

ACCELERATING GROWTH AND INNOVATION IN THE NORTH OF ENGLAND LIFE SCIENCES

A SCI-TECH DARESBUY ROUNDTABLE





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FOREWORD

The pitch deck for life sciences in the North of England continues to expand with an ever-growing base of R&D-based companies and manufacturers focused on global markets. The North also benefits from a wealth of science parks, research-led universities and regional development strategies that have a strong focus on the innovation economy. Yet for all the progress and excitement, there is a feeling that the best is still to come in the North and that opportunities abound to make an even deeper impact on the government's avowed intention to make the UK a scientific superpower.

Life science is at the forefront because, quite simply, health comes before everything else. In global terms the sector is considered one of the great drivers of growth in the 21st century as the ability to use innovation and technological advances to diagnose, treat, cure, and prevent a much wider range of diseases comes with potentially enormous socio-economic benefits.

The UK is not alone in reaching this conclusion and the race is on to determine which countries will take the lead in pharma, biotechnology and MedTech over the next decade and beyond. To cast light on the how the North can unlock more potential and help the UK compete, Sci-Tech Daresbury and its joint venture partners, Langtree, the

Science and Technology Facilities Council (STFC), and Halton Borough Council gathered a panel of industry leaders, investors, and stakeholders to explore the way ahead.

The debate took place at Sci-Tech Daresbury's Innovation Centre. It was the first building in operation when the campus was launched in September 2006 and today stands at the centre of a vastly expanded science estate that is home to a growing community of 150 R&D focused companies and a place of work for 2,000 people.

The discussion was set in the context of Office of Life Science's 10-year strategy for the sector and focused on some of the key issues it has identified as on the critical path to the UK achieving its ambitions.

PANEL

- **Andrew Thelwell**, Chief Commercial Officer for Sky Medical Technology
- **Claire Eyers**, Associate Pro-Vice Chancellor Research and Impact (Faculty of Health and Life Science), University of Liverpool
- **Damian Kelly**, Vice President – Innovation & Technology, Croda Europe Plc
- **Geoff Davison**, Chief Executive Officer, Bionow
- **Professor Janet Hemingway**, founding Director of the Infection Innovation Consortium (iiCON), and former Director of Liverpool School of Tropical Medicine.
- **John Leake**, Business Growth Director, Sci-Tech Daresbury
- **Mark Wyatt**, Investment Director, Northern Gritstone
- **Massimo Noro**, UKRI-STFC Director Business Development and UKRI-nominated Director on UK Innovation & Science Seed Fund (UKI2S)
- **Phil Carvil**, Head of North West Clusters, UKRI-STFC
- **Tony Woods**, Business Development Director, Health Innovation North West Coast



Left to right: Mark Wyatt, Northern Gritstone; Geoff Davison, Bionow; Tony Woods, Health Innovation North West Coast; Janet Hemingway, iiCON; John Leake, Sci-Tech Daresbury; Damian Kelly, Croda Europe Plc; Massimo Noro, STFC; Claire Eyers, University of Liverpool; Andrew Thelwell, Sky Medical Technology; Phil Carvil, Head of North West Clusters, UKRI-STF

SIX KEY INSIGHTS

- 1** The NHS is a difficult marketplace for small and medium-sized innovation business. Many UK firms must now consider international markets as their primary market entry point
- 2** Public and private investment in UK life science is challenging and the national targets, when set in a global context, are modest
- 3** The North of England's research intensive universities represent a golden thread that can link the region together, but greater focus on enabling translation from the academic environment is needed
- 4** Quality and confidence, not geography, are the principal barriers to attracting investment – global VC funding does not care where the next brilliant idea comes from
- 5** The economic impact of life science manufacturing is being overlooked – the sector is the best source of employment and bringing a positive economic impact to regions
- 6** The advance of A.I and supercomputing offers great promise for the sector, but presents enormous challenges for the NHS

INVESTMENT IN SCIENCE AND RESEARCH

The UK is already surpassing the target of 2.4% of GDP invested in R&D activities that featured in the 2017 Industrial Strategy as a milestone to be reached by 2027. This happened in part because, in 2022, the Office for National Statistics changed the methods it uses to produce estimates, which led to a substantial increase in the figures. For example, the estimate for R&D spending in 2019 moved from £38.5 billion using the old method to £59.7 billion under the new method. Using the new calculation, total spending on R&D in 2021 was £66.2 billion. The government has said this equates to around 2.9% to 3% of GDP.

For context, in the last five years, Israel (5.56%) and Korea (4.93%) have outpaced all other nations on R&D as a percentage of GDP. Amongst G7 nations, the US currently spends the most on R&D (3.47% of GDP) followed by Japan (3.27%) and Germany (3.13%). China is the world's second largest economy but is not part of the G7 and is reported to invest 2.55% of GDP in R&D as of 2022.

Given the greater awareness of the need for biosecurity after the COVID pandemic, the rapid advance and convergence of digital technologies with life science, and the potentially revolutionary impact of quantum computing, there is continued debated whether the UK has the right level of ambition.

At the end of 2023 the Russell Group of leading UK universities set out its vision for a future powered by research, innovation, and skills development. It has urged the next UK Government to commit to R&D investment to harness the power of research-intensive universities and strengthen the UK's economy and resilience.

Russell Group analysis suggests that an additional £4 billion in public R&D funding per year by 2029/30 is needed to sustainably meet a commitment of at least 3% of GDP invested in R&D. It also says a stretch target of 3.5% GDP investment in R&D by 2034 would bring the UK closer to the leading competitors within the Organisation for Economic Co-operation and Development.

Much of the Russell Group manifesto would resonate strongly in the devolved UK regions of the North, where there is nothing to stop Metro Mayors establishing their own targets. Liverpool City Region, for example, has set out its stall to invest 5% of Liverpool City Region GVA in R&D by 2030. The Industrial Strategy for Greater Manchester Combined Authority, meanwhile, has a 3% target by the same date.

When asked what the life sector wants from the UK Government, the devolved administrations and their respective agencies and the higher education research councils, **Janet Hemingway** of iiCON said it's about maintaining commitment and momentum. "The ask is more of the same. If I look at what has been happening over the last five or 10 years, there's been a sea change. Central and local government have just woken up to the fact that if we just carried on in a fragmented fashion, we

were never going to get anywhere. We'd never get the academic base driving local GVA, we'd never get all of the required infrastructure established."

She founded iiCON in 2020 as a means of accelerating the discovery and development of new treatments, diagnostics, vaccines, and preventative products for infectious diseases. The organisation is led by Liverpool School of Tropical Medicine and its partners include Liverpool University Hospitals Foundation Trust, along with Unilever, LifeArc, University of Liverpool, Evotec, and Infex Therapeutics. Welcoming the greater recognition of UK regions as places with world class academic bases and a growing innovation capability, she said: "There's much more interest in moving things out to the provinces and locations away from the Golden Triangle. I don't think they've yet quite worked out how you do that, and how you do it well, and what good looks like, but they are at least trying."

The national funding agency that leads on investment in science and research, the UK Research and Innovation (UKRI), has a combined budget of more than £6 billion. UKRI also brings together the seven research councils, Innovate UK and Research England. One of UKRI's highest profile interventions in the North to date was its investment of £18.6 million in the creation of iiCON through Strength in Places, a competitive place-based scheme which drew applications from across the UK. The fund was open to any sector, area of technology or research discipline. All projects that received backing were collaborative and were led by consortiums that include both research organisations and businesses.



The successful iiCON bid featured in the first wave of six awards and has enabled an organisation that has since become a flag bearer for what public investment can unlock both in terms of growth and new healthcare products and novel therapies that offer health benefits.

In the first three years of operation iiCON supported bringing 36 new products to market – a strike rate of one a month. In the first 24 months it achieved many of the organisation's five-year targets. This included securing £200 million of funding for innovation related to infection control and supported the creation of 176 new high-value jobs across the North West and invested £9.4 million in local capacity and workforce development. "We were the second smallest programme in terms of the [financial] input in the first wave of Strength In Places funding. Yet we actually account for 70% of the investment that's come in and 60% of the academic outputs produced so far," said Janet Hemingway.

Massimo Noro of SFTC also felt there is plenty of evidence of strategic intent around R&D investment. "There have been specific targets for UKRI to try investing outside the London and southeast. That's hard targets in terms of changing the balance of investment. UKRI loves case studies like The Hartree Centre and iiCON where there is a track record of delivery. We have several beacons of excellence in terms of research establishments, and research and development. There are incredible places in the North like the Materials Innovation

Factory in Liverpool or the Royce Institute in Manchester which are really the envy of other regions across the UK, if not in the world."

He also reflected on how the Levelling Up agenda, the flagship domestic policy launched in 2019, has played out. "There has been sustained interest in the North in the last few years. I hope that lasts. And I think that one of the things that the new government, whatever colour they may be, will actually support a longer term plan of continued investment."

Aside from UKRI, a significant component of the UK's approach to the sector includes the creation of Investment Zones - knowledge-intensive clusters that can help drive economic growth. The concept is based on offering tax reliefs and large capital and smaller revenue grants to support specific sectors - life sciences, digital/technology, creative industries, green industries, and advanced manufacturing. The idea had a less than auspicious start, unveiled as part of the September 2022 'mini' Budget by Chancellor Kwasi Kwarteng, which became associated with a period of economic turmoil. Nevertheless, plans for a maximum of 12 Investment Zones to be established across the UK have been warmly welcomed where they have landed so far. The proposals were relaunched in the Spring Budget of 2023, with Liverpool life science-focused Investment Zone later confirmed along with an announcement of a South Yorkshire Investment Zone linked to Advanced Manufacturing.



The Liverpool City Region Investment Zone is gathered around infectious disease, mental health, data and materials science, sustaining a meaningful cluster of research and innovation. It has £160m of funding spread over 10 years and has the potential to deliver £800m of public and private investment, creating 8,000 new jobs.

Janet Hemingway felt Liverpool City Region has been quick to seize the moment. "There's an opportunity here as we have got in there reasonably early. This is exactly what's happening with the Investment Zone and exactly what we're doing with iiCON. If we really demonstrate that we're actually managing to get over fragmented silos and people working against each other rather than working with each other, and making the whole ecosystem function, there's a huge opportunity. Once you become a case study for taking things forward then more money will flow because that just makes sense economically."

John Leake echoed the point. "You can see it across many of the Northern cities. The level of ambition and aspiration in terms of what can be achieved that track record of success. Undoubtedly, the implementation and Metro Mayors provides a greater focus and the

ability to pull together a more coherent strategy and a delivery plan to deliver on that strategy. That makes it a lot easier for government to engage in seamlessly."

Damian Kelly of Croda, a global specialty chemicals company, which operates in life science market and consumer care products, was asked about the difference local and national government interventions can make. "We've got approximately 40 laboratories around the world. And the UK is competing with the US, Singapore and every other nation that wants to develop the sector. So, it's not just about the North versus the Golden Triangle. National governments are taking steps to attract global companies. It won't happen naturally for the UK unless they make it as attractive as it can be elsewhere."

In terms of whether a more coherent approach, particularly around innovation and skills, encourages investment, he said, "I don't remember a time it has been particularly difficult. Croda has really good relationships with local partners and the universities. And the funding is there from all the UK Research Councils to allow you to collaborate."

If there's a step being missed, it is arguably around manufacturing and the economic benefits it can bring, he said. "There seems to be an acceptance that we should focus on being inventive and doing the R&D and not be concerned if it's manufactured somewhere else. I don't think that should be okay. It means that all the manufacturing and supply chain jobs go elsewhere. UK taxpayers' money is funding good R&D here. Yet I know many SMEs that have gone abroad because of a lack of manufacturing infrastructure."

Mark Wyatt of Northern Gritstone picked up the point from a different perspective. "A lot of funding and support initiatives are focused on the 'S' in SME, whereas really those organisations which have got the jobs and the ability to grow are bigger - the medium sized businesses. They don't get the same care and attention."

John Leake commented that the plans for Liverpool City Region do go beyond merely bringing through early stage innovative companies. He cited the example of Investment Zone support going into the locally based TriRx, a large scale contract development and manufacturing organisation. Other major players manufacturing in Liverpool City Region include AstraZeneca, which has recently secured £450m investment, and Pharmaron, a global organisation which has facilities for gene therapy manufacture, which has also received significant backing. He also highlighted the success of the Seqirus manufacturing facility, which produces over 50 million doses of seasonal influenza vaccine each year. "We're not only developing some incredible new technologies, but actually we're taking it all the way through that translational process into manufacturing."

The University of Liverpool's Claire Evers talked about a Manufacturing Cluster Board that's been set up by the Liverpool City Region Combined Authority to make sure investment is linked to local companies and building the manufacturing base. **Geoff Davison** looked forward to evidence of it in action. "There's definitely been significant progress in the Liverpool City Region over the last few years, but we've been around these conversations for a long time. It's really important that a strong focus on delivery is established and maintained here to continue to grow the manufacturing base."

Tony Woods of Health Innovation North West Coast talked about co-ordination and seeing the bigger picture. He cited the example of Glass Futures – a

global not-for-profit R&D organisation located in St Helens that connects the glass industry with academia to demonstrate disruptive technologies that will make glass and other materials zero carbon and sustainable. "I'm from St Helens. If you talk to the NHS [in the region], they don't know what Glass Futures is. They don't join the dots and examine how their work could benefit areas like the building of new hospitals, infection control and potential other solutions to problems the health sector is facing. We need to lift our heads and examine other possibilities and that works both ways. We need to stop putting everything in siloes and examine wider benefits of the world class facilities on our door step."

Mark Wyatt felt the focus on Northern challenges and identity had practical limits. "It's great to figure out where we've got strengths in R&D or manufacturing, but we shouldn't exclude collaborating with Oxford and Cambridge, just because they're not local. I just have a UK Plc mindset that says: the North needs to figure out why it's different, because different can lead to better. I like to see the North having hubs and expertise that perhaps other regions don't have but there's still got to be collaboration going on across all of this. That's when we'll have really compelling propositions."



Phil Carvill of STFC talked about joining-up innovation clusters around the UK and developing a more unified model. “As STFC we have two clusters, one in Harwell in Oxfordshire, and North West here at Sci-Tech Daresbury. And we do collaborate with activities, particularly with key themes like vaccine production, infectious diseases, and where there are joint opportunities to showcase some of the key assets. There isn’t currently a unified way across the entire health and life science sector to do that.”

He cited the space sector as an example of best practice. “It is very young but what they’ve done with clusters and growth is have a national drive down, and local drive up. So, you have cluster leads in every single region, including devolved nations, but they are plugged into a national layer, where they’re all communicating. At the moment [in life science] there are silos between R&D spread, adoption, and manufacture. As we grow the UK competitiveness and connectivity we’d like to see joined in a national thread. The North is very good at joining up on things, but there’s a whole rest of the country that we need to connect in on this as well. And that’s the opportunity that happens when people have those links. Or there’s mechanisms support that or networks, but that is based on existing links. I think you do need something which is primarily focused on [joining up the dots] to make it happen.”

He also agreed that manufacturing needed more focus. “I would like to see an Industrial Strategy for manufacturing. So, we know the idea of ‘industrial strategies’ has fallen out of fashion, but long term consideration needs to be given to investing in manufacturing. And 10 years is too short. It’s got to be 20 years-plus minimum in terms of building up the manufacturing, getting to the point where it’s actually creating supply chains and then growing in dominance.”

The willingness of regions to engage was also a factor, said **Claire Eyers**. “As an institution, I would say the University of Liverpool would collaborate with anybody where there’s expertise which can be leveraged, and which can be combined to produce more than the sum of its parts. There are certain institutions, even in the North, which have traditionally been less willing to engage. And that has caused issues. So, we are part of the N8 Research Partnership for universities in the North. I’ve tried to drive initiatives in the past and seven of those eight are happy to work together, but there was one outlier. Whether that will change, who knows.”

In terms of investing in skills, Claire Eyers felt graduate retention levels were very encouraging. “Liverpool is really interesting from a student perspective. It doesn’t matter whether you’re talking



about undergraduate, postgraduate education, medical students – Liverpool students want to stay in Liverpool. And so that has benefits and risks. You need to make sure that you are training them in the skills that benefit the local economy – the research that we want to do, because, at the same time, perhaps you’re not having people coming in with those skills from different geographic locations.”

John Leake pointed out that there’s consistent feedback within Liverpool and across some other northern cities about creating opportunities for graduates and post graduates. “The challenge is not necessarily the first job, but actually the second or third job. We need to focus on a whole career pathway within the city region, ensuring there are sufficient opportunities.”

He felt the feedback coming out of the work Liverpool City Region has done around the life sciences investments demonstrated the breadth of the skills challenges. “It’s certainly diverse. You’ve got everything from laboratory technicians to mental health nurses, to engineers, to data scientists, and analysts and A.I experts. As a region our challenge is also about how we do make sure that that creates opportunities for local people, where people actually can access some of those opportunities through a variety of pathways? One might be immediately through university; one might be into business and then further training once they’re actually in employment.”

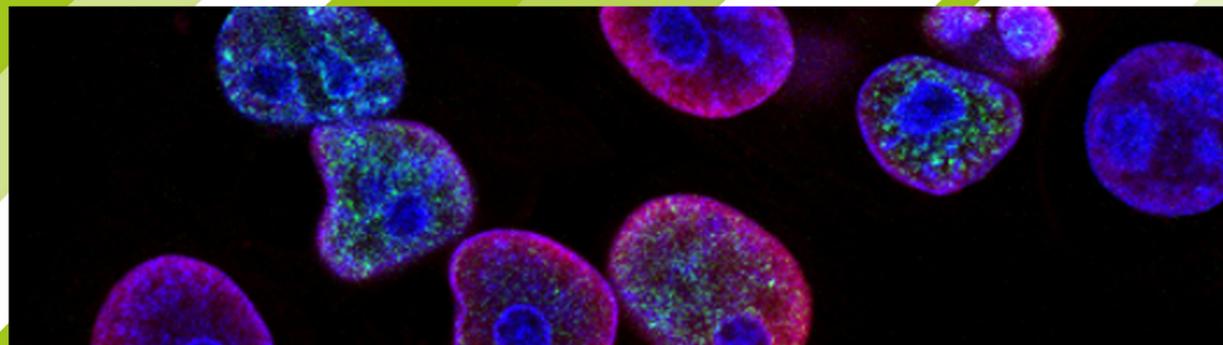
Massimo Noro talked about the focus within STFC and UKRI on both achieving and articulating outcomes in terms of jobs, growth, and skills. More broadly, he stressed the importance of storytelling and communication, a point others endorsed. “We’re

doing a good job within the North, but I don’t think that we do enough in terms of communicating what’s being achieved. We can really ramp up on that communication and tell the story of the Liverpool City Region, the North West, North in general, because we can never tell it enough.”

Mark Wyatt has seen a step change for the better. “I’ve been around and doing this for a lot of years. And when I first moved back to the North of England, there was quite a parochial attitude. Whereas now people say, ‘We want to be the best at this.’ And if we’re the best at this we’ll progress because it’s not about changing how the finance world works. Being in the North is not a barrier to investment. Being the best was the thing that was holding us back.”

He cited the example of Mark Ferguson, the co-founder of Renovo, the world leader in scar prevention and reduction research. Previously Professor and Dean of Biological Sciences at The University of Manchester, Ferguson famously built a company that over a decade went from 2 to 200 employees, raised £32 million from global venture capital and floated on the London Stock Exchange before he departed to new career challenges in 2012. “It’s rare, but it can happen. It’s that it’s not happening enough.”

Mark Wyatt also felt the sales story was not powerful as it could be. “Lots of the life science funds are global. So, the North’s competition isn’t Oxford and Cambridge. It’s MIT and CalTec. And if they can pick from anywhere. We shouldn’t assume that this is going to be a large volume activity ever, for that tier of opportunity. Compared to when I first came back to work for a regional VC, the appetite from investors to support innovation in the north is much stronger. It’s not perfect. It’s not anywhere near the scale of



Oxford and Cambridge but it's a better environment than it's ever been. When I first moved back here 20-odd years ago, all the debate was around, 'How do we get the London VCs to come up here?' It's only a two hour train journey away. If you've got a great business, go down and visit. You've got to accept the rules of engagement and keep a sense of perspective. People talk about the Cambridge cluster but that it took them decades to get a unicorn. And we are starting to see more activity happening in the North on the investor side. Once a London-based organisation makes their first investment here, they've got a reason to be in the North. And then somebody taps them on the shoulder and shows another opportunity. The fund that I work for, we're not under any illusions, we're not the panacea for solving the funding disparity between Oxford and Cambridge and the North. But if we can capitalise a few more companies, get a few different investors coming up here, they will see other things and take more interest."

He also stressed the importance of a rounded approach to boosting innovation and avoiding thinking in terms of one or more silver bullets. "It isn't one thing; it is all things." He cited an example of a previous approach used by the German government which saw it pour investment into biotech. "What happened was they built early-stage biotech businesses with really high burn rates. All the state funding meant the biotech entrepreneurs could have a Rolls Royce when a Mini would have done. That eventually fell off a cliff; there wasn't enough VC funding. Now the government actually didn't mind that, because they had a Darwinian view, which was we'll start a load of companies and the strongest will survive. That's great for the

winners but for all the ones that weren't that strong it left a legacy of disenfranchised people that got burnt, 'I've wasted three years of my life' etc." In terms of the holistic approach, he welcomed the work Innovate UK is doing with its accelerator programme ICURe, along with universities putting a greater focus on enterprise. "There's lots of programmes that early-stage companies can get on, and they often open people's eyes to what they need to think about. They don't actually help you execute, and ultimately execution is key."

Damian Kelly highlighted an event Croda had supported in 2023 with iiCON and other partners across Liverpool City Region to create opportunities for about 30 SMEs to pitch to private equity firms. "We even had an investor coming from New York. It was about making it easy for private equity. Meet 30 companies over two days in the same location; they don't want to have to organise 30 different meetings and to be travelling around to meet different people."

The funding landscape has significantly improved, commented John Leake. "Those companies with the right proposition, team and ambition will secure backing. There are more regional funds, such as Northern Gritstone, and second phase of the Northern Powerhouse Investment Fund. So, we're seeing investors look at how they back businesses in the region. Innovate UK also now has some smarter mechanisms about how we tie-in grant funding alongside the investment that's going in." If there are regional disparities, he felt they concerned businesses outside of the Golden Triangle being less ambitious in terms of the amount of individual grants that they are raising.

"The ask tends to much larger in the South than in the North and part of that is about ambition." Level of ambition is also a factor in terms of innovation space. "Specialist facilities where companies can grow and scale are obviously important and the North hasn't been in a great position, historically," said John Leake. "That is changing, and we are certainly growing here. Yet across the North there's still a big difference in terms of scale compared to what's happening now in Oxford, Cambridge, and London." He cited the example of a development in Canary Wharf that covers 823,000 sq ft in a single 23-storey vertical campus. "That's a level of ambition that's going to make international businesses take notice and we don't want to be left behind as a region."

Claire Evers stressed the value of connectivity and operating on sites that are within easy reach of the well-spring of innovation. She talked about the Materials Innovation Factory and the Digital Innovation Facility – both within walking distance of the University of Liverpool. "As a university, we're starting to actively engage, we've got massive development plans. We want showcase incubator space close to the academic base. How do you better train clinicians to interface with your fundamental research, which will then drive innovation? It's about training from the ground up but it's also about physical proximity."

Geoff Davison welcomed the idea of boosting the supply of incubator space with an ecosystem of support and expertise wrapped around fledgling innovation businesses - citing Sci-Tech Daresbury's Innovations Technology Access Centre. "There isn't anything comparable anymore and it's something that would add value elsewhere in the North." The level of support required always varies, Mark Wyatt pointed out: "Some people start with a seasoned entrepreneur who knows what they're doing, doesn't really need much intervention. Others much less so. Either way, "Things won't happen without a nurturing environment. They might have the best idea, the drive, and the commitment, but it still needs that little bit of support, even down to the level of 'How do I create a company' or 'How do I do management?'"

A campus-style environment where a community of innovators and entrepreneurs can easily engage does offer distinct advantages, said John Leake. "It's the ability to get the community interacting and people engaging with each other. Some entrepreneurs are further down the road

than others, some have been on the journey before. There's a lot of knowledge to share."

In his experience incubator initiatives around the North have struggled to have a sustainable business model but they make sense within the broader campus environment like Sci-Tech Daresbury. "If you create greenhouse environment, grow a number of businesses, then you have a sustainable model with a pipeline of potential occupiers for laboratory and office space on the site."

Sci-Tech Daresbury's overall model is centered on the notion of providing a 'home for life.' It accommodates both early stage companies and those with an initially small requirement which may grow – a scenario which sometimes sees an overseas company establish a UK foothold as a prelude to further expansion. "Our whole philosophy is one that allows successful businesses to have access to grow-on space which avoids all the time wasting and resource required when uprooting and relocating," said John Leake.

That said, he pointed out that Sci-Tech Daresbury's forward plans are about continued expansion based around bringing in larger occupiers. "The vision is growing from 2,000 people working here to 10,000 people. That isn't going to be hundreds of more small businesses, but companies with significant scale."



THE NHS AS AN INNOVATION PARTNER

As the North of England has some of the nation's biggest health challenges there's a view that it's the obvious place to explore smarter ways of working with the NHS to speed up innovation.

For context, research led by Newcastle University and published as The Health Equity North 2023 report is the latest in a long line of studies to demonstrate that the North fares significantly worse than the national average when it comes to life expectancy, infant mortality rates and self-assessed health, disability, and unpaid care.

Amid a litany of stark metrics, the report says that people born in the North can expect to live at least one year less than the English average. Of the 72 local authorities in the North of England, some 52 (72%) have lower levels of very good or good health than the national average. It follows that poor health impacts productivity – and the North has above average rates of economic inactivity due to ill health or disability.

Given that the Office of Life Science identifies the NHS as critical to the delivery of nearly every element of the UK's growth vision for the sector, how innovation partnerships are developing in the North is a good indicator of delivering against national strategy.

Tony Woods, of Health Innovation North West Coast, one of 15 organisations commissioned by the NHS and the Office of Life Science to help foster innovation, felt there was a big gap between grand vision and operational practice. “The NHS is just a bit stuck. I’ve worked in the NHS for 35 years, not quite known a situation like we have today, with so much need for innovation but absolutely no headroom.”

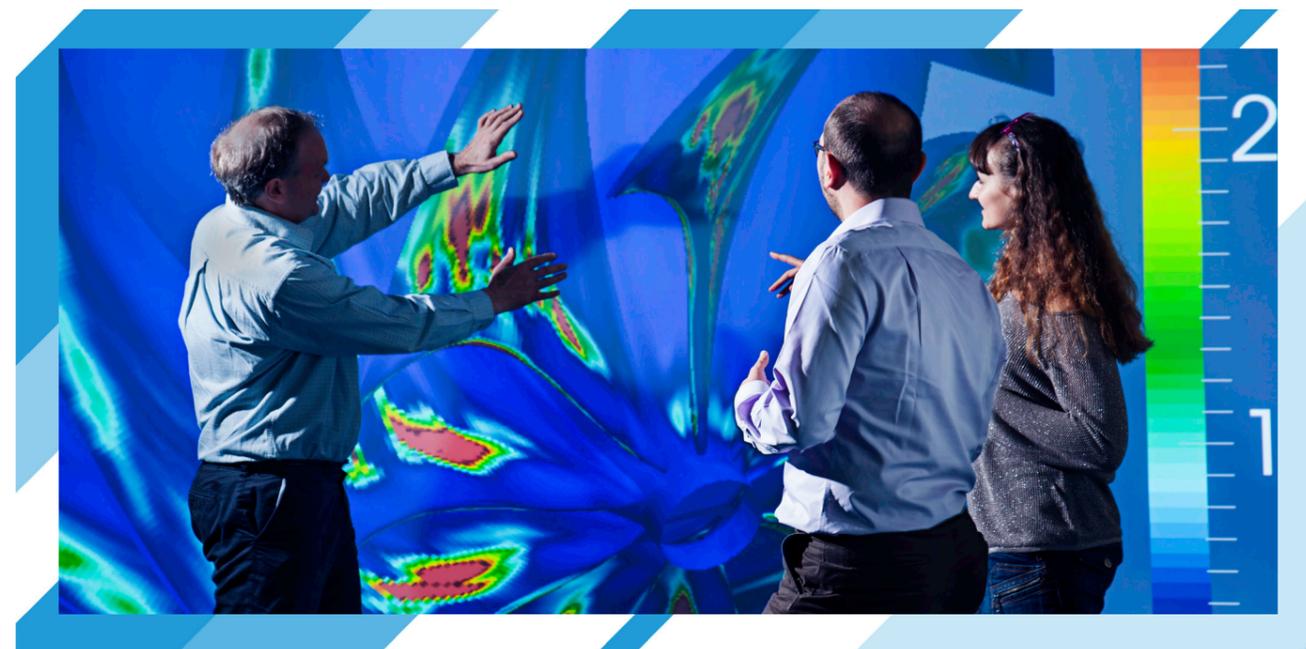
Despite a whole series of complex challenges and issues leftover from the upheavals caused by the Covid pandemic, he pointed to the creation of Integrated Care Boards in July 2022 as a positive milestone, replacing clinical commissioning groups (or CCGs). ICBs have taken on the NHS planning functions previously held by CCGs, as well as absorbing some planning roles from NHS England. They are part of an integrated care system that brings together NHS organisations, local authorities, and others to take collective responsibility for services across geographical areas.

“I see some of the seeds of better ways of addressing innovation, and ICBs, once they settle, we will produce some decision making at scale,” said Tony Woods. “Once that happens, we could really see some impact. I do remain optimistic because I see an awful lot more collaboration already happening. But we are two to three years away from where we

want to be and still in a place where decision making will take place at the local level of an NHS Trust. And that’s going to make life extremely difficult in the short term for innovators looking to break in to the NHS or see solutions taken up at scale, especially when there is no spare money in the system.”

Sky Medical Technology, a Liverpool-based business which develops bioelectronic devices for clinicians who treat vascular related conditions, has a global perspective on selling innovation into healthcare systems. **Andrew Thelwell**, its Commercial Director, pointed to the example of the Covid pandemic as an example of how rapid process can be made. “During COVID, [the NHS] could do A, B and C and we need to apply that ability to deliver change now. Measures that were centrally organised, funded, [and] imposed. COVID showed that change is possible but it needs to be properly planned for and resourced.”

He echoed the points made by Tony Woods. “Putting aside the fact there just isn’t the staff or the money, it is extremely difficult just now as the ICBs are not making those strategic calls. It’s all being done still at the level of the individual Trust, holding the money, not wanting to overspend. So, the ability to enable change is very limited. We’re still working on the challenge. We’ve got



two businesses running in the UK and we just accept it’s a slow burn. We are making inroads, but it’s taken several years and a lot of money.”

He knew of others that have reached a different conclusion. “I can think of companies that have stopped trying to do anything in the UK because it’s just too slow. They have a better opportunity when targeting the US and are not even bothering trying to get into the NHS. They are being told by their boards - the UK isn’t where they need to be, so commercialise elsewhere. I want to be optimistic, and people want to do something, but their ability to do so in the current climate is really restricted.”

Liverpool University Hospitals Foundation Trust is one of the partners behind iiCON. Janet Hemingway said: “There is a lot of willingness within the NHS and Trusts to engage. They are overstretched in terms of the ability to do that meaningfully. And I think we’ve still got a fragmented system where companies, if they’re not used to working with this multi-headed hydra, go into a Trust, think that if they’ve got something done as a basic evaluation then that’s a foot in the door to being able to sell into the NHS. And then they realise that, in fact that they’re only just off first base. We’ve got half a dozen companies that we’ve worked with who’ve even taken that first step into the NHS but now they’re heading off to European or US markets, because they say, ‘We can’t get any further here... we’re stuck.’ It’s problematic on lots of levels. The companies don’t understand the complexity and the NHS doesn’t have time to sit down and explain it. And, in fact, often the people that they’re contacting within the NHS don’t even understand their own systems and the problems of trying to get [innovation] into their own systems.”

She felt new intervention may be required. “We know that there are multiple blockages and there’s a whole raft of organisations that try to resolve them. I hate trying to set up too many different initiatives, because there’s already multiple players and organisations trying to move the bits of the jigsaw around, but [there’s a case for] trying to get those multiple players together and looking at what can we do differently.” Mark Wyatt of Northern Gritstone saw plenty of innovation within the existing NHS structures but familiar failings when it comes to making things happen. “The NHS is a great partner for us. They have an initiative called the Clinical Entrepreneurs Programme. And that’s a source of people who want to innovate. They are really bright, driven



and understand the issues. Yet that doesn’t necessarily translate into near term solutions and they invariably won’t commercialise in the NHS. The reality is people will sell where they can sell and the structural issues mean that the UK is probably not an early adopter of some of the great health innovations going on around the world.”

Tony Woods of Health Innovation North West Coast commented: “The onus is on the local leadership at the NHS to cut through the complexity. One of the big things we can do is identify those areas where we believe that we can make major impact and look to adopt at scale. There are some fantastic things happening in individual pockets, but a classic NHS approach is usually to adopt a short term pilot phase and request more local evidence. This is a real hinderance to progress.”

John Leake of Sci-Tech Daresbury talked of witnessing more interest in closer links between NHS organisations and campus companies. “We’re having



more conversation with Trusts about the potential for a collaboration. Hopefully, that's a positive sign that people are willing to try new approaches."

Geoff Davison, of the North of England life science industry group Bionow, countered that being prepared to talk isn't enough. "I know there is a lot of willingness, but we've failed at this for 20 years. The NHS isn't a viable market for small and medium sized businesses. I sit on a number of investment committees and also assess some grant applications and if the business' primary market is the NHS it's just not a viable plan anymore."

Andrew Thelwell reflected on other reasons why UK innovators look to other markets. "Why would anyone go to US? Funding and grants are more accessible than they are here." Availability of baseline data is also far superior. "So, if we want to go into wound care, or orthopedics or DVT, if you go to a US hospital or group and ask, 'How many wound patients have you got on your case load, how many times are you seeking them each week, and what's that costing you – they can easily tell you. Do that in the NHS and nobody knows. It's few

and far between. No idea of the number of patients generally at the operational level, the burden."

He talked about models such as The Texas Innovation Center at the University of Austin, which has resources to help companies successfully access the marketplace and, as its website proclaims, "prepares innovators to succeed in a global economy." Sky Medical Technology has been through its programme. "It's a focal point and draws in lots of providers and industry." Andrew Thelwell also cited the relative ease of engaging with the groups that control US hospitals. Sky Medical has contact with Dignity Health, which has 41 hospitals in 22 states. "We did the evaluations in one of their hospitals. It was approved by the hospital clinically and we also did all the work to get into their purchasing system. It makes it much more straightforward to approach other Dignity hospitals in the network. The NHS doesn't run like Dignity Health, obviously, but if there was a way that Trusts could group themselves, such that if one Trust approved something and validated it clinically and economically, it would be a step forward."

As evidence of early stage collaborations that are already being explored, Massimo Noro of STFC talked about the relationship between The Hartree Centre, a high performance computing and data analytics facility based at Sci-Tech Daresbury, and the Mersey Care NHS Foundation Trust, which provides physical health and mental health services for 1.4 million people in the North West. The work has involved helping the Trust in terms of "understanding the data system, helping them with how to manage the data, but also applying new techniques like machine learning A.I to their processes."

Claire Evers of the University of Liverpool pointed to Civic Health Innovation Labs as evidence of the dots getting joined-up around data. "On this stakeholder board, they are bringing together different NHS Trusts and to start answering those difficult questions. So, irrespective of whether you're talking about leg ulcers, or stroke, or mental health conditions, they have a way of being able to access that data." But she added that, more broadly, "I'm not sure that some [NHS Trusts] know exactly what they want from innovation and research or how to engage. They know where they want to get to, but they don't necessarily have the expertise in-house to be able to facilitate those conversations or collaborations." She also pointed out that responsibility for effectively engaging on all matters relating to adopting innovation does not just rest with the boards of NHS Trusts. "The clinical academics who are effectively responsible in-house, and they need to be [leading on] training and engaging."

Andrew Thelwell stressed the importance of emerging companies understanding fundamental commercial realities. "In the US innovation teaching emphasizes concepts such as business models and product/market fit – and these are absolutely central." Geoff Davison picked up this point – he also sits on the Investment Committee of LYVA Labs, an organisation set up in 2022 to support and fund entrepreneurs and innovators in the Liverpool City Region. "We need to go beyond just the university and their tech transfer arms; we need to go all the way to funders and support innovative business model development. We're seeing lots of companies coming through the different programmes which LYVA Labs is supporting – there's a lot of potential but a real need for high quality commercial input and expertise."

In terms of the impact of a joined-up regional approach to healthcare challenges, Mark Wyatt of Northern Gritstone commented on how some regions in the US work collectively, if only because they share similar demographics. "We have an opportunity that we're looking at the States, and it's in an area known as the Stroke Belt." The region features a collection of states with mortality rate more than 10% above the average national rate – Alabama, Arkansas, Georgia, Indiana, Kentucky, Louisiana, Mississippi, North and South Carolina, Tennessee, and Virginia. "It makes it a logical place to focus if you're trying to do trials or sell to devices."



CONVERGING ON THE FUTURE

The advance of A.I, supercomputing and data science with other sectors is one of the most dynamic forces at work in the global economy – and life science is starting to feel the impacts and consider the opportunities. Massimo Noro said convergence is already playing out in terms of where businesses choose to establish bases and what sort of partnerships they are seeking. “It’s not just one technology, but the convergence of different technologies.” He cited the example of The Hartree National Centre for Digital Innovation, a programme launched in 2021, which is running jointly with IBM’s research team. “That was focused on data management, A.I and machine learning. We are thinking about what’s next, what would really be the next frontier? No single technology will do it all. There is a great interest in quantum computing, A.I and traditional high performance computing, all going strong. It’s not about betting on any single one of them. It’s about the combination. Big companies are betting on that. And we’re doing the same thing.”

Damian Kelly spoke of his optimism about what can be achieved through convergence. “New and emerging technologies can only be a good thing if they improve people’s lives. In terms of developing and keeping hold of the innovation, there are costs associate with that for region.” The recipe was a mixture of attracting inward investment and capitalizing on the R&D already happening in the region and, crucially, “securing it and building the jobs around it.”

“In Sky Medical Technology’s space, we’re interested in anything A.I-related as it’s hard to overstate the value and importance of high quality data,” commented Andrew Thelwell. He questioned whether UK Plc has the required depth in the skills base. John Leake picked up the point. “The focus has to be around skills. There’s not enough people in this area. So, part of the challenge is education – including people already in employment, upskilling and reskilling them. Doing so will put any region in a much stronger position when it comes to attracting and retaining those types of companies who are hyper-focused on A.I.”

As the largest employer in the region, Tony Woods said the impact of AI on the NHS should not be underestimated. “It just doesn’t know how to do to do AI

effectively and needs support from organisations like Hartree and other expertise in our universities. What we need though is a clear strategy and roadmap across areas like the ICB. For some of our local NHS organisations they are simply not ready and don’t have the right infrastructure in place. Others can adopt now and many already are. That wider view though and roadmap is a key requirement for the companies out there with solutions.”

For all the challenges, the progress achieved across Liverpool City Region should inspire other regions that have existing life science clusters, concluded Janet Hemingway. “There’s clearly opportunity and a lot of building already going on. I think everybody is behind it in this region. If you look back a decade or so there was no such thing as the Knowledge Quarter in Liverpool, just bits. Now we’ve got something that is coherent, that is increasing its footprint, and that people can see. We need to maintain that momentum across the region, and we will achieve that by actually demonstrating that it really is helping drive the economy and creating jobs and other benefits in the area. We need to keep the whole thing moving but we’re on the right track.”



Sci-Tech Daresbury is a national science and innovation campus and part of the Life Sciences and Healthcare Investment Zone located in the Liverpool City Region.

It is managed by a Joint-Venture company comprising of property developers Langtree, the Science and Technology Facilities Council (STFC) – part of UK Research and Innovation – and Halton Borough Council.

Combining the strengths of the public and private sector, the JV partnership aims to support UK industry and regional economic growth. Sci-Tech Daresbury grows businesses at the heart of science, including more than 150 start-ups, scale-ups and global giants such as IBM and Croda, who work alongside each other and with some of the brightest minds in science and tech in STFC to solve the challenges of tomorrow.

The campus creates the conditions for ambitious businesses across a range of sectors including life sciences, digital and advanced engineering to succeed through innovation, collaboration, funding, attraction and retention of talent, access to world-class technology facilities and international markets. Our objective is to grow the campus to 10,000 people working in science, technology and engineering.

For those people wanting to find out more about Sci-Tech Daresbury and how we provide a “Home for Life” for growing science and technology companies, please get in touch with John Leake at info@sci-techdaresbury.com or on 01925 607000.

A graphic consisting of a central white dot with several lines radiating outwards to other white dots, resembling a network or a starburst.

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