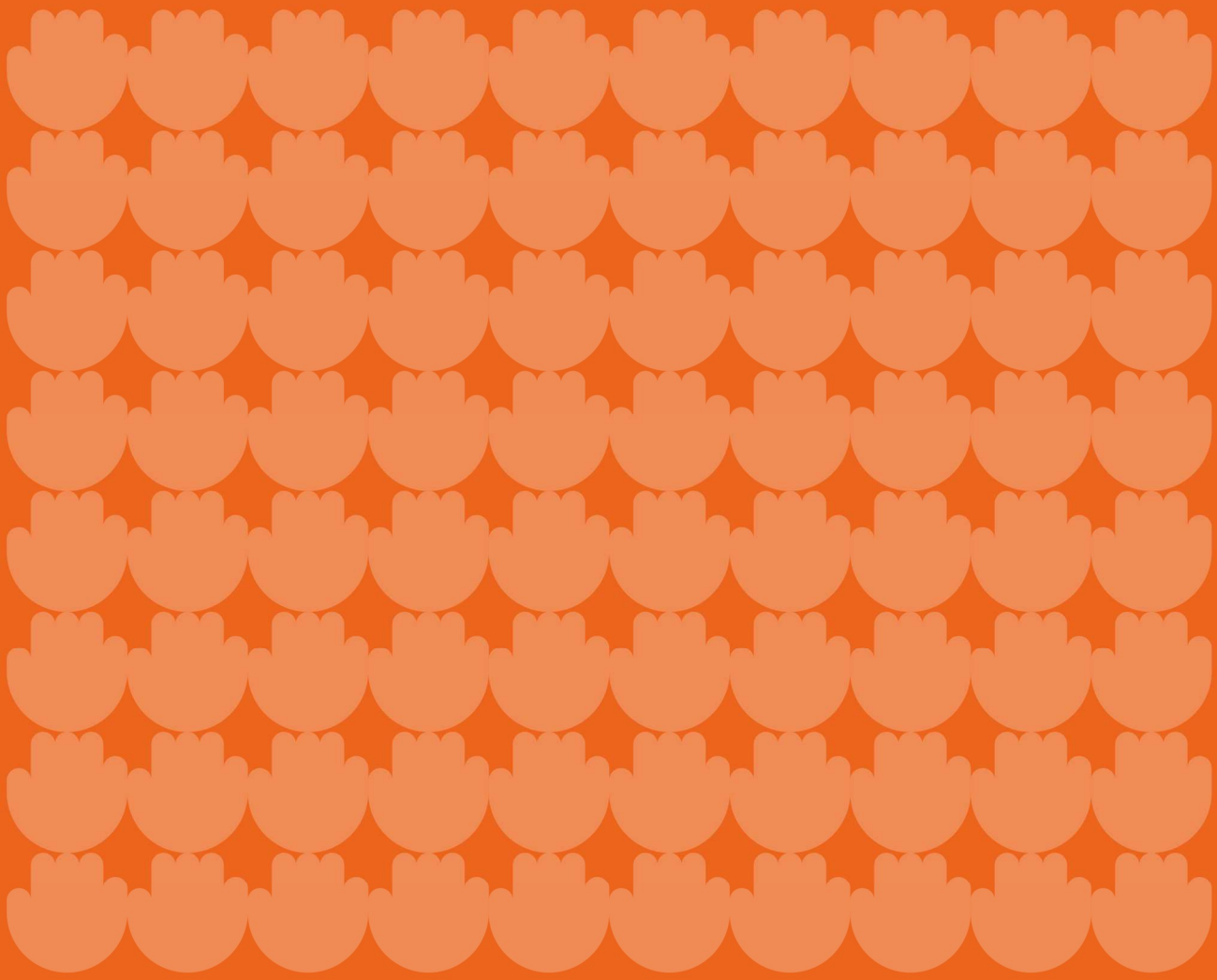
GREATER MANCHESTER

DOING THINGS DIFFERENTLY FOR OUR WORKFORCE

Labour Market and Skills Intelligence Report

Life Sciences

Published September 2021



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Purpose of Report

This report provides an employer led and current understanding of skills and talent needs required across our Life Sciences business landscape in Greater Manchester (GM). The intelligence has been gathered from conversations with a large variety of sources including SMEs in the sector, existing employer networks and sector bodies, Universities, MIDAS, NHS Trusts, Local Authorities, and regional Life Sciences and Health Innovation skills facilitating organisations. GMCA would like to thank everyone involved in the development of this report for their time and insights. The report is intended for a large variety of stakeholders to support in understanding the skills and talent needs within our regional Life Sciences industry. Recommendations made will not necessarily lead to GMCA led work and skills activity. They are intended to help summarise and support stakeholders to understand where their actions may fill gaps and support talent development for the industry. Health Innovation is identified as one of the 4 key sectors for Greater Manchester in the Local Industrial Strategy (published June 2019). This report supports and feeds in to wider GMCA policy and strategy including:

- Greater Manchester Strategy
- Greater Manchester Local Industrial Strategy
- Greater Manchester COVID Recovery
- Greater Manchester Work and Skills Strategy

The report also references and supports national policies around this sector including:

- Science Industry Partnership Life Sciences 2030 Skills Strategy
- Life Sciences Industrial Strategy – A report to the Government from the Life Sciences Sector
- Life Sciences Sector Deal 1 and 2
- Life Sciences Vision

GMCA will coordinate wider dissemination and translation of this intelligence for different audiences in GM. Additionally, GMCA will look across devolved powers in

the work and skills team and wider authority to see where objectives, projects, and activity can better align based on this intelligence. The overall vision for this work is to be a key contributor in developing a fully aligned labour market response in GM where there is credible, current, employer led and shared understanding of the jobs, talent, and competencies employers need across our Local Industrial Strategy (LIS) frontier and foundation sectors.

The report sets out an overview of the intelligence available relating to the skills required to meet our Life Sciences Sector requirements across Greater Manchester. The objectives of this intelligence are as follows:

- Provide a better understanding of the progression pathways to roles within the Life Sciences sector in GM.
- Identify which occupations need to be prioritised.
- Better inform and implement existing skills provision for the benefit of GM residents and Life Sciences employers.
- Identify opportunities for the skills system to increase the available pathways for new entrants and upskilled/reskilled workers into priority occupations needed.
- Understand the future trends within the Life Sciences sector – in particular, how these trends will impact the existing workforce and future skills needs.
- Understand the impacts of COVID19 and Brexit on the skills-base within the sector, including challenges and opportunities.

GM residents need to be able to understand the occupations and progression pathways as well as the technical skills and wider competencies and attributes required in different areas of the industry and at different levels. There is the need for key stakeholders working with different groups to be able to translate these key skills and labour market messages for the following groups

- Young people
- Influencers – teachers, parents, careers advisors and work coaches
- People looking to switch careers or looking for work
- Skills providers of all types
- Employers

- Individuals wanting to progress in work

This intelligence was gathered during 2021 and is accurate as of the release date of this report. The report is intended as an initial platform of intelligence and research, which will be built on and updated by GMCA. The Covid-19 crisis has powerfully demonstrated the strategic importance of the life sciences sector to the UK's health, security and to the economy. There are new developments evolving at a rapid pace which will have large and long-lasting impacts on the future of healthcare in this country. GMCA understands the need to regularly update this intelligence accordingly. Plans are laid out towards the end of the report for further intelligence gathering and research.

Executive Summary

The life sciences sector was originally identified as a strategically important sector to the North West region's economy in 2000 and since this time has been the focus of significant investment to support its development. The sector is crucial to both the wider region and to Greater Manchester in terms of employment of residents, and the growth of the wider economy. This report looks primarily at the skills and labour challenges in health life sciences and aims to better inform and guide responses from GMCA, local authorities, employers, training providers and other stakeholders.

Key findings from this report include:

- Life sciences in the UK directly employs over 250,000 people has the potential to create around 133,000 jobs over the next 10 years. In the last 5 years around 2,400 additional jobs have been created in the Northwest. As part of Manchester Science Partnership, Alderley Park is home to the UK's largest life science ecosystem offering a wider range of bioscience capabilities than any other science park.
- The life sciences sector across Greater Manchester and Cheshire has recently been given High Potential Opportunity (HPO) status and highlights the region's key strengths in molecular diagnostics, digital health and drug discovery and development. The sector's growth also forms a key pillar of Greater Manchester's Local Industrial Strategy and Economic Vision

- The sector has shown resilience and even some growth over the COVID-19 pandemic with the GM region playing a key role in the country's vaccination programme development.
- The growth of the sector means specialist skills are in high demand and within GM there can be a difficulty to recruit when a 'narrow' skill set is desired. There is limited opportunity for employees to cross over into other career paths.
- Significant scientific workforce shortages at senior levels have been identified in several Life Science specialties, which have been further highlighted during the COVID-19 pandemic.
- Employers feel like the sector is an attractive career option with good pay and a highly skilled workforce. Job security among the existing workforce is generally good
- Voluntary staff turnover across GM can be high, which is a sign that employees in the field have plenty of job opportunities and companies need to work extra hard to retain their talent.
- There are clear academic pathways and the Universities in the region boast a sustainable pipeline of graduate talent. Over 65% of Life Science employees have a University degree, almost double that of the wider workforce.
- Diversity in the sector is mixed with a particularly low number of employees from disadvantaged backgrounds.
- Knowledge of apprenticeships is mixed, and a lack of SME collaboration can make training difficult – both geographically and financially. There are some gaps in vocational pathways, and limited opportunity to cross over between specialisms. Although higher level and degree apprenticeships are growing in popularity, there is a lack of entry level courses
- Long progression pathways such as some degrees and lengthy apprenticeships are disliked due to the rapidly changing landscape, and fast-growing organisations needing an 'instant fix'.

Recommendations

Full and detailed recommendations are given at the end of this report, but a list of the core recommendations can be found below. These recommendations are not likely to be short-term fixes, and several require a long-term system change. They serve to summarise key areas of activity based on the greatest need – activity which will need input from all corners of the sector, including employers, skills providers, schools, local government, and sector bodies.

Key recommendations from this report include:

1. Commissioning activity should take place to fill immediate skills gaps in various occupational pathways**.** This should include fast track bootcamps to upskill individuals with relevant experience and may include:
    - Bioinformatic skills, lab technician, commercialisation/entrepreneurism, cross-sector skills, soft skills.

2. Shorter courses and modular options from degree / Master's courses are desired. Often an employer has specific skills needs and may not immediately need the full breadth of a longer course. For example, upskilling existing staff with improved digital literacy, some of whose roles may not previously have required data or computational skills. This should include enhancing worker's ability to manage and analyse large datasets; and promoting familiarisation with Big Data technologies to maximise the benefits of Artificial Intelligence.

3. Increased collaboration between SMEs is important. Through working together, more training courses and apprenticeships become viable. Shared learning and networking also create a stronger ecosystem.

4. Adult Education Budget funding should be considered to support pathways into entry level roles within the sector – in particular, some support roles. There are people currently being funded through AEB for STEM training though often awareness of Life Science careers is limited for this group.

5. Employers should be encouraged to take ownership of the skills problem themselves, opening up traineeship, apprenticeship, or kickstart positions for young people to gain occupational competence as well as qualifications.

6. Incentive payments from government and available funding should be better explained across the sector. There is confusion and a 'funding map' to support learning and growth would be helpful.

7. Occupations and careers advice should position health life sciences careers as rewarding - both financially and emotionally. The chance to make a social impact is a high priority for young people when choosing a career pathway – the sector should use this to encourage young people to take up roles in the sector and make a difference to human health. Work should be done with Bridge GM to engage with Life Science organisations to ensure that the sector is promoted as a careers option in GM schools. Some SMEs have reported that they are not invited to careers events where larger employers are preferred, and so this network of organisations should also be better involved

8. Employers should ensure that that they are working to improve representation in the sector. While this is a long-standing issue, more and better engagement with young people from ethnic minority and disadvantaged backgrounds would be beneficial.

9. There should be support for the movement of academics into industry and back again. This would help the development of a more rounded scientific skills-base to support Life Sciences growth, particularly in areas such as clinical pharmacology.

10. Work is needed to drive up the provision of Life Sciences apprenticeship training across level 2-7, through better industry co-ordinated engagement with Life Sciences employers. Support should be given to boost the proportion of the apprenticeship levy recovered by the Life Sciences sector from 24% to surpass the national average of 31%.[1]

[1] Life Sciences Vision

11. Support should be considered for facilitating collaborative, cross-sector working to create a diverse and agile workforce stemming from the public and private sector, and academia; particularly to enable career agility from sectors experiencing structural change to enter the Life Sciences sector.

1. Introduction

(1.1) The health and life sciences sector represents one of the most diverse and dominant economic sectors in the UK, including assets ranging from the development and manufacture of drugs and treatments, the development of gene and cell therapies, and intelligent drug discovery and development, to artificial intelligence, diagnostics, wearables, telemedicine and much more. The government refers to 'health and life sciences' as "the application of biology and technology to health improvement, including biopharmaceuticals, medical technology, genomics, diagnostics and digital health.

(1.2) The sector is one of the UK's most productive sectors with an average Gross Value Added (GVA) per worker of £104,000 a year, which is more than twice the UK average.2 Across the UK there are 5,870 companies in the sector; 20% of which are large companies and 80% are SMEs. Along with this ecosystem, the world's top 25 Biopharma companies and 30 Med Tech companies have operations in the UK.

(1.3) Life sciences in the UK directly employs over 250,000 people, with over 160,000 within core operations and a further 60,000 within service & supply; It has the potential to create around 133,000 jobs, through replacement and growth, over the next 10 years.

[2] Life sciences: industrial strategy

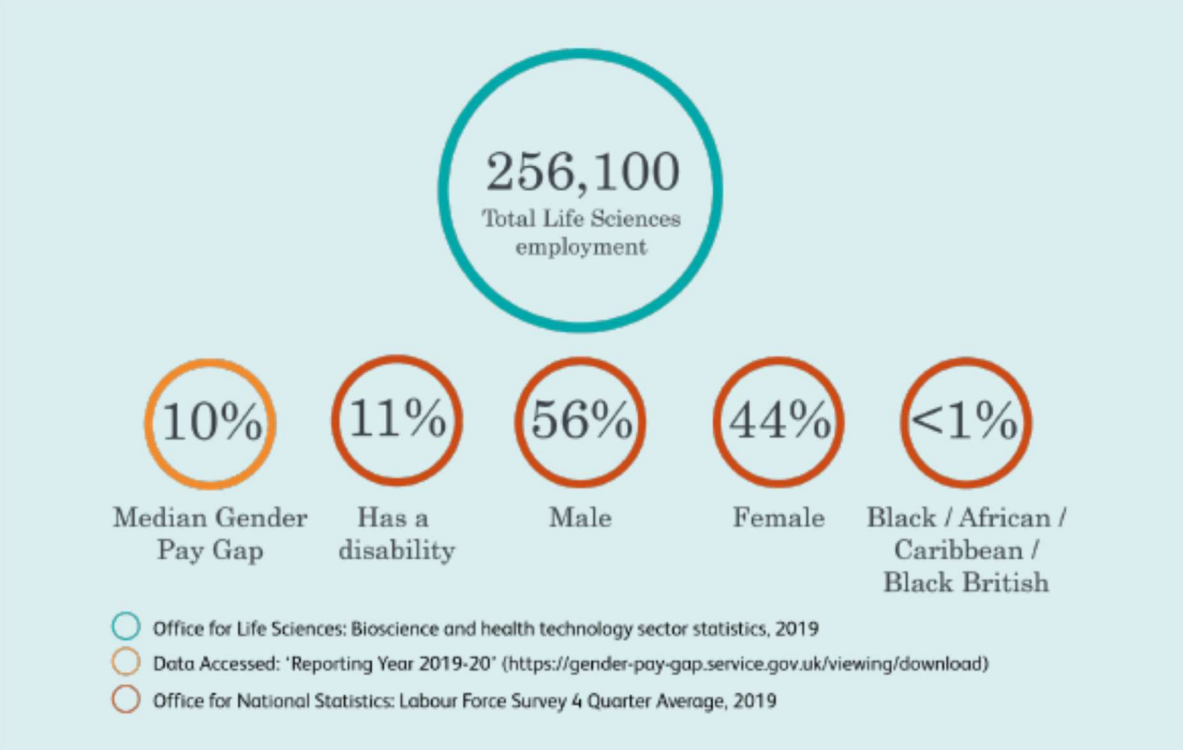


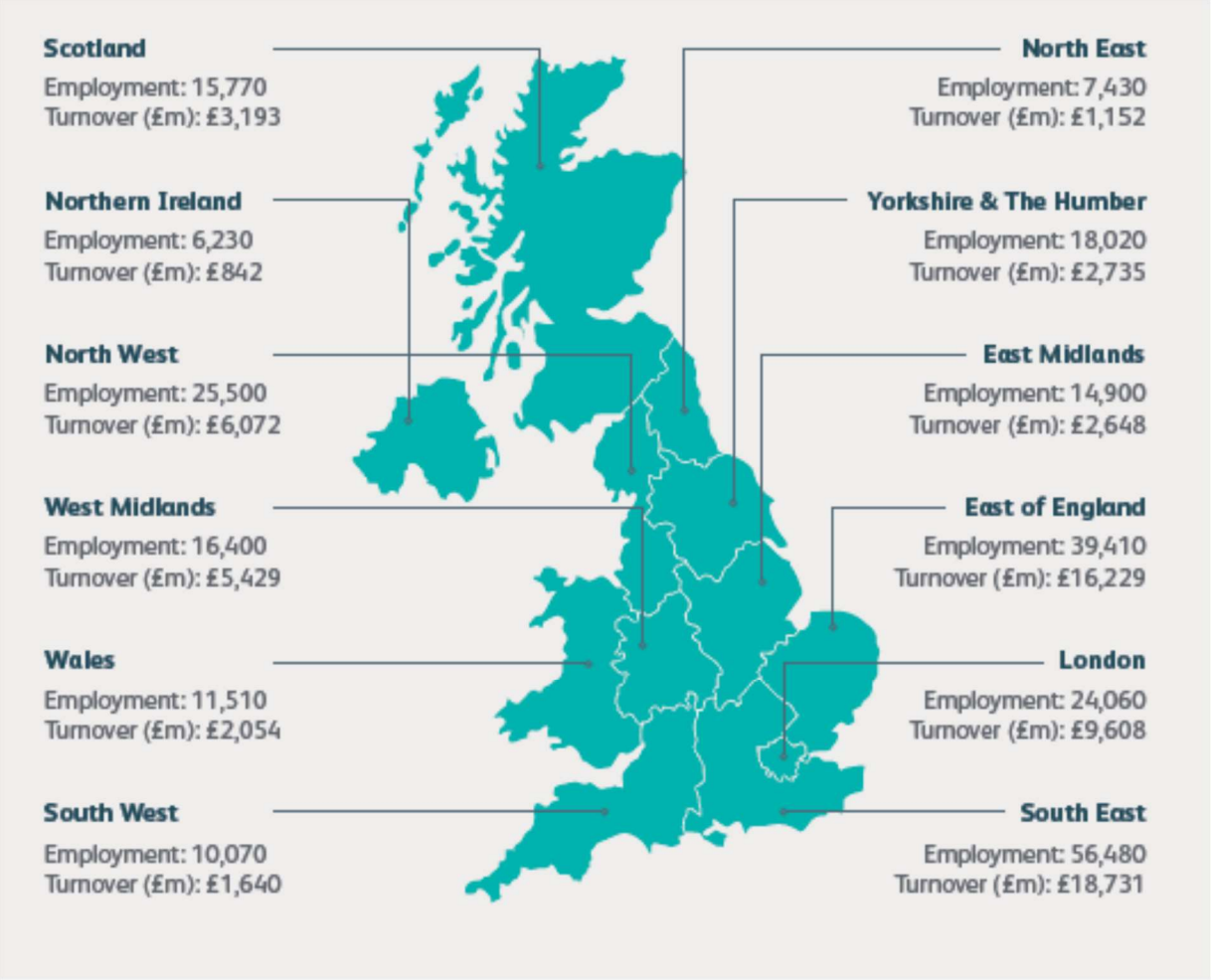
Figure 1 - Life Sciences workforce

(1.4) Employers in the Life Sciences sector have a combined turnover of approximately £73.8bn a year. In addition, there are signs the sector is growing strongly - with an 8% increase in employment and a 3% increase in annual turnover over the past 10 years.Life sciences companies in the UK export goods worth approximately £31bn annually. This is more than 5% of all UK exports by value, of which 84% are pharmaceutical and 16% are medical technology products and also attracts around £1bn of inward investment a year.

(1.5) Across the North West, there are over 25,000 people directly employed in Life Sciences and Local Gov's 2020 analysis[3] showed that the North West was second only to Cambridge for life science job vacancy numbers (and ahead of Oxford). It went on to suggest that the low cost of living in the North West compared to the South and East, were an advantage for the area in attracting both companies and talent.

[3] Life Science Competitiveness Indicators 2020 report

(1.6) Within the Government published Life Science Sector Deal 2[4], developing clusters of industry activity throughout the country (especially in support of existing life science activity) was seen as a high priority. One of the areas highlighted in the reports is the "Northern Powerhouse". The Northern Powerhouse includes the North West, North East, and Yorkshire regions – where there are over 1000 life science and healthcare companies. Employees in the life science sector here now account for 21% of the UK's total life science workforce, having grown by over 9% since 2012.



Source: **Office for Life Sciences [OLS] (2017) Life Sciences: Industrial Strategy Sector Deal 2**

Figure 2 - Distribution of UK Life Sciences workforce

[4] Life Sciences Sector Deal 2

(1.7) There is a strong infrastructure across the North West region to support start-ups and growth. Manchester is home to Manchester Science Park– a campus with over 150 science and tech companies. The site was "purposefully designed to maximise customer interaction in order for innovative ideas to develop, and valuable partnerships to form". The Citylabs Campus in Manchester offers clients "unique direct access to the hospital Trust's clinical resources, researchers, clinicians and procurement teams, as well as a specialist growth support and events programme". Also, Alderley Park in neighbouring Cheshire offers an Accelerator Programme of "start-up and scale-up support to early stage and growing life science businesses on their journey to success". The site also offers access to a £5m incubation fund to support companies establishing themselves in the park.

(1.8) Other Innovation hubs (similar to the Alderley Park Accelerator) exist in Sci-Tech Daresbury and Manchester University's Incubator. These sites offer a gathering of expertise, a place for collaboration, and access to resources and professional services.

Challenges and Opportunities

(1.9) The 2030 Life Science Skills Strategy[5] shows the need for the sector to recruit, reskill and develop employees in both specialist and non-specialist roles as the demand for innovation and integrated skills intensifies. This was also reflected in employer conversations in GM. It also sets the scene for a demographic shift that has far reaching consequences – an ageing population with growing healthcare requirements in need of solutions; skilled older workers leaving the sector and younger people replacing them with very different expectations.

SECTOR	16-29	30-49	50+
Life Sciences	20%	53%	27%
UK Total	23%	45%	32%

Figure 3 - Sector workforce age profile

[5] Life Sciences Skill Strategy

(1.10) Populations living longer is the world's dominant demographic trend. Most people in most countries can expect to live longer and healthier lives than previous generations, and the balance of our population is being transformed as extended life expectancy combines with declining birth rates. In the UK, the most recent projections show that the population is projected to increase by 9.6 million over the next 20 years from an estimated 66 million in 2017 to 73.3 million in mid-2037. It is forecast to reach 70 million in 2027. These figures include an anticipated natural increase, with more births than deaths, as birth rates rise, and more people live longer lives. The population is also expected to continue ageing with the average age rising from 39.7 years in 2012 to 40.6 years in mid-2022 and 42.8 by mid-2037. The number of people aged 80 and over in the UK is projected to more than double to 6 million by mid-2037

(1.11) Overall, these trends create opportunities and challenges for ensuring that older age is healthy and productive, with success in that respect likely to be driven by a combination of social and medical interventions. This provides a key context for health and life sciences sectors in the region

Industry Context

Demographic information

(1.12) The UK life sciences workforce is male dominated. Whilst the gender split is not as pronounced as in some sectors it should be noted that there are some discrepancies. For example, despite the numbers graduating with a Life Science qualification, women only make up around 10% of senior scientists in UK universities, government labs, public science bodies and industry. While women make up 44.5% of Life Sciences Academics, only 20% of Life Science Professors are female and only 13.9% of Senior Managers are women. This indicates that women are not progressing into senior roles in proportionate numbers. There have been increases over the last 5 years though, showing some progress is being made.

(1.13) Anecdotally in GM employers reported that often women don't stay in the sector as long as men. The reasons why women leave are not unique to the sector, but are complex, including non-inclusive workplaces, career breaks to raise families, lack of flexibility and unconscious bias in appraisal and

promotion processes. A competitive culture that rewards long working hours and participation in out of hours activities can be common in the sector; this is not inclusive to those who have caring responsibilities.

(1.14) The data we have has shown that diversity in terms of the representation of Minority Ethnic groups has increased in recent years. However, there are areas that still need some attention. For instance, less than 1% of Life Sciences employees are 'Black/African/Caribbean/ Black British', compared with approximately 3% in the wider economy

SOURCE	UK	EU (excl UK)	Other Europe	Asia	RoW
SHARE AS A %	73.0	12.1	0.7	7.2	6.9

Figure 4 - Life Sciences demographics

(1.15) Approximately 11% of the Life Sciences workforce are disabled, either with a disability that limits their day-to-day activities, or one that is 'work-limiting', or both. This compares to nearly 16% in the wider economy. GM data is not available but is expected to be broadly similar. More research is needed to understand and reverse this trend.

(1.16) One of the starkest demographic trends relates to social mobility. The Social Mobility Commission[6] estimates that just 9% of Life Science professionals are from a working-class background. Career inspiration is needed to promote the sector to more people from this background. The National Skills Strategy suggests 'building on STEM careers outreach initiatives to inform and enthuse young people, and their career influencers, to enter the sector. This will be achieved through the production of age-relevant, engaging material, in a range of media, which outlines potential careers and routes into the Life Sciences and highlights the sector's positive social impact as an attractor.'

(1.17) The potential for apprenticeships to be used as a means to promote social mobility has long been accepted. They enable individuals to gain workplace

[6] Diversity in UK life sciences

knowledge, skills and professional behaviours, supporting employability and boosting earning potential. Equally, university with the potential for high levels of personal debt, is not for everyone, which can act as a barrier to disadvantaged individuals. There is also a problem regarding student loans, with some faiths prohibited from taking out loans that charge interest. It is essential then that young people have access to high quality alternatives that provide a genuine pathway into industry at higher levels and in niche specialisms.

(1.18) The Science Industry Partnership Apprenticeship Survey[7] report describes how Life Sciences companies are increasingly turning to Higher level and Degree level apprenticeships to address a wide variety of skills gaps. However, evidence from the wider economy suggests that people from disadvantaged backgrounds are less likely than their 'better off' peers to secure an apprenticeship at these levels. Within GM though we have seen evidence that this is not necessarily the case.

[7] Science Industry Partnership Apprenticeship survey

Degree Apprenticeships are being taken up by disadvantaged students

Our approach and targeted outreach strategy has enabled Manchester Met to engage with more disadvantaged areas and achieve greater uptake than the national undergraduate figures: (figure 1). This has been a consistent trend over the last four years.

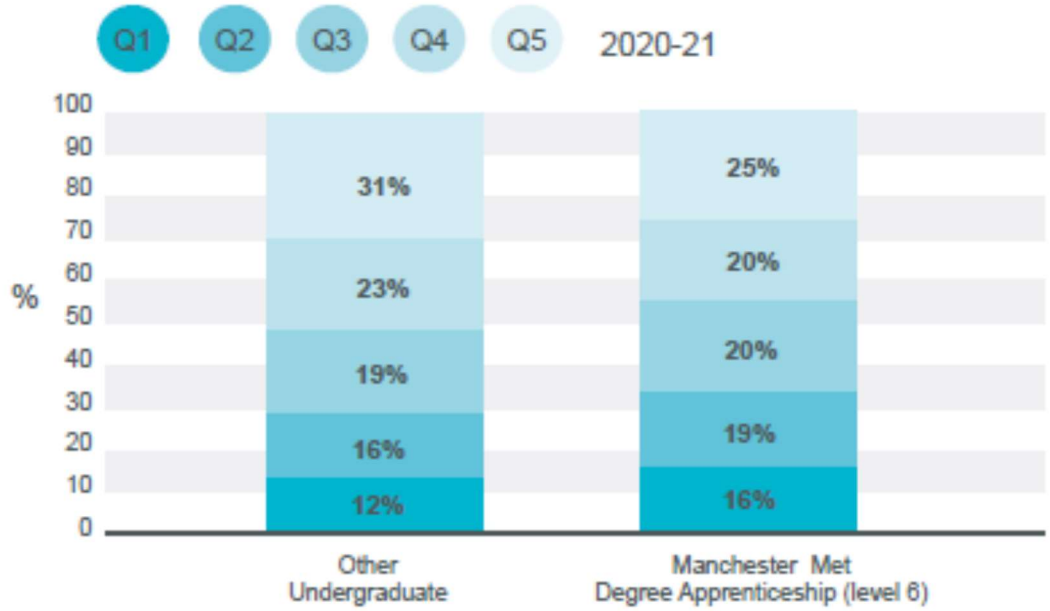


Figure 1
Manchester Met apprentice starts (level 6) compared to national undergraduate degree starts, by POLAR quintiles in 2020-21

Figure 5 - MMU Degree apprenticeship starts

2. Background

(2.1) The human Life Sciences sector is among the most valuable and strategically important in the UK economy, and critical to the country's health, wealth, and resilience. In recent decades, advances in the Life Sciences have fundamentally improved the length and quality of life in the UK and globally, and the sectors advances in new technologies will make previously terminal disease treatable or curable.

Policy Landscape

(2.2) In the future, the collective ambition of the Government and the Sector is for the UK to build on the scientific successes and ways of working from COVID-19 to tackle future disease challenges – silent pandemics – including cancer, obesity, dementia, ageing; securing jobs and investment and becoming the leading global hub for Life Sciences.

(2.3) The 2021 Government Life Sciences Vision has focused on four themes: Building on the new ways of working from COVID-19 to tackle future disease missions. Building on the UK's science and research infrastructure. Supporting the NHS so that cutting-edge science and innovations can be embedded widely as early as possible and creating the right business environment in the UK.

Greater Manchester Ecosystem

(2.4) The GM region has a long history of innovation. Manchester introduced In Vitro Fertilisation (IVF) treatment to the world enabling the birth of over 8 million babies and pioneered the first total hip replacement surgery and bionic eye implants. GM is home to world-leading research and development assets as well as the largest clinical academic campus in Europe, and the city region continues to be at the forefront of innovative healthcare treatments to revitalise and transform patient care.

(2.5) In health innovation, Greater Manchester has internationally recognised research capabilities, one of the largest life sciences clusters outside the Southeast, and a devolved health and care system. GM also has worse health

outcomes than other UK regions. These factors combined create the opportunity for the city-region to be a global leader on health and care innovation and commercialisation, while also improving the health of the population, extending healthy, life expectancy whilst also reducing inequalities and increasing productivity

(2.6) As the first UK city to have devolved control of its £6 billion health and social care budget, GM has developed a more streamlined innovation adoption pathway overseen by Health Innovation Manchester, representing a unique opportunity to life science companies. The model is supported by all of Greater Manchester's NHS trusts, clinical commissioning groups and councils, and provides an integrated academic health science and innovation system that is linked to our health and care system

(2.7) This gives Greater Manchester the tools to bring specialisms in fields like precision medicine, genomics, health informatics and real-world clinical trials to bear on clearly defined health and care priorities. GM has already attracted major new investment into the city-region with organisations choosing here to develop new medicines, technologies, products and services. Global businesses such as Qiagen Kratos Analytical, Hologic, Abbott Rapid Diagnostics, Yourgene Health, E-Lucid, Marion Surgical, Allscripts, Affinity Biomarkers Lab, Digi Dentistry, Lonza, Proteintech Group and Chiesi have a presence in GM.

(2.8) Greater Manchester is committed to continuing to be a test-bed for large-scale clinical and medical technology trials, accelerating the pace of application of new technologies to manage and treat physical and mental health problems, and integrate health and social care through digitalisation. This will drive innovation linked to our core strengths in genomics, precision health, data analytics, and real-world environment clinical trials. Ultimately this will benefit GM residents' health and also create new businesses, technology industries and inward investment.

(2.9) This is a vast sector with a wide ranging eco system. However, key components of the health and life sciences sector in Greater Manchester and the wider Northwest include:

Med-Tech – Companies developing clinical diagnostics, medical devices and equipment and digital health applications to diagnose and deliver care. For example, we have the MedTech Centre which was the first joint venture between the NHS, Central Manchester University Hospitals NHS Foundation Trust and TRUSTECH, and the private sector, Manchester Science Parks, in the Northwest with the objective of stimulating the growth of successful healthcare technology companies. Examples: Northwest Ehealth, Qiagen, Zilico

Pharmaceuticals and biotechnology manufacturers – Companies who create and manufacture medicines. In GM, for example the Intertek Pharmaceutical Services Laboratory in Manchester, provides cGMP and GLP/GCP compliant characterisation, stability, release testing and bioanalysis supporting development, regulatory submission and production

National support – The Government in 2021 has stated its explicit vision in supporting Manchester to become a world leading centre for Genomics and Data. The Northwest Life Science Cluster is to be promoted by the Department for International Trade for international investors, and the region has been awarded HPO status for its life sciences sector. Attaining HPO status underlines the North West's importance and prominence in the UK life sciences sector.

Support services and value chain – Companies who either work across the supply chain or specialise in specific functions. These include MIDAS, Manchester's economic development agency, who provide support to life science and healthcare companies looking to relocate to or expand in the city region.

Biotech – The Manchester Institute of Biotechnology was founded in 2006 to facilitate cross-disciplinary research to develop new biotechnologies. It is home to over 40 research groups who lead a portfolio of pioneering research projects that continue to advance our knowledge. This research is helping to drive the UK's strategic development of biomanufacturing, specifically in the areas of pharmaceuticals, value-added chemicals, advanced materials, and next-generation biofuels.

A broad eco-system – A broad spectrum of institutions, innovation centres and networks that support the functioning, growth and development of the sector. Examples: Manchester Science Partnership and Alderley Park in neighbouring Cheshire.

Academic science and research – The five Universities in GM boast a sustainable pipeline of graduate talent, globally recognised clinical and research capabilities and world-leading biomedical and biotechnology centres providing opportunities to converge and collaborate with industry to pioneer new health innovations

The NHS – The four hospital trusts and the wider commissioning and public health systems are key partners in the development and delivery of this economic strategy. The NHS performs three distinctive and important roles in the Health and Life Sciences strategy: As an enabler of the ecosystem to support SMEs and spinouts, as an innovator of products, services and processes internally, and as a significant health market in which to adopt these products and services. Healthcare spending in the UK totals about £200 billion annually, 10% of GDP.

(2.10) Overall and based upon dates of incorporation, the growth of life sciences companies across the North since 2014 has averaged 4.4% per annum. GM is seen as a particularly strong growth region, and over the same timescale has maintained greater than 5% per annum growth.

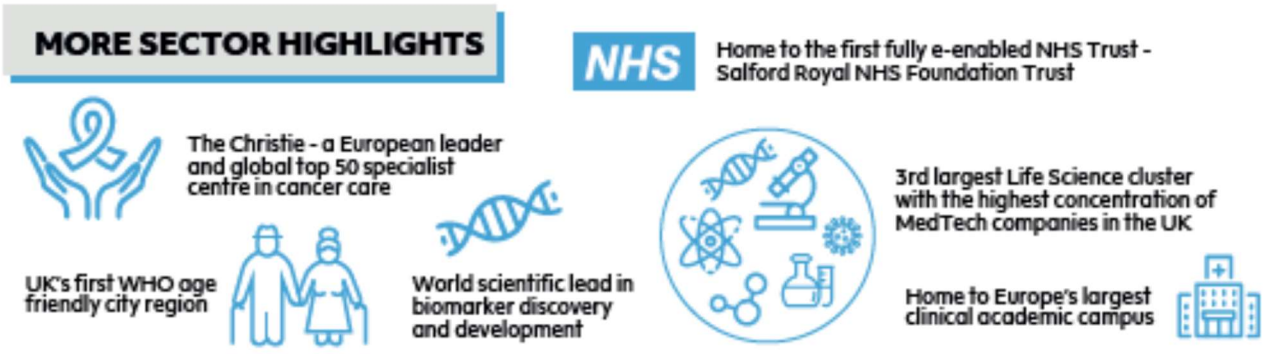


Figure 6 - GM Life Sciences highlights

Key Trends and Market Forces

(2.11) From speaking with employers, it's clear that the life science industry is continuously developing in many directions. Advancements in science are

ongoing which will ultimately affect everyday life. Partnership between different life science companies is important and shared research is vital to ensure we continue to push boundaries. Within GM, and wider, some of the trends expected within the sector are detailed below:

- Personalised medicine through advancements in genetics, or based on DNA information
- Smart technology allows the possibility of improving the assessment and treatment of patients using medication. Doctors will be able to combine the data needed to prescribe the right medication for the patient. This provides accuracy and adherence to the objective information provider by the assessment tools rather than subjective reports.
- In the field of precision surgery, there is a rise in studies connecting robotics to improve surgical methods. Surgeons can now take advantage of artificial intelligence tools to perform accurate procedures on their patients. Artificial intelligence also provides insight for doctors regarding the course of treatment.
- Increased digitalised assessment, diagnosis, and treatment of patients, there will also be an increase in digitalisation in the life sciences industry through online assessment, diagnosis, and treatment of patients.
- There will also be an increase in integrating genetic information in the assessment and treatment of disorders. Additionally, gene technology will enable researchers to identify genome sequences that predict disorders in humans.

3. COVID-19: Impact on Life Sciences

(3.1) Life sciences' profile boost from COVID-19 is an important recruitment opportunity and this should be utilised in career inspiration activity. Whilst some sectors have been decimated over the last 18 months, Life Science employment has proven secure. In GM the pandemic has led to sector growth and some wage increases. The employers who responded to our queries indicated that furloughing within the sector had been very minimal. Figure 7 below highlights some of the local achievements during this period.

(3.2) The successful development of a COVID-19 vaccine has provided a tangible and prominent example of how the life sciences industry's work benefits the people of the UK, and the rest of the world. The UK's life sciences sector has been at the centre of the country's efforts to combat COVID-19 – from the development of the Oxford-AstraZeneca vaccine to the world leading recovery trial[8] identifying safe and effective therapeutics. As the COVID-19 pandemic continues, the government published a new UK Life Sciences Vision in July 2021. The Vision outlined 7 critical healthcare missions that government, industry, the NHS, academia and medical research charities will work together on at speed to solve – from cancer treatment to tackling dementia.

(3.2) The existing strengths within the wider UK sector came to the forefront during COVID-19 and included:

A **world class science base**, with deep expertise from basic science through to clinical research – allowing innovation to move rapidly from bench to bedside.

The **National Health Service (NHS),** which had the research focus, capacity, and expertise to run enormous COVID-19 trials while under unprecedented pressure, and the genomic capabilities to track the spread of, and variations in, the virus.

[8] Covid RECOVERY Trial

The **Medicines and Healthcare Products Regulatory Agency** (MHRA), which was able to focus on getting vaccines, drugs, and technologies to patients as safely and quickly as possible.

Some of the world's **largest pharmaceutical companies**, a rich array of SMEs and a wide range of medical research charities – which were willing to work together and partner to support the national and global response to the pandemic.

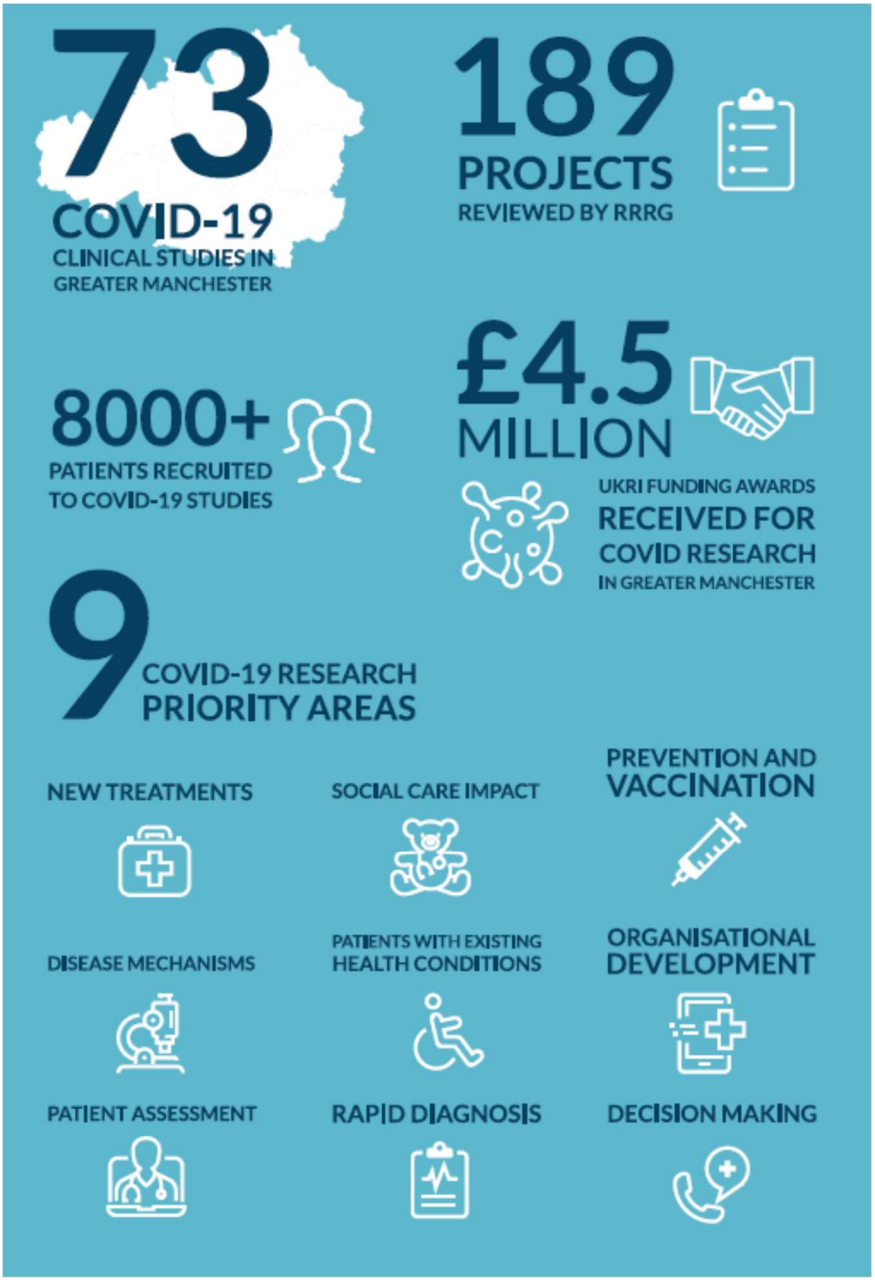


Figure 7 - Life Sciences in GM during pandemic

4. Life Sciences Labour Market

(4.1) Roles in the sector are wide-ranging and varied - many organisations reported that they tend to use specific Life Sciences recruitment agencies to gain new staff. Universities and students that may have been on a previous placement during their studies were also popular places for recruitment. Employment is generally secure and pay terms and conditions are good. Most staff are employed directly by the organisation. Whilst nowhere near comprehensive, some of the more common roles within the sector are shown below

- **Biomedical scientists** examine medical samples, for example, of blood and tissue, helping doctors to diagnose and treat diseases. They use their knowledge and test results to advise and support doctors and other medical staff.
- **Biotechnologists** combine biology, the science of living things, with technology. They research and develop the use of biology to solve problems in areas such as health care, the pharmaceutical and chemical industries, agriculture, food production and environmental protection
- **Biochemists** study the chemistry of life. They investigate life's processes at the level of molecules, using their knowledge to identify and solve biological problems. They research and develop new products and processes to benefit a wide range of areas, including food processing, pharmaceuticals, health care and agriculture.
- **Clinical research associates** organise and run trials to test the safety of new medicines and to see if they work well. They choose and set up sites where tests take place, supervise trials and monitor the quality of data from the trials.
- **Industrial pharmacists** are involved in the discovery and development of safe, effective drugs and medicines. They can work at any stage of the process, including research, development, clinical trials, overseeing production, quality testing, marketing and applying to have the drug legally registered.
- **A research assistant** is a researcher employed, often on a temporary contract, by a university or a research institute, for the purpose of

assisting in academic research. Research assistants often simultaneously teach.

- **Bioinformatics** is an interdisciplinary field that develops methods and software tools for understanding biological data. As an interdisciplinary field of science, bioinformatics combines computer science, statistics, mathematics, and engineering to study and process biological data.

(4.2) The top 20 occupations in the Life Sciences sectors are shown below and this shows the most common occupation in the sector.

UK LIFE SCIENCES TOP 20 OCCUPATIONS	
OCCUPATION (MAIN JOB)	**PERCENTAGE OF TOTAL WORKFORCE**
Biological Scientists and Biochemists	9.2
Sales accounts and business development managers	8.5
Laboratory technicians	6.2
Natural and social science professionals	4.9
Quality assurance and regulatory professionals	4.1
Research and development managers	3.8
Programmers and software development professionals	3.3
Engineering professionals	3.1
Production managers and directors in manufacturing	3.1
Other administrative occupations	2.8
Medical and dental technicians	2.6
Business and related research professionals	2.2
Book keepers, payroll managers and wage clerks	2.2
Chemical Scientists	2.1
Chemical and related process operatives	2.1
Elementary storage occupations	1.8
Actuaries, economists and statisticians	1.8
Business and financial project management professionals	1.8
Physical Scientists	1.7

Functional managers and directors	1.6

Figure 8 - Life Sciences most popular occupations

(4.3) When these are classified, it can be seen that over 70% of jobs are professional or technical occupations. This again supports the notion that the sector is dominated by graduates.

STANDARD OCCUPATIONAL CLASSIFICATIONS	PERCENTAGE OF UK LIFE SCIENCES WORKFORCE
Managers, director and senior professionals	9
Professional occupations	45
Associate professional and technical occupations	26
Administrative and secretarial occupations	7
Skilled trade occupations	3
Sales and customer service occupations	1
Process, plant and machine operatives	4
Elementary occupations	5

Figure 9 - Workforce classification

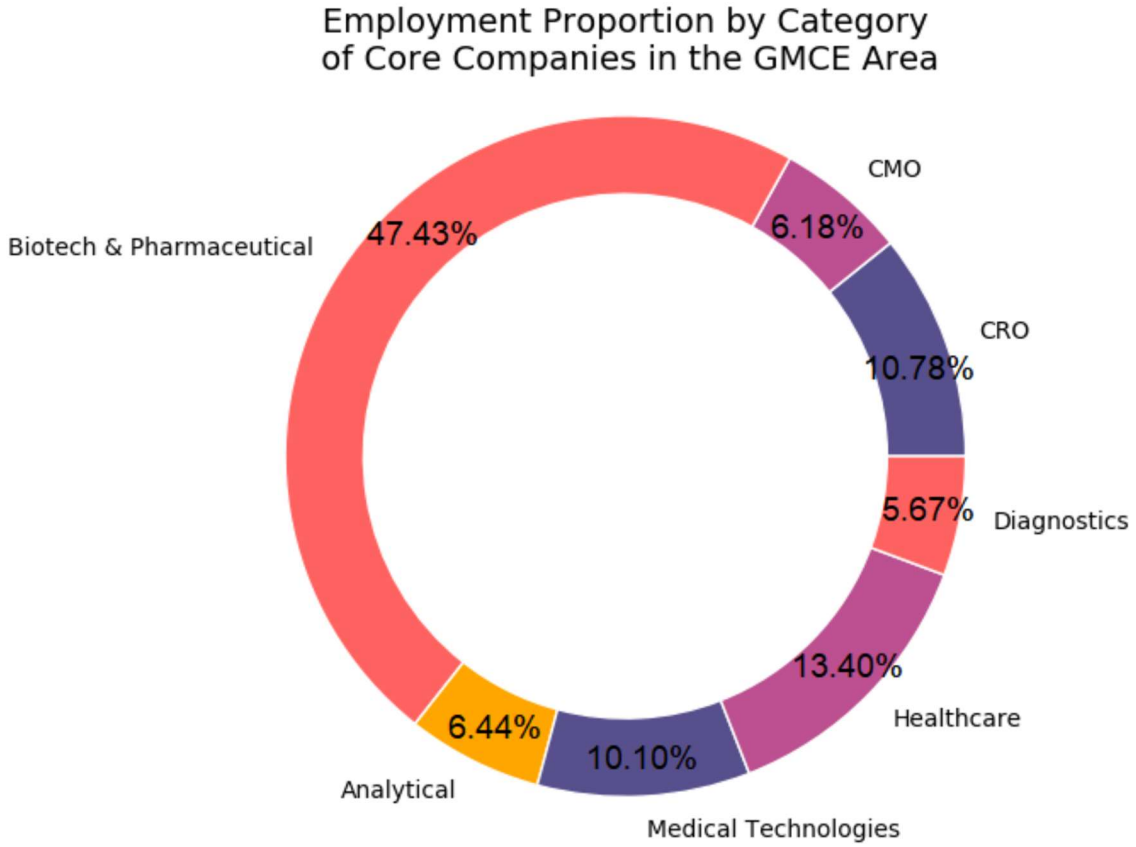
(4.4) The following LMI summarises the key findings of a BioNow report[9] which solely focuses on business that are active and registered at Companies House with an active website and does not include Universities, Research Institutes and Charities. Alderley Park, whilst just outside GM is relevant since it is central to much of the Life Science work in the region. It is often referred to as GMCE – an area including Greater Manchester and Cheshire East.

(4.5) **Alderley Park**: There are currently 63 core companies and 50 non-core companies making a total of 113 companies at Alderley Park. There has been exceptional growth at Alderley Park since 2014 averaging 20.3% growth per annum in terms of company numbers. 34% of core companies and 23% of non-core companies in the GMCE area are based at Alderley Park. More than 70 % of both core and non-core companies started since 2014 in the GMCE area are based at Alderley Park. 83.3% of all core companies based at

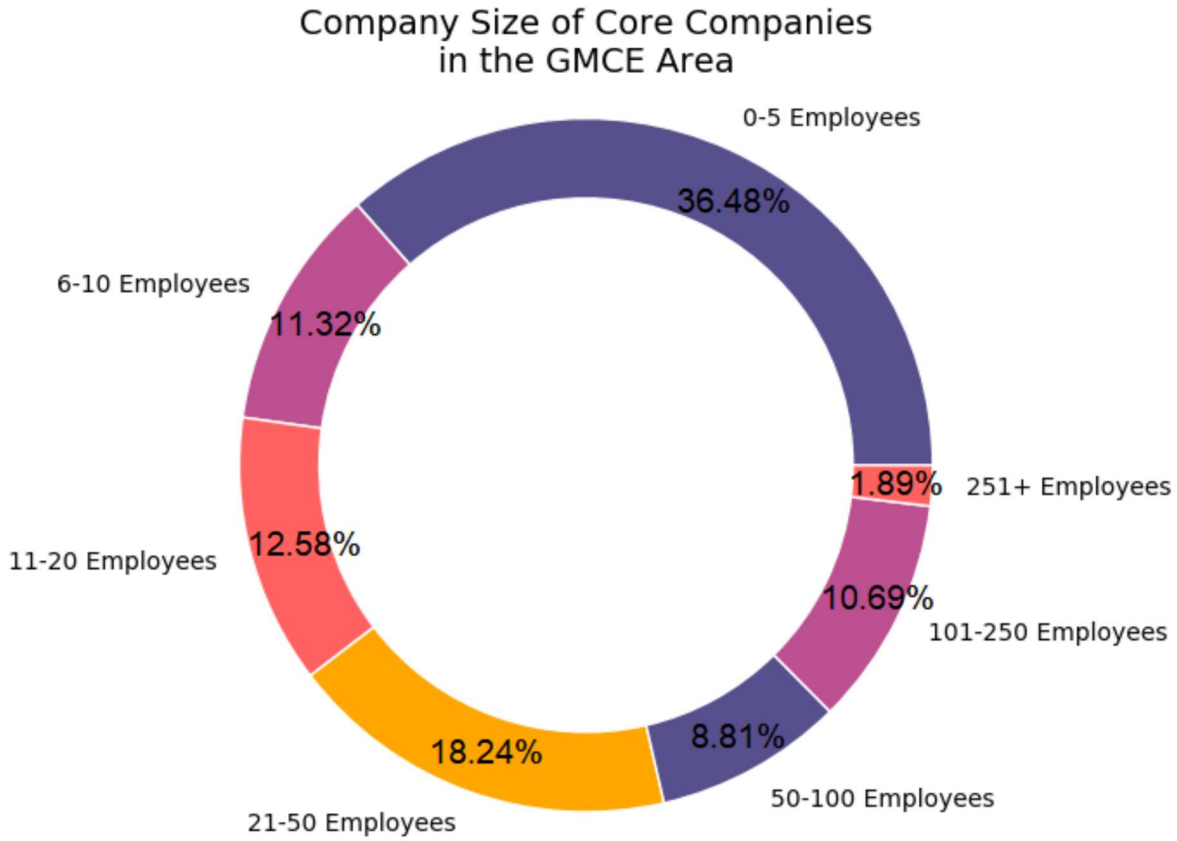
[9] Bionow | Enabling the potential of business

Alderley Park are less than 20 employees and 7.4% larger than 50 employees. The vast majority of employees at Alderley Park are currently employed within the Biotech and Pharmaceutical (41.1%) and CRO sub-sectors (54.1%).

(4.6) **GMCE area**: There are currently 187 core companies and 221 non-core companies making a total of 408 life sciences companies in the GMCE area. In terms of growth in the GMCE area during the period 2002 to 2014 there has been an increase of 45 companies equivalent to a 5.7% compound annual growth rate in core companies. This compares extremely favourably with UK life-science growth rate of 2.2%. GMCE area is home to 55.5% of all core companies in the Northwest region and 34.1% of all core companies in the North of England. The GMCE area represents nearly half (49.6%) of all investments in the North. There are currently 9691 people employed in the GMCE area by core biomedical companies. It is estimated that non-core companies in the GMCE area employ 3583 employees meaning the total sector employment in this area is estimated at 13,274 employees.



(4.7) As would be expected based upon the presence of some larger pharmaceutical companies, most employees in the GMCE area are employed in the Biotech and Pharmaceutical sector (47.4%) with further employment being fairly evenly distributed across the remaining subsectors (5.7% to 13.4%). This data demonstrates that the majority of core companies in the GMCE area are 20 employees or less (60.4%) - just 21.4% of companies have over 50 employees.



5. Skills Demand

(5.1) Projections show that by 2030[10], to meet the expect growth demands of the sector and replace retirees, the sector will need 133,000 jobs, with Med Tech and Med Tech manufacturing at the top of list (with 90,000 jobs and 46,500 respectively). This also comes at a time when 55,000 workers are set to replace retirees across the life sciences – all of which will need to hold the research, manufacturing or technical skills required to join the sector.

(5.2) Data analytics, leadership, statistical literacy and digital/computational skills are the main areas noted as skill gaps in the sector. A lot of the skills that are in high demand in the life sciences sector are soft or transferable skills – in short, skills that aren't necessarily from an academic background or job experience in life sciences.

Skills Gaps

(5.3) The following information has been taken from the SIP Life Sciences 2030 Skill Strategy. It provides an understanding of overarching skills needs for the UK Life Sciences sector and is not specific to the Greater Manchester. However, employers confirmed that these skill gaps are universal across the sector and apply to the sector in GM.

(5.4) **Digital, computational, and statistical literacy**: In line with other sectors, the UK Life Sciences sector is required to upskill its workforce to make the most of digitalisation. There is a reported gap between US and UK capability in this area. Therefore, to remain competitive, the UK Life Sciences sector should ensure there is a strong flow of data science skills, including technical experts and staff who combine laboratory and computational skills.

(5.5) **Attracting, retaining and developing more data scientists,** particularly with data modelling and programming skills, (e.g., to build programs and infrastructure for medicines manufacturing), by developing the talent pipeline

[10] BioNow report

(e.g. industrial placements for students prior to joining the sector, and refresher modules for existing staff).

(5.6) **Attracting and retaining more health economists** to maximise the benefits of larger and richer datasets in the sector; Building the capability of chemical and process control engineers to produce 'digital twins' to generate efficiencies in development processes.

(5.7) **Leadership skills**: Especially in the promotion of the digitalisation of the sector by defining and promoting excellence in leadership in different roles, and by addressing skills shortages in particular areas, e.g. protein science.

(5.8) **Communication skills**: Given the pace of technological development, there is a need to improve the sector's ability to communicate new advances in medicines and medical technology, e.g. more effective use of social media via engaging content.

(5.9) **Translation and commercialisation skills:** For the sector to make the most of the UK's ground-breaking research there is a need to:

- Improve the pipeline of academic innovation flowing to business development in industry.
- Align the skills pipeline to the innovation pipeline.
- Increase the efficiency with which research findings are transferred to industry.
- Breakdown the 'artificial walls' between careers in academic research and industry

(5.10) **Skills updates to reflect technological and regulatory change**. In particular:

- Acknowledge the broad spectrum of digital capability in the workforce and enable staff to adapt and retrain quickly.
- Keep up with and take advantage of advances in manufacturing techniques, in particular additive manufacturing, by updating skills for (chemical and process control) engineers and staff's ability to access and utilise equipment online.
- Broader and deeper knowledge of robotics, e.g. for scientists.

- Increasing the number of people trained in industry regulatory requirements, e.g. Qualified Persons.
- Develop curricula to reflect sector specific skills for data scientists.

(5.11) **Skills for cross-team and cross-disciplinary working**: Address skill gaps and shortages by increasing and enhancing cross-team and cross-disciplinary working – through development of 'intangible skills.'

(5.12) **Succession planning for an ageing workforce**: Life Sciences, along with other sectors in the UK, has an ageing workforce. Therefore, it is important for the sector to plan for and enable the transfer of knowledge and skills to the next generation, particularly for companies that have bespoke technology. The sector also needs to review and adapt its employment practices in order to retain older workers, e.g., through more flexible working arrangements.

(5.13) **Promotion and facilitation of agile careers:** The scale of change across industry will generate opportunities to attract workers from outside the Life Sciences sector, however the competition for talent from other sectors, especially for digital skills, will be high. Therefore, the sector is required to promote itself as an attractive career option, provide clear routes to entry and appropriate training offers to facilitate career agility.

(5.14) **Continuing Professional Development (CPD):** The UK Life Sciences sector lacks the infrastructure to deliver life-long learning to reskill and upskill the workforce. This adversely affects the long-term attractiveness and resilience of the talent base, for example, in developing the digital capabilities that the sector requires. The sector should seek to introduce and support CPD and lifelong training to ensure a skilled and committed workforce that is fit for the industry of the future, as well as industry of today.

(5.15) **Holistic sales and marketing skills**: To maintain the sector's international competitiveness, there is a requirement to enhance sales and marketing efforts, particularly by reinforcing the skills required to take new products to market. To do this, project management and 'intangible skills' should complement the technical knowledge that is essential to the delivery of effective marketing.

(5.16) This Skills Strategy built on the Association of British Pharmaceutical Industry's 2019 Skills Gap Research[11], which highlighted the specific skills shortages in immunology and genomics, and the Cell and Gene Therapy Catapult's (CGT Catapult) skills demand report (2019)[12], that highlighted an urgent need to recruit and retain talent to meet the expected rapid growth of bio manufacturing. In GM, this need has been acutely felt and recruitment agencies have reported a struggle to fill vacancies requiring this skill set.

Diagnosing Skills Demand in GM

(5.17) GM is certainly seeing the same issues as those being reported on a national basis. The skill needs listed above are also being felt in the region -particularly with high level technical skills needs in areas of: Med-tech, Molecular diagnostics, Biomarker Industrialisation, Bioinformatics and Pharmaceutical Manufacturing. Skills are also needed for the emerging and new regulations which emerge with advanced therapies. As a region GM lacks a strong foundation of laboratory technicians to support the talent pipeline to these more specialised roles across health innovation. Most recently in GM the lack of technicians has been a pinch point in pursuing a bid for a second COVID testing centre in the region. Creating new entry routes for Laboratory Technicians is therefore particularly important in GM.

(5.18) Fast track bootcamps are desired to support individuals with previous relevant practical experience and or scientific knowledge to become lab technicians. Exact skills need and length of short course would need input from industry experts but could work similarly to previous Fast Track Programmes but with the focus on moving people to a better role. It is expected that the curriculum to cover key laboratory competencies including; core aseptic techniques, pipette and sampling skills, nucleic acid extraction and PCR. Initial and end assessment of skills and knowledge would be essential as there would need to be some demonstration of the required level of scientific knowledge and practical skill. Cogent Skills were previously funded to run a programme

[11] Bridging the skills gap in the biopharmaceutical industry
[12] Demand for specialist skills in UK

aimed at increasing laboratory technicians through degree level apprentices and learning from that programme should be built into any training model.

(5.19) As the expansion of the sector and workforce increases nationally and in GM, the need for candidates with strong leadership skills to help companies navigate a period of growth is also high. The rapid digitalisation of the sector at large means that those with an entrepreneurial mindset, or those who are skilled with team management and communication on a wider scale, are necessary to meet the new demands of technology. Communicating the advances in medicines and medical technology are cited as areas of interest, as is promoting the digitalisation of the sector. One of the areas that strong leadership skills could thrive in is regulatory and compliance, quality management and overseeing the changes in the sector to address the skills shortages.

(5.20) GM has big digital ambitions and is already home to the first fully e-enabled NHS Trust. The region also has a deep concentration of proteogenomic expertise – a major factor in Qiagen's decision to establish itself here and has been recognised by the UK government as 'an exemplar site for new diagnostic and screening'.[13] Acknowledged as the UK's first age-friendly city region by the World Health Organisation, Manchester is also the ideal test-bed location to develop, commercialise and implement healthy ageing solutions.

(5.21) It is also important that work continues in establishing the GM region as a go-to destination: The conversation about the health and life science landscape in England has been dominated by traditional big players like Oxford, Cambridge, London and the South East, recognised as the UK's powerhouse for life sciences. GM has been successful in attracting high calibre applicants to its universities and is successful in creating a viable career ladder in this sector, but there is more to do to secure graduate retention from the skills generated in the region. At the moment it's difficult to measure the exact number of people who remain working in GM after graduation.

[13] Life Science and Healthcare in Manchester

Digital Transformation

(5.22) In one of the most innovative sectors, it's no surprise that digital skills are in demand. Data modelling and programming skills are in particularly high demand due to the necessity to build programs and infrastructure for medicines manufacturing. As mentioned in the Life Sciences 2030 Skills Strategy report, supporting career agility to allow new talent to enter the industry from different disciplines and sectors is what will ensure skills diversity, whilst also facilitating collaboration.

(5.23) Primarily, research and development scientists and data science and informatics are areas requiring strong digital skills, which also has some overlap with statistical literacy (another in-demand skill in the sector). Data modelling and programming skills would be particularly beneficial to have, in order to assist with building programs and infrastructure for medicines manufacturing, as an example.

Statistical literacy

(5.24) In addition, large, rich datasets are an integral part of the life sciences sector. This is why strong statistical skills are sought-after in the industry, particularly in biomedical research which relies on rich healthcare data. It isn't just about gathering data, but also having the analytical ability to make use of it as well. There is a growing need for candidates who not only have the statistical ability to produce datasets, but also the skills to put all of the data into context and interpret it. Across the sector, statistical literacy is a valuable skill. However, particular job roles in computational biology, bioinformatics, or research and development may be the primary choices, as they utilise skills such as applied mathematics and statistics, alongside other industry-specific skills.

(5.25) This is complemented by crossovers with a deep local understanding of the power of digital technologies to transform traditional approaches to maintaining health and treating ill-health. Strengths in data, analytics, data science, computer science, artificial intelligence, and imaging are leading to innovation in disease prevention, diagnosis, treatment and in nonclinical care.

Future Skills Gaps

(5.26) While new discoveries and the rapidly changing life science environment create demand for new technical skills, employers in GM continue to point to the overarching need for strong soft skills as critical for career success. As companies' needs evolve and change, there is a desire for employees with a rounded skillset.

(5.27) Flexibility, creativity, strong communication skills, the ability to work well with others, comfort working with ambiguity, and the ability to work in remotely are frequently cited as necessary and valued skill sets. Employers have stated that they look for employers with energy, passion, integrity, resilience, interest in taking on more responsibility, and commitment to the company's success. They desire excellent verbal and written communicators that possess the ability to think creatively, and to develop and implement thoughtful, team-driven solutions. In this environment, collaborators and team players are valued over individual contributors.

(5.28) People with hybrid backgrounds and strong soft skills have anecdotally not been easy to find. The hybrid scientist-business professional, for example, may be uniquely qualified to negotiate and sell technical products and services. An engineer with IT expertise might be ideally suited for the medical device team that is building new automation and robotics capabilities into its product line. Technology experts with holistic views of problems or systems who effectively engage with people in other functional areas to solve complex problems are increasingly valued by employers

(5.29) Across all recent technical position job postings across GM, communication skills were the most commonly cited soft skill, followed by the ability to research and write. Quality assurance and control were also seen as important for positions requiring an associate degree or bachelor's degree. Teamwork/collaboration was the next most cited skill for positions requiring graduate degrees. When compared to the data from 2010/2011, one can see a growing mention of soft skills in job postings for all educational levels. Teamwork/collaboration showed the most dramatic increase. Troubleshooting and problem solving are two additional soft skills that made large jumps over the prior period

(5.30) Entrepreneurship and understanding how business works is a skill that life scientists are increasingly being called upon to have. The new trend towards smaller, leaner, more collaborative teams and roles will favour candidates with good commercial skills. Several GM organisations have mentioned that many of their graduates are initially lacking this commercial acumen.

6. Skills Provision

(6.1) There has been an ongoing drive into encouraging more students into STEM, from primary school to higher education[14]. The life sciences are covered in school as part of the science curriculum and qualifications. Science is a compulsory subject for key stages 1 to 4 (ages 5 to 16), and the National Curriculum ensures that all pupils in state-maintained schools are given a firm foundation for the future study of biology and life sciences at further and higher education.

(6.2) In post-16 education, students can continue to study sciences such as biology at A level. DfE is supporting further uptake of science A levels through a range of programmes. This includes support to schools to increase provision of GCSE triple science as we know that those students who study GCSE triple science are more likely to study science at A level. From 2010 to 2019, there has been a 19% increase in entries to Biological Science A level.

Apprenticeships

(6.3) Life Sciences is a sector traditionally dominated by graduates and as such there hasn't been a great apprenticeship culture. However, it is hoped that this is beginning to change. The Life Science Industrial Strategy[15] noted that apprenticeships will play an increasing role in addressing industry's need for highly skilled employees. A survey of organisations in 2019 found a 31 per cent increase in apprenticeships since 2015, up by 169 per cent since 2013 — this increase being primarily higher-level apprenticeships — showing how they are increasingly seen as a viable option to more traditional academic routes. In the first Life Sciences Sector Deal, the government committed to work with the Institute for Apprenticeships to prioritise the development of standards for life sciences. Currently the following pathways are available in this sector. In brackets after each apprenticeship are the number of GM

[14] Bioscience and health technology database:
[15] Life Sciences Industrial Strategy

apprentices in that standard for 2019/20. There are other apprenticeships not included since they are primarily health and social care focused:

Entry Level (L2 - L3)	Intermediate (L4 - L5)	Advanced (L6+)
Healthcare Science Assistant L2 (22) Lab Technician L3 (43)	Healthcare Science Associate L4 (29) Technician Scientist L5 (3)	Clinical Trials Specialist L6 (0) Laboratory Scientist L6 (33) Healthcare Science Practitioner L6 (54) Clinical Pharmacology Scientist L7 (0) Regulatory Affairs Specialist L7 (1) Operating Department Practitioner L7 (1) Bioinformatics Scientist L7 (0) Research Scientist L7 (3)

(6.4) There are a number of particular challenges to overcome in increasing the supply of Apprentices in the life sciences industry:

- Low numbers of life sciences companies taking on Apprentices.
- The life sciences industry has traditionally recruited graduates for technician level jobs.
- The jobs are high level, often science based and can be quite specialist.

(6.5) Employers often cite issues in finding providers to partner with in delivering apprenticeships, particularly in relation to emerging industries and technologies that will drive future growth. As numbers of skilled people required are often small in these areas there is a lack of critical mass required by providers to make delivering apprenticeships viable. Equally prospective learner awareness and confidence in apprenticeships as a progression route is currently relatively low. Numbers have increased but must do so further to meet the growing skill needs.

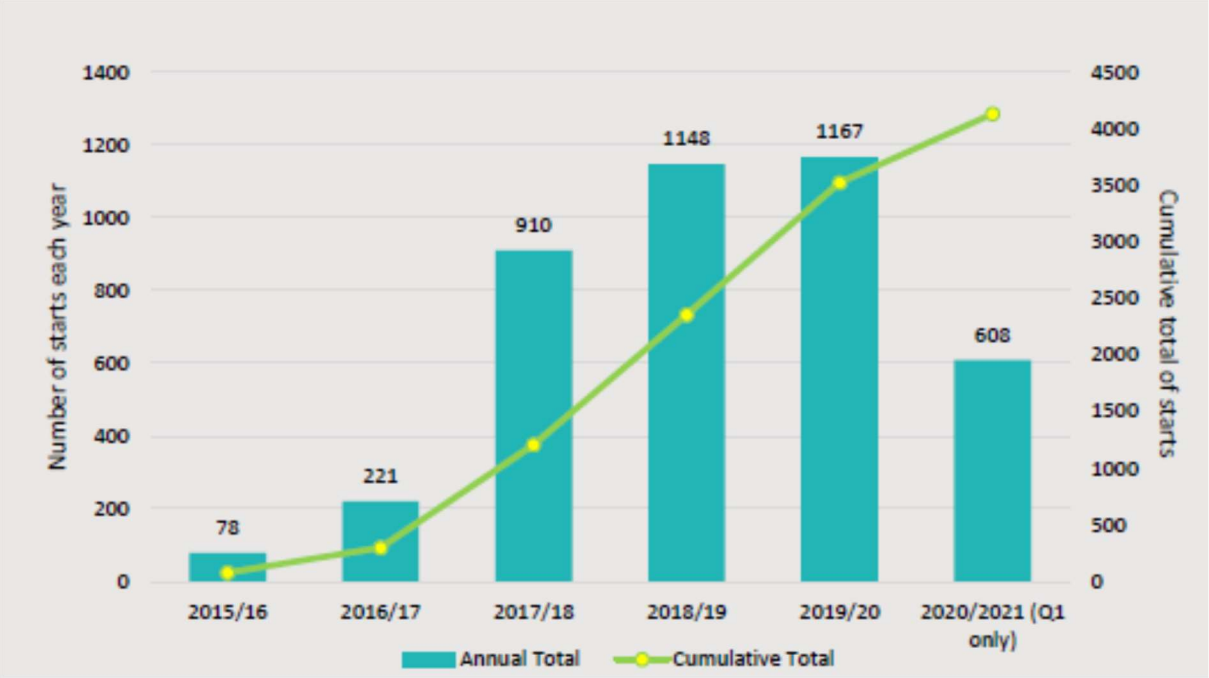


Figure 10 - Increase in apprenticeship starts

(6.6) From speaking to GM employers around apprenticeship, trends that emerged included:

Apprenticeships are at Higher Levels when compared with apprenticeships across all sectors; the science industries have a higher proportion of Advanced and Higher-Level apprentices. Science sector-wide 30% are at a Higher Level (Levels 4-7); this is 54% for Life Sciences, 28% for Industrial Sciences and 12% for all sectors of the economy. Since 2018, the volume of Level 6 and 7 apprenticeships has increased from 11% of total apprenticeships.

More apprenticeship promotion is required**:** most of the sector employers who participated in workshops and consultations remarked they would like to see more activity to promote the apprenticeship route into science careers. Several also spoke about their need to recruit work-ready staff since their organisation was growing quickly.

Higher Education

(6.7) The Life Sciences training market is dominated by universities and in GM there is a steady stream of graduates in a range of courses across the sector. MMU has seen a rapid growth in the number of degree apprenticeships being

offered in the sector with high uptake. Employers feel that the degrees give candidates the technical skills needed but not always the soft skills or cross over skills that they desire. Often SMEs are reluctant to feed into programme design since they do not feel they have the gravitas to make a difference.

Adult Education

(6.8) The GM adult education budget has supported some recent learning in the wider science sector although it is difficult to determine how many of these learners have or will enter life sciences employment. Within GM almost 200 people have used AEB to study GCSE science subjects (Biology accounting for near 75% of these). There have also been 19 people funded to study a Btec introductory award in Applied Science and 25 have done Access to HE Diploma's science.

Commercial Provision

(6.9) Organisations in GM stated that they tend not to use structured training plans but send staff on provision when need arises**.** The most frequently accessed training in GM was related to quality, regulation and technical skills used in research and development and this was delivered either in-house or externally. There was limited commercial provision available particularly related to more specialist training. Cost of commercial provision (often with travel also needed for highly technical training) was also considered prohibitive.

7. Summary

(7.1) This section aims to collate the learning and recommendations from the intelligence gathering process, giving key recommendations for sector employers, training providers, and sector employers, training providers, and sector stakeholders. A further action plan featuring both commissioned and non-commissioned work will be produced mid-late 2021. Several recommendations are given at the start of this report, some of which will feed into GMCA action-planning.

(7.2) Recommendations made in this report will not all be progressed or lead to future work from GMCA. Their aim is to support stakeholders across employers, business networks and membership organisations, skill providers, schools, and sector bodies, with a deep and detailed understanding of the current state of the skills challenge for the life sciences sector. Given the way in which this sector is constantly evolving, it is likely that no one organisation can provide a comprehensive solution. Some recommendations will address existing challenge within GMCA's remit while others will work towards future talent/skills development with partners and other stakeholders.

Life Sciences occupations – Deciding on a career

Challenges

(7.3) The main challenges for individuals and employers at the early stage of the talent pipeline are crucial to get right. The main issues facing the sector at this level are:

- The reputation of the sector among young people, parents, and teachers is highly regarded – but unachievable to many. Roles within Life Sciences are valued but traditionally viewed as being for the most academic students only.

- Some stereotypes exist around the Life Sciences workforce – some of which are justified. Workforce largely seen as consisting of those from higher socio-economic backgrounds.
- Lack of entry level positions and roles for non-graduates means the recruitment pool is reduced.
- Reluctance to take on new untrained talent, and preference to recruit graduates across the sector.
- Over the pandemic and in recent times, temporary lockdowns and safety concerns have reduced the opportunity for site visits as part of careers engagement.

Recommendations

(7.4) On the basis of findings from this report, GMCA would make the following recommendations to support jobseekers, young people, schools, FE and HE Institutions:

- There should be more and better careers engagement activity from employers in the sector to promote careers across the sector. Particularly from SMEs who sometimes feel that they do not get the opportunities to promote opportunities which larger employers get.
- In particular, the sector would benefit from more representative role models – including people from traditionally working-class backgrounds should be encouraged to work with young people.
- Teachers, parents, and influencers should be better informed of the career pathways within life sciences and the wider variety of roles. They should also be encouraged to promote the good pay and working conditions offered, and opportunities the sector brings to contribute to society.
- Career advisors should raise awareness of the positive social impact that the sector achieves and promote the fulfilling and rewarding careers on offer in the Life Sciences.

- Colleges and schools should do more to bring life sciences to life and give more people an understanding of what day-to-day life in the sector may look like.
- Recruit workers from other sectors by promoting multi-disciplinary working and new entry routes and transitions at the industry-academia-NHS interface.

Life Sciences occupations – Seeking Training

Challenges

(7.5) The Life Sciences provision market generally meets the needs of employers, though is dominated by the Universities in the region. Delivery is generally good at providing technical skills, and graduates from GM universities are highly employable. However, there is limited infrastructure for continuing professional development:

- At the FE level, Science A levels are generally used as part of a traditional academic pathway. Entry requirements for life science courses across our GM Universities vary. Colleges should be encouraged to improve and clarify the information available about alternative options such as apprenticeships.
- Many SMEs feel that they don't have the gravitas to influence training provision since their skills need/cohort size is generally small.
- Some employers have reported that graduates have technical skills but lack the soft skills to be work ready.

- Many employers in the sector acknowledge that they need more staff, but don't want to be the ones to train these staff – taking a graduate is often considered preferable.

Recommendations

(7.6) Given the challenges for individuals seeking training, whether this is young people enrolling onto FE, apprenticeship, or HE provision, or for existing workforce looking for upskilling and professional development opportunities, GMCA would recommend the following:

- Colleges and training providers should be encouraged to be better informed about the breadth of different careers and pathways available to prospective students.
- More work should be done on encouraging organisations to recruit apprentices particularly with the availability of degree level apprenticeships– this should also help to attract more diverse candidates
- Life Science employers should make progression routes explicit for all new and existing staff – there is voluntary turnover, but the sector would benefit from a stronger link between CPD and role progression.
- A 'route map' for businesses to navigate the skills funding assistance would be very useful particularly for SMEs; for example, there is limited knowledge around the apprenticeship levy match making service. Some unbiased resources would allow organisations to better understand potential benefits.
- Support to bring a cohort of companies together would enable more apprenticeships and also allow sharing of technical equipment. Challenge is bringing together enough people with the same skills need at the same time.

Life Sciences occupations – Effective training

Challenges

(7.7) Provision for the sector is generally effective. Training generally takes place at local Universities or consists of on-site, practical skills delivery; some of this has been hampered by the pandemic and ongoing lockdowns. HEIs have had to change the approaches used in the delivery and assessment of undergraduate and postgraduate healthcare science programmes. Virtual delivery has increased, but is not the preferred choice for employers, providers, and learners alike. There are some challenges in provision:

- Training is most effective when it teaches practical “hands-on” skills such as in laboratories– this is difficult to translate into a virtual format.
- While employers recognise the value of training their own staff, they often prefer graduates that already have the skillset– a qualification though does not guarantee that a candidate has the soft skills to be ‘work ready’.
- The sector is changing, growing and constantly evolving through innovation and new technology. A concern with lengthy training is that they it can be come dated very quickly.
- Training often doesn’t include soft skills. Also often lacking the specific necessary for a particular job since it may require a narrow skillset (and training caters to the wider majority)

Recommendations

(7.8) To improve the effectiveness of life sciences provision in Greater Manchester, all parties must build connections and work closer with each other. GMCA recommendations include:

- Employers, particularly small organisations, should be encouraged to offer workplace experience in partnership with colleges and training providers.
- Small and Medium sized Employers should be encouraged to work together and network around training needs. They will have far greater leverage and negotiating power in numbers and better ability to form a cohort.
- Providers should make further and sustained efforts to deliver short courses and modules that provide specific skill needs for those in the sector.
- Qualifications where possible should include some soft skills that will better allow people to succeed in the sector. For example, sales skills, commercialism, and ability to communicate are as important to succeed as the technical knowledge.
- Employers would appreciate a more flexible approach to apprenticeship modules – acknowledging that some modules won't be relevant to all apprentices.
- Providers should be encouraged to offer more flexibility and course that allow candidates to cross over into different sub-sectors

Life Sciences occupations – Seeking Employment

Challenges

(7.9) The life sciences job market is generally healthy from a candidate perspective – there are a good number of opportunities. The sector is growing and so candidates with the right qualifications (generally graduates) don't struggle to find positions. There are a few challenges:

- Some GM students may return to jobs outside of our region and so the skills are leaving the area.
- There can be a scramble for the best talent allowing the best candidates to pick and choose which companies to work for, leaving others to take those that may be not quite as suitable.
- Entry-level positions are limited meaning that non-graduates are often dismissed as lacking the expertise to work in the sector.
- With less access to the European labour market after both immigration changes after Brexit and COVID19 travel restrictions, employers may have more trouble finding the right sort of specialist skills.
- Can be a struggle to recruit for specialist skills (e.g. bioinformatics) and there can be a shortage of people out there with correct backgrounds. When employers specify narrow skills bands, they struggle to recruit.
- Lots of organisations are growing quickly and as a result, skill needs / workforce planning can be difficult to predict.
- SMEs have reported that they often feel that they are not invited to career fayres or other opportunities to recruit.

Recommendations

(7.10) To improve the job market for life sciences in Greater Manchester, GMCA would make the following recommendations:

- Employers should be encouraged to generate more entry level positions which accommodate training as part of the role, including apprenticeships
- Short courses of some sort would be good, to give people specialist training in areas away from generic graduate experience.
- SMEs often struggle to support/afford to take students on placement each year; if a mechanism could support this then many would likely return to the same employer after graduating.

- There are specialist life science recruiters, and these can be better integrated with both FE and HE establishments. SMEs should also be given chance to promote their own opportunities.

Life Sciences occupations – Remaining with employer

Challenges

(7.11) Existing life science workers generally work in good conditions, with good wages and high job security. Support from employers varies, but often SME organisations struggle to provide CPD opportunities and upskilling for their staff, whereas large employers are better equipped. There are challenges for the existing workforce:

- Progression pathways can be unclear, and it can be difficult for employees to switch disciplines – they can feel 'pigeonholed' in a specific role. For example, there are reports of high numbers of manufacturing operatives with no pathway to cross them over into lab tech type roles
- There is above average voluntary turnover within the sector as employees move on for new challenges and/or better pay.

Recommendations

(7.12) To improve conditions, upskilling and progression opportunities for workers in the life sciences sector, GMCA would recommend the following:

- Employers should be encouraged to make occupational pathways and progression opportunities within the sector/company clearer.
- Science Industry Partnerships have been piloted in other areas (such as Liverpool) and should be considered in GM
- Greater ability to cross between disciplines would benefit employers.

8. Next Report

(8.1) GM has a rich history of innovation and is home to some of the country's leading academic institutions. We are perfectly positioned to lead from the front in terms of growth, productivity and opportunities within this sector. It is important that we continue to see the benefits that this can bring to our region.

(8.2) Intelligence gathering will be an ongoing activity report for GMCA and partner stakeholders. The data and intelligence gathered as part of this report will be enhanced and updated and a revised version of the report released in 2022.

(8.3) Areas which require deeper research and intelligence gathering include:

Sub-sector differences - Life Sciences is a wide and varied sector. It would be impossible to look into each of these in great detail during this initial report. Further research is needed to look more deeply into sub-sectors such as genomics.

Further Covid-19 response – In unprecedented times, it's difficult to predict how the pandemic will continue to impact daily life. The reaction of government and the population to further disruptions to everyday life will affect the direction of the sector.

Brexit - Some key issues have been identified by organisations: regulatory alignment for medicines, the sustainability of supply chains and impacts around legislation and quality assurance. Impact on the workforce to date has been slim but this should continue to be monitored to ensure UK maintains its position in the global Life Sciences Field.

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