

**1. In your opinion, what should the core purpose of science education be? Is this changing and, if so, how?**

- The core purpose of science education is to understand how the world works, from an atomic/ molecular scale to an ecosystem, global or universal level. It should teach how discoveries are made, how scientific process works (e.g. critical thinking, evidence based).
- Accessibility - We believe that everyone should have equal opportunities to access to Science, it's research and its outcomes.
- To provide trustworthy scientific evidence.
- To inform a body knowledge that is progressive and continually evolving.
- To facilitate the process of gaining knowledge through the observation of testable evidence and subsequent knowledge transfer.
- To enable critical thinking and evidence evaluation.

**2. To what extent do you feel that science education currently prepares young people for the world of work and to become scientifically literate, active citizens? Specifically, how well does it prepare them to work in innovative STEM industries and environments (or not)?**

- Scientifically informed decision making based on evidence.
- The science curriculum should include key threats facing humanity including both climate change and antibiotic resistance.
- Allows young people to verify and assess the validity of both main stream and social media.
- Science prospects - Science education should inform young people of science career paths including both industry and research.
- Science education must keep up to date with the developments in science technology e.g. Science practical classes
- Entrepreneurship - As a sector we are not as well –prepared as our US cousins.

**3. What aspects of science education are currently working well or are less successful in your view? What would you like to see more or less emphasis on? Please flag any gaps in knowledge/skills and highlight changes or developments you would like to see in the next 5-10 years.**

- Scientific skills developments - practical science skills need to be emphasized at all stages of the curriculum, but this takes funding.
- Science education must include the key threats to humanity (related to UN Sustainable Development Goals (SDGs)).
- More emphasis on science as a global unifying force for good – building evidence and suggesting remedies for a wide variety of challenges.
- The science curriculum must become more flexible, as new scientific evidence comes to light.

- It is essential that young people are aware of all the scientific career opportunities available.
  - Inclusivity and diversity within science education is indispensable.
- 4. Can you suggest any changes in science education that would help to recruit a more diverse workforce (in terms of gender, ethnicity and socio-economic background)?**
- Scientific outreach programmes.
  - Targeted funding.
  - Diversity incentives.
  - Talent acquisition and retention.
  - Meet the Scientist: Interactions Between Scientists from diverse backgrounds and Students.
  - Awareness of Equality, Diversity and Inclusion (ED&I) campaigns in STEM.
  - On ED&I – examples of women/people of colour/LBGQTQ+ scientists should be included.
  - Making careers advisors and science teachers more aware of the range of career options. Young people who are good at science are still pushed towards medicine because their advisors don't know about other opportunities.
  - Getting more scientists (of all different colours/ ethnicities) into schools or career promotion videos.
- 5. What challenges might students face in their future *beyond 2030* that science education should prepare them for, both in the workplace and society or the world at large? What new skills and competencies will they need to develop?**
- Applications of Microbiology.
  - Antimicrobial Resistance.
  - Climate Change.
  - Microbiomes.
  - Whole Genome Sequencing/Bioinformatics.
  - Food Safety and Security.
  - Future applications of microbiology & microbial biotechnology – bioremediation.
  - The UK Government's Industrial Strategy.
  - Sustainability.
  - Dealing with fake news and social media
  - The UN SDGs - most young people are aware that unless sustainability is tackled in a robust and timely manner, we are going to be in even more dire straits by 2030.
  - Machine learning into subject areas.

## **6. What three changes would you recommend for future government education policy and/or expenditure in the sciences and STEM**

- Funding (including grants and awards).
- Access to resources (tools, training programmes, expertise etc.).
- Permanent contracts and security within research carers
- Retraining schemes for returners.
- Connecting academia and industry.
- ED&I - Currently, science education is not serving the population equally, under-representing many diverse minority groups. The Science sector must work effectively and collaboratively to improve ED&I.
- Funding should stop focussing on huge grants to established researchers and give smaller grants far more widely to allow more scientists to do innovative work and try more ways of developing technologies for global development. We have loads of good scientists with great ideas, who can't get funded.
- Devolving resources from Oxford, Cambridge and London.
- Building a school curriculum around practical science, with online resources to keep teachers up to date. (e.g. funding scientists from industry or academia to make videos/ podcasts about new developments that are then freely available to schools).