

Foreword

The roundtable brought together health research leaders from major regions across the UK with Chi Onwurah MP, Shadow Minister for Shadow Minister Science Research and Innovation, Peter Dowd Member of Parliament for Bootle and Liz Twist Member of Parliament for Blaydon, to examine the challenges and opportunities of the life sciences sector working together for the health and wealth of the UK and an efficient NHS.

At the NHSA, we know that convening influential stakeholders is a pre-requisite for catalysing innovation and a Life Sciences Supercluster across the North of England. That Supercluster could bring in £16.52bn a year to the UK's economy, double the number of jobs in the sector to 118,700 by 2040, and make the country more resilient to future pandemics. But we need to come together to build it. We have so many of the assets we need already in place and we are starting to get the backing and collaboration from politicians that will be needed to deliver a Supercluster at scale to transform the economy of the north of England.

What was clear from the discussion is that the northern research ecosystem is thriving, and it is willing to deliver against the scientific and economic imperatives for the UK. The collaboration fostered by the NHSA among key actors in the region is a huge strength. The northern NIHR Biomedical Research Centres (BRCs), are powerhouses and we are lucky to have such strong anchor institutions in the North. The Manchester and Newcastle Health Innovation Networks as well as the Newcastle, Leeds, Manchester and Sheffield BRCs are powerhouses of research. Our universities, hospitals and industry are all working together to help grow our skills base, the economy and the health of our population. In doing so there is a strong focus on helping the NHS overcome challenges by innovating and adding capacity to enable systems to improve care. The COVID-19 pandemic was highlighted throughout the discussion. That we must build on and implement the learning from this time and work to address the stark health inequalities the pandemic exposed - especially in the North.

We know that government funding is skewed in favour of institutions

in the South East. We, in the north, receive £21 of public health innovation funding per person compared to £62 per person in the golden triangle. A figure I hope the next government, possibly a Labour one, would seek to rebalance. But rebalancing funding is just the start, to tackle the entrenched inequalities across the North we need a whole systems approach that addresses employment, skills and opportunities for people across the life course. This is indeed a big ask and one that cannot be achieved without support and growth from the life sciences sector. Our proposal for levelling up is simple, if it can be done in the north then it should be done in the north. The discussion touched on the role of decentralising funding and localism – with the simple idea that if local authorities had increased autonomy over their spending, they could address the specific needs of their local communities. Attendees agreed that Mayoral Combined Authorities have a key role to play in fostering a collaborative approach within and between regions. This will help the UK life sciences superpower to work as effectively as possible and have a positive impact on addressing regional health inequalities through economic growth.

It was strongly agreed by attendees that connectivity is of paramount importance. In the north we know that connectivity is vital to regional development. Our life science clusters need to be more accessible to ensure they attract talent, foster collaboration and continue to drive innovation. Key to recruiting a skilled workforce is ensuring employees, investors and patients can access innovation hubs using sustainable, timely, affordable and accessible public transport links.

One takeaway from the discussion, and a real sense of pride, is how well we mobilise and tell our collective story across the north. Our biggest strength is that we are a collaborative, joined-up, interdisciplinary sector, where the various elements of the innovation ecosystem work together under a shared vision and collective purpose. It is through this facilitated collaboration that we can grow the northern life sciences sector and position it as a key driver of a thriving UK economy.

Dr Séamus O'Neill, CEO of the Northern Health Science Alliance

Introduction

In October 2023, the Northern Health Science Alliance (NHSA) and Health Equity North (HEN) hosted a roundtable at the Labour Party Conference. The event brought together health research science leaders from major regions across the UK to explore how life sciences can work together to contribute to the health and wealth of the UK and an efficient fit-for-purpose NHS.

Background: UK Supercluster

Superclusters bring together the vital stakeholders required to catalyse innovation across a region. World leading innovation super clusters like Boston (Healthcare), San Francisco (Tech), Tel Aviv (Tech, Healthtech), Singapore (Manufacturing, Healthtech) and London (Fintech) compete on a global stage to attract talent, foreign direct investment (FDI), capital providers, industry and create a collaborative framework across large ecosystems. The UK has a deep strength in both the life sciences and research and innovation. Collectively the UK is the third largest cluster behind San Francisco and Boston. This has resulted in many emerging clusters at different local and regional scales. However, to compete globally, the UK has to actively connect its existing assets to grow UK-wide Life Science Innovation Superclusters.

In the UK successful life science clusters bring together industry, investors, academia, the NHS and organisations such as the National Institute for Health Research (NIHR), and the Health Innovation Networks (HINs). Anchored by institutions including research-intensive NHS Trusts, universities or manufacturing hubs, UK life science clusters include Manchester, Cheshire, Yorkshire, Newcastle, London, Cambridge, and Oxford. Clusters drive growth and productivity by facilitating networking and collaboration, research and innovation, skills development and training, internationalisation of cluster assets and the ability to do 'high risk' work in a low-risk environment.



The Economic Benefits of a Northern Life Sciences Supercluster

A Life Sciences Supercluster across the North of England could bring in £16.52bn a year to the UK's economy, double the number of jobs in the sector to 118,700 by 2040 and make the country more resilient to future pandemics.¹ Developing the existing excellence in the North into a second UK supercluster would strengthen the whole of the UK's offer in life sciences, while simultaneously levelling up the North's excellence in the sector and tackling health inequalities, which cost the UK £13.2bn a year in lost productivity!



Through supporting areas of opportunity, the Northern Health and life sciences supercluster:

- Jobs in the sector would increase from 54.100 in 2020 to 118.700 in 2040.
- Productivity measured in GVA would grow from £5.17bn in 2020 to £16.52bn in 2040.

The North of England has four globally important areas of opportunity where its research excellence and innovation capacity is matched by opportunity in the market:

- 1. Advanced Therapies
- 2. Infectious Diseases
- 3. Diagnostics and MedTech
- 4. Data and Artificial Intelligence

The North of England also has two challenge driven areas of opportunity, where its globally important expertise meet growing regional, national and international needs arising from specific challenges to the sector:

- Healthy Ageing
- Mental Health and Wellbeing

By supporting these areas of opportunity as a Supercluster through the NHSA and the NP11, the life sciences sector in the North would be doubled over 20 years, creating an additional 64,600 jobs. The GVA added to the national economy from the sector would more than treble from £5.17bn to £16.52bn.¹

1. A Northern Life Sciences Supercluster: The Economic Potential of a Systemwide Approach – NHSA 2021

Delivering Superclusters and Innovation

We must increase capacity and scale for pan-northern collaboration, partnerships and investment. Realising the opportunity of the northern life sciences Supercluster is dependent upon working at a scale that goes beyond existing administrative boundaries in the North.

Working with national government to put in place pan-northern partnerships and greater connectivity between academic and NHS assets in the life science sector and between the public sector and the North's manufacturing and industry assets, including:

- High quality support for industry within the NHS and academia, with clear metrics for delivery.
- Fully engaging NHS leadership in creating a new paradigm of partnership with industry to support innovation, real-world evaluation and adoption.
- Maximising life science cluster collaboration across the UK, building on strong North-South axis of partnership with MedCity and rapidly developing collaborations with HIRANI in Northern Ireland, the Scottish Life Science Cluster, the Midlands Cluster and the Health Tech regional clusters (supported by UKRI), amongst others.

For the Supercluster to reach full potential we must work with partners, including Office for Life Sciences, Innovate UK, UKRI, BEIS and DIT to:

- Develop dedicated pan-northern support for innovative SMEs to flourish and scale.
- Invest in the people, skills and talent needed to grow the life sciences workforce through developing a Life Sciences Skills Action Plan that addresses both national and regional needs.
- Support the NHS and universities to work with businesses within the life science sector to bring innovative products to market more quickly; and crucially, build capacity and skills across the North to do this at scale.
- Improve access to finance for innovation for companies within the North.
- Increase the international visibility of the Northern Life Sciences Supercluster and drive foreign direct investment (FDI) in the North by better co-ordination of the existing and future innovation pipeline infrastructure.



Background: The Role of Mayoral Combined Authorities

Built on the strengths of the North's £13.6bn life sciences economy and home to 21% of the UK's total life sciences workforce, the Supercluster will strengthen the region's Local Enterprise Partnerships (LEPs) and Combined Authorities (CAs), research intensive universities, Catapults, NHS Trusts, Health Innovation Networks (HINs), Academic Health Science Centres (AHSCs), Science Parks and other stakeholders, enhancing the UK's global industry offer.⁵ The Supercluster would build resilience in the UK's health system, enabling it to tackle future pandemics and directly aid in tackling health inequalities in the region which cost the UK £13.2bn a year in lost productivity.⁵

The Levelling Up White Paper included the announcement of the Innovation Accelerators programme which will invest £100 million in 26 projects to accelerate the growth of three high-potential innovation clusters in Glasgow, Greater Manchester and the West Midlands (providing £33m each to three emerging clusters).²

- The 26 research and development (R&D) projects will attract private R&D investment, create new jobs, boost regional economic growth, and develop the technologies of tomorrow.
- The programme is pioneering a new model of R&D decision-making that empowers local leaders to harness innovation in support of regional economic growth.

As a pilot programme, the Innovation Accelerators will also deepen our understanding of the right conditions and interventions to grow successful innovation clusters throughout the country and to cement the UK's position as a science and technology superpower.

Background: Pan Northern Activity

Opportunities for pan-Northern working will enable existing expertise both within diagnostics and medtech and associated disciplines (e.g., manufacturing) to build the scale of activity needed for the North to establish and maintain competitive advantage and a growing profile in evolving national and international markets. Examples of collaborative working, within and across LEPs, are already evident that could be built upon including through:

- The CONDOR diagnostics evaluation platform for new COVID-19 diagnostic tests, co-led by DiTA and the University of Oxford with other project partners within the North including the NIHR medtech and In Vitro Diagnostic Cooperatives in Leeds and Newcastle and the North East and North Cumbria, and Yorkshire and Humber Health Innovation Networks.
- The NHSA's health and medtech Memorandum of Understanding established with the UK-Israel Tech Hub to support the attraction of Israeli health and medical technology innovations to the North of England, recognising assets and opportunities across the North.
- The establishment of a Leeds City Region Israel HealthTech Corridor, mobilising the Leeds medtech cluster to provide a landing pad for innovative Israeli healthtech companies.
- The North East North Cumbria Innovation Pathway initiative and Diagnostics North East both
 of which bring together expertise within the NHS, academia and the Academic Health Science
 Network. Liverpool city region accelerator that bring together Life Science assets in the city to
 deliver a system wide support programme to developing companies.

2 £100m R&D levelling up funding awarded to accelerate innovation – LIKRI 2023



Roundtable Discussions

The roundtable discussions centred around the following three topics. It was held under Chatham House Rules.

- How can we continue to ensure UK research and innovation is world-leading?
- The role of anchor institutions in strengthening and growing superclusters.
- Mayoral Authorities in developing the UK's life sciences supercluster.

Discussion Point One and Two: How can we continue to ensure UK research and innovation is world-leading for the benefit of patients and the country's life sciences industry? How can government, universities, hospitals and industry increase capacity and deliver at scale across regional clusters to deliver their full potential?

The roundtable began by highlighting some of the outstanding research strengths of the UK's Northern clusters. Despite such strengths, there exists extreme funding inequalities between the North and South, with the former receiving £21 of health innovation funding per person compared to £62 per person in the golden triangle. Over half of the North of England have worse health than the worst area in the South, making these funding inequalities unacceptable and incredibly damaging to the region. To tackle these challenges, the whole system needs to be addressed including employment, skills and opportunities for people across the life course. The group recognise this is a big ask and that it cannot be achieved without support and growth from the life sciences sector.

One of the first topics discussed during the roundtable was the UK's centralised approach to economic investment. The group highlighted that it is important to explore the possibility of local authorities having access and autonomy over their own budgets to help drive local economic development. The example of devolution in Manchester was raised, a region which has been able to focus on the health care priorities of its people to address health inequalities. Conducting research in places where the need is higher will yield the greatest outcomes in terms of community health and the local economy. This localised approach helps drive innovation for patient benefit, foster inward investment and thus demonstrates how regional coordination can give national benefit. The importance of having a stable economy was also highlighted as a vital component for the future success of our life sciences sector. Achieving economic stability across the country will ensure the UK is in a position to attract and retain investment in our regions to drive forwards innovation.

In terms of our anchor institutions, their role as an employer is vital in supporting our regional clusters reach their full potential. There is a significant underpinning supply chain required to operate our life science clusters which comes with huge employment opportunities. The businesses operating in our clusters offer exciting job opportunities which attracts world leading scientists from across the globe to our sites. This brings wealth into our local communities from which people and the economy can benefit. It's important to recognise this strength and do more to promote the opportunities we have in various specialisations

Box 1 Case Study: Greater Manchester and Cambridge Collaboration

In October 2023, a partnership between Innovate Cambridge and ID Manchester, a joint venture between The University of Manchester and Bruntwood SciTech, was launched as part of the UK's ambition to become a world-leading science and tech superpower. Both cities are existing hotspots for science and tech innovation and the new collaboration will utilise the strengths of each cluster to support the scale-up of businesses and create jobs in local areas.

New hubs will be set up in both cities to help establish, strengthen and accelerate collaboration between local entrepreneurs and researchers. The partnership will also map out the current network of connections between both clusters and work together to attract and capitalise on emerging co-location investment opportunities.

As demonstrated here, there is opportunity within the UK for anchor institutions to build on existing strengths by working in partnership to help foster innovation and investment.⁶

across the North. In addition, we need to ensure we are supporting the development, growth and retention of skills across our workforce to match the expansion of our life sciences industry. Without this complimentary skill development, the nation's ability to grow as a supercluster will be constrained.

The UK continues to attract global investors due to its reputation and assets on offer. Various large companies and other MSEs are based across the country including the Google DeepMind headquarters and QIAGEN at Citylabs in Manchester. The UK is also home to many success stories. The COVID-19 AstraZeneca vaccine was developed in partnership with The University of Oxford and the US company Lilly's cancer drug, Pirtobrutinib, was developed at Bruntwood SciTech's Alderley Park in Cheshire. 3.4 Celebrating these success stories and advertising what we offer will continue to attract investors in a highly competitive international market. This will support inward investment and ensure the UK continues to be viewed as a life sciences supercluster. Furthermore, we need to improve our communication within and between clusters across the nation to share best practice amongst our networks. A point was raised about how local journalism should be improved to ensure we are telling the brilliant stories taking place across the region.

The role of collaboration was highlighted at numerous points during the roundtable. This collaboration should take place across three lenses: cross-discipline, cross-sector and cross-country research. Creating larger clusters across the North of England, as done so by the NHSA and Northern NIHR Biomedical Research Centres (BRCs) in Newcastle, Leeds, Manchester, Sheffield, has provided additional benefit for the region by tackling common

needs. This regional coordination attracts investors and a highly skilled workforce to the North, which benefits the economy and the wider life sciences sector. Regional collaboration has also seen successful recruitment to clinical trials, which is an ongoing challenge within the UK. The number of people taking part in commercial research has fallen from more than 50,000 participants in 2017/18 to just over 28,000 in 2021/22. Despite this, the NIHR Greater Manchester Clinical Research Network (NIHR GM CRN) has increased the number of participants in commercial trials by 44% from 2017/18 to 2021/22. This success is partly due to the collaborative operation of the NIHR GM CRN, who work closely with academia, industry partners, providers and the local community to address both the needs of the region and international sponsors.

As highlighted earlier, our anchor institutions and research funders are huge employers and should build in cross-sector and cross-discipline opportunities for their employees to develop the skillset of our workforce. In addition, clusters in the North of England should be looking to collaborate with those in the golden triangle (See box 1). Our clusters across the UK are powerhouses for scientists, research and innovation and we should be taking advantage of the various specialisations each cluster has to offer. Working in partnership will allow the UK to maximise opportunities to drive forwards innovation and better position the UK as a supercluster powerhouse.

To ensure patients benefit from research and innovation, the process from innovation to adoption needs to be accelerated. It takes an average of 17 years for a product or device to be adopted in the NHS following successful clinical trials. Although companies continue to choose the UK as a place to design their interventions, we may begin to lose our advantage over the coming years if we don't ensure regulations are agile in the fast paced international

Box 2 Case Study: Preeclampsia Test

In 2017, the Oxford Health Innovation Network began a project aiming to increase the adoption of the placental growth factor-based (PIGF) test, which was approved in 2016 after being licensed in 2009.8 The blood test is able to identify women who are likely to develop pre-eclampsia within the next 7-14 days. The project initially supported three hospitals to adopt the testing and demonstrated its success in identifying women who did not have the condition and could be safely discharged. Following this, the test was selected for various rapid uptake programmes to accelerate its adoption.

By April 2022, 86% of eligible maternity units based in England had either adopted the testing or were in the process of implementation, benefitting approximately 35,000 pregnancies each year. The projected savings for the NHS are £4m per year due to reduced hospital bed occupancy. This case study highlights the lengthy innovation to adoption process, but also how regional funding can accelerate widespread adoption to benefit patients and save money for the NHS⁹

market. Not only would this improve the care and treatment for patients, but will also result in cost savings for the NHS (See box 2). By establishing a safe but timely streamlined innovation to adoption process across the country, the UK will further position itself as an attractive place to develop and implement new treatments and technologies.

Discussion Point Three: What role do regional clusters, anchor institutions and Mayoral Combined Authorities play in strengthening the economy of the North through supporting inward investment and developing talent?

To support inward investment for the benefit of local and national economies, our anchor institutions need to retain a focus on conducting world-leading research in our specialisations, as opposed to competing with the golden triangle. We should continue to excel at what we do to produce the skilled graduates and workforce that help benefit patients and attract inward investment from the global community. The importance of collaboration between the anchor institutions was highlighted again to ensure we access shared learning and support each cluster to excel in their specialisation.

In terms of developing talent, there is a huge potential for our anchor institutions to play a role in supporting the future workforce, an opportunity not currently being leveraged across the country. Institutions such as the NHS can work alongside schools and colleges to inspire and support young people to explore their career options (See box 3). By fostering and supporting the skillsets of the future workforce, local communities will have greater opportunities which will encourage regional economic growth.

The conversation turned to AI, data and the role communities can play in revolutionising how these technologies are used. When data is sent to external companies, they are unable to ground that data to a local context, minimising its usefulness. Instead, the UK has an opportunity to flow AI technology between communities, research institutions, industry partners and the NHS. By allowing local regions to test out AI, they can offer valuable feedback and support the development of technology that is suitable for the local context. If this knowledge was connected to a national grid, the UK would have a world-leading trend facility for AI that was connected across the nation, with localism at the centre. Not only would this help establish trust regarding the collection and use of healthcare data, but it would also help create jobs and retain the workforce of local regions. It was suggested that future governments should develop a health tech strategy that is coherent and proportionate to the challenge and opportunities of AI, including the establishment of a national grid. This grid would connect communities across the nation and help realise the potential of AI, strengthening the UK's position as an international life sciences supercluster.

The roundtable continued to discuss the importance of getting communities involved in research. Regional clusters, anchor institutions and mayoral combined authorities play a pivotal role in mobilising regional engagement for the development of local economies. With 86% of northern local authorities having lower life expectancy than the national average, adopting a regional approach, in support with local institutions, is vital in addressing the

health challenges impacting local communities. A long-term cross-sector research strategy aimed at addressing disparities in health is needed to deliver better outcomes for the population. Having an annual update and focus on this issue would be useful to track where the nation is at and which research areas should be prioritised to address health inequalities.

There are other wider enabling factors that are needed locally to support regional development. Firstly, improving planning permission timelines would support the establishment and development of regional life science parks. Local areas also need infrastructure investment. In particular, we need to ensure people can access our life science clusters in an affordable, timely and sustainable manner. Doing so will massively increase the labour market and open up opportunities not previously available to local communities. For example, a new train station is being built at the Cambridge Biomedical Campus, connecting it with areas such as central London, Birmingham and Stansted Airport. This infrastructure will promote connectivity to the cluster to help drive forwards innovation. Clusters across the North need similar investment if the region is to see growth.

Box 3 Case Study: Work Experience at Alder Hey Children's NHS Foundation Trust

Alder Hey Children's NHS Foundation Trust offer a range of work experience and vocational placements for children and young people who are considering future career pathways. The trust has also worked in partnership with the Prince's Trust since June 2022 to support local young people under 30 begin their career in health and social care. These programme allow the trust to support approximately 400 young people in exploring careers in the NHS and life sciences sector. This case study shows the valuable role anchor institutions can play in developing talent and skills in local communities.

- 3 https://www.ukri.org/news-and-events/tackling-the-impact-of-covid-19/vaccines-and-treatments/the-story-behind-the-oxford-astrazeneca-covid-19-vaccines-success/
- 4 https://www.alderleypark.co.uk/news/2023/5/12/redx-discovery-of-pirtobrutinib-recognised-with-unveiling-of-commemorative-plaque-at-alderley-park-following-fda-approval
- 5 https://data.parliament.uk/DepositedPapers/Files/DEP2023-0476/Clinical_Trials_Review.pdf



Summary of Roundtable Discussions

The roundtable discussion highlighted a number of key areas to focus on that will support health innovation in the North of England.

Decentralising funding and localism

Revolutionising the way in which funding is awarded in the UK could benefit regions across the country. If local authorities had increased access and autonomy over their spending, they could address the specific needs of their local communities. There is a need to conduct research in places where the health needs are highest, to ensure regional health inequalities are tackled and to support the development of local economies. In addition, local communities and anchor institutions could be utilised to ground data and AI in the local context, to address specific challenges.

Anchor institutions as Economic Drivers

Anchor institutions are significant and powerful economic drivers by offering huge employment opportunities for their local communities as well as attracting talent from across the globe. These opportunities are important for the development of regional economies and the retention of staff within our regions. The potential of anchor institutions should be leveraged across the nation by offering work experience programmes and interdisciplinary training opportunities to help foster the necessary skilled workforce required to grow our life science clusters. With this growth comes innovation, which is necessary for continued inward investment.

Connectivity

Vital to regional development is connectivity. We need to ensure more is done to make our life science clusters more accessible to ensure they attract talent and collaborators to continue driving innovation. Infrastructure investment is required to ensure employees, investors and patients can access our innovation hubs using sustainable, timely, affordable and accessible public transport links. Without this, clusters may lose out on collaboration opportunities and struggle to recruit the necessary skilled workforce.

Collaborations

Collaboration is key to the development of the UK as a life sciences supercluster. Anchor institutions should seek to develop partnerships within their region to maximise investment opportunities. Collaboration between clusters in the North and South is important for regional innovation to thrive as it creates an environment where best practice can be shared. This will also support the UK in taking advantage of co-location opportunities. Future efforts should focus on fostering collaboration both within and between clusters as well as cross-discipline and cross-sector.

Communicating success and assets

The UK needs to better communicate our assets on offer and success stories to continue attracting global investors. Our regional clusters have various specialisations to offer and this needs to be celebrated and shared to foster future inward investment. In addition, more needs to be done to support communication between the clusters within the UK. Without this, regions will lose out on shared learnings and potential collaborations, both of which will constrain the sector's ability to improve and grow.

Research to Innovation

Finally, the roundtable highlighted the importance of improving the research to innovation timescales within the UK. Not only is this important for improving healthcare outcomes for patients, but it will also ensure the UK continues to be viewed as a place for global investors to develop and test new technologies in an increasingly competitive market.



