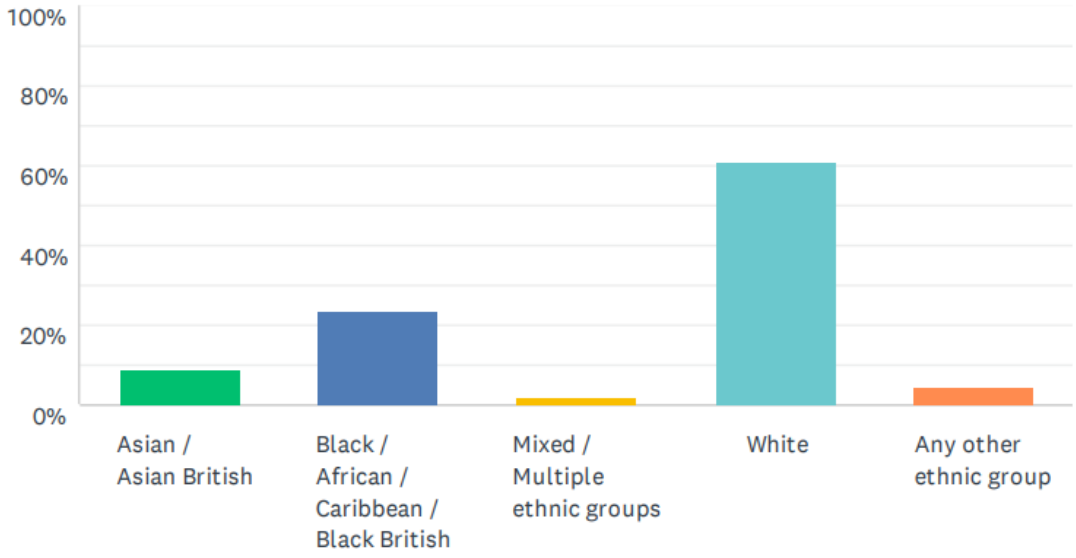
Disability and long-term health conditions



- We report that 12.74% of survey respondents considered themselves to have a disability or long-term condition (such as dyslexia, diabetes, arthritis, a heart condition, or a mental health condition) and meet the Equality Act definition of disability with 3.77% of respondents preferring not to say.
- It is important to emphasise that although 83.49% of respondents do not identify as having a disability or having a long-term condition, the 12.47% of individuals who do are more likely to be adversely impacted by the COVID-19 pandemic.

Answer Choices	Responses	
Yes	12.74%	27
No	83.49%	177
Prefer not to say	3.77%	8
Total		**212**
Skipped		**5**

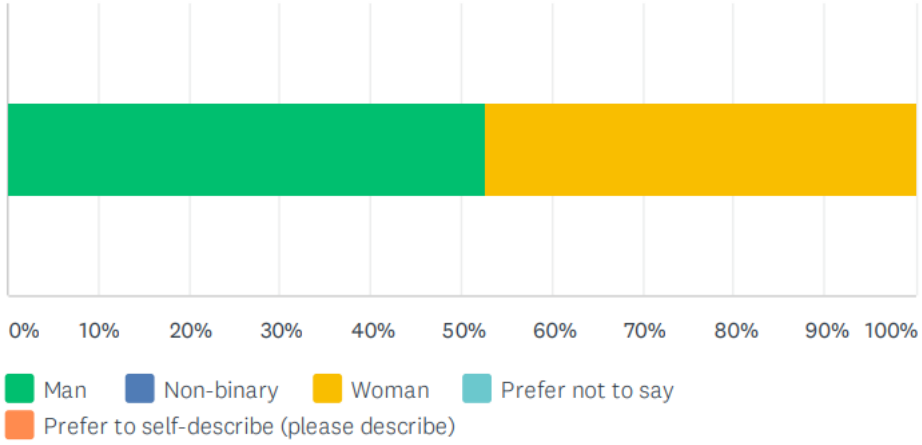
Ethnicity



- Survey respondents were predominantly white with 61.17% from a white background and ethnic minorities comprised 38.83% of survey respondents.
- The ethnicity questions was skipped by 11 respondents which was the highest number skipped of all the diversity questions.

Answer Choices	Responses	
Asian / Asian British: Bangladeshi	0.49%	1
Asian / Asian British: Chinese	0.97%	2
Asian / Asian British: Indian	1.46%	3
Asian / Asian British: Pakistani	0.00%	0
Any other Asian background	6.31%	13
Black / African / Caribbean / Black British: African	20.87%	43
Black / African / Caribbean / Black British: Caribbean	0.97%	2
Any other Black / African / Caribbean background	1.46%	3
Mixed / Multiple ethnic groups: Asian and White	0.00%	0
Mixed / Multiple ethnic groups: Black Caribbean and White	0.49%	1
Mixed / Multiple ethnic groups: Black African and White	0.49%	1
Any other Mixed / Multiple ethnic background	0.97%	2
White: English / Welsh / Scottish / Northern Irish / British	42.72%	88
White: Gypsy or Irish Traveller	0.00%	0
White: Irish	4.37%	9
Any other White background	14.08%	29
Arab	1.46%	3
Any other ethnic group	2.91%	6
Answered		**206**
Skipped		**11**

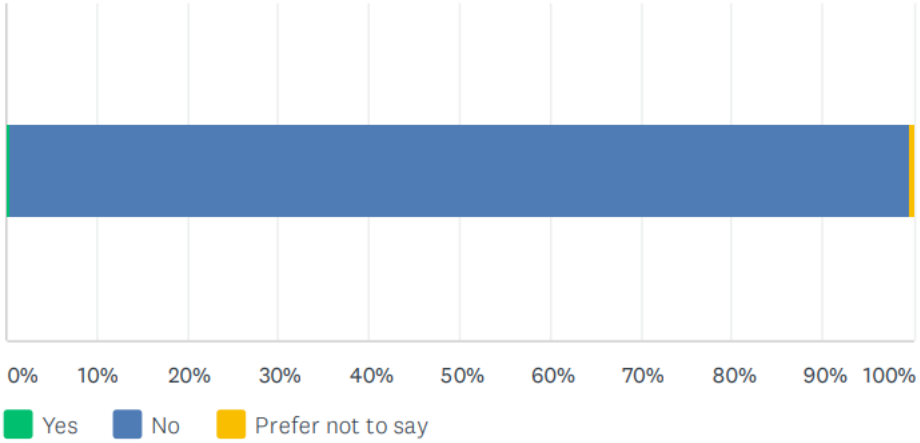
Gender



- Survey respondents were fairly gender balance with a 5.16% difference between male and female responses. The gender balance of respondents was an improvement on the gender balance of the SfAM Executive Committee announced in early 2019 which followed 62% Male and 38% Female. This could signify the impact of the positive steps taken as a society to place Equality, Diversity and Inclusion at the heart of the society.

Answer Choices	Responses	
Man	52.58%	112
Non-binary	0.00%	0
Woman	47.42%	101
Prefer not to say	0.00%	0
Prefer to self-describe (please describe)	0.00%	0
Answered		**213**
Skipped		**4**

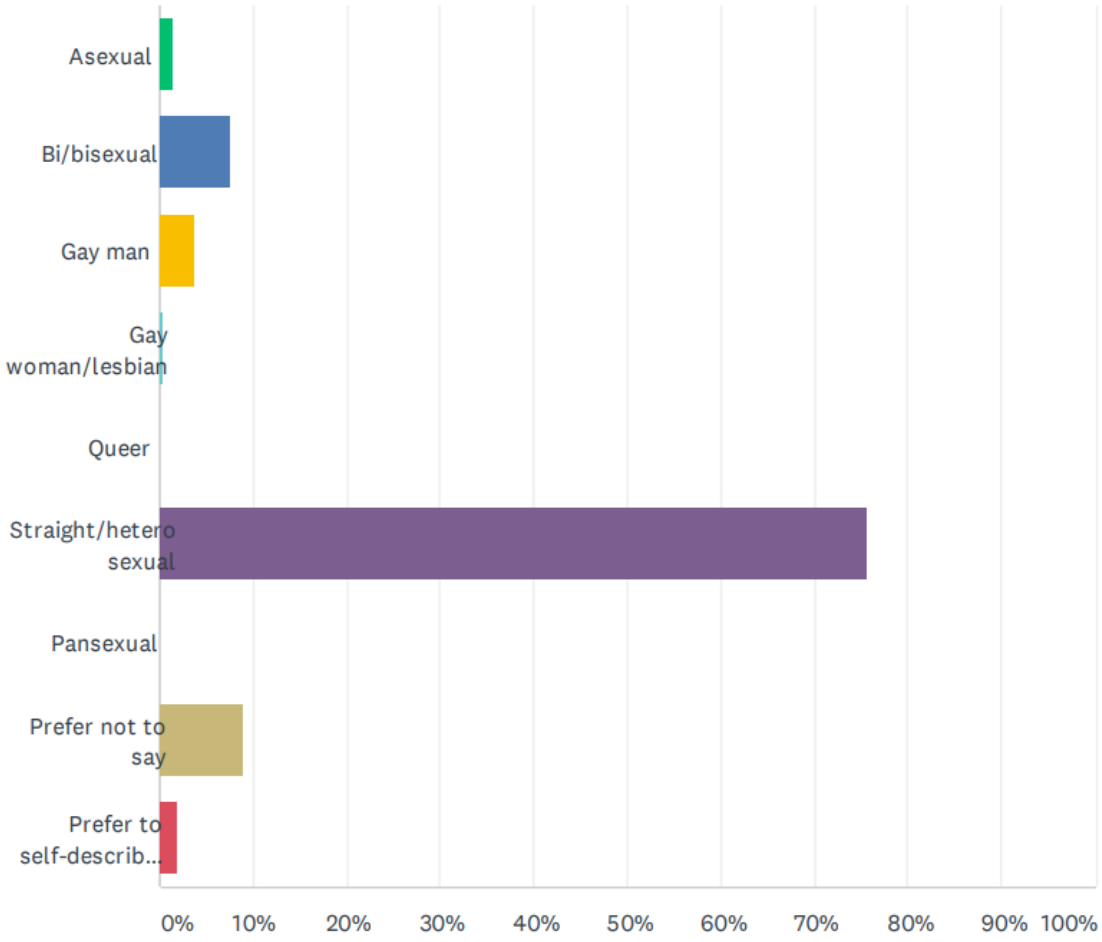
Gender identity



- During the 2019 Federation of European Microbiological Societies (FEMS) congress, Clare Taylor, SfAM's General Secretary, hosted the community conversations at FEMS to highlight the importance of embracing diversity to build inclusive communities. During the LGBT+ community conversation, panellist Dukas, a postdoctoral researcher at CNRS and since SfAM member raised an issue regarding name changes for trans researchers.
- The Society then raised the problem surrounding gender transition, dead naming (referring to the use of the former or birth name of a transgender person prior to transitioning) and publication records as to the EDIS Programme Manager, Dr Lilian Hunt and we have since seen publishing platforms including Wellcome Open Research, F1000 Research and more recently Wiley responding positively and creating new name-change policy to address this issue.
- 0.48% of survey respondents identified as Trans and 0.48% preferred not to say.

Answer Choices	Responses	
Yes	0.48%	1
No	99.05%	208
Prefer not to say	0.48%	1
Answered		**210**
Skipped		**7**

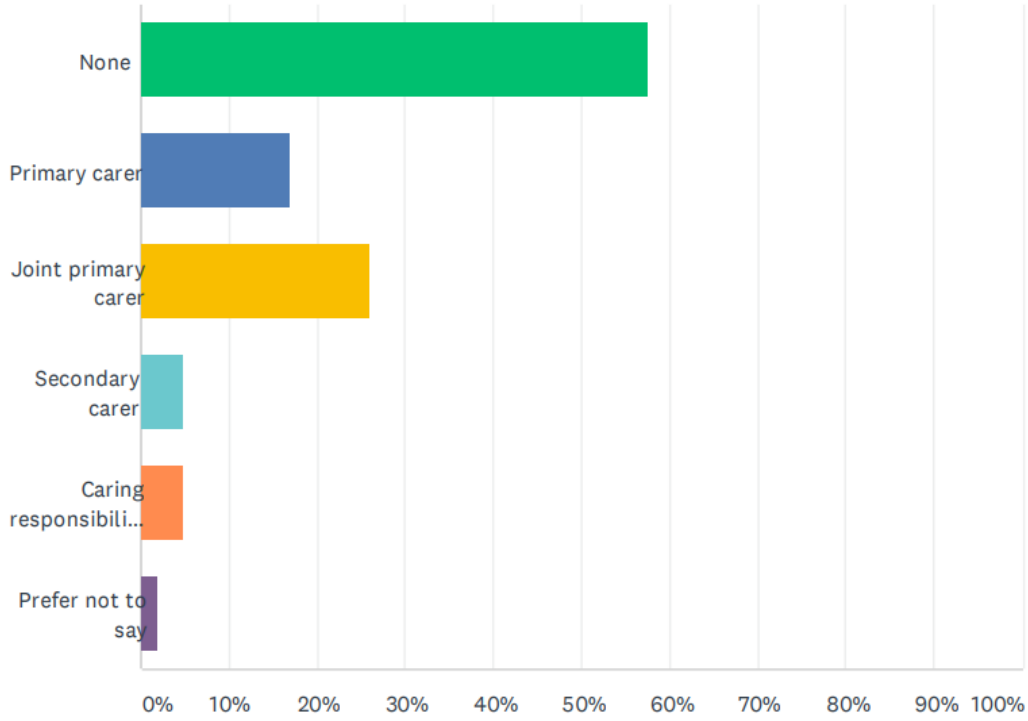
Sexual orientation



- The majority of survey respondents identified as heterosexual (75.71%) and 9.05% of respondents preferred not to say. The sexual orientation diversity question was skipped by 7 respondents.

Answer Choices	Responses	
Asexual	1.43%	3
Bi/bisexual	7.62%	16
Gay man	3.81%	8
Gay woman/lesbian	0.48%	1
Queer	0.00%	0
Straight/heterosexual	75.71%	159
Pansexual	0.00%	0
Prefer not to say	9.05%	19
Prefer to self-describe (please describe)	1.90%	4
Answered		**210**
Skipped		**7**

Caring responsibilities

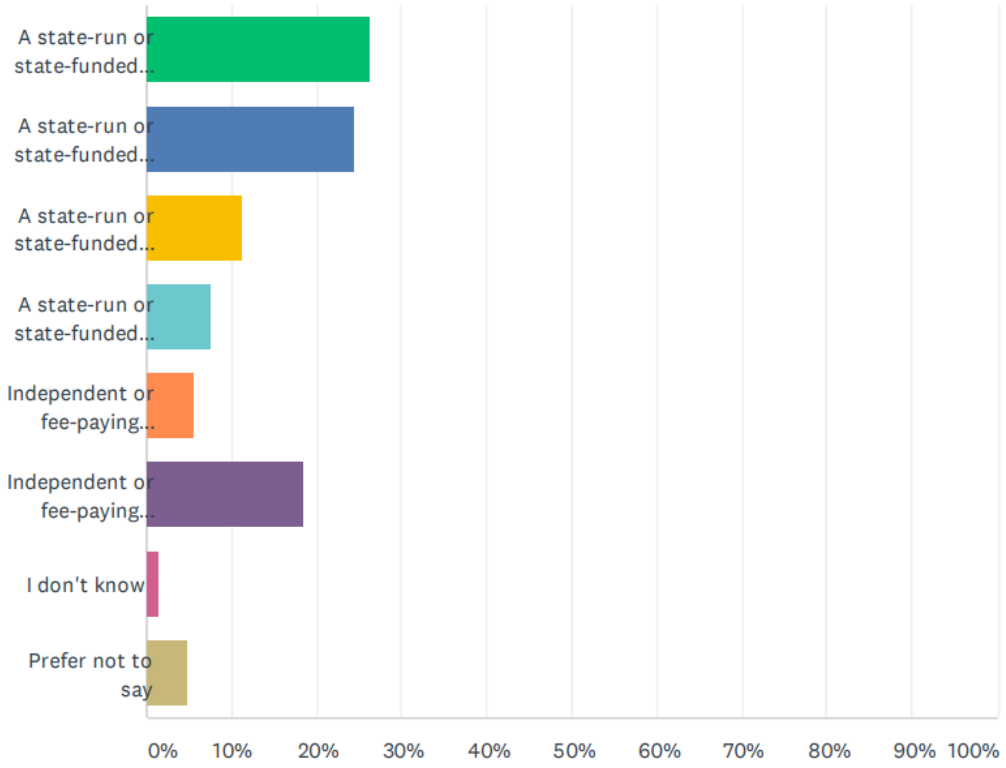


- The survey revealed 40.56% of respondents had some form of caring responsibilities compared to 57.55% of respondents with none and 1.89% of respondents preferred no to say. Further details of the caring responsibilities of respondents have been stated in the table below.

Answer Choices	Responses	
None	57.55%	122
Primary carer of a child or children (under 18)	10.85%	23
Joint primary carer of a child or children (under 18)	18.40%	39
Primary carer of a disabled child or children	0.47%	1
Joint primary carer of a disabled child or children	0.00%	0
Primary carer or assistant for a disabled adult (18 years or over)	0.00%	0
Joint primary carer or assistant for a disabled adult (18 years or over)	1.89%	4
Primary carer or assistant for an older person or people (65 and over)	5.66%	12
Joint primary carer or assistant for an older person or people (65 and over)	5.66%	12
Secondary carer (another person carries out the main caring role)	4.72%	10
Caring responsibilities but prefer not to specify	4.72%	10
Prefer not to say	1.89%	4
Answered		**212**
Skipped		**5**

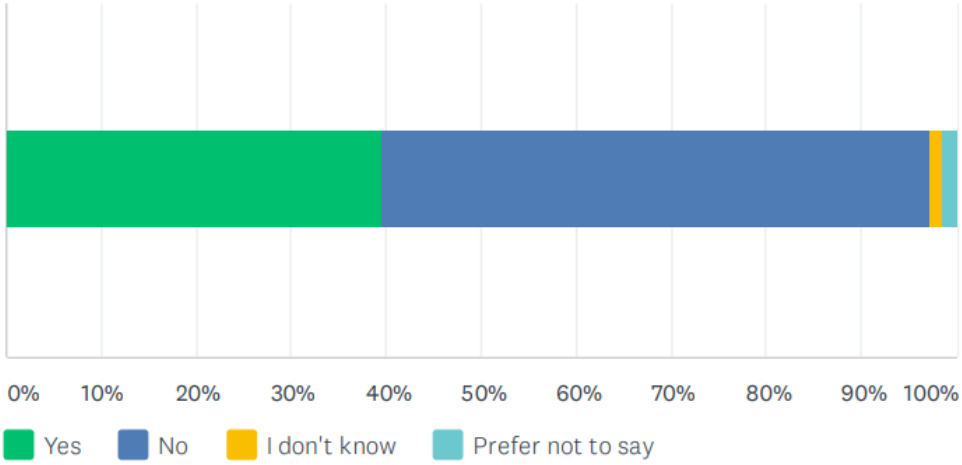
Socio-economic variables

- We asked our membership what type of school they attended for the majority of time between the ages of 11-16. We have included our diversity data for education both within the UK and outside the UK below.
- As this inquiry is looking into Equity in the UK STEM workforce, we can report that 37.74% of survey respondents attended a state-run or state-funded school in the UK with 5.66% of survey respondents attending an independent or fee-paying school in the UK.



Answer Choices	Responses	
A state-run or state-funded school in the UK - Non-selective	26.42%	56
A state-run or state-funded school outside the UK - Non-selective	24.53%	52
A state-run or state-funded school in the UK - Selective on academic, faith or other ground	11.32%	24
A state-run or state-funded school outside the UK - Selective on academic, faith or other ground	7.55%	16
Independent or fee-paying school in the UK	5.66%	12
Independent or fee-paying school outside the UK	18.40%	39
I don't know	1.42%	3
Prefer not to say	4.72%	10
Answered		**212**
Skipped		**5**

- We then asked our membership, at the age of 18, had any of your parents or guardians completed a university degree course or equivalent (e.g., BA, BSc or higher) and our survey revealed more than half (57.62%) of respondents parents or guardians had not completed a university degree course or equivalent at the age of 18 years.

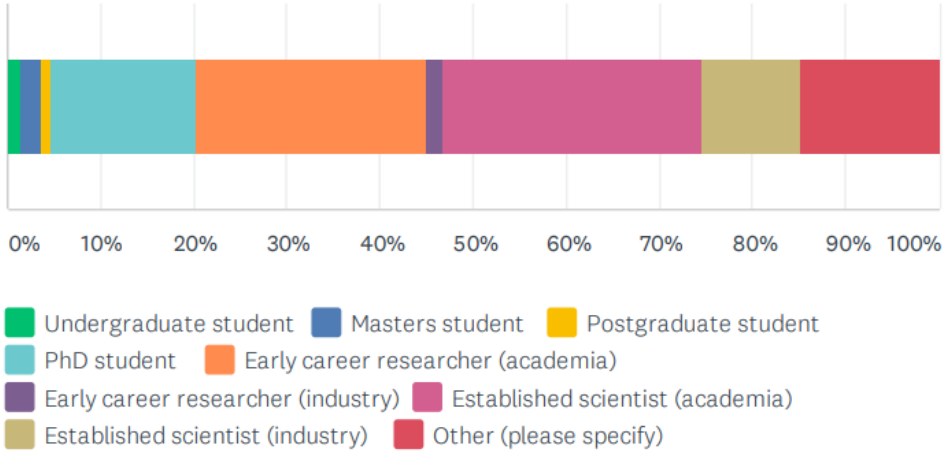


Answer Choices	Responses	
Yes	39.52%	83
No	57.62%	121
I don't know	1.43%	3
Prefer not to say	1.43%	3
Answered		**210**
Skipped		**7**

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

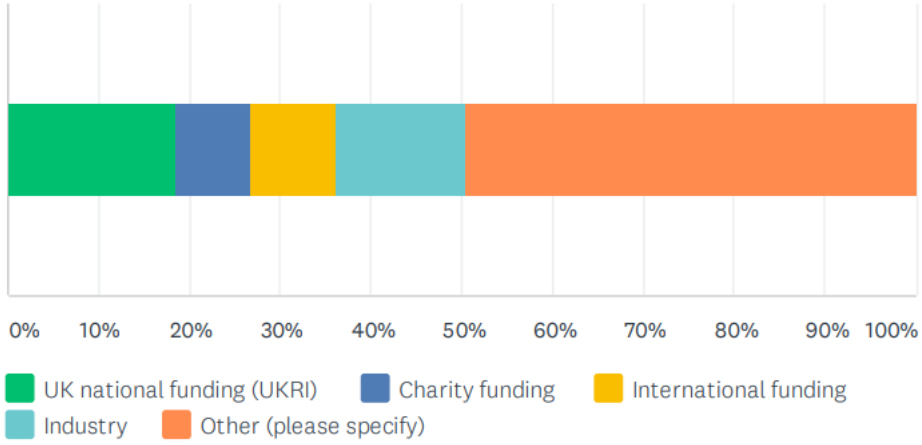
- **STEM disciplines or sector/subsectors**
- **types of organisation (e.g. private, public, non-profit)**
- **type of STEM activity (e.g. academic research, education, engagement, commercial, funding)**
- **job levels and/or qualification.**

- An issue identified by our membership with the findings reported in the Equity in STEM Education report, was that it does not capture the inequality of career progression to more senior roles. Within our end of year membership survey, we included a question on career stage to help us identify the representation of our membership across the job levels within Microbiology. The survey identified that of the 217 survey respondents, of which 46.76% of respondents identified students or early career researchers. It would be interesting to note the diversity of this specific cohort and any obstacles face in terms of career progression or qualification.



Answer Choices	Responses	
Undergraduate student	1.39%	3
Masters student	2.31%	5
Postgraduate student	0.93%	2
PhD student	15.74%	34
Early career researcher (academia)	24.54%	53
Early career researcher (industry)	1.85%	4
Established scientist (academia)	27.78%	60
Established scientist (industry)	10.65%	23
Other (please specify)	14.81%	32
Answered		**216**
Skipped		**1**

- It is important to acknowledge that in most UK universities, international students contribute significantly to the masters and PhD student populations - most of these students then return home after graduation and so are removed from the UK STEM workforce.
- The degree attainment gap refers to the difference in 'top degree' – a First or 2:1 awarded to different groups of students, and the biggest differences are found by ethnic background[1]. This could have long term implications on accessing postgraduate research opportunities and may contribute to the low representation we find at senior levels in STEM careers. There has been suggestions to replace the term "attainment gap" with "awarding gap" as awarding gap would suggest the issue is with the institution rather than the student and their protected characteristics.
- Our members have also raised concerns over the inequity that exists in respects to research funding and concrete examples of this have been provided in an open letter to UKRI by Addy Adelaine *et al* (2020)[2]. Of particular note is that the term BAME can often mask inequities among minoritised groups and that it is also difficult to identify how intersectional communities are impacted without data collection. As part of our end of year membership survey we included a question on funding and found that 18.57% of survey respondents were funded by UKRI, but without further diversity analysis of that cohort it is unfeasible to comment further.



Answer Choices	Responses	
UK national funding (UKRI)	18.57%	39
Charity funding	8.10%	17
International funding	9.52%	20
Industry	14.29%	30
Other (please specify)	49.52%	104
Answered		**210**
Skipped		**7**

- A concern raised is that although there is a good representation of black and minority ethnic students at degree level higher education in the Biosciences, it is not clear what this representation looks like in regards to institute type and regional disparity. This level of representation then drastically declines through the career progression and job levels and this is especially true for women of colour.
- It has been stated that there are only 25 black, female professors at UK Universities. Unfortunately, it is quite challenging to identify how many of these professors are in STEM subjects. Of the 14 black, female professors profiled in the Guardian's 'Portraits of UK black female professors' only 2 women were from STEM backgrounds[3] and we are yet to identify a female professor in Microbiology who is from a minority background in a UK Higher Education Institution. Research undertaken by Dr Nicola Rollock, catalogues the experiences of UK black female professor and provides insights into how different communities are impacted[4].

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

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

As SfAM's Equality, Diversity, and Inclusion policy recognises, STEM sectors are most progressive when they are diverse and inclusive, enabling the best talent to contribute varied solutions to complex problems. It is important to recognise for both recruitment and retention measures one single approach or policy may not be effective for every organisation. Thus, SfAM recognises that there is no "one size fits all" policy and encourages organisations to employ numerous approaches to address diversity and inclusivity.[1]

Recruitment

- Research conducted in 2019 by the Centre for Social Investigation found that despite submitting identical CVs and cover letters, "ethnic minorities needed to send 60% more applications in order to receive as many call-backs as the majority group."[2] Blinding job applications, whereby applicants' personal data (such as their name, age, or university) is removed during the assessment process, is one recruitment technique many organisations implement to address recruiters' unconscious bias around those variables. Blinding applications ensures that those factors, which disadvantage individuals from the start of their careers, are not considered during the recruitment process.
- Mentoring and networking schemes, such as Black British Professionals in STEM (BBSTEM),[3] Sheffield Hallam Students' Union BAME Ambassador Scheme,[4] and Beyond Barriers Student Mentoring Scheme at Kingston University,[5] are another inclusive initiative designed to provide diverse role models that encourage and

[1] Society for Applied Microbiology Equality Diversity and Inclusion. https://sfam.org.uk/knowledge/policy/equality-diversity-and-inclusion-ed-i.html.

[2] Centre for Social Investigation. (18 January 2019). "New CSI research reveals high levels of job discrimination faced by ethnic minorities in Britain." Nuffield College, Oxford. http://csi.nuff.ox.ac.uk/?p=1299.

[3] Black British Professionals in STEM. https://bbstem.co.uk/.

[4] Sheffield Hallam Students' Union BAME Ambassador Scheme. https://www.hallamstudentsunion.com/BAME/.

[5] Kingston University London Beyond Barriers Student Mentoring Scheme. https://www.kingston.ac.uk/aboutkingstonuniversity/equality-diversity-and-inclusion/mentoring-opportunities/.

support minority students in STEM careers. With first-hand experience of navigating barriers to a STEM career as a minority, these mentors offer mentees support, networking opportunities, and access to resources that they may otherwise have difficulty obtaining.

- While these mentoring schemes are great ways to foster diversity in STEM careers, it is important to note that the responsibility of encouraging STEM careers with underrepresented groups should not fall to the minority participants of an organisation. In many cases, underrepresented individuals have been overly burdened with being "Diversity Champions" for their employer while also working full time on their research.[6] This can adversely affect their research performance and outputs, further impeding their ability to progress to senior positions in their careers. Therefore, becoming a mentor or diversity champion for an organisation should always be voluntary.
- Moreover, employers should properly recognise and value the contributions of volunteers in these roles. Taking on the responsibility of supporting mentees or identifying ED&I initiatives for an organisation should not be viewed as an additional activity to one's "proper" job. These roles should be considered crucial and in conjunction with individuals' "primary" jobs, particularly for employees' performance reviews.

Retention

- SfAM has continually stressed in previous consultation responses (SfAM's response to 2020 BEIS UK R&D Survey and 2013 House of Commons Science and Technology Committee inquiry into Women in STEM Careers)[7] a significant underrepresentation of women, ethnic minorities, disabled individuals, and individuals from lower socio-economic backgrounds in senior positions in STEM sectors.
- One significant factor as to why these groups have less representation in senior positions is that career progression in STEM jobs is often measured by the number of research outputs a researcher produces. Researchers regularly work excess hours to constantly produce papers and be seen as competitive. This measurement particularly dissuades and discourages women and early career researchers with family caring responsibilities from pursuing STEM research and development roles. STEM employers and funding institutions should look to discourage working long hours with unrealistic deadlines by rewarding more jobs and grants to researchers based on their research ideas rather than the number of outputs they have produced.
- Another factor for this discrepancy is unconscious bias towards educational attainmemt. Managers may take into account the reputation of the university an individual attended, favouring elite schools, when selecting candidates for job positions or promotions. However, individuals decide to attend universities based on many factors, such as financial costs, location, and caring responsibilities, not just the most prestigious school they are accepted to (which are factors that already disadvantage underrepresented groups). This bias also perpetuates bias at the educational attainment level. As a 2018 report from the BBC found, while the average intake of black first-year undergraduates across the UK in 2016 was 8%, only 1.5% of the University of Cambridge's and 1.2% at Oxford University's intakes

[6] Nance-Nash, Sheryl. (14 September 2020). "How corporate diversity initiatives trap workers of colour." BBC: Worklife. https://www.bbc.com/worklife/article/20200826-how-corporate-diversity-initiatives-trap-workers-of-colour.

[7] Society for Applied Microbiology Briefings and Consultations. https://sfam.org.uk/knowledge/policy/briefings-and-consultations.html.

was black.[8] Underrepresented individuals thus face compounding bias from the start of their career (at the educational level), during recruitment, and throughout career progression.

- While UKRI and Research Councils stipulate that grant recipients are entitled to take maternity/paternity leave, the paid leave amounts can vary by grant provider.[9] This often negatively influences research recruitment decisions for diverse candidates.[10] A 2014 NPA survey of 66 institutions found only 26% of postdocs, paid directly by external funders, were paid maternity leave.[11] For those seeking paid paternity leave, the percentage ranged between 15% to 39%, depending on the postdoc funding source.
- Moreover, confusion around what aspects of a grant is covered by paid maternity/paternity leave, can negatively impact research outputs and further dissuade researchers for applying for grants. As an anonymous researcher cited by the Guardian in 2017 explained, only the researcher's salary costs were covered by the maternity/paternity leave, but the additional experimental costs (e.g. maintaining wet lab costs) were not. Those additional costs to maintain the experiment were considered "exceptional circumstances," which are not required and only granted on a case-by-case basis.[12] Future grants should always support maternity/paternity leave and clarify what recipients are entitled to in order to attract diverse applicants and retain that talent.
- Initiatives such as the Athena Swan Charter[13] and Race Equality Charter,[14] have been designed to encourage organisations and higher education institutions to adopt better inclusive working practices. These initiatives officially recognise organisations who continually improve their ED&I strategies by requiring and supporting good practices such as annual assessment of diversity gaps and creating and executing actions to address gaps.
- In 2018, SfAM created an action plan to identify ways to improve its diversity and inclusivity in every facet of the organisation. Creating the action plan with SfAM's trustees has ensured ED&I is considered throughout every level of SfAM. Actions such as annually reporting committee composition or requiring event organisers to consider diversity of speakers and accessibility of talks continue to encourage SfAM employees and members to constantly reassess how inclusive they are and can be.

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[8] (23 May 2018). "Five charts that tell the story of diversity in UK universities." BBC News. https://www.bbc.co.uk/news/education-44226434.

[9] Science and Technology Facilities Council. (last updated 19 October 2020). https://stfc.ukri.org/funding/promoting-equality-and-diversity/.

[10] SfAM response to House of Commons Science and Technology Committee inquiry into Women in STEM Careers. (September 2013). https://sfam.org.uk/resource/sfam-response-to-inquiry-into-women-in-stem-careers.html.

[11] Kuo, Maggie. (July 10 2017). "Many postdocs face challenges securing parental leave, new report highlights." Science Mag. https://www.sciencemag.org/careers/2017/07/many-postdocs-face-challenges-securing-parental-leave-new-report-highlights#:~:text=Postdocs%20paid%20directly%20by%20external,depending%20on%20postdoc%20funding%20source.

[12] Anonymous Academic. (5 May 2017). "No one told me about the hidden costs of maternity leave." The Guardian. https://www.theguardian.com/higher-education-network/2017/may/05/no-one-told-me-about-the-hidden-costs-of-maternity-leave.

[13] Athena Swan Charter. https://www.advance-he.ac.uk/equality-charters/athena-swan-charter#resources.

[14] Advance HE's Race Equality Charter. https://www.advance-he.ac.uk/equality-charters/race-equality-charter.

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?**

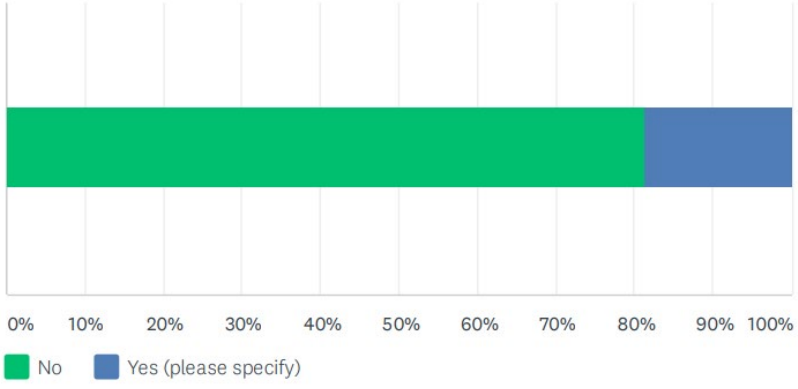
- In 2016, the Cabinet Office commissioned the Bridge Report in order to scrutinise the government's recruitment processes and identify ways to improve diversity through best practices.[15] As a result, the UK Government agreed to implement blind-recruitment processes (see answer to Q3) across public sector jobs, including the Civil Service and NHS by 2020.[16] The Government will also publish "an Inequality Index," the pay ratio of the salaries between the median and highest paid employees, to address pay gaps. In addition, it will establish regional assessment centres to widen recruitment for candidates outside of London. SfAM would support these inclusivity measures being rolled out to the rest of the UK STEM workforce.
- Like the Inequality Index, one of the key recommendations from the Equality Act 2010 is that employers with 250 or more employees must report annually on their gender pay gap (the difference between the average earnings of men and women across their company).[17] This not only enables potential recruits to get a sense of an organisations ED&I values but also forces an organisation to consistently evaluate its ED&I practices and encourages them to seek improvement by including a proposed action plan to remedy gaps.
- To further advance the many benefits resulting from annual gender pay gap reporting, organisations should also be required to report ethnicity pay gaps, particularly across different seniority levels. This would not only support the benefits noted with gender pay gap report, but also help attract diverse candidates and retain those employees, who would otherwise be discouraged by a company's lack of diversity in senior positions.
- While these policies are good first steps to raising awareness of and measuring ED&I gaps within government, statistical analysis conducted since the report was published indicate more work is required to identify measures for addressing gaps. For example, the Civil Service Diversity and Inclusion Dashboard's 2019 report found only 12.7% of its civil servants are from ethnic minorities and 11.7% are disabled.[18] Likewise, the Intellectual Property Office's Inclusion and Diversity Report for 2019-2020 found only 4.97% of its workforce was BAME and 6.66% were disabled (both in IPO Newport).[19]
- Agencies clearly need to identify solutions beyond measuring progress (or lack thereof) to successfully close gaps. Gap reports' action plans should identify more targeted solutions; whereby, underrepresented groups are not categorised together. Bundling underrepresented groups risks identifying solutions that do not work for

[15] UK Cabinet Office. (2 February 2016). Socio-economic diversity in the Fast Stream: the Bridge report. https://www.gov.uk/government/publications/socio-economic-diversity-in-the-fast-stream-the-bridge-report.
[16] UK Cabinet Office. (2 February 2016). "Plan to end inequality in the public sector" Press Release. https://www.gov.uk/government/news/plan-to-end-inequality-in-the-public-sector.
[17] UK Government Equalities Office. (14 December 2020). Gender Pay Gap Reporting. https://www.gov.uk/government/collections/gender-pay-gap-reporting.
[18] UK Cabinet Office and Civil Service. (5 June 2018). Civil Service Diversity and Inclusion Dashboard. https://www.gov.uk/government/publications/civil-service-diversity-inclusion-dashboard.
[19] UK Intellectual Property Office. (25 August 2020). Inclusion and Diversity Report for 2019 – 2020. https://www.gov.uk/government/publications/inclusion-and-diversity-report-for-2019-2020/inclusion-and-diversity-report-for-2019-2020--2#workforce-data.

every group while also skewing progress reports. This allows organisations to falsely claim progress for all groups when they may be only addressing one group.

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?

- COVID-19 will have a significant impact on equity in science careers because of the protracted period of training and short-term contracts, particularly for early career scientists. Most PhD students and research assistants on short contracts will have lost over a year of practical work that in all probability will never be recovered. The pandemic has also distorted the allocation of funding and resources (even laboratory consumables and equipment). Wealthier organisations and groups will have more resilience to buffer this impact, conversely poorer organisations, groups and individuals will be most vulnerable.
- In 2020 at the start of the pandemic, we conducted a survey of the SfAM membership to explore the impacts of COVID-19 and convened COVID-19 task and finish groups addressing 3 essential issues: future preparedness, ensuring other areas of microbiology continue and social impacts and equality. The findings from these activities unequivocally highlighted the disproportionate effects of the COVID-19 pandemic on specific groups of the SfAM membership, specifically those on short-term research contracts. These findings have been used to produce a position statement in support of our members on short-term research contracts, which will be shared with the APPG on Diversity and Inclusion in STEM when published.
- To further assess the impact of COVID-19 on the SfAM membership, we included a question in our end of year membership survey on whether members had considered changing research area, sector (academic, industry, etc.), and/or career because of the impact of COVID-19. Worryingly, of the 217 survey respondents 18.6% stated they have considered changing research career due to the impact of COVID-19.



Answer Choices	Responses	
No	81.40%	175
Yes (please specify)	18.60%	40
Answered		**215**
Skipped		**2**

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?

- One opportunity for employers as a result of COVID-19 is the continual use of remote/ virtual working. The ability to work from any location (depending on broadband availability) will enable participants to access positions they may not live near and increase social mobility. This can reduce barriers to individuals from lower socio-economic backgrounds who may not have the means to relocate and/or live in expensive areas where their employer is located. This should particularly help STEM careers in addressing the regional funding disparity resulting from the "golden triangle," which refer to the elite research universities located in Cambridge, London, and Oxford. As the Department for Business Innovation and Skills 2013/14 Public research and innovation expenditure report found, 46% of funding from Research Council and Higher Education Funding Council were allocated to universities in those three regions.[20]
- Likewise, the way scientists have communicated and collaborated during COVID-19 (e.g. video conferences, online forums, publications, and peer review processes) is hopefully an opportunity that will continue. Increasing access to online conferences and interest groups has enabled individuals with disabilities and caring responsibilities to access information and identify potential collaborations more easily.
- Another opportunity has been the increased investment in healthcare and IT sectors as a result of COVID-19. SfAM hopes that this increased investment and recognition of the importance of investing now to prevent future pandemics will continue.
- One negative implication of Brexit and COVID-19 has been the delay in access to new equipment and resources. One respondent to SfAM's membership survey noted that due to spending freezes at their university, purchasing critical equipment was delayed. Changes in VAT and customs as a result of Brexit have now further exacerbated acquiring this equipment. This will delay numerous research projects and accompanying training for using that equipment.
- While many researchers were relived to see the UK's continued participation in Europe's Horizon Europe research programme, concerns have been raised about immigration and researchers being able to study or work in other countries and vice versa. One of the benefits of the UK being in the EU was the easy exchange of knowledge and ideas between individuals and their institutions. There are concerns that withdrawal from the Erasmus exchange programme may result in overly bureaucratic exchange applications that may deter diverse and talented individuals from studying and/or working in the UK.[21]

[20] Department for Business, Innovation and Skills. (June 2015). Public Research and Innovation Expenditure: Geographic breakdown of public research and innovation expenditure. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/437447/bis-15-350-Public-expenditure-on-research-and-innovation-2013-14.pdf

[21] Gibney, Elizabeth. (5 January 2021). "What the landmark Brexit deal means for science." Nature. https://www.nature.com/articles/d41586-021-00009-y.

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[2] https://www.researchprofessionalnews.com/rr-news-uk-views-of-the-uk-2020-8-knowledge-is-power-an-open-letter-to-ukri/

[3] Portraits of UK black female professors – in pictures | Education | The Guardian

[4] https://www.ucu.org.uk/media/10075/Staying-Power/pdf/UCU_Rollock_February_2019.pdf

About the Society for Applied Microbiology

The Society for Applied Microbiology (SfAM) is the oldest microbiology society in the UK, representing a global scientific community that is passionate about the application of microbiology for the benefit of the public. Our members work to address issues spanning the environment, human and animal health, agriculture and industry.

www.sfam.org.uk

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