BAME scientists: the hidden pioneers?

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2020: The year of inclusion, scrapping labels, where previous divisions become archaic and dated. The promise of communities thriving from foundations built upon equality, diversity and inclusion. Why then is there still a lack of Black, Asian and minority ethnic (BAME) representation within Science, Technology, Engineering and Mathematics (STEM)? In this article, we showcase the experience of BAME scientists as it has progressed through the decades, before exploring the goals and possibilities for a future without inequality in science.

A history of underrepresentation

To understand the root of this issue, we must first take a look at the past. The first doctorate awarded was to a White man, in Yale 1861, while the first Black woman to receive a doctorate had to wait until 1931, an immense 70 years later. Many Black, Asian and minority ethnic (BAME) people in celebrated Science, Technology, Engineering and Mathematics (STEM) positions consider the major underlying reasons for the continued underrepresentation to be:

1. limited access to quality education
2. discrimination in recruitment and promotion
3. a lack of encouragement to pursue these jobs from an early age

In ‘The Education of Black Folk’, Allen Ballard aptly explains this, stating: “until 1965, the academic world itself scarcely noticed Blacks”. We know diverse teams produce better science; teams with a variety of interests, intellectual approaches and complementary skills are more likely to be able to identify and solve complex problems, but perhaps history itself has been whitewashed.

In his 1967 book ‘Where Do We Go from Here?’, Martin Luther King Jr wrote that “the history books … have only served to intensify the Negroes’ sense of worthlessness”. He pointed to medical pioneers like Charles Drew and Daniel Hale Williams, and insinuated that if these figures had been appropriately chronicled in American history, those feelings of worthlessness could have been avoided. It is now clear there has not been a lack of role models per se, rather there has been lack of care when noting the achievements of BAME scientists within their fields.

For example, Alice Ball (Figure 1) was an African American chemist who developed the first successful treatment for those suffering from Hansen’s disease. The famed Dr Arthur Dean based his research largely on hers; yet until now, her achievements have been overlooked and her ability to drive and inspire young BAME scientists has been quenched. And this is just one of potentially thousands of examples littered across history where BAME scientists have been pushed away and told they are not good enough.

In 2011, a study led by economist Donna Ginther of the University of Kansas in Lawrence found that Black applicants were significantly less likely than Caucasian applicants to be funded by the National Institutes of Health, which turns the issue of discrimination into a vicious cycle – without funding, there is no research and without research, there are no BAME scientists making breakthroughs. In 1990, a group of Black data researchers were interviewed and they stated that Black people in STEM were four times as likely as non-BAME people in STEM to say their workplace does not pay enough attention to increasing racial and ethnic diversity, contributing to the 50% of BAME communities today in 2020 who have experienced one or more types of racism in the workplace. In high-pressure environments such as the National Health Service (NHS), this figure rose to a shocking 67%, with 9924 staff quitting in 1989 due to acute racism, both from staff and patients alike.

Our current situation

A strong pattern of BAME discrimination in science, evident throughout the past and in the current age, is unfortunately still prevalent. While advancements and breakthroughs in science have been unfolding at an accelerating rate, it is shocking to see that the field is still lagging behind on greater diversity. Inclusive
Boards concluded in their November 2018 Inclusive Tech Alliance report that 74.5% of boards in the tech sector had no BAME members and that BAME people make up just 8.5% of senior leaders such as directors and executives. As the work of scientists plays a positive part in all of our lives, from health to entertainment, it is imperative that their work scene is more depictive of all groups.

It is not surprising to see that one of the root causes of barriers and discrimination against BAME lies within the education system. Without sharing a basic understanding of diversity and its importance, as well as allowing the theme of partiality to persevere in students’ lives, schools and other bodies become the culprits of a serious crime for the world of work, including science.

To give an overview, a 2018 study co-published by the University Partnerships Programme Foundation (UPP) and the Social Market Foundation (SMF) found that 10.3% of Black students quit university early in the UK, compared with 6.9% for the student population as a whole and this inequality is reflected in the number of BAME undergraduates (Figure 2). The access and progression in education towards STEM careers varies significantly for BAME students and this may be the reason why we fail to see BAME represented in the field – students are simply not supported enough to reach it.

Luckily, there is light at the end of the tunnel as society becomes more aware of the issues faced by minority scientists. Evidenced by the statistics collected, there are clear examples of those succeeding to change the status quo – it is something we should celebrate. One of the major areas being focused on is the promotion of BAME scientists to serve as mentors and role models. For example, there is a rise of ‘diversithons’ in the UK. These are traditional Wikipedia ‘editathons’, when people come together to improve Wikipedia articles, which are aimed at creating and improving the entries of notable BAME scientists. The prominence of such events and the pages made from them hope to bring BAME scientists to the front stage and inspire the next generation. The Financial Times is one of the publications at the forefront of scientific diversity, publishing an annual Top 100 BAME leaders driving progress in the science field. Likewise, in 2016, the University of Leicester celebrated one BAME scientist every day of Black history month. Educating our society on the brilliant work of BAME scientists is vital to ensuring awareness of the need for diversity and to help current and future BAME scientists to access the same opportunities.

There is also work being done to address problems in STEM education so that the pathways to science are accessible to all. BBSTEM is an organization fighting for the balance of Black individuals in STEM. Stemettes is a similar organization which is playing a vital role in this challenge; it holds events, hackathons, exhibitions and mentoring sessions to encourage females in particular, of all backgrounds, to pursue a career in science. Such commitment is clearly helping to drive greater representation in the field and is helping to persuade other organizations to follow suit. Another influential aspect opening up the experience of BAME scientists is that of film. The movie, *Hidden Figures*, which details the story of the team that worked on NASA’s first space missions, including aerospace engineer Mary Jackson, has been particularly notable in making the idea of BAME scientists accessible and emphasizing that science is within reach of us all.

It is wonderful to see the huge improvements being made to better the experience of BAME scientists and these initiatives are beginning to show their impact. CIPD (Chartered Institute of Personnel and Development), the professional body for HR and people development, says that around 14% of the UK working age population comes from a BAME background and by 2030, it is expected that the proportion will be closer to 20%.

**What can we expect to see?**

It is key to remember that there is still an issue to be dealt with and this must continue to be faced going into the future. Introducing more inspirational figures into schools, or even incorporating role models as part of school curricula would be a highly effective effort to resonate with children. Students should have the opportunity to relate to such figures and as such should feel empowered to pursue a career in STEM. Using diverse role models will also enforce the idea that equality is important, and it is likely that the ‘STEM stereotype’ will be quickly disproven.

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**Figure 2.** A graph representing how many undergraduate students are BAME. Image source: https://www.hesa.ac.uk/data-and-analysis/students/whos-in-he
Between the ages of 6 and 16, young adults begin to decide on their careers and ambitions for the future. Such crucial years should be a focal point for many programmes when attempting to encourage more students into STEM. However, making science a more attractive subject when taught at primary and secondary schools would also increase the number of scientists from a range of different backgrounds. This could include:

1. an increased number of excursions to local scientific attractions, for example, science museums, science departments in local universities, science festivals, live interactive scientific lectures, etc.;
2. teaching lessons with a more hands-on approach, for example, performing experiments in the classroom and
3. an increased number of local science festivals or science days to encourage young people to consider science as an attainable career – it is more convenient for families to attend and also makes science more accessible.

There are now an incredible amount of resources available to encourage a greater diversity of scientists. In addition, there are also many inspirational young people, STEM communicators and professionals who are willing to give up their free time to fight for what they believe in: greater diversity in STEM. Perhaps it is time for everyone to listen to those social action campaigners and start acting on the lack of diversity in STEM. Equality and inclusion are the only way we can progress further in science and function as a society. Fight for what you believe in.

Further reading

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