

Investing in global life sciences clusters: lessons from the U.S.

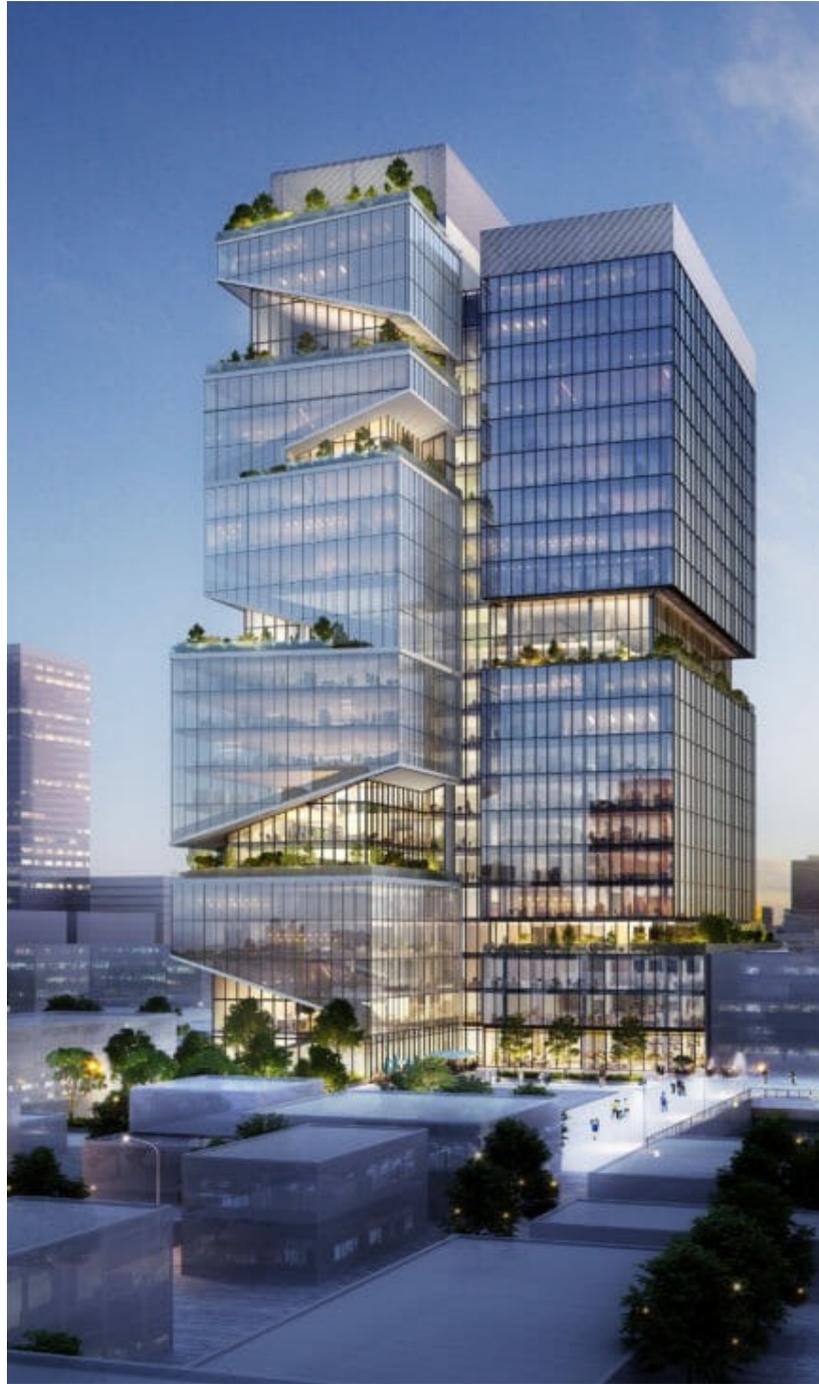
Research Report, August 2022



Executive summary

COVID-19 moved life sciences into the spotlight. Across the globe, life sciences was identified amongst the top property types in which to invest in 2022, according to PwC ULI Emerging Trends surveys. [In a recent publication](#), Allianz Real Estate identified life sciences as one of the five preferred real estate investment sectors. This paper explores the business case for investing in this highly sought-after sector.

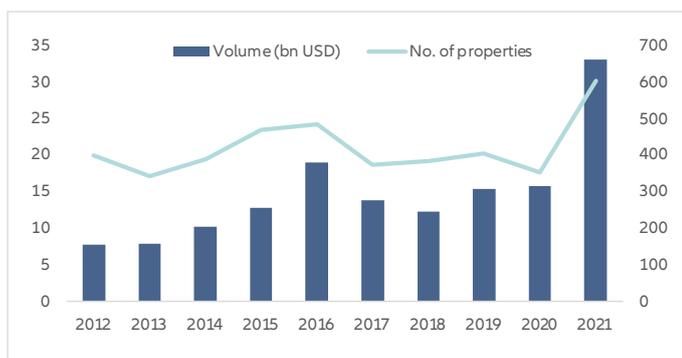
- Driven by structural demand drivers and pandemic-boosted capital funding, life sciences returns are attractive and should remain resilient despite current macroeconomic uncertainty.
- Agglomeration-benefits of life sciences ecosystems make investments highly location-sensitive and support real estate fundamentals by creating natural supply constraints.
- Limited scale of investable life sciences stock and concentration of few specialised investors create high barriers for new entrants. Core investors can gain access through development or repurposing projects, undertaken alongside life sciences experts.



Life sciences expansion will outlive the pandemic as capital fuels innovation

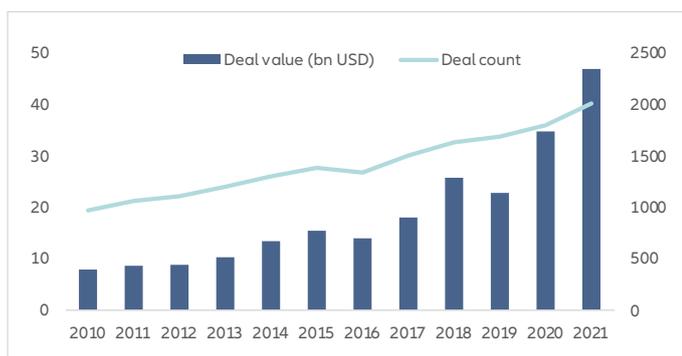
The pandemic proved to be a significant accelerator for the life sciences industry, similar to the upsurge in the logistics sector. All-time highs were recorded in venture capital funding, employment growth and lab space demand. Global transaction volume of research & development (R&D) properties doubled to USD 33 billion in 2021 (Figure 1). Fundraising activity targeting R&D assets in the U.S. since the pandemic reached USD 42.1 billion, which could translate into a leveraged volume of over USD 120 billion.¹

Figure 1. Global R&D properties transaction volume



Source: RCA, June 2022.
Note: R&D properties refer to R&D assets under office and industrial sectors.

Figure 2. U.S. life sciences venture capital deal activity

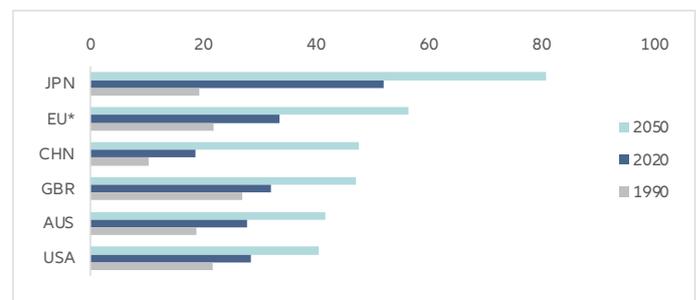


Source: Pitchbook, Life Sciences Snapshot: A Quarterly Report on Financing Trends, Q1 2022.
Note: As of December 31, 2021.

Expansion of the life sciences industry will likely continue even after the pandemic effect subsides due to structural demand drivers that were already in place before the pandemic. The healthcare burden on governments has been soaring over decades due to an ageing global

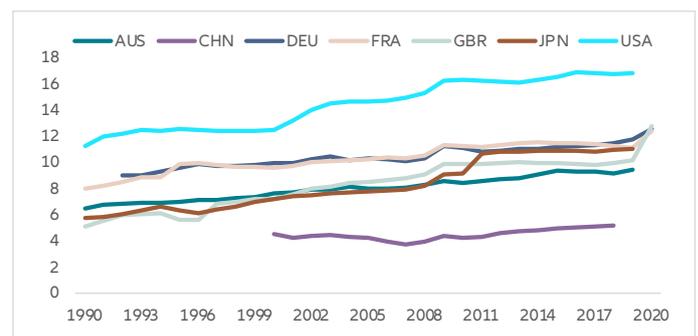
population and surging lifestyle diseases (Figure 3 and 4). As a result, life sciences has been identified as a strategic sector in many countries across the globe and received significant government funding. Furthermore, technological advancements and digital transformation indicate higher productivity than other sectors of the economy. Consequently, life sciences will continue to act as a magnet for private and public funding.

Figure 3. Old-age dependency ratio



Source: OECD, May 2022.
Note: The old-age to working-age demographic ratio is defined as the number of individuals aged 65 and over per 100 people of working age defined as those at ages 20 to 64.
* European Union plus UK.

Figure 4. Health spending (% of GDP)



Source: OECD, May 2022.
Note: 2020 data available only for Germany, France and United Kingdom. 2019 data not available for China.

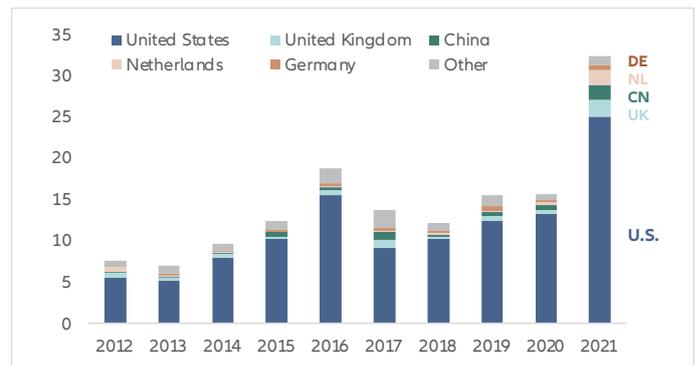
Life sciences will also favor well from COVID-induced capital shifts across real estate sectors. Life sciences has proven to be resilient to the working-from-home (WFH) trend due to the nature of lab work that requires physical presence and collaboration. As a consequence, life sciences – a sector boosted by structural trends and protected against disruptive forces – should be at the top of the list for investors seeking to invest in alternatives.

¹ Newmark, 2021 Year-End Life Science Overview & Market Clusters, Q4 2021.

U.S. is by far the most developed market, Europe and Asia have solid growth potential

The U.S. is by far the largest and most transparent life sciences property market. More than three-quarters of global R&D transactions over the last decade was allocated to the U.S. (Figure 5). Nevertheless, for a core investor seeking entry into the U.S. market, access can be difficult as most investable stock is closely held by a small circle of investors. From 2017 to 2021, 35% of U.S. R&D property investments were undertaken by the top 11 buyers.² This compares to only 12% in the office sector. On a similar note, the top 10 life sciences investors own more than half of the ‘wet lab’/R&D space in the largest 14 markets (including under-construction and renovation) (Figure 6).³

Figure 5. R&D properties transaction breakdown by country (bn USD)



Source: RCA, May 2022.

Note: Total of R&D transactions within office and industrial sectors.

² RCA, 6 June 2022.

³ Newmark, 2021 Year-End Life Science Overview & Market Clusters, Q4 2021.

Figure 6. Top 10 life sciences owners in the U.S.

Company	HQ Location	Investor Type	No. of properties	Square Feet*
Alexandria Real Estate Equities	Pasadena, CA	Public REIT	407	43,000,000
Blackstone BioMed	New York, NY	Institutional	106	16,000,000
Healthpeak Properties	Denver, CO	Public REIT	83	11,700,000
Ventas	Chicago, IL	Public REIT	42	8,400,000
Longfellow RE Partners	Boston, MA	Private/Developer	56	7,300,000
King Street Properties	Boston, MA	Private/Developer	29	4,800,000
Boston Properties	Boston, MA	Public REIT	51	4,200,000
Diversified Healthcare Trust	Newton, MA	Public REIT	30	4,100,000
IQHQ	Solana Beach, CA	Public REIT	21	3,800,000
Alloy Properties (TPG)	San Francisco, CA	Institutional	37	3,400,000

Source: Newmark, 2021 Year-End Life Science Overview & Market Clusters, Q4 2021.

* Includes under construction and under renovation product



Compared to the mature and highly concentrated U.S. market, life sciences in Europe and Asia Pacific are more nascent and far less institutionalized. This allows investors to be part of the growth and commercialization process and leverage on strong research capabilities. Europe is home to 43 of the top 100 life-science universities (U.S. is second with 34).⁴ The region also ranks first in the number of science publications (966,000) between 2018 and 2020.⁵ As a result, equally skilled but less costly life sciences talent, and tax incentives, are persuading U.S. firms with expansion plans to look into Europe.⁶

Asia Pacific's outstanding growth prospects stem particularly from its demographic strength and emerging middle class. Healthcare spending in per capita terms, and as a share of GDP, lags considerably behind Western counterparts.⁷ With an ageing population, these figures will rise considerably. Furthermore, governments play a proactive role in cultivating life sciences capabilities, particularly in China, Singapore and Australia, significantly improving research and manufacturing capabilities.

4 McKinsey, 'Can European biotechs achieve greater scale in a fragmented landscape?', *Biotech in Europe: Driving the next act in Europe*, 29 June 2021."

5 McKinsey, 'Building the European biotech sector with science and innovation', *Biotech in Europe: Driving the next act in Europe*, 5 August 2021

6 Savills, *European Life Sciences*, September 2021.

7 OECD, May 2022.

For instance, the number of biotech patents granted in China has risen annually by 14% from 2015 to 2019 and surpassed the U.S. and Europe.⁸ Current challenges in Europe and Asia Pacific include government involvement and widely owner-occupied markets. Government concessions could present a downside risk for institutional investors as they may depress rents and capital values to below market levels, most notably in Asia Pacific.⁹ Conversely, government involvement can kick-start emerging life sciences clusters.

8 McKinsey, 'Building the European biotech sector with science and innovation', *Biotech in Europe: Driving the next act in Europe*, 5 August 2021.

9 CBRE, *Asia Pacific Major Report: A New Era Of Life Sciences Growth*, 2021.

Diversification into life sciences contributes to resilience and returns of real estate portfolios

The last two global recessions demonstrated that the life sciences sector shows resilience to economic downturns. Leasing activity and vacancy rates for lab space outperformed the office sector significantly in the U.S. In Boston, for instance, tenant demand was strong in both 2020 and 2021. In 2020, 1.5 million square feet of additional lab space was absorbed¹⁰ versus 1.3 million square feet of grade A office space give-back.¹¹ The trend continued in 2021 with 4 million square feet of lab space absorbed while only 0.1 million square feet of grade A office space was given back. Cushman & Wakefield observed a similar take-up trend during the global financial crisis where, unlike the office sector, lab space commitments in Greater Boston slightly turned negative for a brief period.¹²

The resilience of occupier markets is also reflected in rental growth. According to a JLL report published in 2021, rents in established life sciences markets grew on average 63% over the preceding five years (>100% in Seattle and >30%

in Boston Seaport) while average U.S. office rent growth was less than 40%.¹³ CBRE recorded that U.S. lab rents increased by 11% in 2021 versus 2% growth in the office sector.¹⁴

Life sciences have good return prospects due to solid market fundamentals and yield compression potential. Strong demand drivers and significant undersupply could result in solid rent growth in major markets. Green Street projects life sciences NOI growth in the U.S. to be as strong as the last decade. As a result, 5.4% annual NOI growth is expected to outperform other property sectors, second only to industrial (Figure 7).¹⁵

U.S. transaction data demonstrates that life sciences yields have traded inside office yields since 2015 (Figure 8).

Yields for R&D assets compressed by around 145bps while office yield compression remained at 50bps.¹⁶ Yields are expected to compress further as investors compete to gain exposure into the sector.

10 CBRE, Figures: Boston Metro Lab, Q4 2021.

11 Costar, April 2022.

12 Cushman & Wakefield, *Investing in the Life Sciences Sector: Opportunities and Risk*, 24 February 2022.

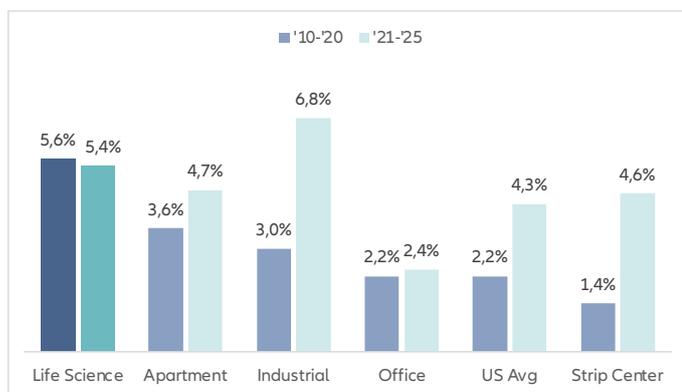
13 JLL, *2021 Life Sciences Real Estate Outlook: The innovation engine is shifting into high gear*, 2021.

14 CBRE, *Despite the Cost, Construction of Life Sciences Properties Brings Strong Returns*, 21 April 2022

15 Green Street, *Life Science Insights: Stitching Together a Forecast*, 15 December 2021.

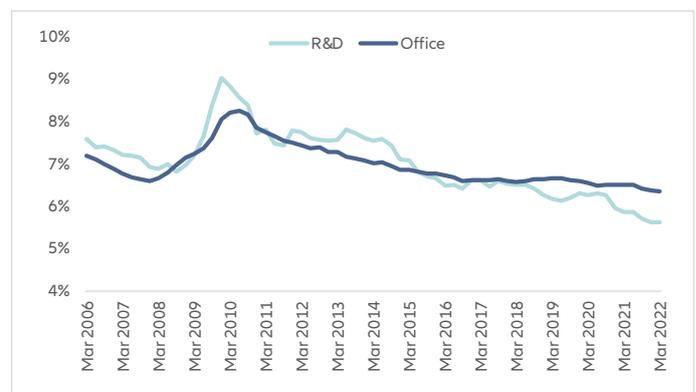
16 RCA, 17 May 2022.

Figure 7. U.S. NOI Growth Estimates (p.a.)



Source: Green Street. 15 December 2021. Life Science Insights.

Figure 8. U.S. average cap rates for office and R&D properties



Source: RCA, May 2022.

Note: R&D properties refer to R&D assets under office and industrial sectors

Despite unprecedented growth momentum, life sciences is still a niche asset class

Despite heightened investor and occupier interest, the life sciences sector is still very small in scale. Even in the U.S., the most mature market, the investor-owned commercial lab market totals around 150 million square feet. This compares to U.S. industrial and office inventory of 13.6 billion and 4.3 billion square feet respectively (Figure 9).¹⁷

Similarly, the global transaction volume for R&D assets accounted for around 4.6% of total transactions over the last decade. Even in 2021, where investment volume reached an all-time high, this share had risen to only 5.8%.¹⁸ The relatively small size of life sciences markets coupled with high investor concentration makes it challenging for investors to gain access and build scale into the sector.

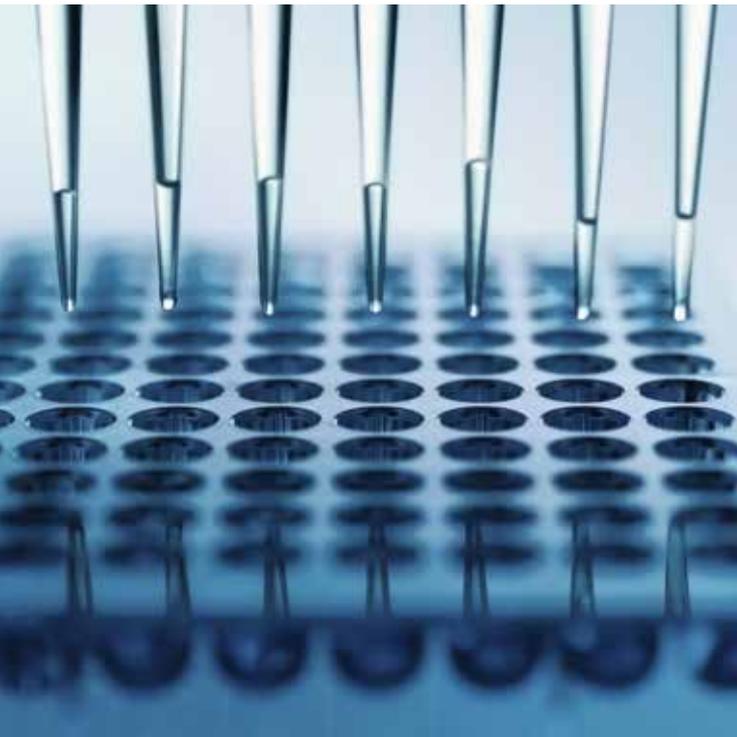
¹⁷ JLL, *2021 Life Sciences Real Estate Outlook: The innovation engine is shifting into high gear, 2021.*

¹⁸ RCA, 6 June 2022.

Figure 9. Sizing life sciences opportunity



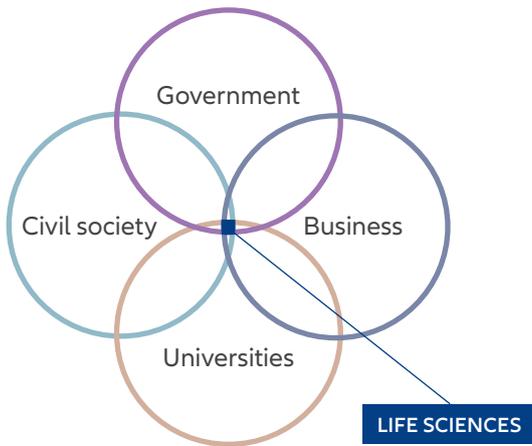
Source: JLL, *2021 Life Sciences Real Estate Outlook: The innovation engine is shifting into high gear, 2021.*



Life sciences investments are highly location sensitive

Life sciences investments are much more location specific than other sectors. This is because the life sciences industry flourishes in locations where an ecosystem can be created (Figure 10). This requires a distinguished research university/institution that drives the scientific knowledge required for innovation and ensures access to a highly skilled talent pool. A dynamic business environment emerges as businesses such as start-ups, university spin-offs and investment firms cluster in the area. The innovation system grows organically as more capital, firms and talent flow into the area.

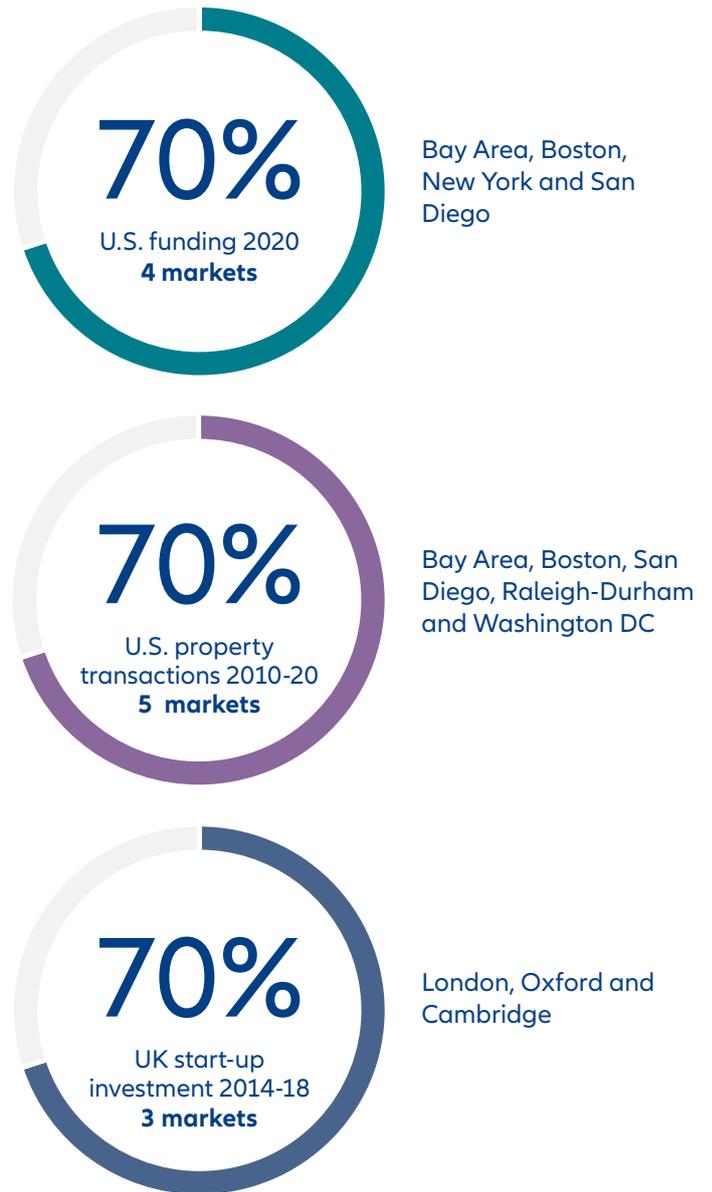
Figure 10. Defining life science ecosystem ecosystem - "The quadruple helix"



Source: ULI, *Understanding the Life Sciences Sector: The Case for Real Estate Investment*, 2021.

Establishing a life sciences ecosystem is a lengthy process dependent on concurrence of multiple stakeholders and conditions, thus established clusters have undeniable competitive advantage. This is reflected in the funding and real estate data where the lion's share of activity takes place in only a few established clusters (Figure 11).

Figure 11. Concentration of life sciences activity



Source: JLL, *2021 Life Sciences Real Estate Outlook: The innovation engine is shifting into high gear*, 2021.
 JLL. 11 February 2021. <https://www.jll.co.uk/en/newsroom/uk-life-sciences-real-estate-sector-targeted-by-up-to-p15bn-of-c>

Research Triangle: the actualization of ‘the quadruple helix’

The Raleigh-Durham ‘Research Triangle’ region takes its name from Research Triangle Park, one of the largest and most prominent research parks in the U.S. positioned in-between three closely located world-class research universities: North Carolina State University, Duke University and the University of North Carolina at Chapel Hill.

With 47% of residents holding a bachelor’s degree or higher, the region has the fourth highest concentration of PhDs in the U.S.¹⁹ and produces 5,000 science, technology, engineering and mathematics (STEM) graduates each year.²⁰ A highly educated labor force is complemented by a high concentration of life sciences employers. The region accommodates more than 600 life sciences companies specialized across different functions of the life sciences value chain (Figure 12), including big players such as Pfizer, Bayer, GlaxoSmithKline, LabCorp and Biogen.²¹

The innovation ecosystem benefits from the interplay between government, universities and businesses. From 2017-2021, three

universities received more than USD 6 billion of government National Institutes of Health (NIH) funding and the region attracted on average USD 650 million of life sciences venture capital per annum.²²

The region ranks high in terms of lower cost of doing business and living, hence it will continue to attract talent and employers. CBRE projects the population to grow by 10.1% over the next five years, significantly outperforming other primary life sciences locations (Boston 3.9%; Bay Area 4.9%; San Diego 4.6%).²³ Life sciences locations in Raleigh-Durham have traditionally been concentrated in suburban areas, but recently have expanded to downtown.

19 <https://www.researchtriangle.org/the-triangle/>

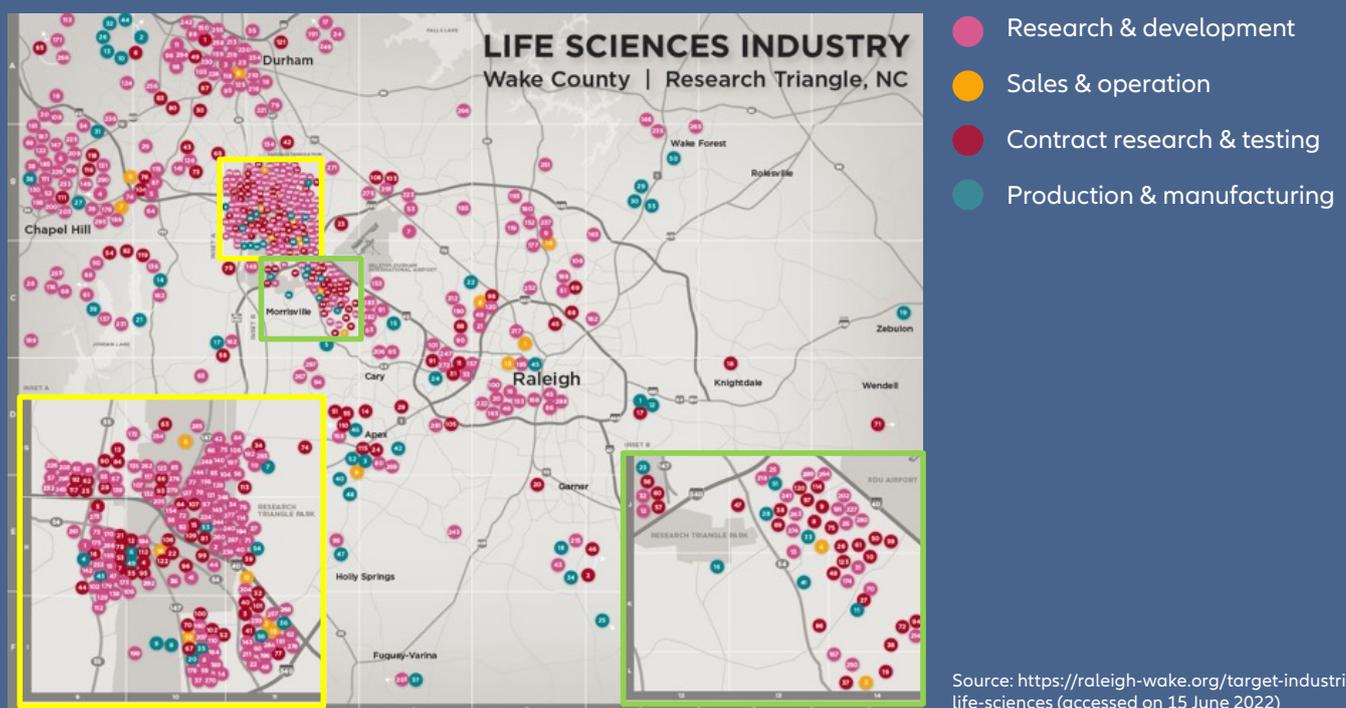
20 JLL, *Life Sciences Outlook: Breakthrough discoveries at a breathtaking pace*, 2018.

21 <https://www.researchtriangle.org/the-triangle/>

22 Newmark, *2021 Year-End Life Science Overview & Market Clusters*, Q4 2021.

23 CBRE, *Life Sciences Research Talent 2022: The Search to Sustain an Industry Boom*, June 2022.

Figure 12. Life Sciences Map- Research Triangle Wake County



Source: <https://raleigh-wake.org/target-industries/life-sciences> (accessed on 15 June 2022)

Creating a life sciences community: 585 Arts as a placemaking example

One of the fundamental features of an ecosystem is creating a sense of community. Mixed-use buildings serve this purpose by accommodating space for collaboration, socialization and recreational activities. Consequently, they allow various stakeholders to build relationships and exchange ideas.

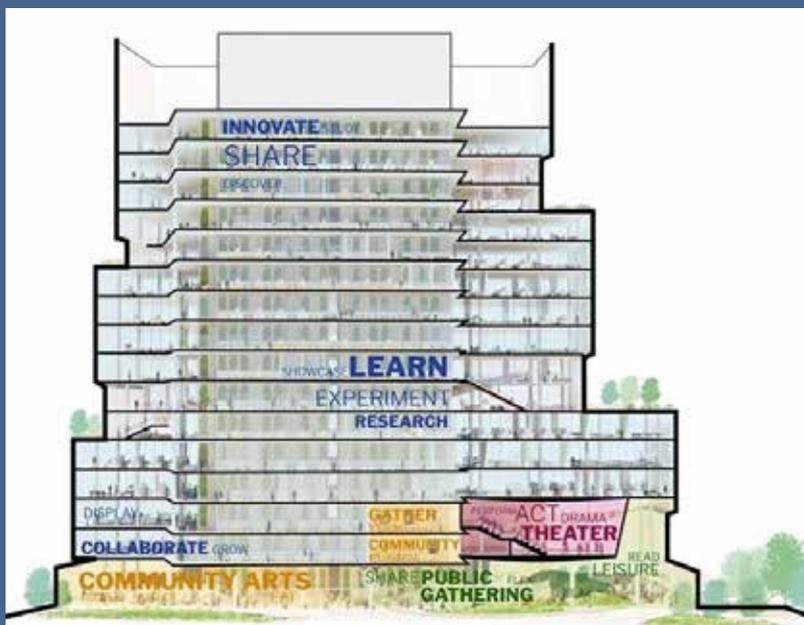
BioMed Realty's planned development in Kendall Square, Cambridge, Massachusetts provides an example for how real estate can play a significant role in community-building (Figure 13). 585 Kendall, a project for a 16-storey lab building due to complete in 2024, has commercial, cultural and entertainment features that aim to transform Kendall Square into a more vibrant, diverse area.

The mixed-used building allocates more than 30,000 square feet of indoor and outdoor public space for a performance venue, community arts space and social gatherings.²⁴ The project also expands to a partnership between BioMed Realty and Global Arts to create a non-profit arts organisation, 585 Arts, to oversee programming, presentation and promotion of performances and artists in the area.²⁵

²⁴ BioMed Realty, <https://www.biomedrealty.com/developments/parcel%20C>

²⁵ <https://www.wbur.org/news/2021/03/10/new-arts-nonprofit-venue-cambridge-585-arts>

Figure 13. 585 Third Street



Source: CBT Architects, www.cbtarchitects.com/project/585-third-street



The location sensitivity acts as a safeguard for life sciences fundamentals, creating natural supply constraints and nurturing steady demand for existing ecosystems. This explains why it is more resilient to economic cycles than other sectors. This resiliency makes life sciences opportunities in well-established clusters fit well to the investment strategies of core real estate investors.

Given the digitalization of healthcare research and the adoption of artificial intelligence and robotics, there is increasing crossover between tech and life sciences talent. This trend translates into location overlap between global tech and life sciences cities (Figure 14). Select examples include the Bay Area in the U.S., Berlin in Europe and Tokyo in Asia Pacific.

The most mature markets have very low vacancies. In Boston, for example, expected waiting time for life sciences tenants ranges from 12 to 24 months.²⁶ As a result, start-

ups in search of immediate space and firms looking into larger floorplates are left with no other option than moving into secondary markets.

New life sciences clusters are emerging in technology focused cities with research capabilities and talent. U.S. Sun Belt markets such as Dallas, Atlanta and Phoenix are a few of the examples for second tier emerging markets.²⁷ The location preferences contingent to the interplay between tech and life sciences overlaps closely with Allianz Real Estate’s recently published international talent pool and U.S. multifamily theses (see [earlier publications for details](#)). The spatial needs of life sciences players within the ecosystem can be met in a variety of settings from accelerator/incubator environments to science parks, big corporate R&D campuses, urban clusters and interconnected clusters spread across wider geographic areas, e.g. the BioValley cluster connecting Switzerland, France and Germany.²⁸

26 CBRE, *US Life Science Trends: The “Century of Biology” lifts off*, November 2021.

27 Newmark, *2021 Year-End Life Science Overview & Market Clusters*, Q4 2021.

28 <https://biovalley.ch/>

Figure 14. Global talent pools – Tech & life sciences cross-over



Source: Savills (2020), ULI (2021), CBRE (2021)

Note: Cities in bold refer to hotspots for growth sectors. Unbolded cities are below the threshold for 24/7 gateway cities.

Life sciences micro-locations are expanding to urban centers in Europe and to suburbs in the U.S.

The life sciences ecosystem is all about attracting and retaining the right talent. Similar to the office sector, life sciences occupiers are seeking to be in central urban locations that are easily accessible and in proximity to cultural and recreational amenities. Moreover, city center locations offer agglomeration benefits that facilitate interaction between industry players and knowledge spill-overs which drives innovation.

In the U.S. where the life sciences industry is more commercialised, primary life sciences facilities are predominantly concentrated in urban submarkets.

However, the supply-demand imbalance in some established submarkets has forced firms to move to surrounding areas for expansion. It is nevertheless noteworthy that competitive advantages of urban locations are undisputable for agglomeration economies and suburban spill-overs are visible only in top tier, high-demand life sciences clusters such as Boston and San Diego.



Building - 225 Wyman

Forced suburbanization: evidence from Boston and San Diego

The forced suburbanization trend is particularly prevalent in primary clusters such as Boston and San Diego where inventory in central locations is not sufficient to satisfy strong demand. Lab vacancy rates in Boston Cambridge and the overall Boston markets were 0.5% and 0.1% respectively at the end of 2021.²⁹ This is reflected by suburban leasing activity that has surged to unprecedented levels in recent years (Figure 15). Emerging suburban markets such as 128 West achieved record-high absorption volumes (1.3 million square feet) almost on par with the most established market, Cambridge (1.6 million square feet) (Figure 16).³⁰

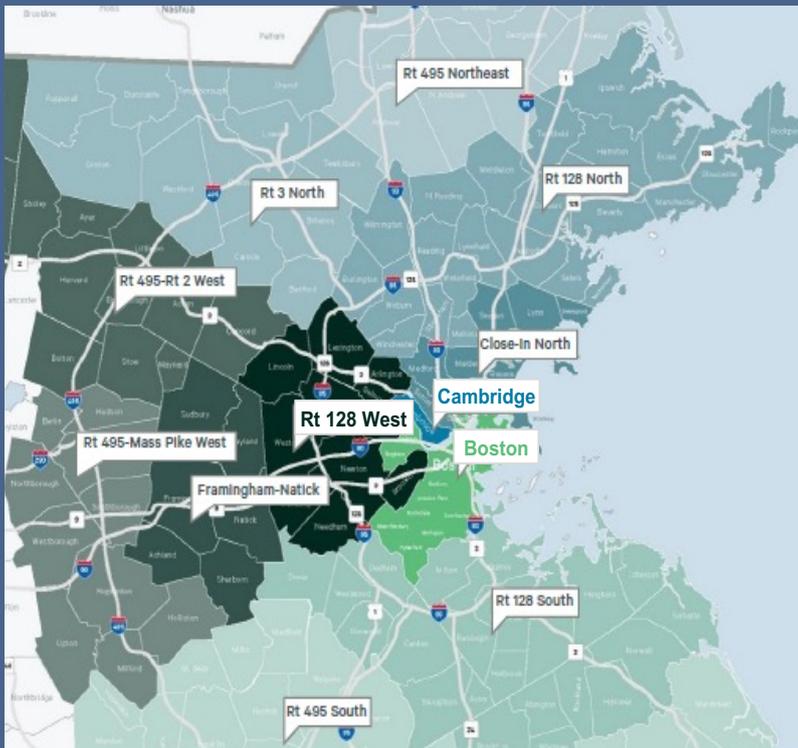
Similarly, alternative life sciences submarkets have developed in San Diego's major transportation nodes. As of Q4 2021, 78% of 3.2 million square feet (ca. 15% of inventory) of lab space under construction in San Diego was located in growth submarkets (Figure 17).³¹

29 CBRE, Figures: Boston Metro Lab, Q4 2021.

30 CBRE, Figures: Boston Metro Lab, Q4 2021.

31 CBRE, *Market Overview: San Diego Life Sciences*, Q4 2021.

Figure 16. Boston submarket overview



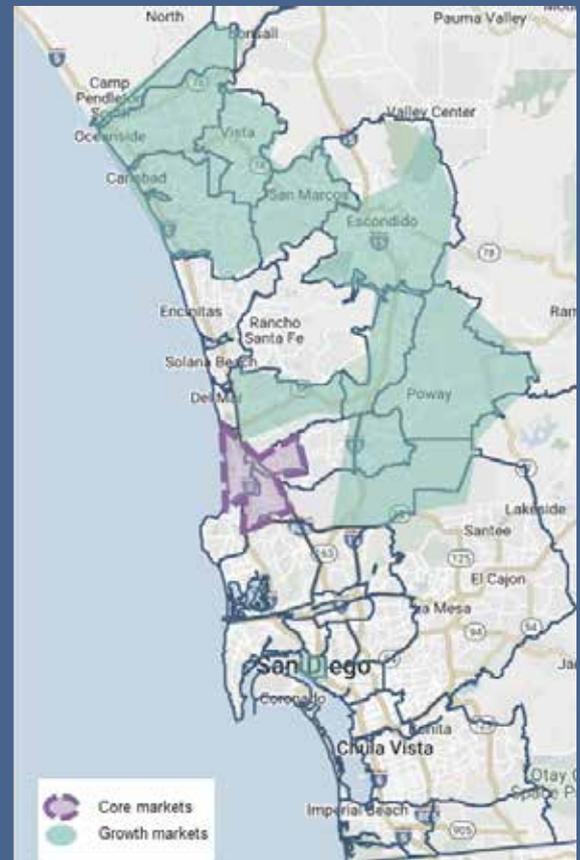
Source: CBRE, Q4 2021. Figures: Boston Metro Lab.

Figure 15. Lab leasing activity in Boston (million sq ft)



Source: CBRE, Q4 2021. Figures: Boston Metro Lab.

Figure 17. San Diego core and growth submarkets



Source: Allianz Real Estate based on CBRE, Q4 2021. Image credit (submarket map): Costar

London: urban life sciences clusters

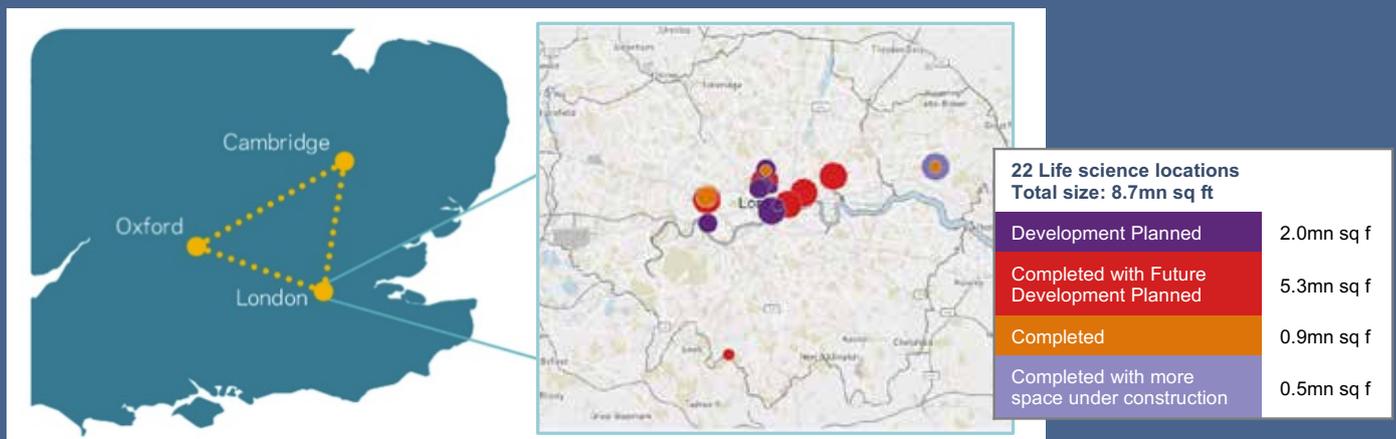
London has seen a couple of burgeoning urban life sciences ecosystems over the last decade (Figure 18). The White City and King’s Cross/Euston clusters in particular are among the most competitive life sciences research clusters. They are home to world-class research institutions, well connected to national and international transportation hubs and within close proximity to art and cultural amenities. Moreover, the clusters accommodate a variety of innovative sectors including media and tech.³²

³² ULI, *Understanding the Life Sciences Sector in Asia Pacific: The Case for Investment*, 2021.

These qualities have been major pull factors for the flow of talent and companies to London. A recent WAPG/JLL study shows that London has become the number one location in the UK in terms of the number of life sciences start-ups.³³ London’s urban life sciences clusters with urban infill offers opportunities for U.S. based investors seeking expansion to Europe.

³³ WAPG and JLL, *UK Life Science Start-up Report*, 2022.

Figure 18. UK Golden Triangle and clusters emerging within London



Source: JLL, www.jll.co.uk/en/life-sciences-map, accessed on 14 June 2022. Image credit (Golden Triangle): www.building.co.uk, February 2019.

In Europe and Asia Pacific, life sciences clusters have historically been located in out-of-town science parks and university campuses where larger space requirements could be met more easily. Nevertheless, usage of designated science parks is a reflection of commercial underdevelopment. As life sciences business activity grows in Europe, life sciences locations are more likely to resemble U.S. urban ecosystems. In recent years, life sciences clusters have somewhat shifted into city centers to capitalize on agglomeration benefits. In Basel and London,

centrally located new ecosystems are being developed.³⁴ According to ULI, few life sciences firms in Seoul and Singapore relocated some of their business functions to the CBD markets.³⁵

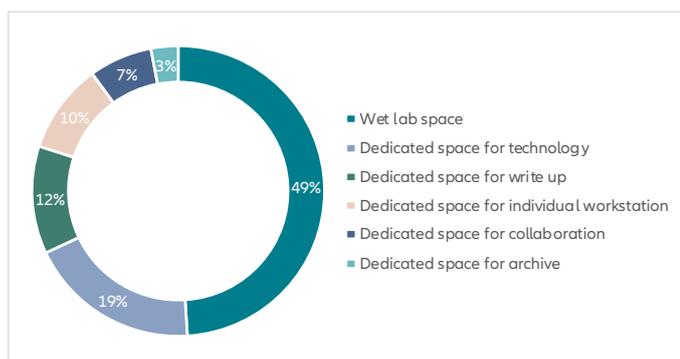
³⁴ Savills, *Spotlight: European Life Sciences*, September 2021.

³⁵ ULI, *Understanding the Life Sciences Sector in Asia Pacific: The Case for Investment*, 2021.

Lab space requirements have evolved, mixed-use high buildings will be more common in the future

Property characteristics for life sciences research transformed concurrently with the integration of digitalization and automation. As a result, life sciences space is no longer dominated by wet lab space but instead requires a variety of space for different purposes (Figure 19). Computer-based analysis requires desk-based dry lab areas whereas spacious interactive areas are needed for collaborative tasks and innovation. As a result, today's life sciences properties greatly resemble offices, with office-to-lab space ratio ranging between 40/60 and 60/40.³⁶

Figure 19. Utilization of space in a R&D lab



Source: CBRE, *Lab of the Future*, 2016.

Against heightened competition to attract and retain talent, life sciences companies put higher emphasis on amenities within the buildings. Many of the new developments are mixed-use buildings with conference halls, cafes and restaurants, art centers and childcare facilities.

The transformation of property requirements blurred the distinction between labs and offices both in terms of location and building characteristics. The preference for urban life sciences clusters raises the prospects of

³⁶ CBRE, 'Life's Been Good: Meeting the Skyrocketing Demand for Life Sciences Properties', <https://www.cbre.com/en/insights/podcasts/season-3-episode-7-lifes-been-good>, 15 February 2022.

high-rise lab buildings. A solid example is the life sciences tower development planned in London's Canary Wharf, announced by Canary Wharf Group and Kadans. It is located in an area traditionally known to be a financial district. The planned 22-storey tower is expected to be the largest wet lab building in Europe.³⁷

Even though space allocation had shifted from wet lab towards dry lab areas in the recent past, the technical specifications and regulatory requirements of life sciences assets are still highly complex. Wet labs require taller floor-to-ceiling heights and higher floor loading than traditional office buildings. Some requirements of life sciences properties include efficient HVAC systems, loading decks and cargo lifts, waste water treatment pools and fume hoods. These requirements make life sciences assets more capital intensive and operationally complex. According to ULI estimates, cost premium versus prime office buildings is more than 20%.³⁸ Nevertheless, the rent premium can exceed the cost premium materially, subject to how prime the location is. In Boston Kendall Square, the average asking rents were reportedly 59% higher than office rents.³⁹ Whereas in London, recent transactions on pre-built incubator and grow-on lab space have recorded up to 70% premiums over office rents.⁴⁰

It is also worth noting that hybrid working might reshuffle the configuration of life space. If most of individual desk research moves to home office, allocation might shift once more to the prominence of wet labs, adding to the capex and operational requirements.

³⁷ Kadans Science Partner, *Europe's largest commercial lab building to be built at Canary Wharf, London*. <https://kadans.com/europes-largest-commercial-lab-building-to-be-built-at-canary-wharf-london/?lang=en>, 30 March 2022.

³⁸ ULI, *Understanding the Life Sciences Sector in Asia Pacific: The Case for Investment*, 2021.

³⁹ ULI, *Understanding the Life Sciences Sector: The Case for Real Estate Investment*, 2021.

⁴⁰ Savills, *What next for the UK science market?*, 4 February 2022.



<https://www.hok.com/projects/view/the-francis-crick-institute/>

High barriers to entry favor investing alongside a life sciences partner

Against the backdrop of limited investable stock and high investor competition, core investors can gain access to life sciences assets through investing in development and repurposing projects. Purpose-built solutions might be sufficient to satisfy the real estate requirements of big pharmaceutical companies. Nevertheless, these types of investment opportunities are rather limited, given that the industry is dominated by small and medium-sized enterprises.

Early stage firms prefer outsourcing daily operations of highly regulated, capital-intensive lab environments and directing resources to research & development. Therefore, real estate investors that can incorporate operational capabilities into their solutions would have a significant competitive advantage. Moreover, landlords are expected to tailor the space according to tenant needs and regulatory requirements. Specialised knowledge required for life sciences properties can be obtained via partnerships with life sciences managers and/or operators.

In recent years, several vertical alliances were established that integrated life sciences investment experience with real estate expertise, and addressed a wide range of needs of life sciences companies. An example is Breakthrough Properties, a real estate development company founded as a joint venture between Tishman Speyer, a real estate

company, and Bellco Capital, a direct life sciences investment firm. In April 2022, Breakthrough Properties closed its USD 3 billion, Breakthrough Life Science Property Fund, the largest real estate fund dedicated exclusively to the life sciences sector.⁴¹ Another example is We Are Pioneer Group (WAPG), which manages 2.6 million square feet of life sciences and tech space across the UK.⁴² WAPG was launched as a joint venture between Harrison Street Real Estate and Trinity Investment Management and in 2021 acquired BioCity Group, the largest science incubator in the UK. Both initiatives provide physical infrastructure for life sciences companies and offer services tailored to the business needs of the life sciences ecosystem such as mentoring and accelerator programs.

In Europe and Asia Pacific, where the sector tends to be purpose-built and owner-occupied, there are sale-and-lease-back opportunities from big pharmaceutical and FMCG firms. Select examples from 2021 are Fidelity's acquisition of the Astellas Pharma R&D building in Leiden and the Coca Cola building purchase by Investcorp in Brussels.⁴³

⁴¹ <https://www.pehub.com/breakthrough-properties-racks-up-3bn-for-fund/>

⁴² <https://wearepioneer.com/about/>

⁴³ RCA, 6 June 2022.

Partnering with research universities is another possible way to enter the sector. In 2021, the University of Manchester formed a joint venture with Bruntwood SciTech (itself a 50:50 joint venture between Bruntwood and Legal & General) for the development of ID Manchester, an urban innovation district in central Manchester with planned commercial space of over 4 million square feet.⁴⁴

Current undersupplied market conditions support the business case for repurposing investments. The trend towards more dry lab usage facilitates these opportunities and the market provides several successful conversion examples from different asset types (Figure 20). Nevertheless, not every building is economically viable to repurpose due to planning permissions, regulatory standards and quality specifications (e.g. ceiling-to-floor height, floor loading) and immediate demand in an undersupplied market can distort the attractiveness of repurposed assets in the short term. Those redeveloped assets may easily become obsolete once prime purpose-built assets are completed. Repurposing projects should therefore be undertaken with long-term quality and ESG standards in mind.

The current development pipeline for life sciences properties is increasing, especially in the U.S. As investable life sciences stock grows over the next few years, opportunities to build scale via direct real estate investments may also rise.

⁴⁴ <https://www.manchester.ac.uk/discover/news/preferred-partner-for-15-billion-new-global-leading-innovation-district-id-manchester-announced-by-the-university-of-manchester/>

Figure 20. Select repurposing examples

From office



Synlab, Friars Bridge Court, London, UK
From WeWork office to a pathology laboratory

From retail



The Stitch, Durham, U.S.
Morrisville Outlet Mall converted to Class A creative office, research and lab space

From industrial



The Works, South Cambridge, UK
1970s industrial warehouse converted into a contemporary office and R&D space

Idiosyncratic challenges of life sciences investments

Whilst investing in life sciences is without doubt one of the top items on investment officers' wish lists, for the reasons we outline in this report, it is important to be aware of the challenges.

Tenant covenant risk: A large share of life sciences companies are early stage start-ups with high probability of failure. However, in incubator/accelerator type of ecosystems where tenants of different risk profiles are pooled, the risk is diversified. Furthermore, leasing the property to a third-party operator, e.g. lab coworking firms, could mitigate a landlord's exposure to this type of risk.

Opportunity cost of insufficient scale-up space: Start-ups that receive VC funding and are in expansionary stage, increase headcount and require larger space. This offers landlords the opportunity to be rewarded for the tenant risk taken earlier. However, failure to accommodate rising space needs of successful firms is to forgo upside potential of rental income.

Flexible leases: Office-like long leases are less common and preferred mostly by large companies. Start-ups and smaller companies prefer flexible, short-term leases due to the prospects of spin-off or scale-up. Given that development and build-out costs are larger than traditional office, landlords may incur additional costs if tenants do not renew leases and leave early. Nevertheless, retention rates are reported to be particularly high⁴⁵, especially in the current undersupplied market conditions. Therefore, higher build-out costs may be one-time additional costs only. Moreover, higher tenant turnover might mean modern and prime quality space at all times; as a result, short leases might offer a chance to catch up with rising market rents.

Sustainability: Life sciences properties are energy intensive buildings using up to ten times the energy and four times the water of traditional office.⁴⁶ High amounts of unsafe chemical waste are generated, while life sciences hubs in out-of-town locations cause more carbon emissions

due to the use of cars as a mode of transport. Landlords can alleviate such adverse impacts by providing environmentally friendly solutions, such as electric vehicle charging points to facilitate the usage of electric cars. Landlords of big pharma companies may find it easier to deal with ESG requirements as most of these companies have their own sustainability goals and strategies. However, ESG issues might be less of a priority for SMEs. Landlords might need to take a more active approach and engage with tenants and asset managers more closely.

Outlook

Life sciences returns should remain resilient, despite current macroeconomic uncertainty, based on structural demand drivers.

The location-specific agglomeration benefits of life sciences ecosystems require investors with strong real estate expertise in cities' fundamental supply and demand characteristics and to be cognizant of the idiosyncratic risks in the sector.

The limited scale of investable life sciences stock and concentration of few specialized investors create high barriers for new entrants. Core investors can gain access through real estate development or repurposing projects, undertaken alongside life sciences experts.

⁴⁵ Green Street, *Life Science Insights*, 15 July 2021.

⁴⁶ JLL, *Life Sciences Sustainability Series: Embracing Sustainability*, September 2021.

Allianz Real Estate Research

August 2022

Dr Megan Walters

Gizem Bartu

Luke Latham

Allianz Real Estate
Seidlstr. 24-24a
80335 Munich, Germany
Tel: +49 89 1220 7800

Disclaimer

In this brochure Allianz Real Estate GmbH and Allianz Real Estate of America, their subsidiaries and affiliates are jointly referred to as "Allianz Real Estate".

The sole purpose of this brochure is to provide information on a non-reliance basis. It discusses broad market, industry or sector trends, or other general economic, market or political conditions. This brochure contains statements of opinion and belief. Any views expressed herein are those of Allianz Real Estate as of the date indicated, are based on information available to Allianz Real Estate as of such date, and are subject to change, without notice, based on market and other conditions. No representation is made or assurance given that such views are correct. Allianz Real Estate has no duty or obligation to update the information contained herein. This brochure should not be construed as research, investment advice, or any investment recommendation. It does not constitute an offer to sell any securities or the solicitation of an offer to purchase any securities.

Certain information contained herein concerning economic trends and/ or data is based on or derived from information provided by independent third-party sources. Allianz Real Estate believes that the sources from which such information has been obtained are reliable; however, it cannot guarantee the accuracy of such information and has not independently verified the accuracy or completeness of such

information or the assumptions on which such information is based. Any forecast, projection or target where provided is indicative only and not guaranteed in any way. Allianz Real Estate accepts no liability for any failure to meet such forecast, projection or target. Past performance is not necessarily indicative of future performance.

Allianz Real Estate may have issued, and may in the future issue, other communications that are inconsistent with, and reach different conclusions from, the information presented herein. Those communications reflect the assumptions, views, and analytical methods of the persons that prepared them.

No representation, warranty or undertaking is given by Allianz Real Estate or any other person in respect of the fairness, adequacy, accuracy or completeness of statements, information or opinions expressed in the brochure and neither Allianz Real Estate nor any other person takes responsibility for the consequences of reliance upon any such statement, information or opinion in, or any omissions from, the brochure.

The information contained herein is proprietary and confidential and may not be copied, used for an improper purpose, reproduced, republished, or posted in whole or in part, in any form, without the prior written consent of Allianz Real Estate. Allianz Real Estate is a PIMCO company. PIMCO is a trademark of Allianz Asset Management of America L.P. in the United States and throughout the world. ©2022, PIMCO.