



# Life sciences: Super Clusters for Global Britain and Northern Ireland



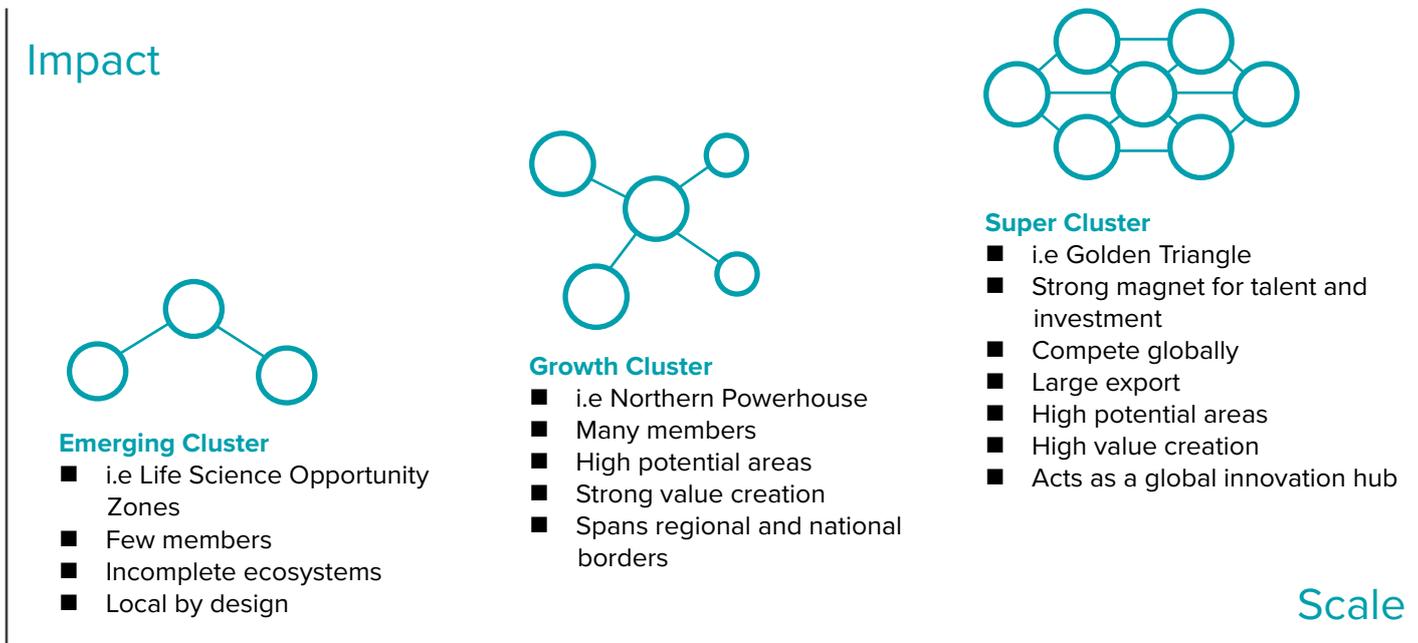
## 1 Introduction

### 1.1 What is an Innovation Super Cluster?

Innovation Super clusters bring together the vital stakeholders required to catalyse innovation across a region. World leading innovation super clusters like Boston<sup>1</sup> (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.<sup>1</sup> This has resulted in many emerging clusters at different local and regional scales. However, to compete globally we argue that the UK has to actively connect its existing assets to grow UK-wide Life Science Innovation Super Clusters.

**Fig 1. What is an innovation super cluster?**



<sup>1</sup>Building Something Great: UKs Global Bioscience Cluster, BIA, 2016

*“Recognising and maximising the value of life sciences clusters is a key step towards maintaining the UK as a global powerhouse of the life sciences. These hubs of research, development and innovation play an essential role in delivering the UK’s world-leading research and driving its translation into benefits for society.”*

**Professor Sir Robert Lechler PMedSci, former President of the Academy of Medical Sciences**

## 1.2 How do life science clusters work?

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 Academic Health Science Networks (AHSNs). Anchored by institutions including research-intensive NHS Trusts, universities or manufacturing hubs, UK life science clusters include Manchester, 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
- The ability to do 'high risk' work in a low risk environment

The most successful innovation clusters have a formal cluster development organisation to drive place-based development in their given sector. They do this by focussing on assets that are world class and close to scale, acting ambitiously to compete globally in key areas, attracting public and private investment, and backing in those areas to make impact.

Innovation cluster support organisations act as a front door to innovators in a region and facilitate collaboration, driving growth and investment under a recognisable brand that can be promoted to globally.

Innovation cluster support organisations are the regional bridge between places and national strategies, especially within the context of a global Britain, succeeding in levelling-up, meeting the 2.4% R&D investment target, and delivering the Life Sciences Vision.

The UK does not lack for research excellence but to remain a global innovation superpower it is crucial we build on recognised best practice in connecting and diffusing knowledge, and invest in places capable of unlocking growth. Innovation cluster support organisations provide the most obvious mechanism for achieving this.

## 2 Why the UK Needs Life Science Clusters

The UK Life Sciences Vision sets out to maintain and grow the UK's position as a global leader in health and life science. At the same time, life science policy can further the Government's Levelling Up agenda. There is consensus across the sector that this can be achieved through targeted investment in excellence and by joining up the existing UK assets to deliver at scale – but it is not happening. There is also a need for regional challenges

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and opportunities to be effectively communicated to the centre and cluster organisations are poised to meet this challenge. However, there is currently a gap in national strategy and resource around cluster development.

There are multiple life science clusters of varying scale within the United Kingdom; from smaller local level emerging clusters, for example the Life Science Opportunity Zones (LSOZ), through to established globally competitive innovation hubs, such as the golden triangle of London, Oxford and Cambridge, and growth clusters such as the Northern Life Science Arc identified by Savills.<sup>2</sup>

Thus far, UK cluster policy has been framed as localised hubs in specific physical locations, such as the LSOZ support model, which provides support and benefit on the scale of individual science parks. However, the science parks do not exist in isolation, they have grown and been successful through their access to talent from universities and hospitals, their networks of collaborators and access to capital providers, amongst other factors, within a regional and national ecosystem. They also need to be connected to each other and academia, clinicians and investors if they are to be more than the sum of their parts.

Innovation cluster support organisations such as the NHTA and MedCity work across all the relevant regional stakeholders to create the environment in which places

<sup>2</sup> Life Sciences: Trends & Outlook, 2021, Savills

such as the LSOZs can thrive. However, this type of support is currently under-utilised and often undermined through policy that focusses on intra-UK competition, over promoting collaboration to compete globally.

With an increased focus on developing places and people in national innovation policy there have already been successful examples of clusters working across the UK, see 2.2 case study “Connecting UK Advanced Therapies” below.

Ensuring further success requires explicit and sustained financial support for this way of working and a focus on system integration to translate government investment and policy into sustained economic advantage across the UK.

## 2.1 Approaches in Other Sectors: UK Fintech

Although not branded as such, the UK is taking an innovation cluster policy approach to Fintech development. The Kalifa review of UK Fintech<sup>3</sup> identifies Fintech as a UK wide strength with high potential growth. With a ‘super hub’ in London as the recognised global leader and gateway to the UK; and established growth clusters in the ‘Edinburgh and Glasgow corridor’, ‘The Pennines’ of Manchester and Leeds, and in the city of Birmingham. Alongside this they identify emerging clusters in Northern Ireland, Newcastle and Durham, Wales, Cambridge, Bristol and Reading.

The report identifies the opportunity for the Fintech sector to contribute £13.7 billion GVA by 2030, with £9.6 billion in job growth across all the regions mentioned above. In order to achieve this growth, the report recommends the creation of The Centre for Finance, Innovation and Technology (CFIT) to develop 3-year cluster strategies for each cluster, to drive national connectivity and growth by engaging in innovation cluster organisation activity: such as attracting investment and international partners, skills development and engaging with regulators.

## 3 The Potential Reward

The potential return on investment is substantial; research and comparisons globally demonstrate this:

### 3.1 The NHTA working to drive regional growth

The NHTA has partnered closely with the Northern Powerhouse 11 (NP11) local enterprise partnerships (LEPS) to link the in-depth institutional knowledge of the NHTA with the regional development mandate of the LEPS. Utilising networks of experts and practitioners across academia, clinicians, and industry the NHTA identified six high potential areas for the North of England life sciences.

These are areas of strength that have high potential if the existing assets across the region can be connected and orchestrated at scale to compete at a global level. Analysis shows that taking a cluster approach to the six areas; Diagnostics and Medtech, Data and AI, Infectious

## 2.2 Case study: Cluster organisations connecting UK Advanced Therapies

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A newly formed UK-wide advanced therapies collaborative network will enhance the UK’s position as a world leader in the sector thanks to a funding boost. It is a direct result of collaboration across Cluster Organisations to present a unified, collective front to the world and enhance collaboration.

Research England awarded £1.3m, through the Connecting Capabilities Fund, to London Advanced Therapies to expand its activity into a UK-wide collaborative network to connect existing regional clusters of excellence.

The network links partners across the North of England, London, Scotland and Northern Ireland to bring together academic, clinical and industry leaders in advanced therapy medicinal products (ATMPs) to coordinate activities, share knowledge and bolster existing strategic alliances such as those forged by the NA-ATTC and iMATCH Advanced Therapy Treatment Centres. It includes organisations with interests ranging from ATMP discovery and pre-clinical research, through translational development and clinical evaluation, to adoption and spread in the NHS.

UK Advanced Therapies will enhance this regional activity to maximise the collective capabilities and accelerate advanced therapies for the benefit of patients and the economy.

Diseases, Advanced Therapies, Mental Health and Healthy Ageing, could generate £16.52 billion GVA, double Life Science sector jobs to 120,000 by 2040 and accelerate the growth of the Northern Advanced Therapy Sector by 650%.

### 3.2 MedCity: Planning for Growth in a Crowded Market

MedCity’s ground breaking report on life sciences real estate demand in London in 2016 catalysed the development of high demand areas such as Kings Cross and St Pancras and resulted in more than £1 billion life science real estate planning with a forecast growth of over 800 new jobs in that vicinity alone.

Since then, the Demand Report 2021, published in October and based on surveys and interviews with over 100 companies, identified demand for space exceeding 500,000 square feet from that sample alone.

More than half of this space is needed in the next two years. This fourfold increase compared to demand recorded in 2016 is caused by significant growth of London’s life science industry. Notably demand is rising faster than supply, causing companies to compete for lab space in the city.

<sup>3</sup> The Kalifa Review of UK Fintech, HM Treasury, 2021

MedCity, working together with life sciences industry, lab providers, real-estate developers and local districts, is creating a framework to ensure supply and demand visibility, coordinate strategic planning discussion and help facilitate better supply.

### 3.3 Health Innovation Research Alliance Northern Ireland, HIRANI: Creating a life sciences narrative to promote growth in an emerging cluster

HIRANI is an emerging cluster organisation established in Northern Ireland in 2019. As a cluster support organisation HIRANI provides leadership to align Northern Ireland's health and life science ecosystem with the life sciences vision. Working in partnership with Northern Irish health and social care institutions, Invest – Northern Ireland, Queens University Belfast, Ulster university, 17 life science institutes and over 300 local companies; HIRANI has developed a cohesive narrative for Northern Ireland, that identifies three key opportunities.

The opportunities focus on the high growth potential technology areas of precision diagnostics and data integration, digital health and wearables, and advanced pharmaceutical delivery systems. The cluster strategy will focus on these key areas to drive innovation, with particular focus in clinical areas of national significance such as oncology and healthy ageing. HIRANI is also working to leverage Northern Ireland's unique advantages of agility, working across an integrated health and care system, and, direct access to both UK and EU markets.

Analysis shows that prior to forming HIRANI, the life science and health sector together supported approximately 100,000 jobs, which is 5% of the population of Northern Ireland, and generated £1.1 billion GVA in 2018.<sup>4</sup>

Over the subsequent 3 years, by embedding cluster connectivity, access to investment, and partnering with complimentary expertise in other UK clusters - such as NHTA and Medcity - GVA is likely to double to £2.2 billion.

### 3.4 Ensuring a collective UK offer that is globally competitive

In their 2015 report "A vision for the UK life sciences sector in 2025"<sup>5</sup> the Bio Industry Association (BIA) makes a comparison between the UK and Massachusetts' Life Sciences centre (MassLife) which oversees the Boston life sciences cluster, arguably the largest life science cluster in the world. Initiated via a 10-year \$1 billion<sup>6</sup> investment in 2007,

MassLife was founded to apply private sector thinking in a venture philanthropic way to drive growth in the Boston cluster and improve health outcomes. The report estimates that the UK biotech sector alone could achieve £5 to £10 billion salary growth, 30,000 to 60,000 jobs, create 130 clinical stage drug companies, bring 4x as many drugs and innovations to clinic and attract £2.9 billion in private investment by 2025 by applying a cluster development mindset to grow the UK Life Science Sector in the same manner as MassLife.

<sup>4</sup> Contribution of the Pharmaceutical Sector to Northern Ireland's Economy, 2020, Fraser of Allander Institute

### Cambridge University Enterprise Zone, Connect: Health Tech

Cambridge is the third largest biotechnology cluster in the world with companies turning over £18 billion, and strengthened by links into London and across the Oxford Cambridge Arc.

Cambridge University recognised that in order to continue driving economic growth and developing new technologies for patient benefit, they need to actively resource building interdisciplinary connections and links to the wider business ecosystem within their cluster. In response to this challenge Cambridge city region is developing a local cluster strategy under the brand of Connect: Health Tech.

With an ambition to build a community engaged in commercialisation of interdisciplinary ventures, contributing expertise in business development, R&D strategy, industry engagement, start-up acceleration and incubation, fundraising, business scale-up, operations and healthcare translation.



## 4 Existing UK Life Science Cluster Landscape

As noted previously there are large and well-established life sciences clusters in London, Cambridge (See Cambridge University Enterprise Zone, Connect: Health Tech), Oxford, the Edinburgh-Glasgow Corridor, and across the North of England. There are also emerging clusters in areas across the UK. However, the challenges facing the UK economy, not least in terms of levelling up and ensuring that Britain remains a global scientific superpower, will require that we do things differently.

Developing and connecting capability for the benefit of UK PLC requires that we work together and reach out to other regions. The NHTA and Medcity are two of the largest and most active UK Life Science cluster organisations. They have worked over the last two years to bring together a federation of the emerging life

<sup>5</sup> A vision for the UK life sciences sector in 2025, BIA, 2018

<sup>6</sup> Approximately £950 Million in 2021 GBP

science cluster-support organisation. They have been supported in this by the Academy of Medical Sciences (AMS), aligned with their report *Geographical Clusters: A vision for the future*.<sup>7</sup>

**The major cluster organisation members are:**

- Medcity: London and the South East
- The Northern Health Science Alliance, NHSA: The north of England
- Midlands Engine Health: The East and West Midlands
- GW4: The South West of England
- Health Innovation Research Alliance Northern Ireland, HIRANI: Northern Ireland
- NHS Research Scotland
- Life Science Hub Wales

The group meets regularly to work together to share best practice and influence collectively around national initiatives. The group takes a place-based approach to strengthening our health and life sciences ecosystems to deliver better health outcomes, drive economic growth and productivity, and ensuring the innovation strengths of one region provide benefits across the entire UK.

This network of life science clusters is ready formed and working well together to engage with government to deliver a successful cluster policy. These cross regional networks are supporting national initiatives such as the UK Advanced Therapies Network and links between regions involved in the Data-CAN HDR UK Project.



<sup>7</sup> *Geographic Clusters: A vision for the future*, AMS, 2017

## 5 Recommendations

**1** Develop a clear cross-sectoral policy on clusters and the expectation of cluster support organisations in the implementation of the Government's place based R&D strategy.

**2** Invest long term in the growth of cluster development organisations.

**3** When creating programmes to drive innovation (especially levelling up funds), encourage and accept cluster bids to support the UK competing globally, over competition between regions – building on the success of the strength in places, shared prosperity and Research England development funds.

**4** Share best practice from Life Science clusters policy and Life Science Cluster Organisations and apply it to other priority innovation sectors for the UK, for example Green Energy, FinTech and electric vehicles.

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