

Evolution of an innovation-based biopharmaceutical industry: **how skill requirements are changing**



June 2023



Contents

About the report	3	Part 3: Detailed survey findings	17
Key facts	4	Top priorities	17
Foreword	5	Ongoing priorities	17
Executive summary	6	New emerging gaps since our last survey	18
Commitments and policy recommendations	8	A combination of core and technical skills are becoming a priority for the sector	19
Commitments from the ABPI	8	– Core skills concerns	19
Policy recommendations	8	– Future skills concerns	20
Part 1: Landscape overview	9	– Recruitment of experienced staff remains a concern	20
National and regional impact	10	– Perceptions of the industry are a challenge for recruiting in a competitive environment	21
Part 2: The role of skills in the pharmaceutical industry's impact on the UK	11	– Location of sites can often be a key factor for recruitment	21
Higher Education	12	– Brexit and visa requirements continue to be a challenge for bringing international talent to the UK	21
Apprenticeships	14	– Upskilling, reskilling are considered to be tightly linked with retention	22
		– Culture is considered a key part of retention strategies within the industry	22
		Appendices	23
		Appendix 1: An update on the 2022 ABPI Skills Gap report commitments	23
		Appendix 2: List of participating companies	25

About the report

About this research

To gather evidence for this report, Public First and the ABPI conducted a survey of ABPI members on the skills gaps present in their companies. In total more than 30 different organisations engaged with the survey.

In addition to this, Public First and the ABPI also arranged a focus group of HR and talent professionals from membership organisations to explore challenges and opportunities in recruitment and retention of 'in demand' skills within the industry.

The ABPI acknowledges the help and support of its members, and in particular through the ABPI Academic Collaboration, Education & Skills Board Sponsored Group and the HR Directors' Forum for supporting the development, dissemination and completion of the skills gap analysis survey.

The ABPI would also like to thank Public First for survey analysis and report development.

About the Association of the British Pharmaceutical Industry

The ABPI exists to make the UK the best place in the world to research, develop and use new medicines and vaccines. We represent companies of all sizes who invest in discovering the medicines of the future. Our members supply cutting edge treatments that improve and save the lives of millions of people.

With over 6,500 businesses across the UK, the pharmaceutical industry has a considerable impact on both the national and regional economies. The ABPI plays a key role in the industry representing a portion of these companies.

About Public First

Public First is a global strategic consultancy that works to help organisations better understand public opinion, analyse economic trends and craft new policy proposals.

It has worked directly with some of the world's biggest companies, government departments, top universities and major charities to produce bespoke, original policy proposals and reports derived from an evidence base of economic analysis and public opinion research. Public First is a member of the British Polling Council and Company Partners of the Market Research Society, to whose rules and guidelines it adheres.



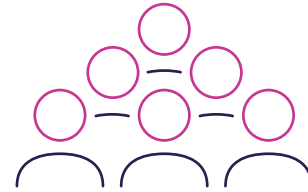
Key facts



Digital and **data skills** are the **top priorities** for the industry and continue to grow in importance



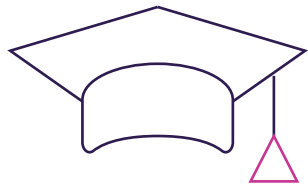
In 2021, the **life sciences industry** had a total of **6,548 businesses** operating in the UK



In 2021, the **pharmaceutical industry** employed **136,300 people** in the UK (including service and supply)



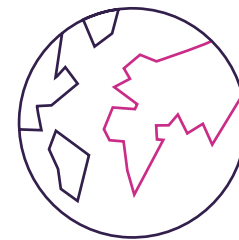
The **East of England, North West** and the **South East** have seen the **biggest increase** in **biopharmaceutical sites** over the last 3 years



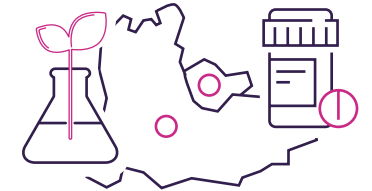
45% of new **undergraduate students** were studying **STEM subjects**



Over half of respondents (57%) feel that the application of **scientific, mathematical** and **digital knowledge** are **a concern**



Access to **global talent** remains an **ongoing challenge**



67% of **life science sector** sites are based **outside** of **London** and **the South East**

Foreword

The UK's life sciences industries are consistently the largest investor in UK research and development and have the potential to be globally leading in disease research and medical innovation. Achieving this goal will help to deliver new transformative treatments and medicines which will benefit UK patients, as well as helping to build a high-productivity, innovation-led economy which can contribute both directly and indirectly to the high quality innovative public services we all want to see.

This vision relies on the UK continuing to invest in a robust skills ecosystem— one that provides for the evolving and disruptive nature of innovative industries and, as a result, the evolving skills requirements to remain globally competitive.

The skills ecosystem must cater for the growing importance of engineering, mathematics, digital and data science expertise. The palpable need for these skills continues to expand across an array of innovative industries, which are developing and embracing new technologies. The biopharmaceutical industry is no exception, as advances in areas like personalised medicines and advanced therapeutics require an ever wider range of skilled roles to develop and deploy.

This report clearly sets out the status of the skills and talent pool within one of the UK's foremost growth sectors, and provides valuable insights into how policymakers, research funders, industry and educators must respond to preserve this world-leading status.

This robust evidence base and clear identification of priority skills needs will enable us to take forward actions that can help harness the potential of the UK's outstanding higher education institutions and research institutes, maximise the value of flexible vocational routes, and provide the right level of support, inspiration and career options to those who will comprise the innovation-ready workforce of tomorrow.

Skills are the fuel that drives forward UK competitiveness, and the recommendations and commitments in this report will help to ensure the UK's innovative biopharmaceutical industry continues to advance with a rich supply of diverse talent.

I look forward to seeing the tangible steps resulting from this report.

A handwritten signature in purple ink, reading 'Ottoline Leyser'.

Professor Dame Ottoline Leyser

Chief Executive,
UK Research and Innovation



Executive summary

This report highlights the skills the UK pharmaceutical industry requires to maintain its world-leading position and further develop its impact in the UK and beyond.

Findings and views have been obtained directly from industry via a survey and focus groups, and represent the latest in a series of biennial analyses dating back to 2005.












Specifically, this report:

- outlines the impact of the biopharmaceutical industry across the nations and regions of the UK
- identifies the top current and future skills priorities for the industry and benchmarks these against those identified in our 2021 survey
- assesses how well the UK education and skills systems are meeting these needs
- identifies activities and actions by various stakeholders, including Governments, research and training funders, academia and industry which could address new or emerging/evolving skills gaps

Key findings

1. **Digital and data skills are the top priorities for the industry and continue to grow in importance.** Of the top thirteen priority skills identified by our survey, eight involve an element of digital or data expertise. The report highlights reaffirmation of some previously identified skills gaps, alongside new areas such as robotics and data analysis. Though an increasing number of people are studying relevant subjects in higher education, competition for this talent continues to grow from within the industry, from other sectors, and internationally.

2. **A number of skills gaps remain from previous years.** Several priority skills identified in this year's survey have featured in previous surveys. Specifically, members reported ongoing challenges in relation to:

Disciplines	2018	2021	2023
Biomedical imaging			
Bioinformatics computational/systems biology (to include human genomics)			
Computational chemistry			
Computational science			
Physiological modelling			

As above, this highlights the increasing salience of data and digital in the industry.



3. **Progress has been made in closing some skills gaps.** Chemometrics no longer features as a high priority gap. Other skills gaps identified in our 2021 survey, such as formulation science, pharmacokinetic/ pharmacodynamics modelling and engineering in manufacturing were not highlighted in this year's survey, with concerns appearing to ease, or shifting to more discrete disciplines.
4. **Core skills are once again a growing concern.** Although previous recent surveys found a sustained reduction in the percentage of respondents identifying core skills as a concern, this has now re-emerged. In particular, over half of respondents in this year's survey identified the application of scientific, mathematical and digital knowledge as a concern. Concern has also grown since 2021 over the lack of new recruits with problem solving/critical thinking skills, communication skills and teamworking skills. Focus groups held with HR and talent professionals from the industry suggest this may reflect the impact of COVID-19 having limited young people's ability to develop these skills whilst studying, as well as opportunities to work in laboratories.
5. **The combination of technical and core skills is seen as crucial for the future of the industry.** The percentage of respondents rating a range of core skills for those moving into leadership or management roles as a concern has also increased since 2021. These include leadership skills such as negotiating/influencing, mentoring and coaching, and working in ambiguity. Our focus group found that leaders and managers were increasingly being required to combine these skills with scientific knowledge, making them more important than was previously the case.
6. **COVID-19 continues to leave a lasting legacy for recruitment and retention in the industry.** Comments recorded in our survey and in our focus group highlight the way the pandemic has changed industry operations and access to talent. For example, an increased preference for remote working has created new opportunities for accessing in-demand skills but the pandemic has also made many re-evaluate their priorities, forcing the industry to work harder to market itself. Other key skills shortages, such as medically qualified professionals and QP roles, have been described as becoming "high attrition" or "high churn" roles since the pandemic by HR and talent professionals.
7. **Access to global talent remains an ongoing challenge.** Our previous report highlighted the impact of new immigration arrangements on the ability of members to attract talent from around the world. This year's survey found some of these concerns have remained, with respondents continuing to face challenges in moving existing staff into UK based roles and in recruiting people from overseas. This is a particular challenge in an industry where many firms have operations across multiple countries. More work is required to understand and address these barriers.



Commitments and policy recommendations

Commitments from the ABPI



In order to boost in demand skills and support retention of key talent in the industry, we will:

- **Short term:** conduct research into perception of our industry amongst prospective employees, including how this relates to the expectations and values of younger workers, and how the location of employers impacts recruitment and retention.
- **Medium term:** lead efforts to expand the number of people entering the industry through the respective technical routes available across the UK by: supporting the Institute of Technology programme and promoting the uptake of Higher Technical Qualifications including as a route through to Level 6 training and beyond; supporting individuals to use the Life Long Loan entitlement to develop their skills; helping to support success of new T-Levels with a view to further progression on for T Level students after their qualification.
- **Long term:** maintain our long-standing commitment to support STEM education across the UK, from primary school to university level, particularly focusing on 'cold spots' where the pharmaceuticals industry has less presence, by way of supporting first class specialist teaching, inspiring the next generation of scientists and supporting informed career choices.

Policy recommendations



In order to boost in demand skills and support recruitment and retention of key talent in the industry, the following should be done:

- **Short term:** simplify access to, and increase the flexibility of, government skills provision, in particular the apprenticeship levy, in order to ensure that businesses of all sizes have the resources to be able to train and retain key staff. This should include further devolution of skills and apprenticeship spending, in order to enable local leaders to put in place the provision that best suits the needs of their area.
- **Medium term:** develop a clearer and more coherent careers guidance system across the UK, in England by implementing the strategic framework outlined by Sir John Holman in his review of careers guidance.¹ An important aspect of this should be to develop a better picture of graduate career readiness and ensure that higher education institutions support STEM graduates to develop both the technical and transferable skills required to succeed in the industry. This could be supported by expanding the Unit for Future Skills' existing work on graduate outcomes to collect and report data on graduate career readiness and intentions, working more closely with employers.
- **Long term:** support development of a more highly skilled workforce that is equipped for the increasing number of jobs that rely on data, digital and analytical skills, by delivering on an ambition that all young people can access outstanding and inspiring STEM education from primary stage, supported by specialist teachers and adequately funded schools and colleges.

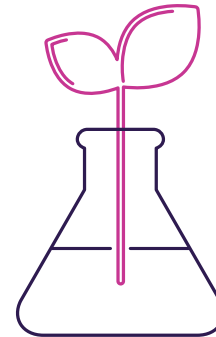
¹ [Letter from Sir John Holman to DfE and DWP Ministers re: Careers Guidance System in England - GOV.UK](#)

Part 1: Landscape overview

- The life sciences industry had a total of 6,548 businesses operating in the UK in 2021.
- Turnover for the biopharmaceuticals industry in 2022 was £64.2bn.
- GVA for the UK pharmaceutical industry was £15.6bn in 2022. This is more than the agriculture, forestry and fishing sectors combined (£15.4bn).²
- In 2021, the biopharmaceuticals industry employed 136,300 (including service & supply) which is nearly 50% of the wider life sciences sector workforce of 282,000 employees.³
- In 2021, the UK life science industry was placed third compared to comparators in terms of equity raised, behind only the USA and China.⁴



The pharmaceuticals industry has a huge impact on the UK. It provides tens of thousands of highly skilled jobs, conducts world class research and provides new medicines and vaccines which save and improve the lives of the public. Furthermore, the industry is a major part of the UK's world leading life-sciences sector, which together researches, tests and delivers treatments for millions of people around the world.



In 2021, the **life sciences industry** had a total of **6,548 businesses** operating in the UK



² [Regional gross value added \(balanced\) by industry: all ITL regions - Office for National Statistics](#)

³ [Bioscience and health technology sector statistics 2021 - GOV.UK \(www.gov.uk\)](#)

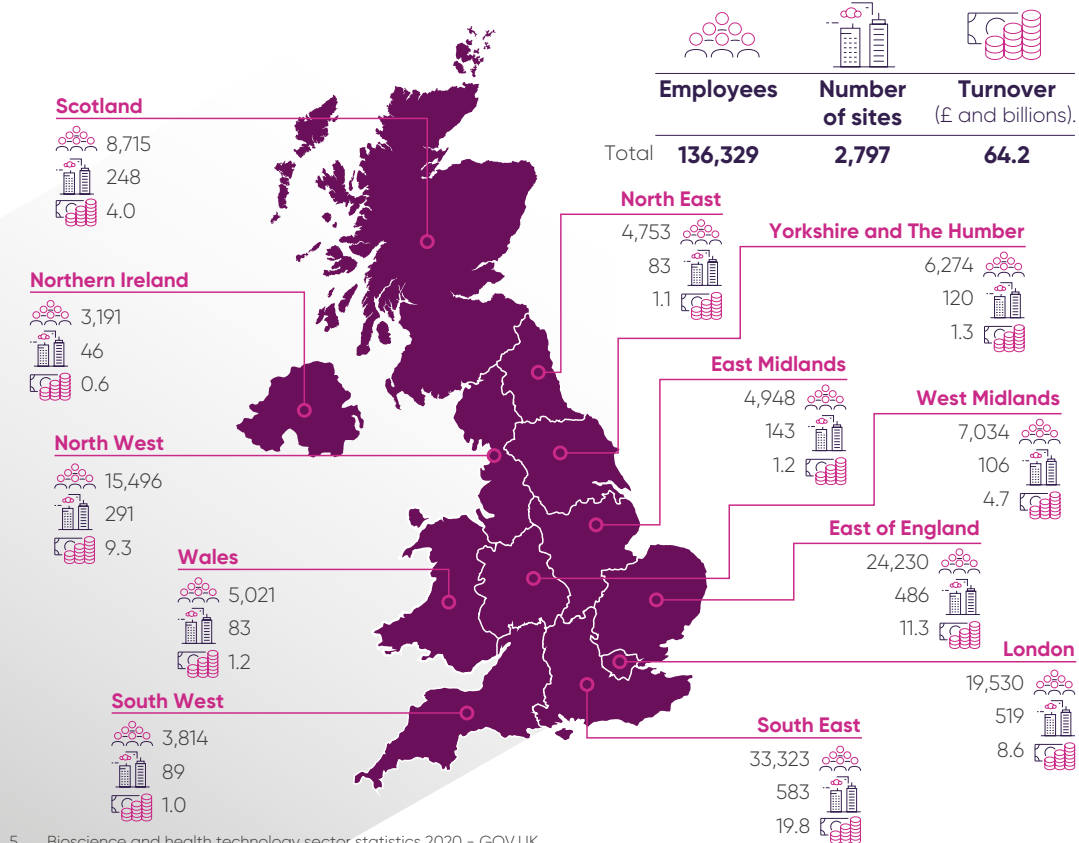
⁴ [Life science competitiveness indicators 2022 - GOV.UK](#)

National and Regional impact

The life sciences industry, and the biopharmaceutical industry specifically, has a significant presence in London and the South East, with the largest number of sites and employees found in these regions.

However, the industry makes a significant contribution to levelling up by creating highly skilled employment around the country. In particular, there is a strong corridor of biopharma businesses located in the North West between Liverpool and Manchester.⁵

Biopharmaceuticals industry (core, service and supply) by nation and region.⁶



⁵ Bioscience and health technology sector statistics 2020 - GOV.UK

⁶ Calculations based on Bioscience and health technology sector statistics 2021 - GOV.UK data tables



A source of high-quality jobs across the UK

67% of life science sector sites are based outside of London and the South East. This is similar for the biopharmaceutical sector, with 60% of sites being outside London and the South East. The regions which have seen the biggest increase in biopharmaceutical sites over the last 3 years include the East of England, North West and the South East.

At the same time, biopharmaceutical industry employment is highest in the South East, East of England and London. The largest net increase in employment was in London where employment rose by 47% between 2009 and 2021. The South East was the only region where employment decreased over the same period (35,800 to 33,000).



The **East of England, North West** and the **South East** have seen the **biggest increase** in **biopharmaceutical sites** over the last 3 years

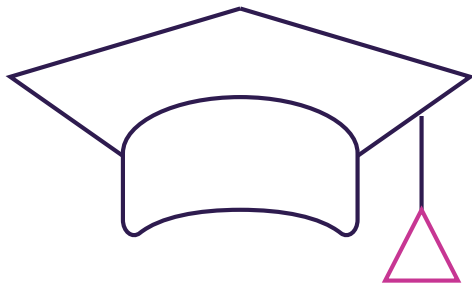


Part 2: The role of skills in the pharmaceutical industry's UK impact



A report by the World Economic Forum estimates that worldwide employers across all sectors will need to reskill more than 1 billion people by 2030,⁷ while LinkedIn data shows skills sets for jobs have changed by around 25% since 2015 - this is expected to double by 2027.

Globally, the pharmaceutical industry product landscape is changing swiftly with the emergence of new modalities. Changes of modalities are likely to bring more fragmentation of technology, new supply chains, and unique product life cycles. These changes are impacting labour market trends - for example, there has been a 20% increase in demand for STEM-related roles across the life sciences industry in the United States.⁸



45% of new **undergraduates students** were studying **STEM subjects**

Consequently, understanding the changing skills demands in the UK pharmaceutical industry is key to retaining a strong skills pipeline. This includes understanding the range of educational settings from which people enter the industry, as well as the professional development and upskilling of those already working within it.



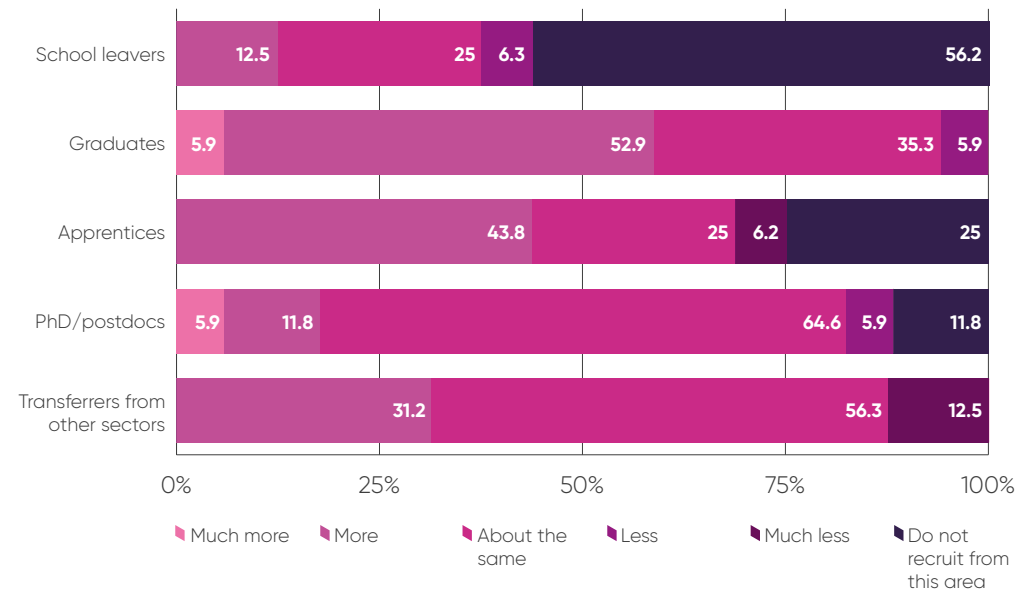
⁷ [Here's why the world of work urgently needs to put skills first](#)
⁸ [Emerging from disruption: The future of pharma operations strategy](#)

Higher Education



The number of graduates being recruited by the industry has increased compared to four years ago. Therefore, further development and support for relevant higher education courses, ensuring responsiveness to evolving needs, remains key to helping support a sustainable talent pipeline for the sector.

Figure 1: "Thinking about your recruitment from the UK, are you recruiting more or less of the following compared to four years ago?"



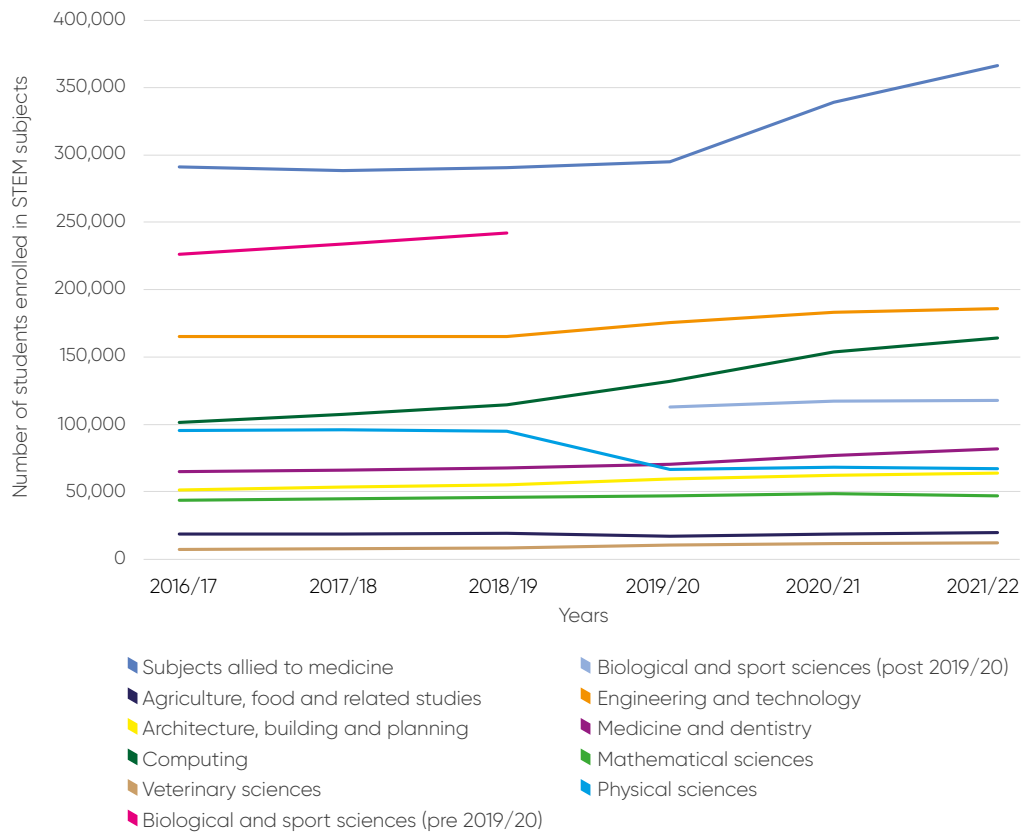
The proportion of undergraduate student enrolments into higher education for STEM subjects in 2021/22 remains at 45% - this figure has remained constant for almost a decade.⁹ However, this is against the backdrop of a growing higher education sector; between 20/21 and 21/22 the number of students enrolling into STEM subjects increased by almost 52,000.

'Subjects allied to medicine' continues to be the most popular of all STEM subjects - however, part of the uptick in enrolments may be accounted for through the recoding of 'Biological and sport sciences' in 2019/20. The number of enrolments in 'Computing' continues to increase whilst enrolments in 'Engineering and technology' appear to have plateaued.



Over half of respondents (57%) feel that the application of **scientific, mathematical** and **digital knowledge** are a concern

Figure 2: Number of students enrolled in higher education per STEM subject over time.¹⁰



Interest in STEM subjects appears to be driven by demand from UK 18-year-olds and suggests that increased emphasis on STEM/STEAM education in schools - and increased uptake at this level - has translated into increased interest and uptake in the older age group.¹¹ Specific courses which have grown in popularity over recent years include Artificial Intelligence (which has had a 400% increase in acceptance rates between 2011 and 2020) and computing and engineering.

With data and mathematical skills among the top priorities for the UK life sciences sector but major skills gaps continuing to persist in these vital fields, increasing the number of young people able to use maths in the workplace is essential and will also play an important part of improving economic productivity.

Overseas students also continue to make up a significant proportion of STEM undergraduates in the UK and therefore, are considered vital as part of the talent pool for the industry. Understanding why international students remain in the UK after studying - and any barriers they may face - will be key to ensuring that the pipeline into the sector remains relatively stable in comparison to demand.

For example, international students make up 35% of computing students, 37% of engineering and technology students and 32% of mathematical science students in the UK higher education sector.¹²

Supporting, attracting and training the world’s best talent in the UK through the international student visa will be a key part of keeping up with the changing skills requirements of the industry in the coming years.

¹⁰ Higher education student statistics: UK, 2021/22 - subjects studied | HESA

¹¹ [More young people are taking STEM subjects than ever before - The Education Hub](#)
¹² [Calculations based on What do HE students study? | HESA](#)



Apprenticeships



The biopharmaceutical industry is also endeavouring to make as best use where possible of the technical education system, by increasingly using the apprenticeship route to find the talent it needs and develop the skills of its employees. Our previous research showed the number of apprentices hosted by the biopharmaceutical industry has increased year on year,¹³ with 44% of respondents to the current survey taking on more apprentices than four years ago (figure 1 above) – highlighting increasing sector employer confidence in using apprenticeships to develop a skilled workforce. Despite this, the apprenticeship levy system remains insufficiently flexible to allow maximum benefit.

CASE STUDY – Taking action on identified skills gaps

The UK had a shortfall in skilled clinical pharmacologists, with both the public and private sector reporting serious challenges in recruiting into medical and scientific roles.¹⁴ This carried a significant threat to the provision of an effective and comprehensive clinical service in the NHS, the attractiveness of the UK as a place to conduct national and international clinical research, and the development of new medicines.

Having identified shared need enthusiasm to take action, an alliance was formed between the Association of the British Pharmaceutical Industry, the British Pharmacological Society, the Faculty of Pharmaceutical Medicine and Health Education England – the Clinical Pharmacology Skills Alliance (CPSA).

In 2019, The Migration Advisory Committee accepted the CPSA's recommendation that clinical pharmacology roles should remain on the UK's shortage occupation list.

Through continuing CPSA discussion, it became apparent a higher-level apprenticeship was one clear solution to support bridging part of this particular skills gap – furthermore, that it could provide a clear pathway into a clinical pharmacology scientist career with a recognised qualification.

As a result, a Level 7 Clinical Pharmacology Scientist Apprenticeship standard was developed and launched in September 2022 at King's College London.

The collaborative approach taken by all system partners to overcome this shared challenge may provide a blueprint for new programmes which can address emerging or future skills shortages.

Companies in the biopharmaceuticals industry make an important contribution to the growing number of apprenticeship starts. The table below shows changes in the number of apprenticeship starts across a number of relevant apprenticeship standards. We see significant growth in a number of areas, including those – such as data analysis – highlighted by this year's survey.

"We are pleased to be working with employers and students from within the pharmaceutical industry, Contract Research Organisations, regulatory authorities and the NHS, to help build a stronger UK contribution to the discipline of clinical pharmacology."

Professor Graham McClelland, Course Director, King's College London.



¹³ [Apprenticeships in the pharmaceutical industry](#)

¹⁴ [Life sciences: industrial strategy - GOV.UK \(www.gov.uk\)](#)

Table 1: Selection of relevant apprenticeship starts in academic year 2019/20 and 2021/22 and percentage change in delivery.¹⁵

Apprenticeship	2019/20	2021/22	+/- %
Laboratory Scientist (Degree)	120	200	+66%
Laboratory Technician	300	400	+33%
Data Analyst	2,370	4,020	+69%
Data Technician	N/A	2,890	N/A
Engineering Technician	4,770	5,660	+18%
Science Industry Process and Plant Engineer (Degree)	10	20	+100%
Science Manufacturing Process Operative	40	170	+325%

However, there have also been reductions in the number of starts on some standards. This may reflect ongoing challenges employers face in making effective use of the apprenticeship levy and engaging with the apprenticeship system – one participant from our recruitment and retention focus group stated:

“The simple thing I’m going to say is when I try to interact with anything that the government does, it’s really hard... So if the government is looking to do anything, the simpler, the better means that we can actually take advantage of it.”

Despite interest from employers, the administrative burden of engaging with the levy is considered to be particularly prohibitive for SMEs. There was also interest in the expansion of the levy to help bridge skills gaps outside established apprenticeship standards. For example, one participant from a large company stated they now provide training on a number of core skills such as communication and leadership for employees and that it would be beneficial for training of this ilk to fall under the levy umbrella.

Previous research from the ABPI,¹⁶ highlighted the industry hosts apprenticeships from Level 2 to 7 across multiple business areas, with level 6 and 7 hosted apprenticeships being especially popular, having increased by over 200% between 2019 and 2022.

Notably, the same research also highlights that the number of apprenticeships lasting for less than two years has gone from 27 in 2019 to 225 in 2022, as demand across industry for flexibility in using apprenticeships to train and upskill workers remains high. This suggests that a more flexible funding and delivery model could further facilitate increased uptake of apprenticeships.

Such is the commitment of industry to support use of apprenticeships that the ABPI, as part of the Futures Group, has worked with the Office for Life Sciences and the UK Government Department for Education to support co-development of a new interactive manual. This highlights how to adopt apprenticeship flexibilities specifically across Life Sciences in order to deliver apprenticeships which meet the needs of employers and apprentices (<https://www.abpi.org.uk/publications/flexible-apprenticeships-manual/>).

¹⁵ <https://app.powerbi.com/view?r=eyJrIjoiazYwNTcxNDItNjgyNS00ODMyLTgwNGUtMjFjODkyMjE4OWMyliwidCI6ImZhZDI3N2M5LWM2MGEtN-GRhMSiINWYzLWVzYihIMzRhODJmOSIsImMIOjIh9>

¹⁶ Apprenticeships in the pharmaceutical industry





Technical education

Recent years have seen the creation of other technical education routes which can provide the industry with the skills it needs.

Since 2021, T Levels, which aim to provide a technical alternative to A-Levels, have been introduced and are now being rolled out across England. There are a number of T-Level subjects with relevance to the sector, most notably healthcare and science but also digital, engineering and manufacturing.

T-Levels are currently only studied by a small number of students – around 1,800 are in the first cohort to study healthcare and science, which will complete their courses in 2023 – and there have been challenges for the industry in engaging with the programme.¹⁷ But the UK Government is strongly committed to expanding the number of young people taking up the courses, which is set to grow in the coming years and will form a new potential entry route into the industry. In particular, there is an opportunity for employers to engage young people through the work placements that form a core part of T Level provision.

The UK Government is also committed to increasing the number of people taking higher technical qualifications at Levels 4 and 5 (which sit in between A and T Level provision and degree level provision).

Pharmaceuticals has been highlighted as an industry where higher technical qualifications may be more appropriate for many roles, such as laboratory technicians, than an undergraduate degree.¹⁸ Higher technical qualifications may suit some workers better, as they take less time to complete, can be studied more flexibly and cost less.

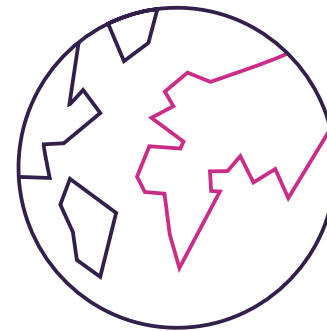
The number of people taking higher technical qualifications in England has traditionally been low compared to other countries, and uptake remains significantly smaller than for undergraduate degrees.¹⁹ However, the UK Government hopes to increase uptake, including through focusing the initial rollout of its Lifelong Learning Entitlement on these qualifications.²⁰

New Institutes of Technology (IoT), which are sponsored by both Higher Education and Further Education providers, have also been opened, currently in England only, specifically to help boost the provision of higher technical qualifications.

The pharmaceutical industry has supported this initiative, especially via the Swindon and Wiltshire IoT, which opened this academic year and has a focus on skills aligned with the pharmaceutical industry. Catalent is one of the institute's founding employer partners and its location on the M4 corridor means it is well positioned to support the strong presence of pharmaceutical firms in this area.

As the IoT programme grows, it may provide the industry with an additional avenue for talent in the future.

There are countless examples of people pursuing fulfilling careers across industry today having entered through those vocational routes that provide clear pathways to chosen career destinations. Industry remains committed to embracing such routes where possible.



Access to **global talent** remains an **ongoing challenge**

17 [T Level Action Plan 2022-23](#)

18 [Review of the Level 4-5 qualification and provider market](#)

19 [Higher Level Learners in England](#)

20 [Government Response to the Lifelong Learning Entitlement Consultation](#)



Part 3: Detailed survey findings












Top priorities



Top priority disciplines are those deemed nothing less than high or medium priority by all respondents. The breakdown of votes for top priority areas can be seen in figure 3, where the disciplines are ranked in order of highest priority to lowest priority.

Overall, this year's survey found more top priorities (13) than in 2021 (7) though fewer than in 2018 (16). The full list of priorities is as follows:

Table 2: Comparison of 2023 priorities with those identified in 2018 and 2021.

Disciplines	2018	2021	2023
Biomedical imaging			
Bioinformatics computational/systems biology (to include human genomics)			
Computational chemistry			
Computational science			
Physiological modelling			

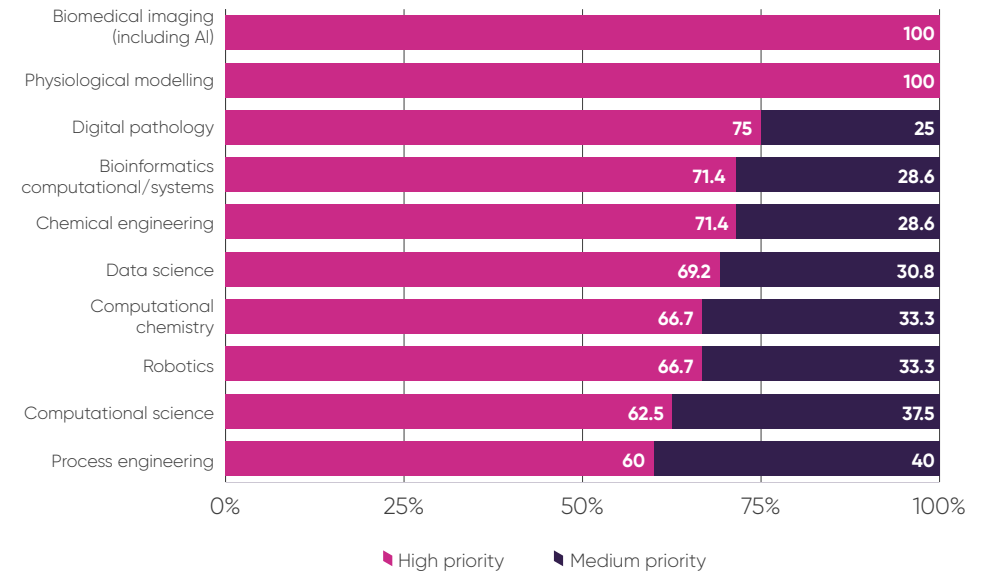
Ongoing priorities



A number of the top priorities remain unchanged from previous years, indicating a longstanding difficulty in attempts to close the skills gaps for these disciplines.

This is especially true for computational chemistry, which has been identified as a top priority in the previous four skills gap surveys. Similarly, following on from the 2021 skills gap report, there is a continuing need for data, digital and engineering skills.

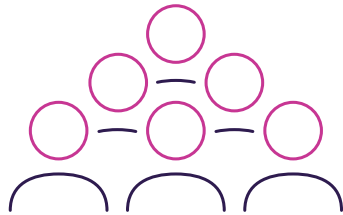
Figure 3: Percentage of respondents rating each top priority discipline as only high or medium priority.





Biopharmacology, Human Genetics and Clinical Research Operations Medically Qualified Clinicians all had a significant proportion of responses for both medium and high priority however, they also had responses indicating a low priority, thereby suggesting only pockets of high need within the industry.

As shown in Table 2 above, there are top priority disciplines in 2023 which have been considered a top priority in previous surveys, and which therefore, have proved difficult to close skills gaps over the longer term. These areas have posed persistent challenges for the industry and must therefore be given special attention.



In 2021, the **pharmaceutical industry** employed **136,300 people** in the UK (including service and supply)



New emerging gaps since our last survey



While some top priority disciplines have persisted over the last few years, there are a number of new top priorities, such as robotics and data science and digital pathology.

Most of these are linked to advanced data and digital skills, reflecting their increasing importance to the industry and the increasing impact of technologies such as Artificial Intelligence.

"... we need data sciences and data analytics and data skills...everybody knows the way the world is going, that it's so critical for the organisations moving forward."

Meanwhile, there are a number of areas that continue to be of low concern. These include Necropsy, Training and Project Management.

Chemometrics has moved to being an area of low concern after featuring as a high priority skill for the last 3 surveys. This could suggest that efforts over recent years to raise awareness of the need for these skills in order to bridge the gap have been effective.

Other skills gaps identified in our 2021 survey, such as formulation science, pharmacokinetic/ pharmacodynamics modelling and engineering in manufacturing were not highlighted in this year's survey.

In addition to this, our focus group of industry HR and talent professionals found that there were significant challenges in recruiting and retaining individuals who are medically qualified as well as those with experience of QP roles.

"It's an area [medical] where we have constant churn and a constant need to hire."

A combination of core and technical skills are becoming a priority for the sector



Not only are there challenges with recruiting specific skill sets across the industry, there is also now more of a need to ensure that applicants have a combination of both technical pharmaceutical skills as well as in-demand skills such as data science or data analytics.

"... it's not just about people with those [data] skills. It's those people that have those skills, but then also, the ability combined with like technical skills to be able to work in a laboratory or at least understand the pharma process."

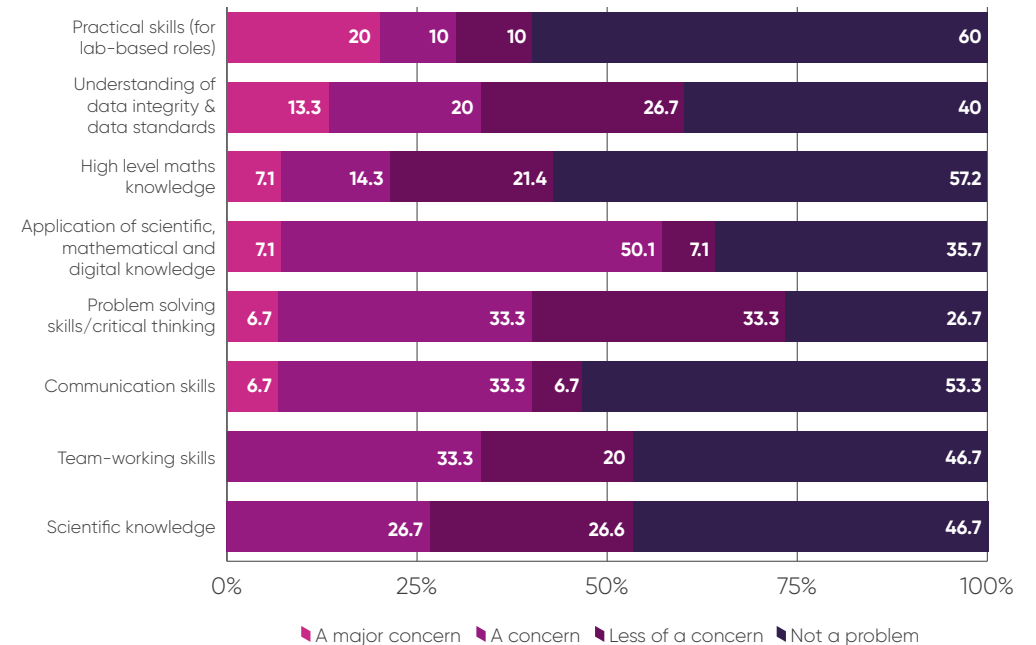
Core skills concerns

Non-specific to particular topic areas, respondents were also asked to indicate what core skills and knowledge they felt were problematic or not for new recruits coming into the industry. They were asked to rank the skills on a spectrum ranging from a major concern to not a problem (figure 4).



Digital and data skills are the **top priorities** for the industry and continue to grow in importance

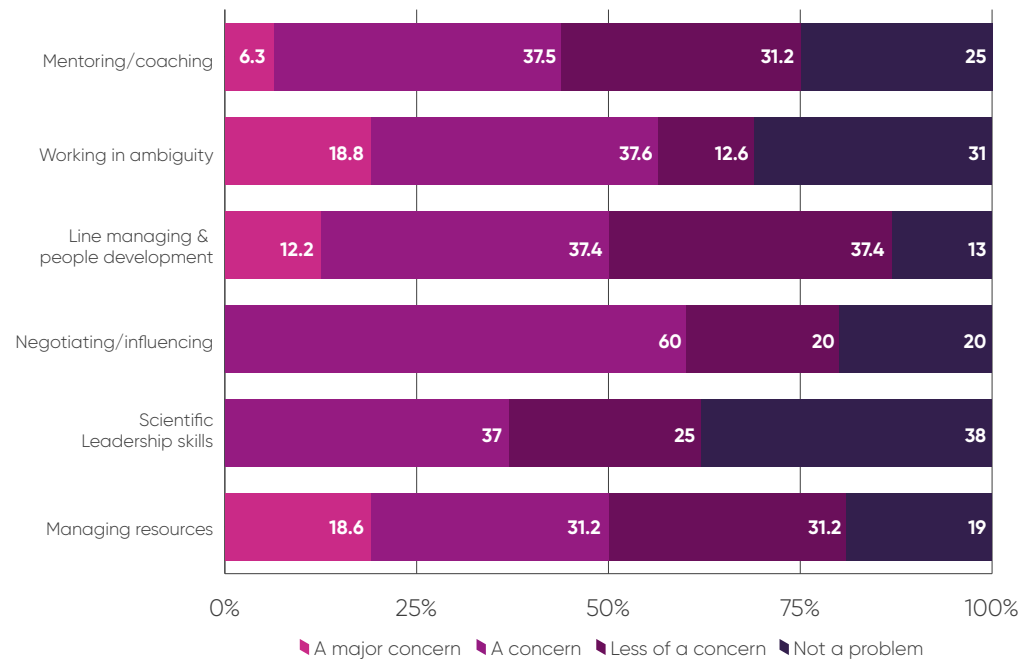
Figure 4: Percentage of respondents rating each core skill as a major concern, a concern, less of a concern, or not a problem.



Since the last survey, data-based core skills have become more of a concern. Over half of respondents (57%) now feel that application of scientific, mathematical and digital knowledge are a concern. Whilst over 10% of respondents considered understanding of data integrity and data standards as major concerns this year. Practical skills for lab-based roles has the largest proportion of votes for 'a major concern'. Notably, communication and transferable skills have become more of a concern since 2021 - although the number of respondents sharing that these areas are not a problem suggests that skills gaps in these areas may be concentrated in particular disciplines.

Many participants in the focus group shared that they felt COVID-19 had had a significant impact on the talent pool available to the industry. Many had concerns about specific lab based skills – due to a lack of lab time at both school²¹ and university – as well as a lack of core skills such as communication, leadership and working with ambiguity.

Figure 5: Percentage of respondents rating each core skill for those moving into leadership or management roles as a major concern, a concern, less of a concern or not a problem.



Future skills concerns

Physiological modelling is the only discipline identified as a top priority both now and for the future. All other areas identified as likely future concerns whilst not having been flagged as top priorities currently, certainly should be watched very closely for the future – these are as follows:

- Device Engineering
- Packaging Engineers
- Process Chemistry
- Physical Chemistry
- Clinical Research Operations
- Sustainable/Green Chemistry

Key skills for the future cover engineering, chemistry and research operations. As the transition to Net Zero continues, the competition for sustainable and green skills will only increase. The sector will require skill supply to keep up with demand – both in terms of volume and specificity. Therefore, work must be done to ensure that skills gaps within these disciplines, especially sustainable/green chemistry, are provided for in order the UK life sciences sector can maintain its position as a global leader in this area.



Recruitment of experienced staff remains a concern

Respondents consistently rated recruitment of experienced staff as the highest concern across almost all priority skills and across nations and regions, over and above concerns around recruiting new graduates, apprentices or other entrants to the industry.

There are particular challenges in recruiting experienced staff in regulatory, quality assurance and quality control roles (100% of companies who required the skill felt this was an issue).

This was a particular issue in areas of the country where a strong existing industry presence means there is intense competition for staff. The East of England, South East and London were the top three regions for challenges with recruiting experienced staff, with 86%, 80% and 78% of respondents respectively sharing that it was an issue in terms of recruitment in the area.



Perceptions of the industry are a challenge for recruiting in a competitive environment

The UK Pharma Reputation Index shows that in March 2021, 60% of the public viewed the sector more positively as a result of vaccine approvals in the winter of 2020, compared to only 33% in October 2020. By May 2022, favourability towards the industry had returned to 50%. Globally, the Ipsos Global Trustworthiness Monitor found the sector to be the most trusted of those measured.²²

However, despite an increase in news recognition and familiarity with the sector during the pandemic, there is still a way to go to further build trust and confidence with the general public – with small pockets of distrust and criticism remaining.²³ Perception of the industry is inextricably linked to attracting workforce.

Participants of our Recruitment & Retention Deep Dive workshop, raised that there are often misconceptions about the industry and this can also extend to what roles within it may be like. For example, this was particularly prevalent in terms of being able to work from home and have more flexible hours. Some shared that these had become a higher priority for prospective and current employees since the COVID-19 pandemic.

“Sometimes there is also a bit of a gap around people’s perception of the pharmaceutical industry and also their motivations and why they would like to move to a different sector.”



Location of sites can often be a key factor for recruitment

In particular, businesses operating outside of pharmaceutical cluster areas, such as London and the South East, or near major cities, can struggle to recruit and retain individuals due to their location. This provides a challenge for the industry in its ability to grow its footprint across the UK and contribute to levelling up.

“Historically, we have had to sell, I guess, not just the excellent science and technical ability that we have here on site, but what this area can offer.”

²² <https://www.ipsos.com/en/trust/innovation-speaks-itself>
²³ Reputation – General Public Overview

“For recruitment of experienced colleagues – location is very important if they are bringing family with them.”



Brexit and visa requirements continue to be a challenge for bringing international talent to the UK

The industry is also continuing to adapt to restrictions on the movement of staff imposed by new immigration requirements, especially where companies have a base in Europe.

“We have more challenges simply because of Brexit. It’s an ongoing challenge... where recruitment is concerned, because individuals now need a visa in certain cases that perhaps they didn’t need before. That is causing a challenge. And we are seeing individuals turning down opportunities, because they don’t want to come to the UK, they don’t want to leave Europe.”

When asked what challenges there were for recruitment in their company:

“Brexit to an extent for overseas/European applicants, because of the need for visa sponsorship which is taking longer to come. Being a European headquartered company internal talent movement especially at junior levels is more restricted.”





Upskilling and reskilling are considered to be tightly linked with retention

Retaining key talent was seen as a high priority for many focus group members. One participant shared how recruitment activity in the UK compared to other European countries:

"When I look at the recruitment, I talk to my peers in other countries, one of the biggest differences I've observed in the UK is that we tend to hire externally more than internally..., so we're roughly about 60/65% of our hiring is externally in the UK, and the rest comes through internal moves. Whereas that ratio flips in the European countries."

"...career development is definitely one of the main reasons that individuals are citing, as to why they move elsewhere."

"we're trying to do more career pathing across the company, not just within function, because sometimes it's attractive for individuals to move out, they want to do something different. And so how can we make it easier for them to move to a different role, but just stay within the company?"

Expectations of a fast rate of progression were common – particularly amongst employees with in demand skill sets. However, some participants raised concerns about perceived inequity across the workforce when different roles are rewarded at different rates based on skill demand.

"I think particularly around data science, machine learning, health economics, any sort of data driven roles. We've seen that people want to get promoted fairly quickly."



Culture is considered a key part of retention strategies within the industry

Culture was identified as a key element of business' retention strategies and something that was considered as being of increasing importance for younger generations – in particular Gen Z.

"The culture piece and the growth piece is critical to retaining and I would argue, equally as critical to what you get somebody in the door technically for, because actually that will always move as the projects move and then things move around it. But the culture is what will keep somebody in a place..."

The ABPI commissioned a report on the approach of industry to Equality, Diversity and Inclusion (ED&I),²⁴ which found that industry is increasingly focused on improving ED&I across the workforce through defining and tailoring UK-specific ED&I strategies in addition to global strategies. Furthermore, that whilst ownership of the ED&I agenda is increasing among leadership, there is further opportunity to expand diversity within leadership teams across a wider breadth of ED&I characteristics and for leadership to continue strengthening their accountability to accelerate tangible progress.

Fundamentally, the pharmaceutical industry – and society more generally – is going through significant changes to how it attracts people to work in the industry, what might support them to stay and what might support them to continue developing their skillsets at pace with the changing skills needs of the sector. Given this, there should be more research into the following:

- ▀ Perceptions of the industry amongst prospective employees.
- ▀ Establish a deeper understanding of the competitor industries currently accessing the same talent pool.
- ▀ Further develop an understanding of 'what works' within the industry for retention including culture programmes and talent development programmes.

Appendices

Appendix 1:

An update on the 2022 ABPI Skills Gap report commitments

2022 ABPI Commitment	Update	Next steps
<p>Support higher education institutions across the four nations with course development and industrial placements to help boost in-demand digital skills and further increase the positive awareness of the life sciences industry as an attractive employer for candidates with digital skills.</p>	<p>In 2022, we reported industrial placements have increased in number, returning to the high levels seen in 2017, with 70% of placements falling within R&D, manufacturing, or other clinical roles. Placements are now being hosted by 79 different academic institutes all across the UK. Through our Academic Collaboration Board Sponsored Group we have continued to engage with higher education institutions in respect of both courses and informed career support.</p>	<p>Support the industry to prepare to engage with the Lifelong Loan Entitlement in England - including supporting existing staff to upskill in key areas.</p> <p>Look to review where there are specific challenges for the industry to engage with the LLE system.</p>
<p>Support STEM education to inspire young people to develop in-demand skills and knowledge and to make informed career choices, through the launch of an updated, dedicated platform of free, high quality, up-to-date STEM resources supporting all key stages for UK curricula. This will help develop young people's foundational STEM skills, support long-term attainment and drive achievement, as well as provide support for teachers. Simultaneously, the ABPI also commits to continue supporting and enhancing specific initiatives including the CREST Awards, and both the Science Industry Partnership and STEM Ambassador schemes.</p>	<p>The ABPI has worked with the Association for Science Education to be awarded their Green Tick for all resources curated on the ABPI dedicated website for schools.²⁵</p> <p>Since 2021, the ABPI has continued to fulfil its commitment to continue to support education initiatives, working with organisations including the Science Industry Partnership, Association for Science Education and STEM Learning.</p>	<p>Continue to review and develop resources in consultation with educators to ensure they remain relevant, effective and useful to participating schools.</p> <p>Continue to explore and deliver collaborative projects.</p>

2022 ABPI Commitment	Update	Next steps
<p>Conduct further research into recruitment and retention of experienced staff and why this is proving a challenge for the sector.</p> <p>Whilst this report contains substantial new information and insight, we must also be clear where we need to know more. As the world of work changes, and government increases its focus on reskilling and lifelong learning, we need to understand what drives shortages in experienced staff and whether the industry needs to reconsider how careers can best be supported in the long term.</p>	<p>As part of this report, further research was conducted to explore why recruitment and retention of experienced staff continue to be a challenge for the sector.</p> <p>The research highlighted a number of key areas where recruitment and retention were particularly challenging including medically qualified professionals and QP roles.</p>	<p>Formulate commitments to address any issues with recruitment and retention of experienced staff.</p> <p>Deliver on commitments and measure impact, reporting back in the next iteration of the skills gap report.</p>
<p>As part of the Futures Group, continue to address industry identified areas for action for securing a sustainable skills pipeline. The '2030 skills strategy'²⁶ for the life sciences sector was produced by the Futures Group, a collaboration comprising the Office for Life Sciences, the ABPI, The Science Industry Partnership and the BioIndustry Association.</p>	<p>The ABPI continues to be an active member of the Futures Group, which now also benefits from ABHI and MMIP membership.</p>	<p>Build on the recognition of the Futures Group as the expert group on skills feeding into the Life Sciences Vision Implementation Board, ensuring impactful initiatives are taken forward and delivered.</p>



Appendix 2: List of participating companies²⁶

1. AbbVie
2. Advanz Pharma
3. Alexion
4. Alimera
5. Amgen
6. Ashfield
7. AstraZeneca
8. Biogen
9. Bristol Myers Squibb
10. Boehringer Ingelheim
11. Britannia Pharma
12. Daiichi Sankyo
13. Eisai
14. Eli Lilly
15. Fresenius Medical Care – AG
16. GSK
17. Grunenthal
18. Ipsen
19. IQVIA
20. Labcorp
21. MSD UK Ltd
22. Novartis
23. Novo Nordisk
24. Otsuka
25. Pfizer
26. Roche
27. Sanofi
28. Servier
29. Seqirus
30. Shionogi
31. UCB





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A company limited by guarantee registered in
England & Wales number 09826787

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RMI-0162-0523