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From the Beatles to biologics – how Liverpool became a life science hotspot

The city has a long history with tropical medicine and is now home to one of the largest biotech clusters in Europe

**Julia Kollewe**

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Tucked away in the village of Leasowe, near Moreton on the Wirral peninsula west of [Liverpool](#), the US pharmaceutical company Bristol Myers Squibb (BMS) is building a new £35m glass-clad laboratory building.

It is part of a growing [life sciences cluster in and around Liverpool](#), one of the largest in Europe, and a leader in vaccine development and manufacture, as well as infectious disease research projects in the UK.

The move comes as Britain's biggest company, AstraZeneca, has put on hold a [£450m investment in a vaccine research and manufacturing site](#) in nearby Speke, a suburb to the south of Liverpool, while it tries to secure UK government grant funding.

A grant would constitute one of the first big state interventions since Labour came to power in July, and a test of how well the drug maker, run by [Pascal Soriot](#) - the best-paid chief executive of a FTSE 100-listed company, who is [in line for up to £18.7m](#) for 2024 - can flex its muscle.

Meanwhile, the new BMS building, to be unveiled next May, is 50% bigger than its existing labs in Wirral, and will house 250 scientists and operational staff, more than double the number of eight years ago.

It is a key product development site for BMS and monitors the effectiveness of existing drugs. Here researchers test tablets for impurities and the ability to withstand exposure to light, extreme temperatures and humidity during storage, as well as their durability, with the goal of achieving a shelf life of three years.

Dr Clare Rawlinson-Malone, incoming Moreton site leader, says: "Connecting with local universities is immensely beneficial for scientific collaboration and nurturing our talent pipeline. The life sciences and medicine development sectors are incredibly dynamic and there is growing enthusiasm for a regional approach."

In a drive for better sustainability, scientists in Moreton use enzymes to help synthesise drugs, avoiding the need to employ oil-based solvents and heavy metals during drug development.

Back in the 1960s, staff at Moreton provided the first ever human clinical trial supplies of an ACE (angiotensin converting enzyme) inhibitor - a class of drugs used to treat high blood pressure and heart failure - and later created technologies for the delivery of diabetes treatments.



Some fear that AstraZeneca's chief executive, Pascal Soriot, will turn from the UK market to targeting the US. Photograph: Sophia Evans/The Observer

The hope in the Leasowe area is that, as more biotech and pharma companies invest around Liverpool, they will create jobs for local people and provide a boost to the local economy.

There are 167 life science companies in the Liverpool city region, employing more than 6,000 people, out of 354 such firms in the north-west, employing 28,000 people.

A designated life science investment zone, the Liverpool city region expects to attract **up to £800m in investment** over the next 10 years, including £160m from the government, and create 8,000 more jobs.

The **AstraZeneca** investment, if it goes ahead, would provide a further big boost. The company is in talks with the UK government about “incentives” to support the expansion of its childhood-vaccine factory in Speke in order to turn it into a bigger research and development (R&D) and manufacturing centre across about six hectares (15 acres) where several vaccines could be produced at once.

It has constructed a new 7,710 sq metre (83,000 sq ft) building that stands empty and would be kitted out with bioreactors, in a move from current egg-based technology to cell-culture-based vaccines.

The current facility, near the Mersey and Liverpool John Lennon airport, manufactures the drug substance for the children's nasal flu vaccine that is used in the annual vaccination programmes in the UK and the US.

It can make more than 20m doses a year, which are shipped to Philadelphia to be “filled and finished” as Fluenz or FluMist nasal spray. The new Speke plant would be able to produce vaccines from start to finish - important to the UK’s pandemic readiness planning.

The Office for Life Sciences - part of the Department of Health and Social Care and the Department for Science, Innovation and Technology - is leading negotiations, together with the Treasury, to work out the mechanisms of the funding, which could come from the government’s **£520m Life Sciences Innovative Manufacturing Fund**.

As part of the package, the Liverpool City Region Combined Authority could fund training and apprenticeships to attract new staff to the site and upskill current employees.



📷 AstraZeneca has put plans for a £450m investment in Speke on hold as it tries to secure state funding. Photograph: AstraZeneca

The Conservative government trumpeted the planned AstraZeneca investment of £450m in March and pledged an undisclosed subsidy, which the new chancellor, **Rachel Reeves, reportedly wanted to cut**. Government **grants tend to be 15%-25% of capital costs**, according to industry insiders, which would equate to £67.5m at the lower end. AstraZeneca has also been investing in other countries, most recently the US.

“These companies are multinational, so they will go where the expertise is - they will go where they can get the best value, so we need to be able to compete and work with them closely where we can,” says Prof Janet Hemingway, former president of the Royal Society of Tropical Medicine and Hygiene.

She was also director of the Liverpool School of Tropical Medicine (LSTM) for nearly two decades, and in 2020 set up the Infection Innovation Consortium (iiCon), which brings together industry, academia and NHS clinicians.

Soriot and other executives flew to New York in mid-November to present AstraZeneca's latest financial results, which showed a 24% rise in third-quarter pre-tax profits to \$1.8bn. There, they **unveiled plans to spend \$3.5bn** on new labs that will bring together all its researchers in the Boston area, along with manufacturing sites for new cell therapy and biologics (drugs that are derived from biological sources such as cells, tissue or blood).

“It won't escape anyone's attention the US economy is expected to grow and there's lots of innovation there,” Soriot has said. While the US is the business's largest market, accounting for 43% of its revenues, he added that “we are in the top three companies in most markets - not in the US”.

At the same time, AstraZeneca has been rocked by a crisis in China, where the president of its China business and other senior executives **were detained** over **allegations of illegally importing cancer medicines**.

This has weighed on the drug maker and sent its share price sharply downwards when the news broke. AstraZeneca's market value has dropped from a peak of more than £200bn in mid-August to about £170bn.

Referring to the Speke expansion, Russ Mould, investment director at the stockbroker AJ Bell, says: “AstraZeneca will be looking to get the best support possible [from the UK government] so it can compete effectively on the global stage and get the best returns for its shareholders.

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▲▲ From a UK perspective, it's pretty important that we support this sort of investment and harness the opportunities for growth
Geoff Davison, Bionow

“The government will be looking to help to provide the right conditions for investment, job creation and growth, even as it minds its own fragile finances and contrasts those with AstraZeneca's \$6bn in global after-tax profits in 2023 and how the company's management felt

comfortable returning \$4.5bn to shareholders in dividends last year.”

Prof Tom Solomon, director of the UK’s emerging infections research unit since 2014 and head of the Pandemic Institute in Liverpool, which was set up in 2021, says: “It also sends a signal to other potential investors. Here’s a company that wants to invest. They obviously need government partnership and support, and if we want more of this kind of thing, we can’t renege on the deals that have been made, even if the deal was made by the previous government.”

A Treasury spokesperson says: “We are committed to making the UK one of the best places in the world to develop and manufacture new and innovative medicines, and we are in active discussions with AstraZeneca to support the delivery of this planned investment in Speke.”

AstraZeneca says: “The discussions with the UK government are ongoing. We are reviewing the incentives for investment in the UK.”

The UK’s £108bn life sciences sector provides more than 300,000 jobs across the country, and the autumn budget promised up to £520m backing for the Life Sciences Innovative Manufacturing Fund, set up to support businesses investing in UK projects.

Liverpool is the only place in the UK with officially designated “high potential opportunity” status for vaccines, and LSTM, the world’s first tropical disease research institute, was founded there in 1898. Steve Rotheram, mayor of the Liverpool city region, says: “We are a genuine global leader in understanding and tackling infectious diseases, and we’re continually striving to innovate and future-proof the world against the viruses and pandemics of the future.”

Speke is where the Distillers Company, a Scotch whisky maker, became one of the first factories in Europe to manufacture penicillin, in 1945, and where US company Eli Lilly made biosynthetic insulin and human growth hormone in the 1980s.

The area is reliant on a handful of big companies that have their subsidiaries here, while GlaxoSmithKline shut its factory in 2004 with the loss of 500 jobs.

Adjacent to AstraZeneca in Speke is the UK’s largest vaccine factory, run by Australia’s CSL Seqirus, which has been manufacturing flu vaccines since 1943 (previously under Novartis) and employs 750 people. It makes 56m doses a year from start to finish, but could ramp this up to 200m in the event of a flu pandemic.

The nearby TriRx factory, initially built by Eli Lilly, has just been saved from closure by the US company Elanco Animal [Health](#), in a £20m buyout saving 300 jobs. The site makes monoclonal antibodies, targeted therapies that can treat cancer and other diseases.



Guardian graphic. Note: *University of Liverpool, Liverpool John Moores University, Liverpool School of Tropical Medicine, Pandemic Institute, iiCON

China's Pharmaron runs a gene therapy and vaccine manufacturing site in Speke, originally the [National Biomanufacturing Centre](#), built in 2003 with government funding.

"It's unusual to have so many big companies in the small area of Speke but it's really important to Liverpool and the UK that we maintain this infrastructure and capability," says Geoff Davison of Bionow, which represents 330 life sciences organisations across northern England.

"AstraZeneca and other global players can easily go elsewhere in the world. From a UK perspective, it's pretty important that we support this sort of investment and harness the opportunities for growth."

Together with neighbouring Cheshire and Warrington, the Liverpool city region delivers £2bn of infectious disease research and development each year.

As a major port, Liverpool has a long history of infectious diseases and public health initiatives, and in November 2020 became the first place in the world to do voluntary mass testing for Covid-19, with nearly half the city's population coming forward.

More recently, researchers from Liverpool University developed the first [vaccine for the Zika virus](#), which is spread by mosquitoes and can cause serious birth defects. The vaccine is being tested in about 20 volunteers in initial clinical studies.

Hemingway's iiCon organisation - [backed by the Wellcome Trust and the Bill & Melinda Gates Foundation](#) - is [building new robotic labs powered by AI](#) and capable of handling dangerous pathogens in a £10m project at LSTM.

Founded with a £18.6m government grant, the consortium has an infectious disease R&D programme worth £260m four years later. It has helped 36 new products enter the market, including diagnostic devices, vaccines and [next-generation mosquito nets against malaria](#), treated with a more effective insecticide that is also safe for babies.

However, there are challenges. The distinctive Spine building – home to the Pandemic Institute and the Royal College of Physicians – at Paddington Village has been half-empty since opening in May 2021.

A Liverpool city council cabinet report said last year that [it suffered from “a lack of investment”](#). Paddington Village is a key part of the “knowledge quarter” that includes Liverpool University and the Royal hospital, and [the council is pushing ahead with its expansion](#) undaunted.

“The UK’s prowess in science must never be underestimated,” says Mould. “The University of Cambridge has more Nobel laureates on its own than the whole of France. Britain therefore offers deep pools of knowledge and talent, combined with a cheap currency [which is helpful for exports], so it can be a terrific base from which to operate, as AstraZeneca can already attest.”
