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Bringing medicines to *life*

The rise of Corporate Venture Capital investment *in UK biotech*

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In its consultation document ***Financing growth in innovative firms***, HM Treasury reports on the Prime Minister's aim for the review to "strengthen the UK further as a place where growing innovative firms can obtain the long-term 'patient' finance that they need to scale up."[1] In what is an otherwise comprehensive consultation report, the authors miss out one of the most dynamic and valuable elements in the financial ecosystem for entrepreneurial firms: **corporate venture capital.**

Some critics have described biopharmaceutical corporate investment as some sort of PAC-MAN™ game; in fact, as this report sets out, corporate venture capital (CVC) by biopharmaceutical companies is a catalyst for this shared goal of patient capital for emerging entrepreneurs in the life sciences. Not only do these companies have the patience to hold steady in investments (recognising very well the cadence of drug development), but they can provide capabilities and strategic expertise that are valuable not only to the growing innovative firms, but to their co-investors as well.

In brief, a healthy financial ecosystem that supports biotech innovation and the growth of companies in the life sciences needs to retain and cultivate CVC activity to succeed. The UK has a crucial opportunity to build upon the success to date for CVC and consider further policy support to ensure that our life sciences community has the savvy patient capital it needs to deliver on its potential as a leading global biotech cluster. This report identifies the opportunity to build on the UK's position as a leading recipient of CVC, following the surge in CVC investment in biotech in the UK in recent years, and includes a number of recommendations for consideration as part of the Life Sciences Industrial Strategy.

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Sources: This report was compiled with data provided by Global Data, JRA, Akesios Associates, Crunchbase, information provided by corporate equity investors, and company press releases and company websites.

1 Financing growth in innovative firms: Consultation. HM Treasury, August 2017, p. 7. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/642456/financing_growth_in_innovative_firms_consultation_web.pdf

2.2 Corporate Venture Capital – emerging finance for innovative firms

Since I established the European office of SR One in 2005, GSK's corporate venture arm has been one of the leading investors in European biotech alongside our peers from Johnson & Johnson, Novartis Venture Fund and an expanding group of other corporate equity investors.

This report highlights the acceleration of corporate equity investing in European biotech over the last decade, and most notably the growth observed in the UK. The findings are consistent with data from the US where a recent analysis confirmed the critically important contribution of corporate venture capital (CVC) and direct corporate investing for start-up and emerging biotech companies over the past 15 years, and importantly, the correlation between corporate investor involvement and successful 'exit' outcomes.[2]

While the investments made by SR One and our CVC peers leverage significant further private investment into Europe, the report illustrates that SR One is among a small minority of CVCs both actively investing and with investor decision-makers present on the ground in the UK. There is therefore a clear opportunity to consider how best to establish the UK as the preferred location for corporates investing in Europe, secure continued growth of CVC as a funding source for early-stage biotech companies and enable the translation of a broader footprint of innovative science into potential new medicines.

Deborah Harland

Vice President and Partner at SR One

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2 LifeSci VC: Corporate Equity Investing in Biotech, 10 March 2016. https://lifescivc.com/2016/03/corporate-equity-investing-biotech-enriching-success/

3 Executive summary

- Corporate venture capital (CVC), where pharma companies invest their own funds in emerging start-ups, is now established as a key source of capital for biotech innovation in the UK.
- By being prepared to invest early, take higher risks and stay in investments longer, CVC investors represent a critical form of financial support for start-ups at every stage of their development in order to retain growth potential.
- The UK is an attractive destination for investment in the biotech industry and offers unparalleled and unique access to co-investors compared with the rest of Europe.
- The UK has a strong reputation in life sciences as a global centre of scientific excellence, second only to the US as a country, or as the third global cluster after Boston and the Bay Area; the UK is first within Europe.
- Compared with the rest of Europe, CVC investors view the UK as offering better access to experienced senior management as well as to specialist drug discovery and development experts, thanks to the historic presence and links with large pharma companies.
- In recent years, there has been a significant increase in CVC investment in UK biotech.
- The amount of capital invested alongside CVC into UK companies increased six-fold between the 3-years to 2010 and calendar year 2015, such that about 60% of the capital invested in unquoted UK biotech financing rounds in 2016 included CVC.
- Yet despite the attractiveness of the UK as a biotech destination, only a small number of CVC investors have an investment office in the UK, limiting the exposure of CVC investors to investment opportunities here.
- There remains enormous untapped potential, which could be realised through a concerted effort to remove barriers, thus enabling further growth. This will increase the prospect of more successfully converting great UK life research and start-ups into world-leading businesses.
- Three factors play a key role in stimulating investment: proximity, capacity and networks.
- Action needs to be taken by industry, the research community and government to encourage CVC investors to develop a presence in the UK and to strengthen capacity and networks. The evidence shows that CVC has a multiplier effect, acting as a magnet for other forms of investment.
- The UK has the potential to become a global leader in the biotech market. However, until there is a functional public market, CVC will remain a critical form of funding to enable new start-ups to emerge and develop.
- As the UK leaves the EU, there is a pressing need to address specific concerns that could otherwise undermine future investment; in particular the access to research funds and free movement of skilled workers.

4 Recommendations

1. The Government should support and provide practical advice to CVC investors (CVCs) seeking to establish an office, satellite or venture partner in the UK. This would offer one-to-one assistance to CVCs, facilitate introductions for CVCs who lack knowledge about the UK and increase entrepreneur awareness of capital sources.
2. There should be freedom of movement for knowledge-intensive businesses: broaden the graduate entrepreneurship visa to maintain open borders for knowledge-based enterprise.
3. A Government-backed National Investment Fund investing in patient capital would stimulate the investment environment for innovative life science early-stage firms, establishing a fund-of-funds directly investing in UK venture funds focused on early-stage research, and offsetting the loss of the existing European Investment Fund. This fund-of-funds should be encouraged to back an early-stage biotech CVC co-investment fund.
4. Restoration of the Corporate Venturing Scheme (CVS) would be a significant gesture – which might encourage certain CVCs to locate European funds in the UK, in consultation with the finance directors responsible for each CVC stakeholder.
5. A dedicated UK biotech accelerator like FutuRX or NYC Accelerator should be established with government financial support, to enable a coordinated approach to attract investment and strengthen life sciences clusters.
6. Fiscal incentives should be established to encourage longer-term investment, by increasing tax benefits for every year the investment is sustained. Additionally, the list of eligible expenditures covered with the R&D tax credit scheme (e.g. spending on clinical research services) would also support growing innovative life science companies as they move into profit, thereby enhancing the interest for patient capital.
7. The early-stage biotech environment should be stimulated by broadening the scope of venture capital and tax reliefs offered through the Enterprise Innovation Scheme (EIS) and Seed Enterprise Investment Scheme (SEIS) to reflect the capital-intensive nature of the biotech industry, and the Enterprise Management Incentives and Entrepreneurs Relief to reflect the current working practices. This would add significant value to the incentives for entrepreneurship in the UK, stimulate investment and encourage the location of pharma innovation hubs and CVCs in the UK.
8. An industry working group should be established to explore the creation of a functional European public market for biotech centred in London, with the aim of creating critical mass to enable the UK to become a prime global biotech Supercluster.

What is corporate venture capital?

For the purposes of this report we are adopting a broad definition of corporate venture capital (CVC), including most of corporate equity investment by pharmaceutical companies in innovative biotech companies developing therapeutics. This includes investment via dedicated CVC operations that are controlled by the pharma company, as well as direct investments by the pharma corporate in biotechs. In the figures calculated we do not include the investments made by independently managed venture funds in which pharma companies have been one of a number of investors as limited partners, as the numbers would be subject to uncertainty. The motivations for investing may be very strategic, in that the investments made are in areas which fit the therapeutic partnering areas of interest of the parent (e.g. AbbVie, Takeda Ventures), or they may be largely seeking a financial return (e.g. SR One, Roche Venture Fund, Novartis Ventures Funds), or their motivation may be strategic and financial. We have pragmatically included in the calculations investments made by the subsidiary venture funds of two foundations that also control pharmaceutical companies, being Novo Nordisk Foundation's venture investment organisations Novo Ventures and Novo Seeds, and Lundbeck Foundation's venture investment organisation Lundbeckfond Ventures.

5 Introduction

This project was initiated as a result of an ongoing dialogue between the ABPI and JRA on whether decreasing pharma R&D spending, partly resulting from increasingly external sourcing of pipelines, might be being balanced by increasing levels of investment in external R&D in biotech companies.

Although subjective observations of gross trends in biotech abound in the trade press, and there have been numerous unpublished conference discussions in which the UK is called out by pharma business development executives as a leading European country for biotech innovation, there appeared to have been no objective evidence gathered on the changing scale of bets placed by pharma corporates on biotech companies in the UK and rest of Europe.

The scope of this work included an analysis of 1250 corporate equity investments into biotech companies worldwide since 2000, focussing on 28 pharma corporate equity investors, identifying that UK biotech companies had raised $3.2bn in financing rounds where corporate equity participated.

This research provides that hard evidence, quantifying the surge in corporate equity investing in UK biotech, as well as identifying the opportunity that as yet not even half of pharma CVCs are present and significantly active in the UK. This report also sets out recommendations to grasp the potential opportunity at hand, to fulfil the ambition of making the UK a prime global biotech Supercluster.

5.1 CVC in the biopharmaceutical sector

The biopharmaceutical industry has faced a well-documented challenge to the productivity of research and development in recent decades, with a steady decrease in the number of new medicines produced per billion dollars invested since the 1970s.[3] The biomedical sector has responded to this challenge in a variety of ways, with changes in ways of working and investment patterns. Most notably, many companies have adopted a more open approach to innovation.[4] This includes more collaboration throughout the value chain, increased outsourcing and improved access of and support for innovation outside of the organisation.

One element of this approach, which has been adopted by many large biopharmaceutical companies, is corporate investment or corporate venture capital (CVC), where corporate funds are invested directly into external start-up companies. This form of capital has played a role in venture financing since the 1960s, but has grown in importance, particularly in the biomedical sector, since the 1990s.

This report explores the rise of CVC investment in the UK; how this compares to the rest of Europe and the rest of the world; how corporates are investing in the UK considering the strengths, challenges and opportunities of the UK; and how such investment could be further encouraged and grown in the coming years.

3 Booth and Zemmel 2004 Nature Reviews Drug Discovery http://users.unimi.it/mpl/lezioniAA11-12/Allegato%201%20Lezione%201.pdf

4 ABPI, The Changing UK Drug Discovery Landscape, 2016 http://www.abpi.org.uk/our-work/library/industry/Documents/the-changing-UK-drug-discovery-landscape.pdf

5.2 The growing importance of CVC

Globally, CVC in the biopharmaceutical sector has become increasingly important in recent years. Since 2000, over $34bn of investment has been made by pharma corporate equity investors and their syndicate partners in biotech companies globally.[5] To date, a relatively small proportion of this has been invested in UK companies. Attracting further CVC finance would not only bring additional investment to the UK, but also enhance links between the UK landscape and the global biopharmaceutical sector. Furthermore, CVC investments leads to a multiplier effect on their portfolio companies: including one or more CVC in a syndicate leads to a 40–60% higher rates of licensing deals, M&As and IPOs,[6,7] and translates into a higher step-up valuation for biotechs.8 This higher success rate could potentially result in an increased R&D footprint from these operations in the UK.

CVC investment can bring a number of benefits to both investor and recipient companies. For the corporate parent such venture investment can of course bring financial rewards. Beyond this, however, there may be strategic benefits, such as growing their understanding of a new or emerging scientific field, developing scientific networks and accessing novel expertise or intelligence, as well as the potential to identify new assets.

From the perspective of the investee biotech, CVC investment may bring access to sector-specific expertise, contacts and resources, which other finance routes may not provide. Importantly, CVC investment is also often more patient than venture capital, as corporate investors recognise and understand the timelines involved in bringing new medicines to the clinic, and often have strategic rather than purely financial drivers for investment.

5.3 UK finance environment and the role of CVC

Access to finance is one of the most important elements for creating, maintaining and growing a vibrant and dynamic life science sector. Venture capital and related classes of capital are particularly important for supporting small and medium-sized start-up firms to take new medicines from idea to asset.

There is a reasonable-sized cohort of both life sciences specialist venture capital fund management firms (VCs) and mixed portfolio investors investing in later-stage UK companies, including VCs located in the UK, Europe and the US. In contrast, the number of VCs investing in early-stage companies, where risk levels are higher, is much smaller. There are only five or six life sciences specialist VCs actively investing in early-stage UK companies, not all of which are UK-based. This has the potential to make accessing early-stage financing challenging; underlining the influential role of CVCs in supporting UK-based companies at the start of their journey.

However, the last few years have seen a significant increase in venture financing for early-stage companies from an increasing variety of organisations. Notably there has been a large increase in **Academic Capital*** investment, with 55% of UK companies funded in H1 2016 being spin-outs from Oxford Sciences Innovation, Touchstone Innovations (formerly Imperial Innovations, now part of IP Group) and Cambridge Innovation Capital. There has also been an increase in **Patient Capital*** investments in the UK, by investors such as Woodford, Invesco and Syncona.

Additionally, the last few years have seen increases in the numbers of active regional investors, equity crowdfunding, and investment via the Enterprise Investment Scheme (‘EIS’) and Seeding Enterprise Investment Scheme (‘SEIS’).

CVC is one element in this complex funding landscape that supports the life sciences ecosystem in the UK, but one which is becoming increasingly important, as highlighted by the data collected in this report.

5 JRA: an estimate of aggregate pharma corporate equity investments using GlobalData and other sources, Q1 2000 – Q2 2016. The total includes all capital invested by CVCs and alongside CVCs.

6 https://lifescivc.com/2012/05/want-better-odds-get-a-pharma-corporate-vc-to-invest/

7 https://lifescivc.com/2016/03/corporate-equity-investing-biotech-enriching-success/

8 https://scrip.pharmaintelligence.informa.com/SC092125/Corporate-VC-Backing-Influences-Private-MA-StepUps

What is Academic Capital?

JRA defines 'academic capital' as funds whose mandate includes a major focus on the commercialisation of university, public or private academic research institute IP, not excluding open innovation where the aim is usually the founding of companies or joint ventures designed to translate and/or commercialise the product of research. A subset class of academic capital focused on seeding pre-clinical projects in an accelerator model prior to incorporation has also emerged, notably Oxford's Lab 282 partnership with Evotec.

Academic Capital in the UK was historically linked to particular academic institutions or geographically constrained, and has been broadened by the emergence of increasingly geographic agnosticism particularly in the case of Arix Bioscience plc, as well as the broadening of boundaries for veteran academic capital fund managers. A number of the UK's academic capital firms are particularly strongly backed by large institutional investors especially including Woodford, Invesco and Lansdowne. In the last three years corporate equity investors including Google Ventures, Celgene and Takeda Ventures, Inc. have noted the synergies between the academic and corporate classes of capital and have invested directly in such funds. For these reasons, academic capital has been a subset of a more 'Patient Capital' approach to backing innovative biotech and became unusually strong in the UK in part because of the failure of the venture capital market to provide access to capital during the Great Recession.

What is Patient Capital?

HM Treasury's recent consultation on Financing growth in innovative firms defined Patient Capital as investment supporting entrepreneurs and investors to 'make a return from the substantial growth of a business rather than through short-term profits from low-risk projects'. Typically, these investments are made over a long horizon, and depending on the sector, can last as long as ten to fifteen years. Unlike other sources, investors take a long-term view to maximise the prospects of significant returns, whereas short-term investments often secure immediate returns, albeit lower.

Patient Capital is particularly important to emerging firms as it provides greater stability and increases growth potential. Investors view these businesses as higher risk, particularly when firms are focused on early stage research. This is particularly important in the life sciences sector where drug discovery works to lengthy timescales. Therefore, making investment available over a long period provides a solid foundation for innovation to take place. Without this long-term approach, emerging firms can struggle to maximise their full potential, as investment uncertainty can affect confidence and ultimately the ability to achieve scale. The other advantage of Patient Capital is its ability to support UK firms over their true business life cycle so they fully mature and retain a UK footprint, rather than being bought up by larger companies looking to make quick acquisitions.

About Imperial Innovations

Imperial Innovations Group plc was the leading academic capital fund manager investing in UK biotech. Originally spun out as the technology transfer arm of Imperial College London, it completed an IPO in 2006, and spent the next decade investing in life sciences and other science and technology based spin-outs largely from London and Cambridge. A number of CVC leaders credit the organisation with leading the opening up of the UK translational biotech marketplace globally. During its time as a public company it raised over £440m in equity investment, and nearly £75m in debt, leveraging £1.7b of co-investment in its portfolio companies. During 2017 the organisation rebranded as Touchstone Innovations plc as it moved to defend itself from what became a hostile M&A approach from its UK peer IP Group plc, arguably the original pioneer in academic capital which had tended to avoid investments in therapeutics start-ups. The shared majority investor base of Woodford Investment Management, Invesco and Lansdowne in both Touchstone and IP Group backed the takeover, which completed in Q4 2017. Source: Touchstone Annual Report 2017.

6 Corporate venture capital and the opportunity for UK biotech

Recent years have seen a significant the rise in CVC investment in UK biotech, creating exciting opportunities for the next generation of drug discovery. Yet despite the growth of CVC, there remain many barriers blocking such investment from delivering its true potential. This section of the report examines the growth of CVC in the UK and sets out a number of recommendations that could help to stimulate further funding and drug discovery.

6.1 Importance of CVC

CVC is now established as a key contributor to biotech innovation in the UK. The five years after the end of the Great Recession (2010–2015) saw a significant growth in corporate venture capital investment. Increasingly pharma companies are deploying their own capital to invest in riskier start-ups to support early-stage biotech companies in the UK and rest of Europe. As CVCs may be prepared to invest in earlier-stage companies than classical venture capital, CVC complements venture capital and helps to boost the overall pool of funding available to UK biotech.

The presence of a CVC investor can remove risk for other investors who may view CVC activity as a signal of validation. Corporate equity participation may also occur without directly investing in a company, but by virtue of the pharmaceutical company investing as a limited partner in a venture capital fund, increasing the visibility of portfolio companies to pharma. In addition, the corporate venture capital teams become strategic partners with their venture capitalist partners, providing advice and complementing the resources and deal flow; this has the potential to leverage further investment into these funds.

Being more prepared to invest early, to take higher risks and to stay in investments longer, CVC represents a critical form of financial support for start-ups that depend on financing rounds from external sources at every stage of their development in order to retain growth potential. It is now an established component of the investment environment and one that is enabling greater collaboration in UK biotech.

6.2 Scale of CVC investment in the UK

Between 2014 and 2017, $2.9bn was raised by privately-owned emerging companies compared to $1.2bn raised in the previous three years. The scale of the increase in corporate equity investment in UK biotech has been phenomenal. The amount of capital invested alongside CVCs into UK companies increased six-fold between 2010 and 2015, so that about 60% of financing rounds in 2016 included a CVC, or $567m of $965m invested. The UK's share of European financing rounds involving a CVC reached 60% by mid-2016, up from about a fifth a decade ago. The growth in validating investment by pharma is arguably leveraging record levels of investment, *but the potential is even greater.*

6.3 Attractiveness of the UK as an investment destination

The UK has a strong reputation as a global sector centre of scientific excellence, second only to the US as a country (or the third global cluster after Silicon Valley and New England). It offers unparalleled and unique access to co-investors compared with the rest of Europe.

The UK offers better access to experienced senior management than the rest of Europe, as well as to specialist drug discovery and development experts, thanks to the historic presence and links with large pharma companies. Moreover, it is considered to have a good contract research organisation environment and a good early-phase trials environment.

6.4 Removing barriers and creating incentives

Despite the attractiveness of the UK as a biotech destination, only a small number of CVCs have an investment office in the UK, limiting the exposure of CVCs to investment opportunities here. Most CVCs are not based in the UK and have responsibility for a wider geographic area. Only three of over twenty currently have an investor decision-maker based in the UK. Given the extent to which proximity influences investment deals, the lack of such an institutional presence is acting as a barrier to growth. To enable this to happen, there are a number of actions that industry, government and the research community can take to stimulate greater CVC investment.

6.5 Encouraging proximity

To help encourage more CVCs to develop a presence in the UK, it may be necessary to provide assistance in supporting option analyses that would explore the benefits of: (i) employing a UK-based investor or venture partner; (ii) opening an office in the UK; or (iii) creating a UK-domiciled fund. Furthermore, 'symbolic' incentives and the communication of existing reliefs may further encourage such activities.

Policies that would help facilitate investment include measures to help less active CVCs to build networks with CVCs that are more active and others who facilitate investment opportunity deal flow in the UK. Strengthening this communication gateway would attract more interest and generate greater potential for deals.

Government has a role to play here as it can actively attract and support life science CVC investor representatives, wherever they are based, to build their networks with other investors, deal flow managers and the communities of life science entrepreneurs. Focus should be given to providing one-to-one assistance to CVCs seeking to open offices and funds in the UK and signposting activities to support introductions for CVCs without a UK presence. Establishing this within the wider Life Sciences Office of the Department of International Trade is an option.

6.6 Strengthening capacity and networks

Evidence shows that where a US-based CVC has ceased making new UK investments, or has made significantly fewer UK investments recently, it is often due to a perceived lack of capacity to service such investments and to maintain profile and network for deal flow in the UK, whereby there is little opportunity for emerging biotech firms to pitch for investment. Lower levels of activity may also reflect perceptions of being outside a small core group of UK lead investors.

That can be countered through the development of networks that could plug overseas investors more effectively into UK-based initiatives and partners. For example, UK Technology Transfer Organisations (TTOs) could proactively provide access to innovation in academic institutes.

6.7 Government action

Government has a critical role to play, particularly as the investment environment will change post-Brexit.

A key concern in the context of the UK's withdrawal from the European Union is access to skilled labour, and the biotech sector must emphasise the importance of protecting freedom of movement for knowledge-intensive business as the UK adopts a post-Brexit immigration framework. To accommodate current working practices, and especially for virtual biotech companies, this freedom of movement must extend to a company's consultants, directors, advisers and investors as well as their employees.

One solution might be to broaden the graduate entrepreneurship visa to maintain more open borders for knowledge-based enterprise, but perhaps there should also be consideration of how to consolidate our academic clusters by retaining the very best expertise beyond fixed-term positions such as post-doctoral research fellowships and encourage the expansion of pharma sponsored fellowships.

However, there is an immediate risk with regard to the potential loss of European Investment Fund capital, Europe's largest single source of venture capital and accounting for more than a third of investment in UK-based venture capital funds across all sectors.[9]

A post-Brexit countermeasure might be to create a fund-of-funds to replace the UK's contribution to the European Investment Fund (EIF), to support UK biotech more directly through biotech fund investments. This would offset the possible loss of membership to the EU-based EIF, which currently contributes to UK-investing venture funds, influencing the selection of fund managers to ensure the early-phase biotech mandate is well covered, while addressing a Brexit risk which continues to be highlighted by the venture capital industry itself.[10,11]

6.8 UK leadership

The UK has an opportunity to take a leadership role in Europe, trading on its access to capital and relatively experienced management to create more cross-border biotech collaborations with the rest of Europe.

Research for this report found strong support for the establishment of an industry working group to explore the ultimate prize: the creation of a functional European public market for biotech centred in London, the economics of which might pull more capital into the ecosystem than any other measure. This fits into the broader vision to build critical mass towards the UK becoming the prime global biotech Supercluster.

That said, as things stand the UK does not yet have a sufficient critical mass in biotech to sustain a fully functional public market in biotech, nor is there a credible contender elsewhere in Europe. Until such a market exists, the importance of strategic investors such as CVCs to maintain the unquoted capital market for innovation will be paramount to ensuring European innovation translates into new targets, new drugs and new platforms for pharma. This underlines the important role of CVCs in driving UK innovation in the future.

Fast Facts: the scale of the CVC surge in the UK

The amount of capital invested alongside CVC into UK companies increased six-fold between the 3-years to 2010 and 2015.

During 2015, financing rounds involving CVC amounted to $647m of $1033m invested in unquoted UK life sciences companies (2016: $567m of $965m).

UK companies closed 68% of the capital invested in European financing rounds involving CVC in 2016, up from about a fifth a decade ago.

9 Shubber, Khadim and Brunsden, Jim. "UK tech investors face loss of significant funding after Brexit", Financial Times, May 10, 2017.

10 FierceBiotech: 'Brexit – Why UK life science is optimistic in the face of threats to R&D, funding' https://www.fiercebiotech.com/biotech/brexit-why-u-k-life-science-optimistic-face-threats-to-r-d-funding

11 The Wall Street Journal: 'U.K. Venture Capitalists Fear Funding Drought Post Brexit'. Julia-Ambra Verlaine, March 16, 2017. https://www.wsj.com/articles/u-k-venture-capitalists-fear-funding-drought-post-brexit-1489672880

7 Corporate venture capital investment in the UK

7.1 CVC in the UK has increased in recent years

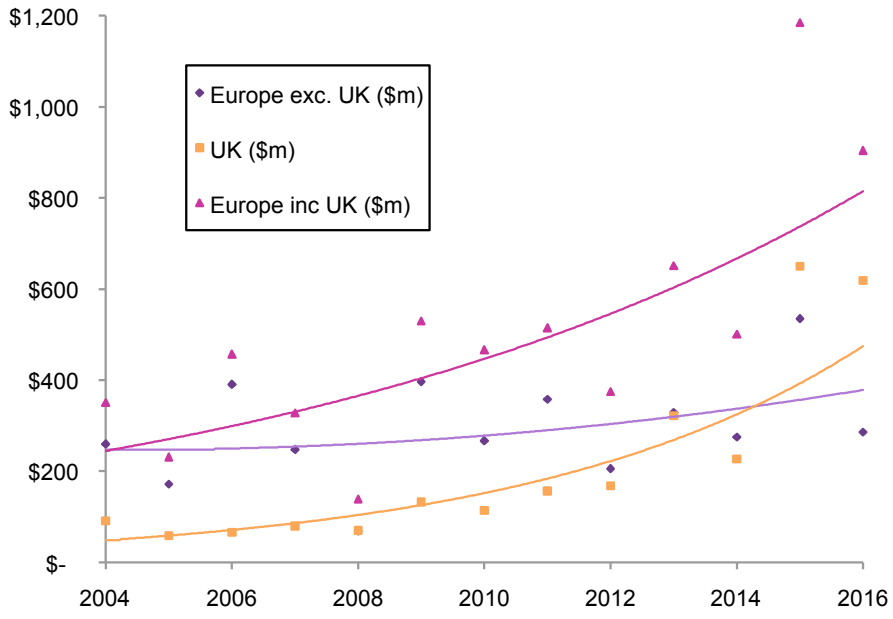
CVC has played an important role in the UK financing landscape over the last decade. Since 2001, corporate related capital has been deployed in 101 financing rounds in the UK in 67 companies, with CVCs and their syndicate partners investing a total of $2.5bn.

Levels of corporate-related financing in the UK have increased significantly over this period, particularly since 2010, both in terms of absolute levels of investment and as a proportion of total available finance.

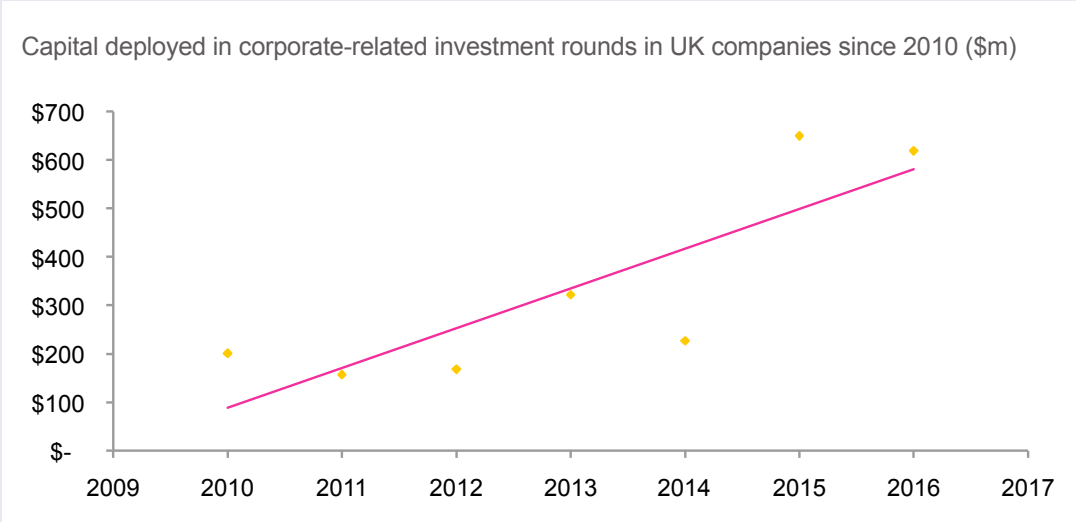
CVCs and their syndicate partners invested just $283m in the UK in 2007–2009, increasing to $526m in 2010–2012, then to a staggering $1.2bn in 2013–2015 (Figures 1 and 2). Data collected since this research was completed shows that this trend held for the remainder of 2016 with over $600m invested alongside corporate equity investors in UK companies in this year alone. CVC is therefore a key factor in the increase in capital being invested in private UK life sciences companies in recent years (Figure 3).

7.1.1 Figure 1. Corporate equity investing in the UK and Europe has risen substantially over a decade

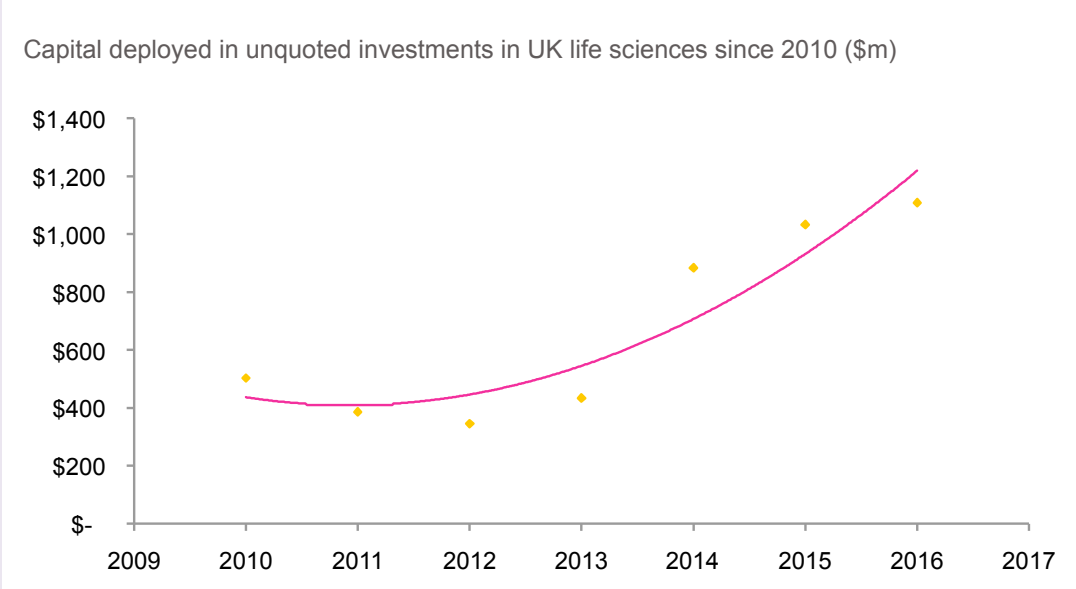
Capital invested in European and UK financings with one or more corporate equity participants since 2004



7.1.2 Figure 2. The amount of capital deployed in financing rounds including corporate equity participation in UK companies has increased substantially since 2010



7.1.3 Figure 3. The amount of capital deployed in unquoted financing rounds in UK companies has also increased substantially since 2010



Financing rounds with corporate equity participation now make up about 20% of all rounds in the UK, compared to just 5% in 2005. In terms of capital deployed, CVCs and their syndicate partners now account for almost 50% of total UK capital deployed, compared to just 13% in 2005 (2005–2010 JRA analysis unpublished data).

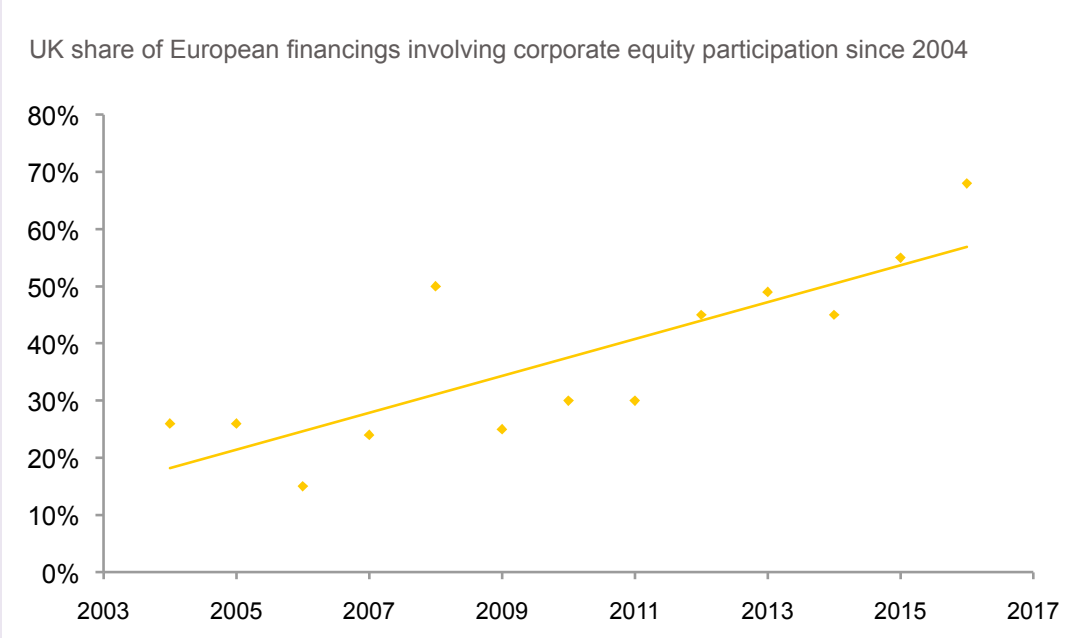
This story of the rising participation of corporate equity investment in the UK's unquoted life sciences capital market is also made clear when we look at the data in tabular form (see Table 1). It is possible to conclude that although the 2015 figures were skewed upwards by Immunocore's £320m financing, the overall trend holds for 2016, illustrating the maintenance of increased levels of participation from pharma corporate equity investors.

7.1.4 Table 1. Involvement of corporate equity investments in UK life sciences company financing since 2010

Year	Number of corporate equity investments	Total investment rounds UK-wide	Amount invested alongside corporate equity ($m)	Total invested UK-wide ($m)
2016	15	73	619	1136
2015	12	60	644*	1033
2014	9	90	237	884
2013	17	54	298	434
2012	8	46	168	345
2011	10	45	170	386
2010	4	57	114	503

*$395m if Immunocore's £320m round is excluded as an outlier.

7.1.5 Figure 4. The UK's share of Europe's CVC-backed financing rounds has increased multi-fold over the last decade



7.2 The UK attracts an increasing proportion of European investment

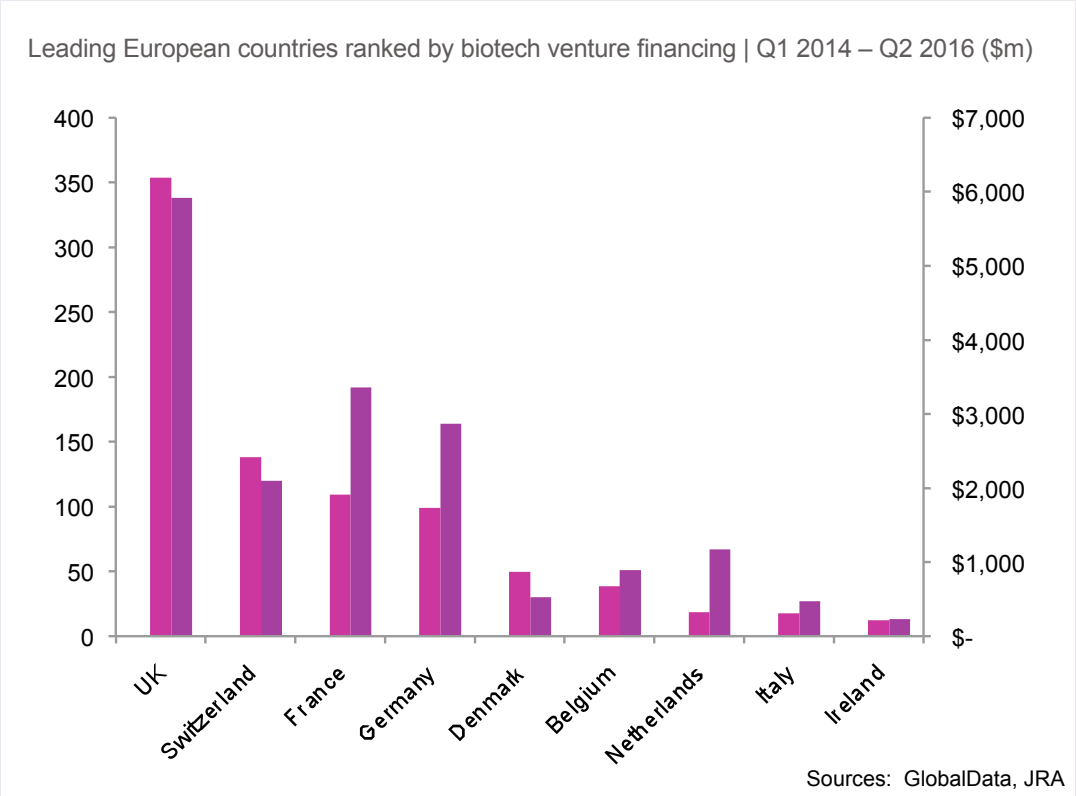
From 2001 to mid-2016, CVCs and their partners financed 279 rounds, deploying $5.9bn, backing 178 companies.

The activity of corporate equity investment in Europe has increased substantially over the medium-term period, with $2.3bn invested in 2013–2015 compared with just $1.4bn in 2010–2012. However, as shown in Figure 1, a significant proportion of this increase is driven by increases in UK investment.

Indeed, the proportion of European corporate-related investment rounds in the UK has increased from 26% in 2005 to 68% in 2016 (Figure 4). Corporate-related finance in the rest of Europe has remained relatively flat since 2010.

In terms of capital raised, from all sources, the most competitive countries in Europe for investment in early-stage biotech innovation are Switzerland, France and Germany (Figure 5), although currently the UK leads these countries by a significant margin in terms of both the number of financing rounds and the capital deployed.

7.2.1 Figure 5. The UK's biotech companies are competing with Switzerland, France and Germany in Europe as a source of early-stage innovation, as well as competing for capital




798,483.40
66.88
27.64
46.48
30.59
26.92
74.51

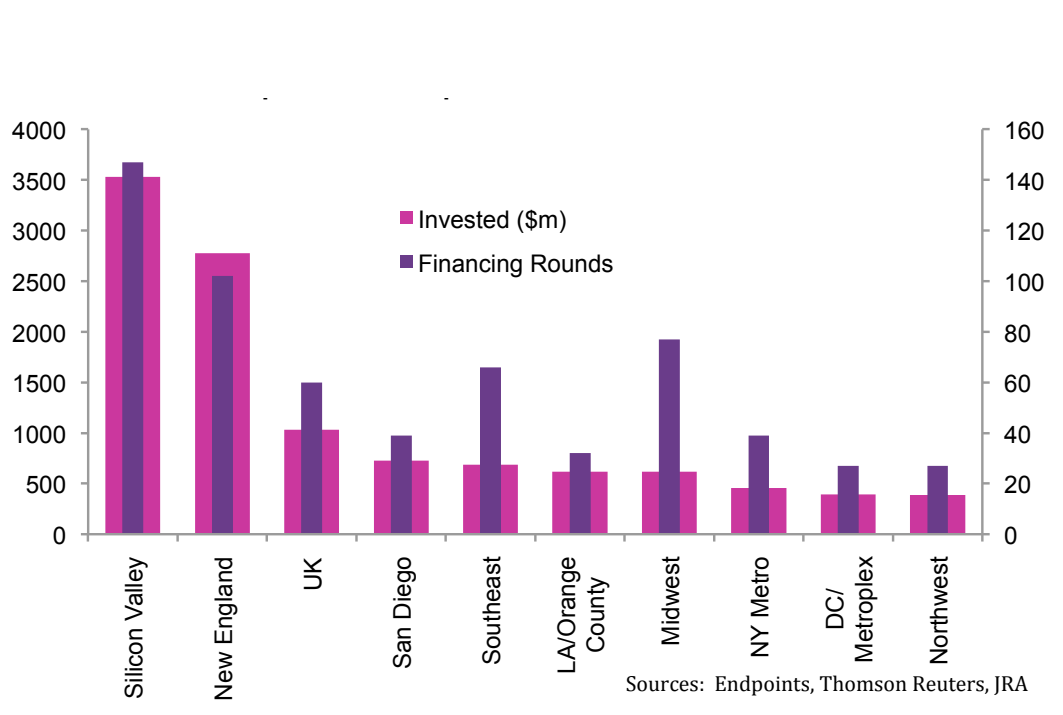
7.3 CVC investment in the UK mirrors global trends

The increase in corporate-related financing in Europe, but particularly the UK, mirrors increases in global CVC financing,[12] although the UK has seen a more consistent increase in this form of finance in recent years. This shows that the UK biocluster is as competitive as the entire rest of Europe in corporate equity investment raised.

Investments in the UK and Europe still make up a relatively small proportion of total global corporate related investments, which total at least $34bn since 2000, with North America the leading site for investment.

However, based on the total invested in biotech financing rounds in 2015, the UK competes well with US clusters, forming the third most significant biotech cluster in the world after Silicon Valley and New England (Figure 6).

7.3.1 Figure 3. The amount of capital deployed in unquoted financing rounds in UK companies has also increased substantially since 2010



12 https://www.cbinsights.com/research/report/corporate-venture-capital-trends-2017-h1/

8 Who is investing in the UK?

8.1 Who is investing in the UK?

In an analysis of geographical investing of corporate venture investors in the UK (Table 2), it would be overly simplistic to conclude that investors are actively avoiding the UK. However, there is a significant subset of investors who have notably not invested significantly in Europe as a whole.

The impression gained from interviews suggests that there has been no conscious decision either to pull back from the UK or not to invest in UK companies. Instead where there has been a historic absence of a UK or European office, or where team sizes were not sufficient to adequately achieve maximal deal flow of the best investments, this has acted as a practical impediment to investing in the UK and/or Europe. Takeda Ventures, Inc. is an example of a company that has recently established European corporate equity investment decision-makers in the UK.

8.2

8.2.1 Table 2. Geographical investing behaviour of corporate equity investors (Source: JRA)

Invests in the UK and rest of Europe	Invests in the UK but not the rest of Europe
Novo A/S	Google Ventures
Novartis Venture Fund	Ipsen
SR One	
J&J Innovation – JJDC, Inc.	
Roche Venture Fund	
Astellas Venture Management	
Lundbeckfonden Ventures	
Pfizer Venture Investments	
Takeda Ventures, Inc	
Merck Ventures BV (Merck KGaA)	
Lilly Ventures	
MP Healthcare Venture Management	
Teva	
Invests in Europe but not the UK	**Little or no investing in the UK or rest of Europe***
Boehringer Ingelheim Venture Fund (BIVF)	MedImmune Ventures (AstraZeneca)
Shire Strategic Investment Group	Merck/MSD/MRL Ventures – various
Merieux Developpement	Amgen Ventures
Baxalta Ventures	AbbVie Ventures
BTG plc	Sanofi-Genzyme Ventures
	Celgene
	Santen, Inc.

* 'Little' referring to no more than one financing round identified

Table 3 shows corporate investors in the UK, Europe and worldwide organised by their participation in UK funding rounds since 2004, while Table 4 illustrates the same information in terms of the amount of capital deployed. It is clear that there is a wide variety of companies with a wide range of strategies and different choices for investment location. There are a few companies that deploy a large proportion of their investment in the UK, others who focus on the rest of Europe, others with very few European investments and others who spread their focus fairly evenly between Europe and the rest of the world. The reasons for such choices are discussed further in the following section.

8.2.2 Table 3. Corporate investors in the UK, Europe and worldwide ranked by participation in number of UK biotech financing rounds, Q1 2002 – Q2 2016 (Source: JRA)

Name of corporate investor	Total investment rounds	UK	Non-UK European	All Europe as % of global
Celgene	33	0	0	0%
MedImmune Ventures	54	0	0	0%
Merck (US) and MSD/MRL	24	0	0	0%
Sanofi-Genzyme BioVentures	18	0	0	0%
Santen, Inc.	8	0	0	0%
Shire	13	0	3	23%
Merieux Developpement	14	0	6	43%
Baxalta Ventures	16	0	5	31%
GSK	10	0	3	30%
Google Ventures	23	1	0	4%
Ipsen	8	1	0	13%
Amgen Ventures	53	1	1	4%
AbbVie Biotech Ventures, Inc.	14	1	1	14%
Novo Nordisk	16	1	8	56%
Teva	24	2	16	75%
BTG plc	7	3	0	43%
MP Healthcare Venture Management	20	3	6	41%
BIVF	20	3	17	85%
Lilly Ventures, Eli Lilly, Lilly Asia Ventures	61	3	1	7%
Merck Ventures BV (Merck KGaA)	26	4	13	65%
Takeda Ventures, Inc.	24	6	4	42%
Inventages	27	6	9	56%
Pfizer Venture Investments	43	6	3	21%
Lundbeckfonden Ventures	26	6	7	50%
Astellas Venture Management	40	7	3	25%

Name of corporate investor	Total investment rounds	UK	Non-UK European	All Europe as % of global
Roche Venture Fund	68	7	12	28%
J&J Innovation – JJDC	92	11	14	27%
Novartis Venture Fund	135	12	28	30%
SR One	111	18	11	26%
Novo A/S	176	18	64	47%
Totals	**1,247**	**121**	**235**	**29%**

The top-ranked corporate investors in Europe are Novo A/S, Novartis Venture Fund, SR One and J&J Innovation – JJDC, Inc. The top investors in the UK mirror this to some degree, with the top-ranked corporate investors in the UK being SR One and Novo A/S. SR One has made eighteen UK financing rounds in which $641m was invested and Novo A/S has participated in eighteen UK financing rounds in which $522m was invested during the period concerned.

8.2.3 Table 4. Corporate Investors in the UK, Europe and worldwide, ranked by the amount of capital invested in the UK biotech financing rounds in which they participated (Q1 2002 – Q2 2016)

Name of corporate investor	UK ($m)	Europe exc. UK, inc. Israel ($m)	Europe inc. UK ($m)	Global ($m)	UK as % Global	Europe inc. UK as % Global
Celgene	0	0	0	1,059	0%	0%
MedImmune Ventures	0	0	0	1,287	0%	0%
Merck (US) and MSD/MRL	0	0	0	690	0%	0%
Sanofi-Genzyme BioVentures	0	0	0	673	0%	0%
Santen, Inc.	0	0	0	128	0%	0%
Shire	0	96	96	381	0%	25%
Merieux Developpement	0	129	129	273	0%	47%
Baxalta Ventures	0	141	141	459	0%	31%
GSK	0	368	368	650	0%	57%
BTG plc	0	36	36	106	0%	34%
BIVF	0	199	199	217	0%	92%
AbbVie Biotech Ventures, Inc.	20	14	34	236	8%	14%
Google Ventures	21	0	21	811	3%	3%
Ipsen	28	0	28	278	10%	10%
Novo Nordisk	29	206	236	341	9%	69%
Amgen Ventures	33	47	80	1,685	2%	5%
Takeda Ventures, Inc.	40	99	139	410	10%	34%
MP Healthcare Ventures Management	46	137	183	410	11%	45%
Inventages	48	118	166	331	15%	50%
Merck Ventures BV (Merck KGaA)	49	181	230	401	12%	57%
Teva	62	180	242	450	14%	54%
Astellas Venture Management	117	123	240	958	12%	25%
Pfizer Venture Fund	165	153	318	1,153	14%	28%
Roche Venture Fund	200	281	481	2,062	10%	23%
Lundbeckfonden Ventures	216	120	336	700	31%	48%
Novartis Venture Fund	247	785	1,032	3,080	8%	34%
J&J Innovation – JJDC	258	365	624	3,486	7%	18%

Name of corporate investor	UK ($m)	Europe exc. UK, inc. Israel ($m)	Europe inc. UK ($m)	Global ($m)	UK as % Global	Europe inc. UK as % Global
Lilly Ventures, Eli Lilly, Lilly Asia Ventures	326	0	326	2,400	14%	14%
Novo A/S	622	1239	1,861	5,064	12%	37%
SR One	641	290	931	2,667	24%	35%
Totals	**3,198**	**5,307**	**8,507**	**34,504**	**9%**	**25%**

Note: this is not indicative of the amount of capital deployed by the corporate, but the amounts invested in rounds in which a corporate equity investor participated. (Source: JRA)

However, as shown in Table 2, there are a number of organisations with significant investments in Europe but none in the UK to date. Beyond this, there are even more with few or no disclosed investments anywhere in Europe, such as MedImmune Ventures, Amgen Ventures and AbbVie Ventures. It should be noted that since our initial analysis AbbVie went on to co-invest in Artios Pharma in the autumn of 2016, alongside SV Life Sciences, Merck Ventures BV, Touchstone Innovations (now part of IP Group), Arix Bioscience and the CRT Pioneer Fund, which appears to be AbbVie's first disclosed UK investment since 2011.

Corporate investors invest in a wide range of companies via an equally wide range of approaches: via CVCs, directly from corporate parents, alone, in partnership with other CVCs, or in partnership with other types of investor. A few examples are highlighted in the following boxes.

8.2.4 Novo Holdings A/S

Novo Holdings A/S, through Novo Ventures and its sister Novo Seeds, is the leading corporate-related investor in European biotech. Their seed fund recently made its first UK investment, investing alongside VC firm Index Ventures (now Medicxi Ventures) and academic capital investors Touchstone Innovations (now part of IP Group), in a new seed stage biotech company called Epsilon-3 Bio, which has a potential therapy in preclinical development targeting autophagy in chronic inflammatory and autoimmune disorders. Novo Holdings is fully owned by the Novo Nordisk Foundation, while Novo Nordisk is majority controlled by Novo Holdings; therefore Novo's venture capital activities are part of the holding company that also controls Novo Nordisk.

8.2.5 SR One

SR One, the independent CVC arm of GSK, established a European investment office in the UK in 2005. In 2010 an allocation of £50m ($78m) from the parent evergreen fund was ring-fenced to invest in early-stage healthcare companies and spin-outs from academia in the UK which are pursuing innovative, breakthrough science. This capital has since been deployed through one or more investment rounds alongside other corporate and blue-chip institutional investors in flagship UK companies including Mission Therapeutics, PsiOxus Therapeutics and Bicycle Therapeutics as well as start-ups such as the regenerative medicine company Progenitor Therapeutics where SR One is the sole investor.

8.2.6 Merck Ventures BV

Along with a reorganisation and rebranding in early 2016, Merck Ventures BV has since seen both an increase in financial commitment and expansion of remit. Merck Ventures BV has invested in at least 22 companies via 27 funding rounds since 2009, with four of these companies in the UK. Examples include F-star, developing bispecific antibodies for the treatment of cancer, and Storm Therapeutics, working on novel RNA-based therapies.

8.3 Pharmaceutical companies participating in funds investing in UK biotech

As a complement to CVC investing, many pharmaceutical companies are also investing as limited partners (LPs) in certain European and US venture funds. Examples are highlighted below.

8.3.1 J&J and GSK as LPs in Medicxi Ventures MV1

Medicxi Ventures is a healthcare-focused spin-out from Index Ventures, and is one of the most successful healthcare CVCs in Europe. Johnson & Johnson Innovation and GSK-backed Medicxi's maiden $250m MV1 fund as LPs with investments such as X01, a virtual biotech developing an antibody against thrombin for anticoagulation without bleed, which was acquired by a subsidiary of J&J in 2015.

Other recent portfolio investments made by Medicxi include Critical Pressure, SuperX Pharma, ApcinteX, Capella Bioscience and Kymo Therapeutics.

8.3.2 Six pharmaceutical companies back the Dementia Discovery Fund

The Dementia Discovery Fund (DDF) is an innovative $100m fund backed by the UK's Department of Health, research charity Alzheimer's Research UK and six companies: Biogen, GSK, J&J, Lilly, Pfizer and Takeda. The fund is almost unique in focusing on very early stage assets whether in academia or biotech, to help 'seed innovation' in disease-modifying Alzheimer's disease drugs, a notoriously challenging area of research. Alongside this, they have the ability to work with biotech or pharmaceutical companies internationally as appropriate.

8.3.3 Takeda's strategic investment in Arix Bioscience plc

Alongside Arix Bioscience plc's IPO, which raised £100m in March 2017, it was announced that Takeda Ventures, Inc. had completed a strategic agreement with Arix Bioscience, which was reported to have included an investment, according to the trade press. The agreement is thought to provide Takeda with an additional sourcing and company-building resource in Europe, complementing the appointment of their first UK-based executive, the European Investment Director, and the recent establishment of the TAK-celerator, Takeda's rare disease accelerator, also located in the UK.


50
40
30
20
0

9 The UK as a location for investment

9.1 Decision making

CVCs are global organisations, and have opportunities to invest in companies in countries across the world. The evidence in the previous section of the report shows that the UK has benefited from a significant increase in CVC investment in recent years, but a number of CVCs have still never invested in the UK. We interviewed eleven senior executives from pharmaceutical corporate venture and investment firms to find out what makes a good place for CVC investment, and how the UK could further attract such funding for its biotech sector.

9.2 Deciding factors

Whilst priorities vary between CVC organisations, depending on their remit and strategy, the interviews highlighted recurring themes that are important for investment location decisions:

- **Proximity** – whilst most CVCs are in theory agnostic about the location of their investments, in practice having investor decision-makers on the ground on average very significantly increases the investments made in a country or region. Local footprint helps organisations gain access to biotech and investor networks, increases capacity to both make and service investments and increases the CVC's profile to secure greater deal flow. Part of the challenge is also increasing UK entrepreneurs' awareness of 'where the capital is' so they can access networks effectively. The data underlines the importance of geographic adjacency.
- **Excellent innovation** – clearly a key influencing factor is the availability of high-quality biotech companies to invest in. Biotech companies need both excellent science and excellent management and leadership to maximise the probability of converting that science into successful medicines or technologies. Many CVCs are investing increasingly early in the value chain, and becoming co-founders of new companies. They are therefore increasingly looking for excellent science in universities and research institutes as well as in existing biotechs. National government investment in translational research and innovation can therefore support the environment for investment.
- **Access and investment opportunities** – the ability to recognise and access deal flow through key sources is critical, and an availability of sophisticated co-investors is helpful. Similarly, particularly when considering early investment decisions, ease of access to excellent science and innovation through easily identifiable contact points is helpful, including access to academic science. This may particularly be the case for organisations without a local footprint.
- **Talent base** – building successful biotech companies depends on being able to recruit world-class talent, including scientific and medical staff, but also for regulatory and senior management positions. A number of interviewees highlighted that clusters such as Boston have a critical mass of biotech activity, which has developed and sustained a pool of top talent.
- **Investment ecosystem and the role of Government** – the proposed National Investment Fund as a Government-backed fund to invest in patient capital could play a significant role in catalysing the investment environment for innovative life science early-stage firms. However, a further consideration for Government should be incentivising CVC investments by backing a co-investment fund to invest alongside them. This has great potential to have a multiplier effect and act as a magnet for increased investment overall.
- **The Corporate Venturing Scheme (CVS)** – which ran from 2000 to 2010, was aimed at corporate equity investors considering direct investment, in the form of a minority shareholding, in small independent higher-risk trading companies or groups of such companies. This included pharma corporate venture investments in UK biotech companies. The CVS provided tax incentives for corporate equity investment in the same types of companies as those qualifying under the Enterprise Investment Scheme (EIS) and Venture Capital Trust (VCT) scheme. The tax reliefs available included an investment relief against corporation tax of up to 20% of the amount subscribed, as well as deferral and loss relief. The CVS ran for a ten-year period until 31 March 2010, but was not renewed, having helped catalyse

the investment of £132m into 579 companies by 1003 investors during its lifetime, peaking in its ultimate year.[13]

- **Strengthening the investor-academic relationship** – CVCs would welcome new ways of accessing UK academia with the concept of a new UK biotech accelerator, such as FutuRX and NYC Accelerator as possible models. Interviews with investors in the course of this research also revealed strong support for the idea of consolidating the value of the UK cluster, especially the 'Golden Triangle' of universities and research centres that creates an important critical mass of research and talent and offers a common access point beyond existing initiatives such as MedCity.
- **Broader environment:**
    - Tax – many interviewees felt that tax incentives are rarely a deciding factor for investment decisions but contribute to a conducive environment for investing, increase the viability of the investments and can influence footprint decisions. The Australian R&D Tax Incentive is regularly cited as a generous regime encouraging innovation. Learning lessons from the Australian experience, where incentives are offered for clinical trials, is worth exploration.
    - Regulatory environment – diverse regulations influence the environment for venture investment including in areas such as work and labour, mergers and acquisitions, IP regulation and business governance.
    - Landscape – no company can develop new health technologies in isolation. Biotechs increasingly work with a variety of partners for both collaboration and outsourcing, including contract research organisations, academia and the health service for clinical studies. A vibrant local landscape that is open for collaboration contributes to a supportive environment for investment.

Recommendation 1

The Government should support and provide practical advice to CVCs seeking to establish an office, satellite or venture partner in the UK. This would offer one-to-one assistance to CVCs, facilitate introductions for CVCs that lack knowledge about the UK and increase entrepreneur awareness of capital sources.

Recommendation 2

Freedom of movement for knowledge-intensive businesses must be enabled: broaden the graduate entrepreneurship visa to maintain open borders for knowledge-based enterprise.

Recommendation 3

A Government-backed National Investment Fund investing in patient capital would stimulate the investment environment for innovative life science early-stage firms. Establishing a fund-of-funds directly investing in UK venture funds would focus on early-stage research and offset the loss of the existing European Investment Fund. There is also a role for Government to back an early-stage biotech CVC co-investment fund.

13 https://www.gov.uk/government/collections/corporate-venturing-scheme-cvs-statistics

Recommendation 4

Restoration of the Corporate Venturing Scheme (CVS) would be a 'significant gesture' which might encourage certain CVCs to locate European funds in the UK, in consultation with the finance directors responsible for each CVC stakeholder.

Recommendation 5

Establish a dedicated UK biotech accelerator like FutuRX or NYC Accelerator with Government financial support to enable a coordinated approach to attract investment and strengthen life sciences clusters.

Recommendation 6

Establish fiscal incentives to encourage longer-term investment, by increasing tax benefits for every year the investment is sustained. Additionally, the list of eligible expenditures covered with the R&D tax credit scheme (e.g. spending on clinical research services) would also support growing innovative life science companies as they move into profit, thereby enhancing the interest for patient capital.

Recommendation 7

Stimulate the early-stage biotech environment by broadening the scope of venture capital and tax reliefs offered through the Enterprise Innovation Scheme (EIS) and Seed Enterprise Investment Scheme (SEIS) to reflect the capital-intensive nature of the biotech industry, and the Enterprise Management Incentives and Entrepreneurs Relief to reflect the current working practices. This would add significant value to the incentives for entrepreneurship in the UK, stimulate investment and encourage the location of pharma innovation hubs and CVCs in the UK.

Recommendation 8

Establish an industry working group to explore the creation of a functional European public market for biotech centred in London, with the aim of creating critical mass to enable the UK to become a prime global biotech Supercluster.

9.3 UK strengths

Overall many interviewees saw the UK as being the world's third-best global life science cluster, after Boston and the Bay Area, and first in Europe. Interviewees highlighted a number of factors that have supported increased CVC investment in the UK in recent years. These strengths should be built on to attract further investment to the UK biotech sector in the coming years:

- Excellent science cluster – it is widely recognised that the UK achieves excellence in its academic science base, and that it has world-class expertise in drug discovery. Given the shift for CVCs to invest earlier in the innovation pathway, this excellence in early-stage R&D has become increasingly important for attracting investment.
- UK biotech companies – sseveral interviewees noted that the quality of UK biotech companies has also increased in recent years, with a number of successful flagship companies such as Heptares, Immunocore, Adaptimmune, PsiOxus and Bicycle Therapeutics. It was highlighted that the proximity of universities and research centres within the 'Golden Triangle' creates an important critical mass of research and talent, which has created significant investment opportunities and deal flow.
- Investing environment – the UK has a number of strong sources of deal flow, particularly for early-stage deals, with high-quality sophisticated investors such as Touchstone Innovations (now part of IP Group), Abingworth and Syncona. Such sources can help with signposting and access to investment opportunities in the UK. Along with the presence of other investors, such funds also create a significant source of co-investors or syndicate partners, which facilitates investment.
- Skills base – it was argued that the UK has a strong skills base in both drug discovery and managerial skills compared to the rest of Europe. In part, this is due to the historic strengths of the UK pharmaceutical industry, combined with the recent downsizing of a number of large R&D sites, creating a pool of experienced pharmaceutical talent. This has supported CVC investment and the growth of the biotech sector in the UK in recent years. However, it raises challenges about the sustainability of this talent pool with the closure of these large training grounds.
- Drug discovery and development environment – the UK has a relatively strong and diverse biopharmaceutical landscape, which supports biotech development and hence contributes to an attractive investment environment. Interviewees particularly highlighted the strength of the UK contract research organisation sector, clinical research opportunities, and patient organisations with excellent links to clinicians, facilitating patient centric research. Government support for biotech innovation, primarily through the Biomedical Catalyst and in future with the Medicines Discovery Catapult, was also valued.
- Regulatory – the UK regulatory environment is stable, well respected, and perceived as supportive to venture investment, particularly compared with the rest of Europe. This includes regulation on workforce and labour, business governance and a lack of schemes anchoring IP. The medicines regulatory environment, for example in relation to the development of gene therapies and biosimilars, was viewed as supportive for innovation.
- Tax – the R&D tax credit was welcomed as contributing to a supportive investment environment. CVC awareness of other tax relief schemes was not pivotal to investment decisions for any individual financing round.

SR One

"The benefit of CVC investment at a very early stage is the ability to leverage insight from potential partners or acquirers to guide and shape the companies. It is also becoming easier to put teams together in the UK, which ultimately enables deals to be finalised. Many skilled employees working at large pharma companies increasingly see the attraction of moving into exciting young biotech businesses. This is a clear UK strength which can only serve to attract more investment and foster collaboration."

9.4 UK weaknesses and bottlenecks

Despite the benefits outlined above, interviewees highlighted some areas that may inhibit further investment in the UK:

- Access to network and deal flow – the ability of CVCs to access deal flow, whereby emerging companies can pitch for investment, should be improved. There was a perception, particularly from those not based in the UK, that it can be difficult for some CVCs to access deal flows in the UK for a number of reasons. Some interviewees felt that a core group of five or six key UK investors had a propensity to avoid sharing investment opportunity deal flow externally when capital was abundant, making the best UK investments difficult to access. Combined with the recent increase in available capital, including through academic capital funds, this could be a barrier for most CVCs to apply their pool of capital to UK biotech financings.

Others highlighted that the fragmentation of the academic and innovation landscape in the UK could make it difficult to access excellent science. A more joined-up approach to attracting investment, for example across the 'Golden Triangle' life sciences cluster, perhaps through a facilitation service, might begin to address this. Finally, it was highlighted that UK universities and TTOs were in general relatively less proactive at approaching corporate investors than similar institutions in other countries.

- Lack of critical mass – whilst the UK was highlighted as a significant skills base and life sciences cluster compared with European competitors, it was perceived as lacking the critical mass compared to the leading US clusters around Massachusetts and the Bay Area. This means that talent can be harder to find, notably for senior management and medical roles compared with the US; however, it was easier to attract senior talent to the UK than to the rest of Europe.
- Lack of a functional life sciences public market in London– the relative lack of an IPO as an option to 'nano-cap' size private biotechs in the UK limits investor options and return on investment compared with other markets such as the US. The lack of public markets infrastructure for innovative biotech on the London exchange can also make a public markets listing for micro-caps less attractive in the UK compared with the US. Investors are mostly investing to sell rather than investing to sell or list, in response to the lack of a functional public market for biotech in Europe. Furthermore, there has been a decrease in analyst coverage of biotech in London, which has further hindered the market.
- Technology Transfer Offices – whilst some UK TTOs demonstrate good practice, there is room for improvement at many, particularly in their mode of interaction with CVCs. Many TTOs are well equipped to perform licensing agreements but have little commercial experience with equity arrangements, so many CVCs choose to interact with academic staff directly instead of TTOs. In some cases, TTOs were reported to have inhibited access to scientists, forming a barrier to collaborations and deals. In general, UK TTOs are regarded to be less proactive at approaching potential investors than their counterparts elsewhere in the world. However, some interviewees felt that there was the potential for TTOs to be useful as signposts to excellent science within their institutions.
- Access to end-to-end financing – a financing gap with a lack of variety of funds has been highlighted, albeit there is some disagreement on whether that is for small investments ($2-10m) or a lack of follow-on investment capital.

10 Glossary of terms

CRO	Contract Research Organisations provide support to the biotech and pharmaceutical industry, often conducting research, including clinical and pre-clinical trials. CROs have strong relationships with academia.
CVC	Corporate venture capital is where companies invest their own funds in emerging start-ups. While these investments are considered high-risk, they are invested over a long period in order to support companies and increase the prospect of generating a significant return.
CVCs	Corporate venture capital investors.
Deal flow	The rate at which investors receive proposals for investment opportunities is commonly known as deal flow.
EIF	The European Investment Fund provides investment to SMEs by allocating investment to other funds who then invest directly to individual members states.
Financing rounds	Start-up companies depend on financing rounds to secure investment at various stages of their development to enable the next phase of their growth.
Micro-caps	Public companies with market capitalisation between about $50 and $300 million.
Nano-caps	Small public companies with a market capitalisation below about $50 million.
Patient Capital	Investments made over a long horizon, and depending on the sector, can last as long as ten to fifteen years. Patient Capital is particularly relevant to entrepreneurs wishing to build early-stage companies to a significant size, rather than building to sell.
TTOs	Technology Transfer Offices are tasked with identifying opportunities to commercialise research and facilitating relationships between investors and academia in particular.
VCs	Venture capital investment fund management firms (VCs) are a subset of private equity, and typically raise and manage funds structured as limited partnerships typically with a fixed lifespan of 10 years. Funds are raised from limited partners (LPs) and general partners (GPs), the latter leading the management of the fund.

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