Introduction

1. The Science Industry Partnership (SIP) is a membership group of science sector employers collaborating to take strategic action to deliver the skills needed across the sector. The SIP’s Strategic Aims are:

   1.1. To have a pipeline of young people with the capability, drive and ambition to build a globally competitive science based industry in the UK
   1.2. To support the development of the existing workforce to acquire the skills it needs to adopt new technologies and develop innovative new products and services

2. This response is from the Science Industry Partnership members.

3. Science is a key driver of the economy – our productivity increasingly relies upon both technological advances and in particular the high level vocational and applied science skills that allow the commercialisation of ideas. Scientific progress across biotechnology, life sciences and chemicals is a mainstay of British science. In order to maintain its global position the UK needs to continue to develop world-class scientists and equip them with the practical skills to ensure such progress can have as wide an application as possible – from drug discovery to the development of advanced materials. These skilled people are doing scientifically complex work in laboratories, on industrial plants and in advanced manufacturing environments. In the light of Brexit, homegrowing these skills has never been more important.

The STEM skills that were needed but were found to be in short supply or missing:

4. A comprehensive evidence base of skills needs and challenges across the Science Industry was collated to underpin the SIP Skills Strategy 2025, published in March 2016, available from: http://scienceindustrypartnership.com/skills-strategy/. This work was led by the SIP Futures Working Group, a subset of SIP employers, and has been used to shape the forthcoming SIP Action Plan, to be launched in February. The research identifies the following occupations where appropriately skilled people are in critically short supply:

4.1. Bioinformaticians, Cheminformaticians & Health Informaticians
4.2. Computational Scientists
4.3. Health Economists
4.4. Formulation Scientists
4.5. Control and Instrumentation Engineers
4.6. Process Safety Engineers
4.7. Technician workforce
4.8. Toxicology, Systems Biology & Immunology
4.9. Veterinary physiology and pathology

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1 3M, Allergan, Amgen, AstraZeneca, Eisai, Fujifilm Diosynth Biotechnologies, GSK, Huntsman Polyurethanes, J&J, Lotte, Medimmune, Mundipharma, Pfizer, Sabic, Seralab, UCB, Unilever, Victrex, William Blythe
4.10. Qualified Persons (QPs) (Pharmaceutical Industry Specific Role)

5. Roles to monitor where future demand may outstrip supply are:

5.1. Materials Scientists
5.2. Microbiologists
5.3. Chemical Engineers

6. The final category are those occupations which industry is seeking, but at present it is hard to find people with the full skill set to meet the demands of broadening roles. The unifying theme around these occupations is the need for multidisciplinary combinations of skills which will allow businesses to take full advantage of emerging technologies:

6.1. Production and Process Engineers with Bioscience knowledge
6.2. Wet Lab Scientists with Informatics & Computational Science Capability
6.3. Scientists with Commercial Awareness

7. There is also rising demand for a range of cross cutting transferrable skills. This is driven by the adoption of new technologies, coupled with structural industry changes such as more fragmented supply chains, which are altering operating models across the scientific industries. Companies increasingly need to collaborate across organisational boundaries, from sharing the costs and risks of early stage research by sharing knowledge, through to outsourcing parts of their manufacturing capability. Internally there is an increasing requirement for staff to work in multi-disciplinary teams. The cross cutting skills most frequently in demand are:

7.1. Leadership and management
7.2. Team working
7.3. Communication skills
7.4. Business skills
7.5. International business awareness
7.6. Commercial and intellectual property awareness
7.7. Translational skills
7.8. Regulatory awareness
7.9. Quality management
7.10. Problem solving skills
7.11. Project management
7.12. Interdisciplinary skills
7.13. Computational skills
7.14. Mathematical and statistical skills
How this particular skills need has been addressed, including specific details of the measures introduced:

8. The Science Industry Partnership was established in 2014, under the Employer Ownership Pilot Fund to deliver the skills needed in the science industries. A full analysis of the outputs delivered under the SIP 2 year funded pilot can be found in the SIP year 2 report, available from: http://www.scienceindustrypartnership.com/resources/

9. The SIP Programme designed and implemented 6 innovative skills programmes, and over the 2 year funded pilot delivered:

   9.1. **Careers** – 181 Science Industry Ambassadors Trained and working in schools to raise the profile of science industry careers and STEM qualifications
   9.2. **Traineeships** – 74 Science Industry traineeships delivered
   9.3. **SMART Apprenticeships** – 1135 Science Industry Apprenticeships
   9.4. **Industry Degree Scheme** – 149 Industry Placements for HE Students
   9.5. **Modular Masters in Formulation Science and Technology** – New masters programme established, taking 91 Learners
   9.6. **Workforce Development** – 4,606 learners on industry approved training courses, across both generic and technical skills areas.

The cost of the measures and how they have been funded:

10. The total investment in the SIP programme was £28.3m, comprising £19.4m Employer Ownership Pilot (EOP) Funding, £7.1m Employer Cash Investment and £1.8m brokered mainstream apprenticeships.

11. The Science Industry Partnership has now transitioned successfully to a membership group and is seeking funding to continue to drive forward its successful skills initiatives. To date over £695k of project investment funding has been secured since the closure of the EOP Fund.

12. In future the introduction of the apprenticeships levy will fund apprenticeships in the sector. The SIP has made a proposal to government to ring-fence a portion of the science sectors’ unspent levy contributions to support initiatives such as: a group apprenticeship scheme to aggregate training demand in order to stimulate provision availability and secure value for money, specialist training delivery, careers outreach activity enhancing social mobility into the sector and set up support for employers new to apprenticeships in this profitable and productive sector.
The results of any evaluation of the measures / schemes introduced:

13. The SIP has increased the demand for apprenticeships in the sector with 43% of employers taking apprentices through the programme doing so for the first time.

14. 190 apprentices were with SMEs, a typically difficult group to engage, representing 17% of the total number of apprentices taken through SIP.

15. The SIP provided simple access to skills support for SMEs: 66% of employers participating in the SIP were SMEs.

16. The SIP increased practical and workplace skills amongst graduates through innovative employer placements.

17. Value for money was increased by giving employers purchasing power.

18. Delivering local and national employer collaborations created provision where it is needed most.

Recommendations for action that the SIP would like the committee to consider:

19. There are a number of challenges currently inhibiting the development of STEM provision – these include instability in funding regimes - particularly in the FE sector, the high costs of delivering science acting as a disincentive to potential providers, limited critical mass of demand for specialist science training in local areas and devolved adult skills funding preventing the development of nationwide approaches to tackle these issues.

20. In response to these challenges there is a need for funding streams targeted at supporting STEM specific education and training provision. A national centre of excellence for science vocational skills is needed, supported by industry. The SIP could enable access to the critical mass of trainees needed to support the high quality vocational education on a national basis that is needed. Government should play an active role in ensuring LEPs/Local Areas work together and pool funding to deliver STEM skills via centres and mechanisms that work for industry rather than on a purely geographical basis.

21. The SIP are taking an active role in Apprenticeship Reform and engaging with the Post 16 Skills Plan, and new technical routes. It is important that these reforms dovetail and deliver what the science sector needs. Active employer engagement via the SIP must be ongoing throughout the process.

22. Mathematics, statistics and computing skills are key underpinning skill sets for a wide range of STEM careers, and these must be embedded from school age to provide young people with the appropriate foundations for later learning leading to STEM careers.

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