

UK Commercial - May 2022

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**SPOTLIGHT**  
*Savills Research*

# Life Sciences: Trends & Outlook



Venture Capital • Life Sciences 'Superpowers' • Biomanufacturing



# Global & UK trends

Capital investment remains strong and real estate investor interest is strengthening

The scientific world never stands still. Whether it is called to action to provide a solution to a global pandemic or developing the next mind-boggling innovation. Just looking to current trends for 2022, the sub-sectors of genomics, mRNA, genetic therapies, quantum simulation and CRISPR appear to be evolving in capability and importance. However, within the real estate industry, it is arguably more important to understand the future trends by tracking individual companies and city-level analysis.

The level of capital being raised by life science companies, across the world, continued apace during 2021. The total amount of capital raised totalled US\$803 billion last year, which includes all types of deals (M&A, IPOs, venture capital (VC) and other types of private equity). This was 43% higher than the total for 2020. However, it is expected that the total for this year will be lower. Despite this fact, there will still be a considerable growth of those life science companies that raised capital during the past

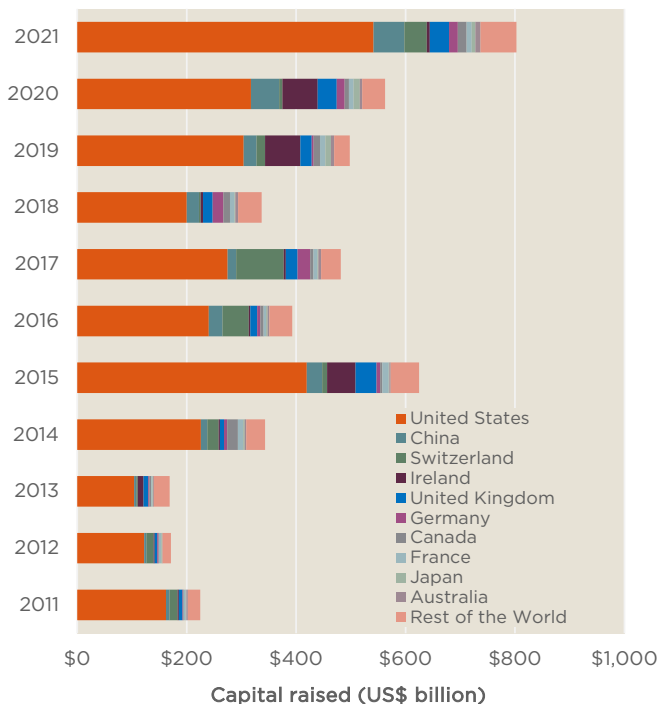
few years, which will result in real estate decision-making and ultimately higher demand. The US still dominate the funding data accounting for a 67% share of the total capital raised by companies, last year.

For identifying opportunity in the real estate markets, there are many measures available to help to understand the strength of key locations across the globe. Tracking the flows of capital invested into life science companies is the best starting point for this. However, to understand the growing ecosystems, it is important to understand the characteristics and strengths of the "Big 5" science nations in terms of academic excellence. These top five locations include the US, China, Germany, UK and Japan. These countries will have access to the biggest budgets, the best facilities and a long history of scientific excellence. However, what has emerged more strongly during the pandemic, is the interaction between the scientific community. These five countries are the linchpins of global life

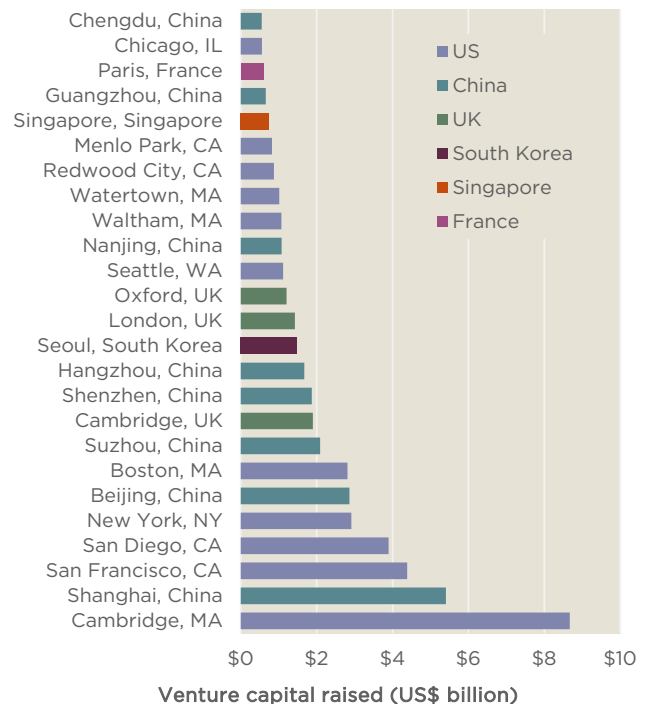
science research, but they are supported by international collaborations. Driven by strengthening academic reputations across the globe, recognising those countries, and specifically, the institutions, who are collaborating with the 'Big 5' provides a valuable insight for the next tier markets. For future real estate opportunities, for investors and developers, identifying those leading collaborating countries outside of the 'Big 5' is critical. Such countries include South Korea, Canada, France, Netherlands and Italy - all strong global economies, but also growing significantly in terms research and development (R&D) excellence in the life sciences.

A trend that Savills has seen during the past 12 months is the stronger real estate investor appetite at the production stage of the scientific supply chain for human health. The R&D phases have driven real estate demand levels, particularly in the laboratory sector, but there is a realisation that the production and manufacture stage

**The US continues to dominate life science capital raised volumes** This includes M&A, IPO, venture capital and private equity deals (US\$bn)



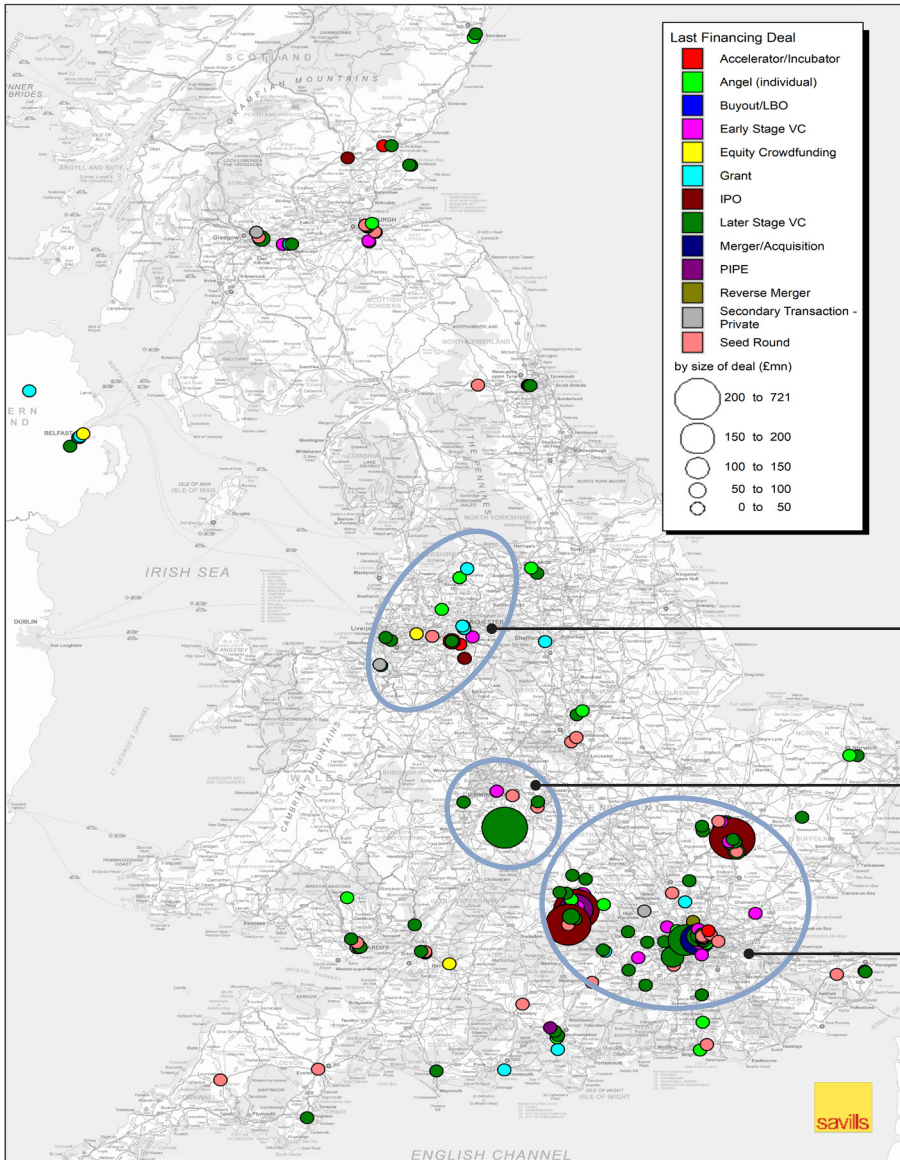
**Top 25 cities** The US and Chinese cities dominated the top-ranking locations, in terms of venture capital raised by life science companies last year.



Source Savills, PitchBook Data, Inc. (Data has not been reviewed by PitchBook analysts)

Source Savills, PitchBook

**In 2021, for life science-related capital raised by companies headquartered in the UK, the annual level of VC raised was £5.6bn** This was 120% higher than 2020; A near five-fold increase on the 2017 total



The North West continues to see a strengthening cluster of fund-raising activity throughout the region. Manchester dominates, with a larger cluster of activity in 2021 compared to 2020.

The West Midlands saw a cluster of capital raises in 2021, following a low level in 2020. This is encouraging to see and illustrates the growth potential for the wider region.

The London-Oxford-Cambridge cluster continues to dominate in terms of the presence of companies that have raised capital. There have been significant real estate investment deals and subsequent development proposals to increase the supply of appropriate real estate to cater for future demand. Overall, this has been the dominant cluster in the UK and Europe in terms of capital raising.

Source PitchBook, Savills

is as important and that the real estate required provides an opportunity for investors/developers. Good Manufacturing Practice (GMP) has come to the fore in the real estate sector, and we will watch with interest on how this emerges during the next few years. Hi-tech industrial buildings through to more advanced manufacturing facilities are part of this R&D/testing/manufacture supply chain.

As seen in the office markets, the growth of hybrid working in the laboratory has also flourished. The laboratory-based employees, for most companies, have adopted booking systems for reserving lab space, but enhanced hardware to take data home has also become more prevalent. In fact, less time in the lab has forced some researchers to spend more time diving into genomics and other

datasets resulting in unexpected discoveries. Also, given the collaborative nature of the life science industry, in-person meetings and working, at agreed days/times of the week across teams, has become more planned, but overall, the hybrid patterns of work will continue to prevail. However, there are similar challenges to the office sector, with on-boarding of younger researchers being more difficult, but the hybrid model also alleviates some of the pre-Covid-19 issues that early-career researchers faced, such as childcare support.

Overall, the UK firmly sits within the classification of a "superpower" when it comes to global life sciences. Throughout the UK, locations of funding for 2021 is shown on the map above. The mapped analysis primarily shows VC, but also

shows deals where VC and a subsequent deal, e.g. M&A, has occurred in 2021. These are represented by the larger dots on the map. The South East and Eastern regions dominate the fundraising patterns, but as shown on page 4, this is also where there is a denser cluster of educational and research institutes - this is why a 'levelling-up' and leveraging from those academic and research institutes throughout the UK is essential to make it an even larger life science superpower.



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“ Unlocking this potential requires local leaders to identify and promote the hooks or beacons that will attract investors and provide catalysts for growth ”

# Levelling up in the UK

Decentralisation and growth will increase the UK's life science superpower status

With an ambitious aim of tackling regional inequality, the Levelling Up White Paper (LUWP), published in early February 2022, presents the Government's vision for regeneration and economic growth. Key to its policy programme will be investment and growth in the Research and Development (R&D) sector.

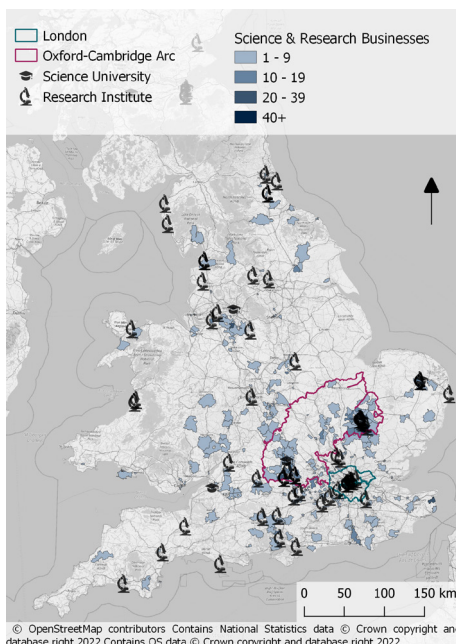
The LUWP commits to an overall national R&D investment target of £20 billion by 2024-25, while the Government's Life Science Vision (July 2021) sets out its target for the UK (across government, industry and philanthropy) to invest 2.4% of GDP in R&D by 2027.

## Alleviating the bottleneck through decentralisation

A key plank in the Levelling Up agenda is to 'boost productivity, pay, jobs and living standards' by increasing the R&D spend outside the South East by 40% by 2030, while leveraging 'at least twice as much private sector investment over the long term to stimulate innovation and productivity growth.'

The reason for this is that historically these high productivity jobs have landed in the 'Golden Triangle' made up of London, Oxford and Cambridge. Over the last decade approximately

## Opportunities around institutional anchors to attract science and research business growth - but currently more density in the south



80% of the venture capital raised by life sciences companies was headquartered in London, the South East and the East. The last three years have seen this rise to 86%, driven by Oxford, Cambridge and London. This is significant considering that the UK has seen capital investment in life science companies grow from £5.75 billion in 2010 to £16.7 billion in 2020, a rise of 372%. However, core markets are experiencing severe real estate bottlenecks and constraints. In 2021, Oxford reported 3.8% lab space availability, while Cambridge reported close to 0% availability.

Decentralisation of R&D funding, along with the significant increase in investment in R&D real estate, infrastructure and skills and education, could alleviate these bottlenecks. Many top life science research institutions, centres of academic excellence and companies are spread throughout the UK and are key hooks on which to base this decentralisation strategy.

As noted in the White Paper, 'Levelling Up will only be successful if local actors are empowered to develop solutions that work for their communities'. There are many cities that stand out as credible and strong growth prospects for the life science and human health sectors. The LUWP proposes to target £100 million of investment in Innovation Accelerator pilots in Greater Manchester, the West Midlands and the Glasgow City Region to foster clusters which leverage private-public-academic partnerships.

## Bridging the skills and education gap

For regions to access the promised public sector R&D funding, and the potential private sector co-funding this could potentially unlock, regional areas will need to bridge skills and education gaps.

Research by PricewaterhouseCoopers for the Life Sciences sector in 2017 reports a multiplier effect of +2.5 for the UK. The life sciences supply chain presents a massive opportunity to attract manufacturing and services jobs, however, at its core will still require access to in-demand advanced STEM degrees. So, while research funding is key, and so is its decentralisation, so too is the funding of new universities, colleges and advanced degrees, which will need to access funding beyond levelling up.

## The role of planning in attracting talent and investment

At the heart of facilitating this growth is the ability to attract and retain talent from national and global labour pools. There is a clear commitment in the LWUP to "set a more positive

approach to employment land in national policy to support the provision of jobs".

The importance of the planning system to delivering land in the right places and creating environments where people want to live, and work should not be overlooked. Planning policy and decision making should ensure a sufficient supply of employment as well as housing land in the right places. Delivering high-quality and well-designed communities with access to public transport and social amenities is important to attracting and retaining talent.

Local planning authorities could be proactive in engaging with businesses and institutions in their locale to understand their needs. While zoning has now been squarely dropped by Government, the White Paper's suggestions of further devolution and planning reform should provide even more tools for local planning authorities to deliver what is needed. More use could be made of tools such as Local Development Orders and Brownfield Land Registers to simplify planning and accelerate employment development.

Unlocking potential requires local leaders to identify and promote the hooks or beacons that will attract investors and provide catalysts for growth, and to ensure the right environment is created to support it. The opportunity here is not just the productivity boost of increasing education funding or feeding the R&D sector's labour needs, but the opportunity for new institutions and campuses throughout the UK to anchor new Innovation Districts which attract private sector funding, and large indirect/spill-over benefits via boosts to productivity.

While this will take upfront public sector investment, the return over the lifetime of these projects has the potential to repay the public sector several times. When assessing these projects, the business case needs to consider the wider social and economic benefits and effects that can occur.



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“ With around €3 billion of funding Paris-Saclay has become a leading educational and research location ”

**View from Paris**

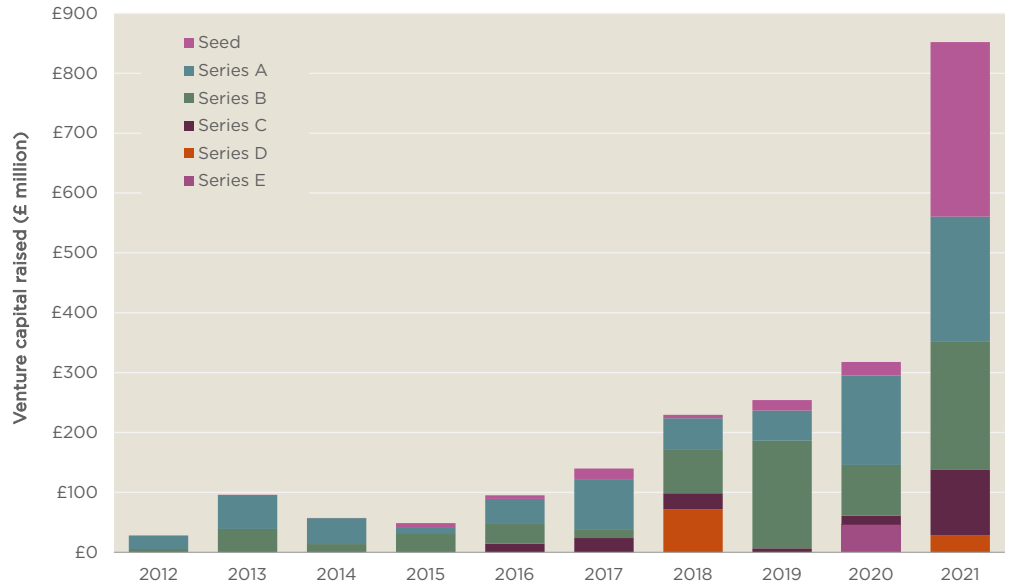
The forecast growth in the scientific and technical sectors shows significant cause for optimism, with an annual growth rate of circa 2% in the coming years. Investment into these sectors has grown rapidly over recent years thanks to significant government and private-sector investment across the country. Analysing the life science clusters in the Greater Paris region alone, demonstrates that there is a strong talent pool and significant growth potential with incubators and support provided to allow SMEs and start-ups to grow progressively.

Paris is one of continental Europe’s foremost life science clusters and is home to major healthcare companies and public/private partnerships, which support the growth of the ecosystem. The cluster dynamics are strong with a good combination of academia, industry and Government support. Given the relatively small geographical size of Paris from a continental European perspective, the city can be considered as a single cluster with key hubs.



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**Exponential growth** Venture capital raised by Paris headquartered life science companies saw a significant 168% increase in 2021



Source Savills, PitchBook Data, Inc. (Data has not been reviewed by PitchBook analysts)

# Paris

## Continuing to grow as one of Europe’s key science clusters

One of the primary drivers for life science business growth is venture capital funding. France is one of continental Europe’s major life science hubs, with a strong ‘Triple Helix’ (academia, industry and Government). As a result of this positive and supportive ecosystem, France experienced a record year in 2021 in terms of venture capital raised by French headquartered life science companies. In 2021, France recorded €1.05bn of venture capital investment into life science companies, ranking 2nd in Europe (behind the UK only). Importantly, France has recorded a Compound Annual Growth Rate (CAGR) of circa 36% in the period 2017 to 2021. For reference, Savills forecast that every €1bn raised creates a real estate demand of 46,000 sq m within 12-18 months. Investment into these sectors is growing at an alarming rate, with leading institutions raising dedicated life science investment funds tailored to building SMEs. In April 2022, Blackstone closed its \$1.6 billion Life Sciences Yield Fund which is the largest first-time fund of this nature that will focus on post-approval and commercial-stage investment opportunities.

Various clusters are identifiable in Paris. The Paris-Saclay is one such important cluster that has historically been known as an educational hub since the post-war era but gained national and international acclaim in the early 2000s as one of Europe’s leading research campuses. It hosts two universities, 65,000 students (1,300 PhD students per year), 275 laboratories, has earned Nobel Prize

and Field awards, and is responsible for 15% of France’s national research potential. According to the Shanghai Rankings, it is the best-ranked university for mathematics globally and is France and Europe’s most renowned university for public research. It has been a heavily funded government initiative, benefitting from circa €3 billion of funding. The innovation cluster currently undergoing an 872,000 sq m redevelopment. From an R&D perspective, 40% of both Greater Paris’s public research and private high-tech R&D originates from Saclay.

Thanks to this €3 billion of funding Paris-Saclay has become a leading educational and research location, bringing together some of France and Europe’s leading educational institutions and faculties. Furthermore, the highly skilled talent pool and tender processes have encouraged large international corporations to install research facilities and launch multiple innovation and technology hubs as well as laboratories across the cluster. The cluster’s primary functions focus on life sciences, healthcare, quantum computing and food-tech. Whilst the cluster serves as a home to many major corporations, it also acts as a catalyst for start-up or ‘spin-out’ organisations. On average 100-150 start-ups are founded on the campus each year with circa 40% in the life sciences sector. The campus’s unique selling point is that it aims to nurture these start-ups and provide them with scalable space and infrastructure to harness their growth.

“ We anticipate increased levels of new development to facilitate life science growth and choosing the right science park operator is essential in delivering this ”

# Stepping up

Which European countries need to step up their university/industry R&D collaboration to compete on the global stage?

The ‘Triple Helix’ is central to a successful life science ecosystem. Consisting of industry, teaching hospitals and universities, the integration/interaction of these three institutions is essential for growth within the sector. According to the Times Higher Education 2021, the best European universities to study life sciences are University of Cambridge, University of Oxford, UCL, ETH Zurich, Imperial College London, Wageningen University, Karolinska Institute and LMU Munich.

However, Israel leads the way globally in terms of the level of R&D collaboration between university and industry, according to data from the Global Innovation Index. Switzerland, Finland, the Netherlands, Belgium and Germany mark the top five European markets.

Although Israel is comparatively smaller by population, it spends almost 5% of annual GDP on R&D expenditure. Israeli universities have established educational programmes and research centres in cutting-edge fields, such as the Center of Knowledge in Machine Learning and Artificial Intelligence at the

Hebrew University in Jerusalem. This has subsequently attracted over €2bn venture capital investment in the sector over the last five years, to companies including Insightec, which develops ultrasound technology to treat oncology conditions, and drug discovery firm Gamida Cell, which develops cell therapies to target cancers. Interestingly, less than half of the patents obtained by investors are owned by Israeli companies, as multinationals including Google, Microsoft and Intel have acquired fast-growth Israeli companies in recent years.

Accelerate Cambridge is an example of an early-stage life science spinout which offers 10-week programmes, coaching, training and access to shared workspace. This helps to secure intellectual property rights, assisting in patent applications and leading seed investment rounds. In Zurich, the ETH Zurich spinout Covagen was acquired by Johnson and Johnson and develops therapeutics including to treat cancer.

There are outliers, however- despite France receiving over €3bn of venture capital investment in the life sciences sector over

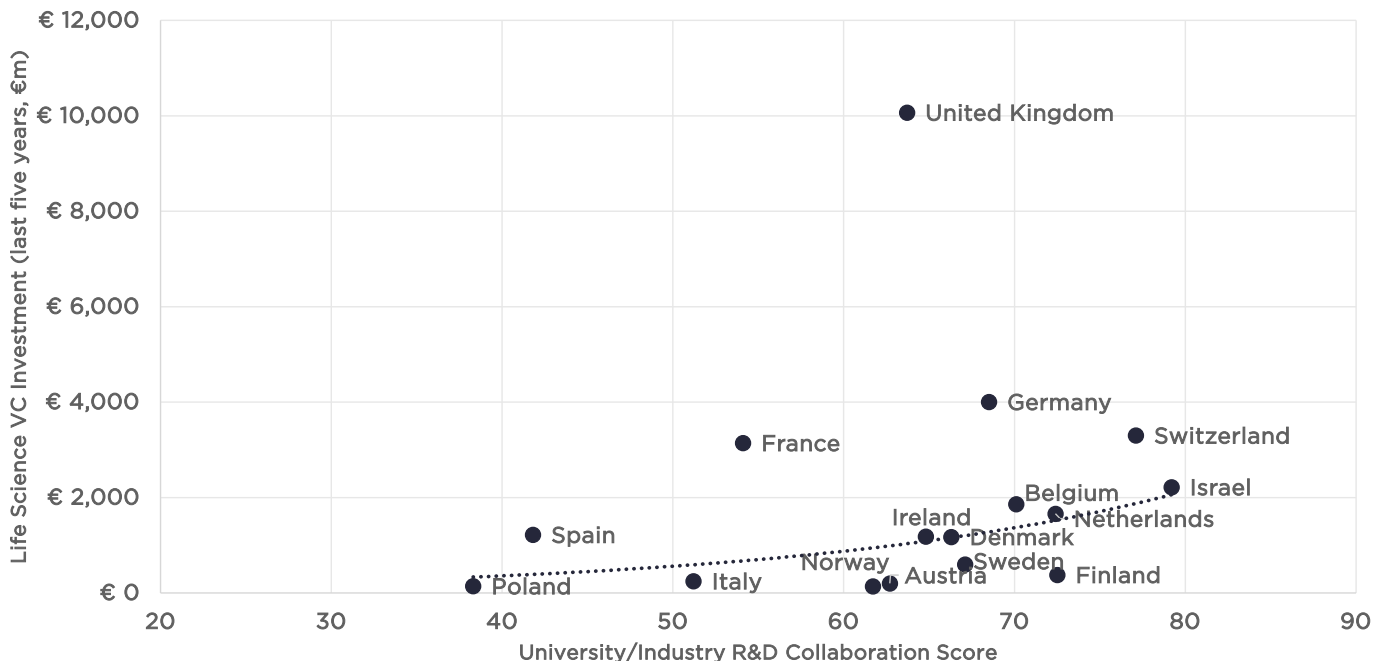
the last five years, the quality of university/industry R&D collaboration is relatively low compared with competing European countries. France, home to pharma giants Sanofi and Servier, and Spain, home to Almirall and Grifols invested a combined €7bn in R&D funding during 2020, although stronger university-industry linkage will be required for these countries to compete on the world stage.

Given rising investor demand to gain exposure to the European life science sector, we anticipate increased levels of new development to facilitate life science growth and choosing the right science park operator is essential in delivering this.



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## University/Industry R&D collaboration and life sciences venture capital investment (last five years; €m)



Source PitchBook, Global Innovation Index

### View from Switzerland

Western Switzerland's life sciences hub – the so-called Health Valley – is one of the most advanced and diversified life sciences hubs in the world. In 2021, it was ranked as the 2nd leading life sciences cluster in Europe, and the 12th worldwide, by Startup Genome. This small region at the crossroads between Germany, France and Italy earns 25% of all export income from pharma, biotech and medtech products. More than 1,000 life sciences companies contribute to this impressive performance: from cutting-edge startups spun-out from local universities to Swiss unicorns like ADC Therapeutics, Mindmaze, and Sophia Genetics, to multinationals such as CSL Behring, UCB, and WuXi AppTec. Compared to other life sciences hubs around the world, the Health Valley fares well in the fierce competition for talent. International companies are often drawn to Western Switzerland because of the large pool – 37,500 – of R&D, production and management professionals. This deep talent pool is the result of the region's unparalleled quality of life, which is a magnet for foreign skilled workers, combined with an efficient educational system geared towards market needs. As an example, specific training initiatives designed to boost capabilities in biomanufacturing have been launched by the Biofactory Competence Center (BCC) in Fribourg and the Bertarelli Foundation Gene Therapy Platform at the Swiss Federal Institute of Technology in Lausanne (EPFL).

### Lonza, Visp Building upon the region's established excellence in life sciences



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## Biomanufacturing in Western Switzerland

Global demand for biologics is at an all-time high. According to a CPhI report, by 2025 Europe will overtake North America as the top location for biologics manufacturing. With its robust pharma heritage, ample availability of highly skilled workers, and a reputation for industrial quality and reliability, Western Switzerland is poised as a leader in the field, helping to meet demand for innovative therapies and medicines to treat cancer, Covid-19, genetic diseases and neurodegenerative disorders.

The region provides efficient and rapid solutions in terms of establishing strategic partnerships with world-class CDMOs and setting up new production facilities. Companies considering insourcing can find the best fit for their needs – from a few hundred square meters (sq m) up to 200,000 – in this export-oriented region, served by a dense network of suppliers and service providers.

Unsurprisingly, many global companies have invested in biomanufacturing in Western Switzerland in recent years. In October 2021, ThermoFisher Scientific opened a 140,000 sq m facility in Lengnau. The site features highly flexible

bioproduction technologies, including both single-use and stainless-steel with up to 12,500 litres of bioreactor capacity. It will initially support manufacturing of CSL's next-generation product for haemophilia patients. Over time, it will be expanded to serve additional biopharma customers.

In August 2021, US-based biopharma company Incyte inaugurated its first and only in-house biomanufacturing facility in Y-PARC, Switzerland's largest technology park located in Yverdon-les-Bains. The BioPlant consists of a 13,300 sq m campus composed of three buildings housing production, technical operations and analytical labs. "We wanted to set up operations in Europe, and Switzerland, with its tradition of pharmaceutical production, emerged as the obvious choice," said Hervé Hoppenot, CEO. This investment follows the establishment of Incyte's European headquarters in the Swiss city of Morges in July 2020.

Merck has invested more than \$1 billion in Switzerland over the past ten years. In Western Switzerland, the German drugmaker has two major projects underway: a new building at its biotech

manufacturing site in Aubonne, and a state-of-the-art biotech development facility located near its commercial manufacturing site in Corsier-sur-Vevey. The latter – a 15,700 sq m facility bringing together a cross-functional team of approximately 250 employees spread across different sites today – will be Merck's global centre of expertise for biotech development and manufacturing for clinical studies.

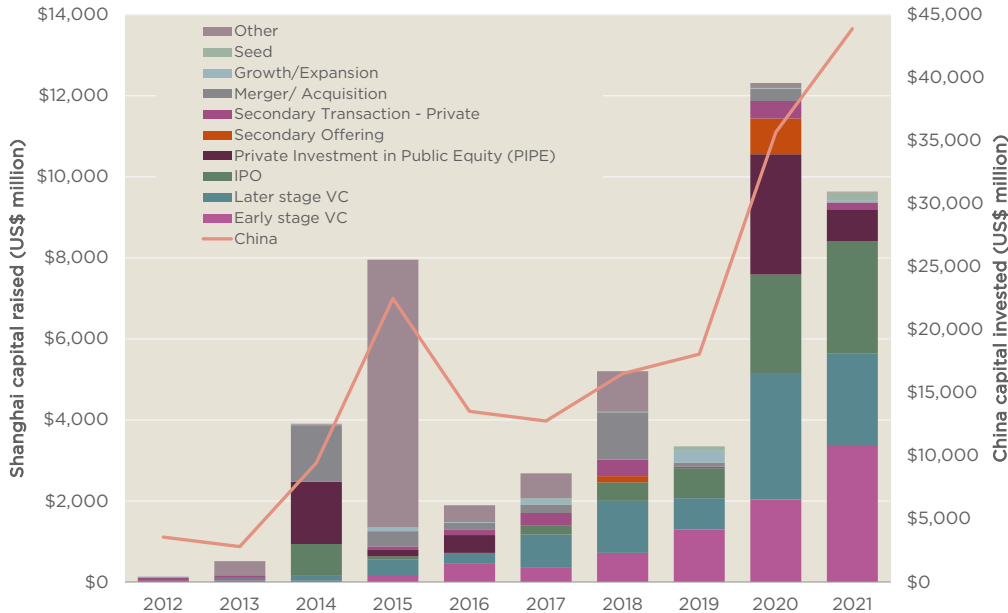
In 2017, Lonza started the Ibex™ biomanufacturing complex at its Visp site. Built on a brownfield surface of 100,000 sq m, Ibex™ offers modular solutions to biopharma customers at every stage of development and manufacture. These include Servier, Kodiak, Sanofi, and most notably Moderna, with six production lines installed in record time and dedicated to manufacturing the drug substance for its Spikevax Covid-19 vaccine.



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“ The city’s five-year plan outlines the target of growing the sector to RMB1.2 trillion by 2025, more than doubling its current scale in just four short years ”

**All types of capital raising in Shanghai** Strong growth in 2020 and 2021, in-line with the trends across the whole of China



Source Savills, PitchBook Data, Inc. (Data has not been reviewed by PitchBook analysts)

# Shanghai is growing fast

A positive outlook for the life science sector

Key drivers of demand in China are not too dissimilar to many other global markets although the scale of the challenge, urgency and support are of a much larger magnitude. China’s population is one of the largest and most rapidly ageing in the world, meanwhile, the prosperity generated from three decades of rapid growth has increased the willingness to spend on healthcare as well as the necessity as lifestyle diseases are on the rise. There has also been an increasing awareness of health issues, especially in the context of Covid-19 and a willingness of the government to support R&D expenditure and investment into the sector.

Shanghai’s biopharmaceutical industry was valued at RMB700 billion in 2021 have expanded 16% over the last year. The Shanghai Economy and Information Technology Commission (SHEITC) reported that 41 of the 57 leading MNCs in the sector have established regional HQs,

R&D centres, functional offices or manufacturing bases in the city. According to PitchBook, Shanghai was the largest recipient of venture capital (VC) funding in China over the last three years, with early and later-stage financing totalling US\$12.5 billion more than double second-placed Beijing. Unlike many developed western countries, China’s largest cities tend to lead or dominate many industries, with the leading cities boasting the best ecosystems.

Shanghai has continued to attract a stable of leading international and domestic life sciences firms over the last decade. Recent examples include Clover Biopharmaceutical which recently announced plans to build a 25,000 sqm R&D centre in Zhangjiang with plans to recruit hundreds of employees in the area, as well as AstraZeneca’s securing a new 15,000 sq m premises in Jing’an district as its global R&D centre. Healthcare firms with their

often-sizeable real estate budgets, tend to prefer high-profile projects in traditional business areas for their main offices. Nanjing Road (W), the city’s most expensive submarket, has 22% of its tenanted space leased to healthcare companies by the end of 2021, meanwhile, the new up and coming submarket of Qiantan in Pudong, has been able to attract leading international and domestic pharmaceutical firms such as Bayer, BD Medical, Takeda Pharmaceutical and I-Mab Biopharma.

Shanghai is one of the most expensive cities in China to rent life science real estate. Rents can vary significantly depending on the project’s Environment Impact Assessment (EIA) license and what the EIA allows. Projects without an EIA typically charge rates lower than the cost of offices in the same area while those with EIA licenses can be significantly higher given the lack of supply.

## View from China

Just five years ago the life science real estate sector in China was largely ignored by investors. The sector remained largely underdeveloped, opaque, and illiquid with high entry hurdles and regulatory risk. Real estate investors instead focused on traditional asset classes which presented more opportunities, greater transparency and liquidity, especially in leading cities, as well as strong tenant demand supported by economic growth. 2018-2019 marked a watershed moment for investors as a slowing economy and tighter financing environment made underwriting commercial assets challenging. At the same time the government was emphasizing the importance and its support of new economy sectors, basic research and core technologies. Real estate investors have since looked to rebalance portfolios to gain exposure to these more niche asset classes. The key challenge remains a lack of investment grade stock (even in leading cities) and rising competition. A handful of deals have been concluded in recent years; however, they are nearly all small-scale single assets typically with an add-value angle and ticket prices typically remain below US\$200 million.



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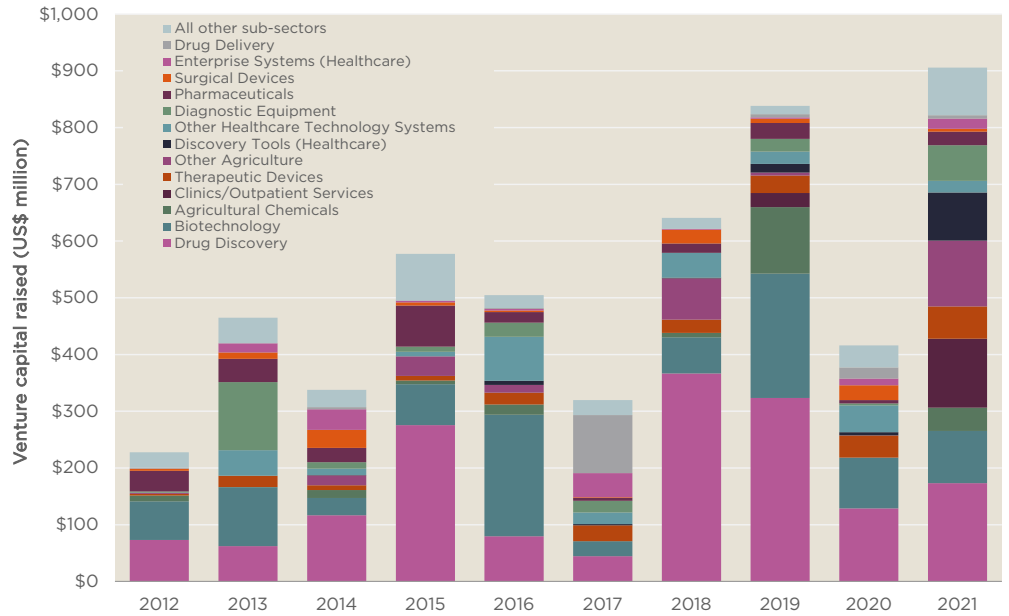


“ It is more important than ever for life science companies to be strategic in their real estate strategy ”

**View from the US**

Venture capital (VC) funding in life sciences has continued to grow at an exponential rate on a national level. In the Raleigh-Durham metro region, VC funding jumped 118% from 2020 to 2021. This metro region’s life science industry is made up of 14 sub-sectors, with Drug Discovery, Clinics/Outpatient Services, Other Agriculture, and Biotechnology among the most funded. Life science sub-sector Drug Discovery received the largest amount of funding in 2021 at \$173.2 million or 19.1% of 2021’s total in Raleigh-Durham. The second most funded was Clinics/Outpatient Services at \$121.5 million or 14.3%. VC funding activity remains steady in 2022 with the majority of deals being Later Stage and Early-Stage VC funding. Life science companies such as BioMason, Vestaron and Inceptor Bio are some of the largest funded for the beginning of this year. In late February, BioMason raised \$65 million in funding from 2150 and Celesta Capital to accelerate their biocement technology platform in hopes to reduce the global carbon emissions from the concrete industry. Reviewing the trends in capital raised, in terms of type of deals and the volume, presents a great indication of the type of companies that will grow in the future and the type of real estate required in Raleigh-Durham.

**Life science venture capital raised in Raleigh-Durham** Strong growth in 2021 across a wide range of life science sub-sectors



Source Savills, PitchBook Data, Inc. (Data has not been reviewed by PitchBook analysts)

# Raleigh-Durham

A key and mature life science market in the US

The Raleigh-Durham market is at the forefront of rapidly emerging life science clusters in the US. Raleigh is home to the country’s most prominent research park, Research Triangle Park (RTP), known for its high-tech facilities and upper echelon of life science tenants. Approximately 75% of life science companies in North Carolina are based in Research Triangle Park. The park is situated on 7,000 acres and boasts over 22 million square feet of lab space which is home to more than 300 life science companies. RTP is occupied by Biogen, Eli Lilly, Pfizer, Bayer Pharmaceuticals and agencies such as the Centers for Disease and Control and Prevention (CDC).

The RTP submarket is seeing an influx of new developments in the lab and R&D product class as life science companies continue to flock to the market. Announced in the beginning of the year, Starwood Capital Group and Trinity Capital Advisors planned

a joint development referred to as Spark LS, a \$1 billion life science campus in the Research Triangle submarket comprised of 12-15 buildings across 109 acres dedicated to lab and bio spaces featuring a STEM education center. Additionally, one of the world’s leading biotechnology companies, Amgen, recently broke ground on a biomanufacturing plant located in Holly Springs. Amgen’s biomanufacturing plant is anticipated to cost \$550 million dollars and encompass 350,000 RSF, expecting to be fully operational sometime in 2025. The region has an enhanced draw due to the constant influx of talented graduates coming from three world-class research institutions, North Carolina State University, Duke University and the University of North Carolina at Chapel Hill, as well as other traditional colleges nearby. In addition to an educated workforce, the Triangle is seeing growing demand because of its lower cost

of doing business and lower cost of living that employers are keen to take advantage of.

The war for talent has heightened as the country emerges from the pandemic and it is more important than ever for companies to be strategic in their real estate strategy and pick markets with a booming talent pipeline and a metro area that draws employees due to lower living costs and amenities. Life science users will continue to relocate and grow their footprint in Raleigh-Durham as they are drawn in by the robust development pipeline underway, friendly business atmosphere and available government incentives.



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“ Labs of today require new infrastructural elements so that the rapid influx of digital tools can perform at optimal levels ”



# Lab development and connectivity: the essential considerations

In an ideal world, research facilities would predict and accommodate every emerging trend in the research and development sector. Of course, the world isn't perfect, and the ways in which we work change constantly and unpredictably, particularly in the research realm.

The use of computer modelling, to analyse that which cannot be examined in the physical environment, has significantly increased. What were once chemical and water-based "wet labs", are now operating on a predominantly machine and computer-based model.

Traditionally, labs have been designed to be completely autonomous, featuring emergency power systems and N+1 Heating, Ventilation and Air Conditioning systems. Now, the labs of today require new infrastructural elements so that the rapid influx of digital tools can perform at optimal levels.

Over the past decade, high-speed internet access and cloud computing have become increasingly critical to the maintenance, security and operational consistency of any lab facility.

To maximise productivity, and reduce the risk of research loss, facility design must be nimble. In today's terms, that means having optimal levels of reliable, resilient, and redundant connectivity. To achieve this, new design best practices and aspects of infrastructure must be considered - here are four key areas to consider:

## 1) Access to multiple Internet Service Providers (ISPs)

A lab's connectivity and, consequently, its business, is only as good as its ISPs. Ever reliant on telecommunications to transmit and store research data, labs must have resilient data

infrastructure components if they're to consistently conduct research, even in the event of a system breakdown. It is therefore essential that a facility can access multiple service providers. The extra investment into a secondary connection pays dividends the moment a primary source fails.

## 2) Proper telecom room planning:

Any building, especially one that houses a laboratory, should have a well-planned telecommunications room. These rooms should be located above floodplain levels, incorporate climate control, and include proper fire detection/suppression methods to mitigate risk of damage to equipment.

Each space must be solely dedicated to telecommunications, rather than co-located with other utilities, and must have its own backup power generation.

## 3) Incorporating diverse risers:

In the Research and Development (R&D) world, lease terms are longer than in other industries, and often span upwards of ten years. Throughout that time, it's likely that a laboratory's layout will need to change a multitude of times.

To eliminate the possibility of costly IT retrofits, incorporating multiple, diverse, and protected risers will provide the necessary configuration flexibility throughout the duration of the lease. Patch cabling can then be routed between these closets to facilitate simple equipment moves from one side of the building to the other.

## 4) Providing electrical resiliency:

For a facility to possess best-in-class connectivity,

multiple forms of electrical resiliency must exist to support its telecommunication services.

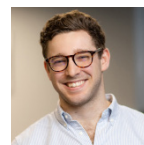
To reduce the risk of power failures, a building's telecommunications room must be connected to an emergency generator to eliminate the possibility of an internet outage. Additionally, the incoming electrical utility feeds should be fed from diverse electrical substations. This ensures that there is a failover in the case of a grid-wide power outage.

The above precautions protect against the loss of both time and data, whilst providing a substantial infrastructure for new, internet-dependent smart building technologies.

## Final thoughts

Operating a lab facility on a daily basis is a costly venture, with operational expenses often amounting to upwards of six figures per day. For this to be feasible, business continuity needs to remain at 100 percent. With proper planning and upfront resiliency investments, developers can create optimal environments in which laboratories can thrive, safe in the knowledge that they are protected against irreparable financial losses.

[www.wiredscore.com](http://www.wiredscore.com)



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## Outlook

What are the five takeaways from this report?

**1** The in-flows of capital into life science companies grew strongly in 2021. The pandemic was a key influence on this, but also a realisation by the wider investment community that the credibility and opportunity of life science companies, of all scales, has increased. We expect the overall level to be lower in 2022, but there is still a significant amount of capital that will kick-start and grow life science companies in the next few years.

**2** The UK is clearly a superpower in the global life science sector on many levels. The quality of academic and research institutes helps to drive this. The UK accounts for a significant proportion of the global life science R&D market, when considered relative to the size of the UK. However, the policy to drive a levelling-up agenda in the UK, to grow other parts of the country, and to complement the growth prospects in the South East and Eastern regions, is a very credible one.

**3** In real estate terms, it is important to consider all types of real estate required to complete the life science 'supply chain'. Academia and start-up driving the R&D agenda is significant and something that tends to be measured and assessed. However, the production/manufacture of the 'fruits' of the R&D process must also be considered. The biomanufacturing sector is therefore interesting and important to consider.

**4** Global markets must all be reviewed and considered at the same time. The US continues to account for the highest proportion of capital raised by life science companies. This will remain the case for many years. However, it is equally important to recognise the importance of global regions and, specifically countries, that will move up through the rankings. Overall, the total market is getting larger, and funding is growing, but the global distribution of this will change through time. Asia, and China in particular, will take an increasing share. This will create real estate opportunities in Asia, but also result in Asian-headquartered companies taking floorspace in their own countries and across the world.

**5** Connectivity, in every sense, is critical for the life science sector. The close proximity or physically connected 'players' within the life science ecosystem is so important. This includes co-location but also the transport infrastructure to enable connectivity at national and international levels. However, during the past couple of decades, the cross-over of technology companies and life science companies has resulted in the growth of data collection, analysis and sharing. Therefore, in a real estate context, the capability and resilience of the IT infrastructure has become increasingly important, and this will even more so as the 'big data' aspects of the life science sector becomes the key aspect of R&D.



## Savills Science

Science, R&D and technology sectors all demand specific types of real estate. Savills, using data and expertise across all markets and disciplines will help clients make the best real estate decisions. Savills have established offices, with life science capability, within the key markets across the UK. Savills also has significant expertise in dealing with all aspects of life science real estate, particularly for occupiers, within the key markets in EMEA, North America and Asia. Having a global understanding of these international markets, with experts 'on the ground', means that Savills can provide an enhanced offering to all types of clients, including occupiers, investors and landlords.

For more information on Savills Science and the research capability, in the first instance, please contact:

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