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The UK's Global Bioscience Cluster in 2017

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Foreword

Steve Bates, OBE

CEO BIA

The UK biotech sector ended 2017 in a strong position with clear signs that the sector is maturing and the UK starts 2018 with the strongest pipeline in Europe.

Venture capital figures remain resilient and we saw a more typical return to form in terms of financing, with the public markets providing a greater proportion of the funding for UK biotech companies.

On a personal level, it is fantastic to see companies that we have followed from the beginning successfully navigating the funding life cycle through venture capital investment, to floating on the public markets, to now acquiring new businesses. It demonstrates how the UK's strong science base and world leading talent have attracted a vibrant funding ecosystem for biotech here in the UK.

2017 was not without its challenges for companies. The uncertainty and constantly changing landscape of Brexit did not provide an easy backdrop for fundraising. However, we have seen that UK companies are more than capable of transcending the political issues and that there is a huge appetite both from UK and international investors for UK biotech.

This is the second year we have worked with our data partner Informa and we will be revisiting the headline statistics each quarter this year to keep a close eye on trends and to ensure that we can keep an up-to-date picture of what is happening here in the UK.

I would like to thank all of the companies that have taken part in this year's report and I believe that this document will be a valuable tool to demonstrate the vibrancy of the UK biotech ecosystem to stakeholders in the UK and around the globe. There has never been a more important time to celebrate this sector and ensure that it receives the profile it deserves for creating innovative medicines and technologies that truly make a difference to people's lives.

The BIA will continue to bang the drum for UK biotech and we look forward to showcasing more success stories as we move through 2018. I would encourage you to keep a close eye on the BIA website **www.bioindustry.org** for all the latest industry news from our 320+ members who work at the cutting edge of scientific development.

John Hodgson

Executive Editor, Informa

This second BIA/Informa report on the performance of biopharma sector within the United Kingdom comes at a crucial time for the industry worldwide.

The £85m tranche of venture capital raised by gene therapy company Orchard Therapeutics in December falls just outside the cut-off for this report (30 November) but it is a timely reminder that both healthcare options and the means for their delivery can change rapidly.

This is the second year in which Informa has supplied data to underpin this report. While two points on a graph do not constitute a trend, the benefit of applying consistent definitions year-on-year, cluster-to-cluster is that signs of alteration in the overall picture can be detected early. In 2017, there was plenty to see.

On a stand-alone basis, the investment picture for the biopharma sector in the UK remains robust. Equity investments in UK bioscience firms remain at high (although not record) levels. But the profile of that investment has changed.

Venture capital, for instance, has migrated upstream, a sign of market maturity, perhaps, allowing some companies founded only a few years ago to attract substantial growth capital. In parallel, however, the amount of money committed in venture capital A rounds has halved since 2016.

The picture has changed, too, for UK companies in public equity markets. UK biotechnology company IPOs raised more than twice as much money in 2017 than in 2016, but 90% of last year's cash came through Nasdaq rather than through LSE or AIM.

AIM remains a solid source of follow-on finance for listed bioscience companies, unlike the LSE Main Market where investors found virtually no new money for biotech (and pharma) companies in 2017. However, London institutional investors did commit over £500m to several early- and late-stage vehicles specialising in equity or debt investments in biopharma.

Two messages from the financial markets seem apparent. One is that some UK biopharma companies can readily compete for flows of international finance. The other is that UK investors continue to appreciate the potential of biopharma but currently prefer to explore it through vehicles that operate internationally rather than locally.

Brexit brings uncertainty, at the moment principally about what it will bring. Until more is resolved, this environment raises investor risk one extra rung. That may explain why those in the UK who are keen on biopharma are looking for ways of making their money work globally.

London institutional investors
committed over

£500m

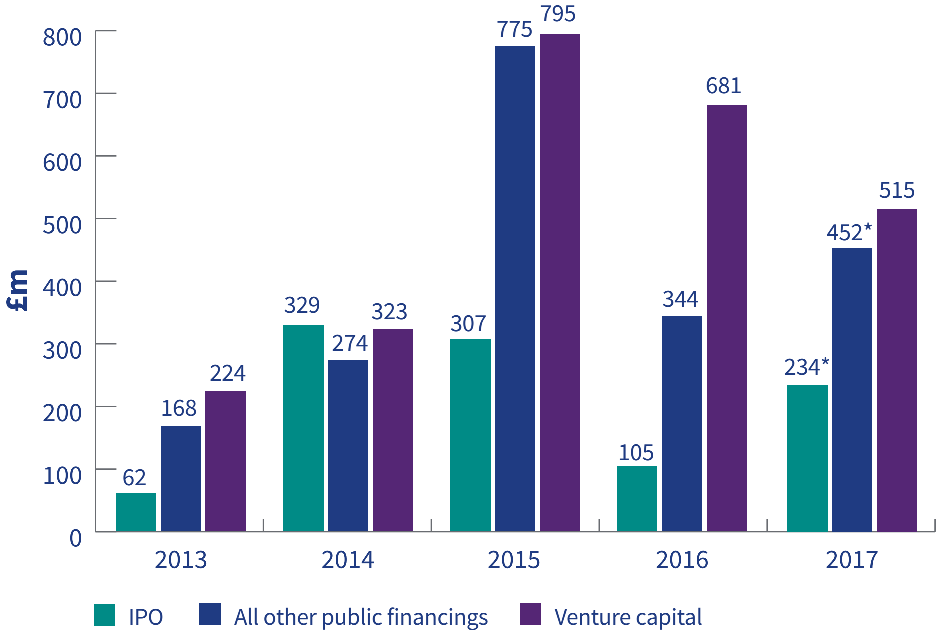
to early and late stage vehicles specialising in equity or debt investments in biopharma

Overall trends for 2017

The UK is in a good place in Europe with strong levels of funding. 2017 marked a return to a more usual financing pattern that relies on the public markets – 2015, 2014 and 2013 all had greater numbers for public rather than private fundraising.

It's very positive to see that both IPO and follow-on financing were stronger than last year and this shows that the uncertainty around Brexit has not had a detrimental impact on the public markets for biotech. This year's strong public market figures may also have been bolstered by 2016's venture capital fundraisings. The progression to the public markets could show that the sector in the UK continues to mature as companies move through the funding cycle.

Overall trends, finance raised by UK-based bioscience companies



*Includes Public financing of UK companies on Non-UK exchanges

Source: Informa, Strategic Transactions and Scrip

Clare Terlouw

Managing Director, Corporate Broking & Advisory, Numis Securities Ltd

Numis

The UK's life sciences and wider healthcare sector continues to be an exciting sector for investors, with 2017 delivering several notable transactions and fundraisings.

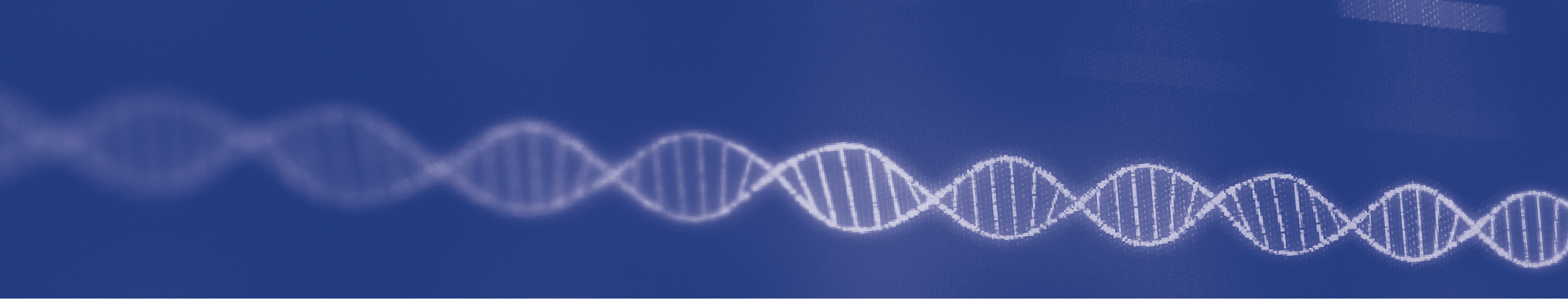
In the capital markets, across the Main Market and AIM, it was a quiet year with only 6 IPOs in the sector raising an aggregate of £260m, down from the previous year. However, the secondary fundraising market was reasonably strong with 43 transactions raising over £2.4bn (up from £1.2bn in the prior year). It was an active year for M&A and several notable transactions were completed, including Clinigen's acquisition of Quantum Pharma, Horizon Discovery's acquisition of Dharmacon, and IP Group's offer for Touchstone Innovations.

With regards to sector performance, the FTSE 100 Pharma & Biotech index returned -2.1% for the year compared to the FTSE 250 Pharma & Biotech returning 6.3% over the year. In the U.S, the S&P 500 Pharma, Biotech & Life Sciences index returned 17% for the year, and the Nasdaq Biotech Index returned 21.6%.

The private fundraising market for healthcare companies remained active. Our view is that the trend for earlier stage companies to stay private for longer looks set to continue, as the IPO market was subdued, and UK healthcare companies raised over £900m in the private markets in 2017. We expect that the private fundraising environment will remain strong as global investors and new sources of capital from outside the existing sector investors look to the UK for investment opportunities across innovative life sciences and technology companies.

Looking ahead, despite some caution due to current high market levels and Brexit looming, there remains good opportunities for investors within both the private and listed healthcare sector and, as a result, investment and M&A opportunities should continue to drive activity into 2018.

The figures in this case study are based on a wider definition than this report and cover life sciences and healthcare.



Venture capital funding

The UK venture capital picture

Although it is positive to see seed funding up this year, the bulk of venture capital money is aimed at later stage and more established biotech companies, which shows the continuing maturing of the sector.

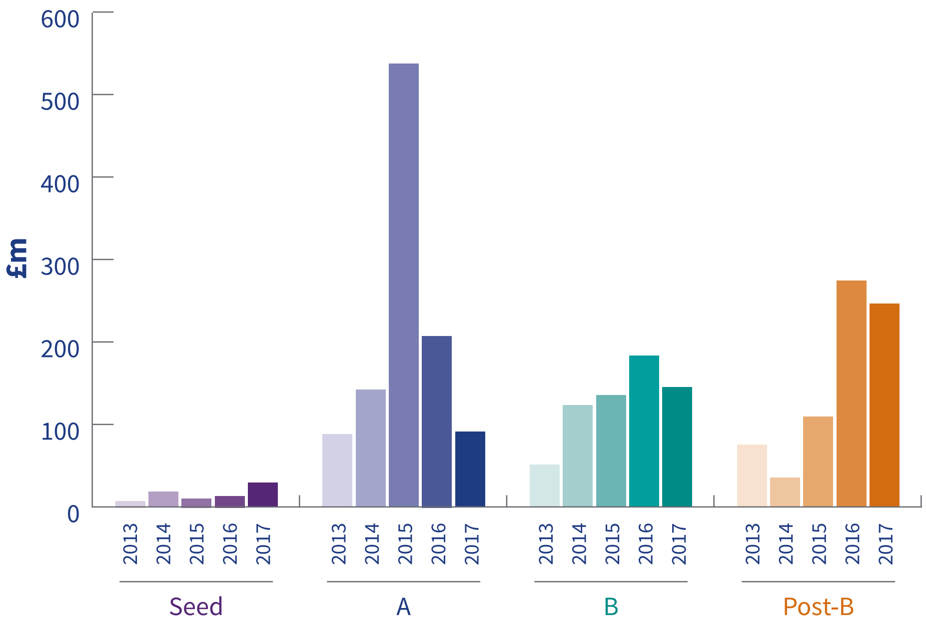
The total venture capital investment in the UK sector to November was £515m. This is down on the totals for 2016 and 2015 (£681m and £795m, respectively) although much higher than the annual totals between 2012 and 2014.

Furthermore, December brought a £85m B round from gene therapy specialist Orchard Therapeutics and an £8m A round from Bioceptre International, boosting the 2017 total to a respectable £608m. Unfortunately, these were after the data cut-off point for this report so aren't reflected in the charts.

In our previous report, we had noted the apparent dependence of late-stage UK venture capital investment on the involvement of funds associated with Neil Woodford. In 2017, the value of venture rounds in which Woodford invested declined to about a third of their 2016 value (£115m in 2017 versus £309m in 2016).

However, this did not impact late-stage venture investments unduly as other investors stepped into the breach, most notably corporate venture groups such as the Novartis Venture Fund, Johnson & Johnson Development, Amgen Ventures and Vertex Ventures.

UK venture capital progression figures over the last five years



Source: Informa, Strategic Transactions and Scrip

Sarah Haywood
CEO, MedCity

Seed funding into UK biotech has more than doubled on the year before, and this is not surprising, as innovative early-stage companies are presenting major opportunities for investors, particularly in digital health, genomics, and cell and gene therapy.

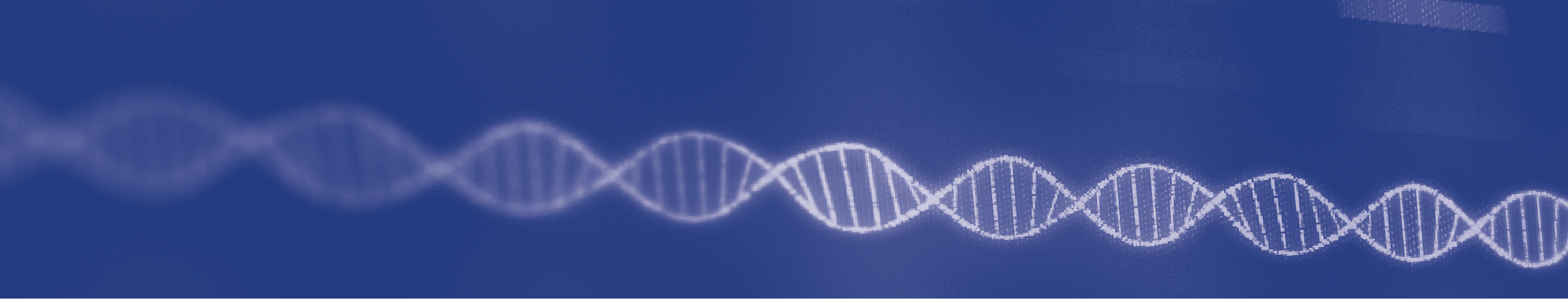
Research by the UK Business Angels Association (UKBAA) shows that healthcare is in the top five sectors for angel investment and we have built a strong community of investors through our Angels in MedCity programme, helping 18 companies to raise £14m over the past three years.

We are increasingly seeing co-investment between a wide range of sources including grant bodies such as Innovate UK, angel syndicates, loan finance, venture capital and crowdfunding; amplified last year by Europe's first dedicated Life Sciences crowdfunding platform, Capital Cell, expanding into the UK market.

Investment into university spinouts reached record levels in 2017. It was great to see many spinouts from universities raising seed funding this year, including University of Oxford spinout, SpyBiotech, who secured £4m to develop a molecular superglue for rapid development of vaccines for a range of diseases.

We were pleased to see support for the sector in the Government's Industrial Strategy, as well as further EIS incentives in the Budget, as it has been the existence and extension of this scheme that has encouraged angels to keep investing through turbulent economic conditions.

Seed funding into UK biotech has more than doubled on the year before



Top UK venture capital rounds 2017

We can see the sector maturing as there is a good range of businesses growing at a solid rate. The previous year in 2016 was an exceptional year with a number of large financings from Oxford Nanopore Technologies Ltd, Kymab Ltd and Dalcor Pharma U.K Ltd, which has made it a challenge to keep up with this year.

At least for some UK life science firms, there is a clear and expansive venture capital financing path. Significant B round funding was available to companies such as Bicycle Therapeutics and Pulmocide. Further down the line, previously well-backed companies such as Cell Medica, Autolus, and NightstaRx were able to attract further substantial C round funds in 2017.

For NightstaRx, or Nightstar Therapeutics as it became, its £37.5m C round in June served as a prelude to an IPO on Nasdaq in September, a path forged by AdaptImmune in 2015/2016 that provides an alternative to listing on UK exchanges.

Company	Deal Date	Round	Value (£m)
Cell Medica Ltd.	16/03/2017	C	60
Autolus Ltd.	26/09/2017	C	59
Bicycle Therapeutics Ltd.	01/06/2017	B	40
NightstaRx Ltd.	29/06/2017	C	33.75
Atlas Genetics Ltd.	23/01/2017	D	26.25
Pulmocide Ltd.	20/03/2017	B	22.8
NeRRe Therapeutics Ltd.	05/01/2017	B	23
Fortuna Fix Inc.	08/11/2017	B	18.75
ApcinteX Ltd.	02/02/2017	A	14

Source: Informa, Strategic Transactions and Scrip

Gregg Sando

CEO, Cell Medica

Cell Medica is committed to transforming patients' lives through developing the significant therapeutic potential of cellular immunotherapy for the treatment of cancer.

In 2017 Cell Medica closed a £60m series C investment round with participation from existing investors IP Group, funds managed by Invesco Perpetual, and funds managed by Woodford Investment Management.

This investment has allowed Cell Medica to continue to develop and invest in its proprietary technology platforms including its CAR-NKT platform, being developed in collaboration with Baylor College of Medicine and University of North Carolina, and its Dominant TCR technology being developed with University College London.

Cell Medica's differentiated approach to chimeric antigen receptor (CAR) technology utilises NKT cells (a subset of T cells) engineered to express IL-15 to maintain cytotoxic function within the immunosuppressive environment. Cell Medica's CAR platform pipeline includes an off-the-shelf allogenic product aimed at CD19 B cell lymphomas.

In the field of engineered TCRs, Cell Medica's Dominant TCR platform technology, developed at University College London, improves the potency of TCR-modified T cells while maintaining the safety profile.

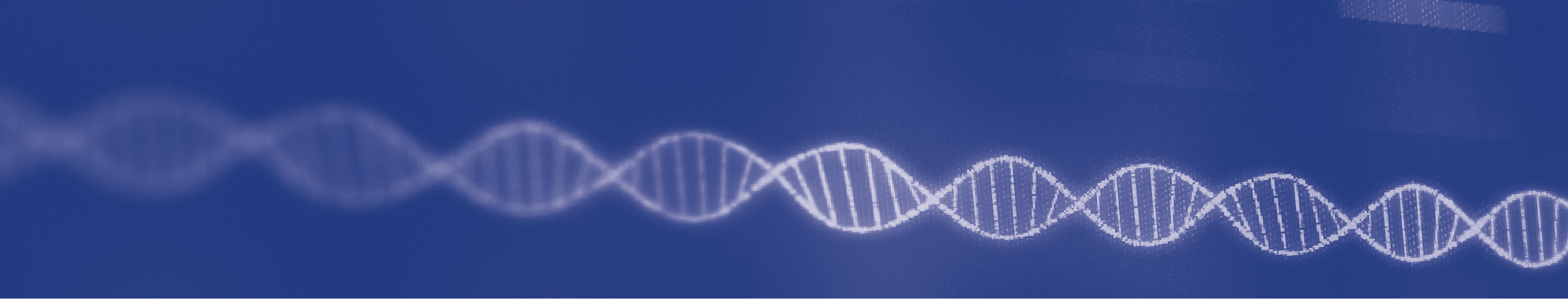
In 2017
Cell Medica
closed a

£60m

series C
investment round

In 2017 we also saw moves in government policy that have the potential to significantly impact the pool of long-term finance for the sector.

In the Autumn Budget, the Chancellor announced the outcome of the Patient Capital Review, which will deliver a £20bn package to support investment in innovative companies over the next 10 years. The Review was launched by Chancellor Phillip Hammond a year ago and has been looking at how to increase access to finance, and especially long-term investment, for innovative growing companies.



Daniel Mahony

Partner, Polar Capital LLP

The HM Treasury's response to the "Patient Capital Review", led by Sir Damon Buffini, and the "Financing Growth in Innovative Firms" consultation has positive ramifications for the UK life sciences industry.

HM Treasury has agreed that there are barriers to investment in high growth innovative companies – especially for pension funds. As a result, the Pensions Regulator will clarify guidance on how pension fund trustees can invest in assets with long-term investment horizons. Moreover, the Prudential Regulatory Authority may issue new guidance on how fund Trustees should interpret the Prudent Person Rule, which governs how the assets of a pension fund can be invested.

With over £2 trillion in UK pension funds, even a small allocation to high growth industries, such as life sciences, could have a tremendous impact on the supply of capital to innovative companies.

The second major announcement, which was announced in the recent budget, is HM Treasury's plan to establish a new subsidiary of the British Business Bank to become a leading UK-based investor in patient capital across the UK. The subsidiary will be capitalised with £2.5bn and plans to co-invest alongside private investors to unlock £7.5bn of new investment into innovative companies.

These two initiatives should create a supply of capital to both early-stage and scale-up companies over the next few years. The life sciences sector will need to make its case and compete for this capital with other innovative industries. Nevertheless, we view this as a significant positive for the sector – capital will be available for bioscience companies with a compelling business case.

Private investors to unlock

£7.5bn

of new investment into innovative companies

Alice Hu Wagner

Managing Director, Strategy, Economics and Business Development, The British Business Bank

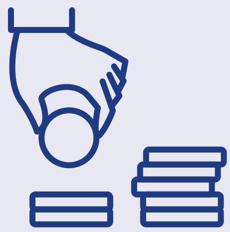
Patient capital – long-term finance for high-growth innovative scale-ups seeking to become established companies with global clout – is particularly critical to the life science sector, where development life cycles can be complex and last years. November 2017's Autumn Budget announced a number of new interventions targeted at increasing the availability of this type of finance.

British Business Bank's funding was increased by £2.5bn, with much of this going towards a 'British Patient Capital' entity, launching in 2018. This entity will incubate an expanded VC Catalyst programme that will invest on a commercial basis into UK venture and growth capital, alongside private investors. Importantly, fund managers operating in the UK can apply to the existing VC Catalyst programme today.

Our venture capital interventions have historically supported the life sciences sector, and we would expect further commitments to be made to life sciences-focused funds and businesses. We always welcome further approaches from interested and qualified managers.

We also intend making investments into a small number of large scale, private sector managed funds-of-funds to catalyse patient investment into high potential businesses. In due course, this and the private capital leveraged in should also become available to promising innovative companies, including those in the life sciences sector.

The British Business Bank is the UK government's business development bank. It makes finance markets work more effectively for smaller businesses, enabling them to prosper, grow and help boost the economy.



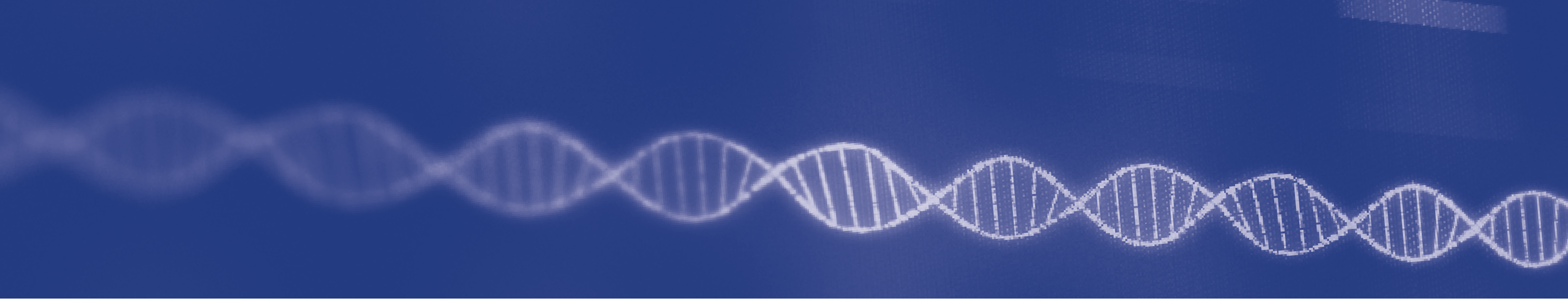
British Business Bank's funding was increased by

£2.5bn

Further changes announced in the Autumn budget that will also create new opportunities in the venture capital landscape in 2018 are:

- Doubling the annual allowance for people investing in knowledge-intensive companies through the Enterprise Investment Scheme (EIS) to £2m.
- Doubling the annual investment that knowledge-intensive companies can receive through the EIS and Venture Capital Trusts (VCT) to £10m.

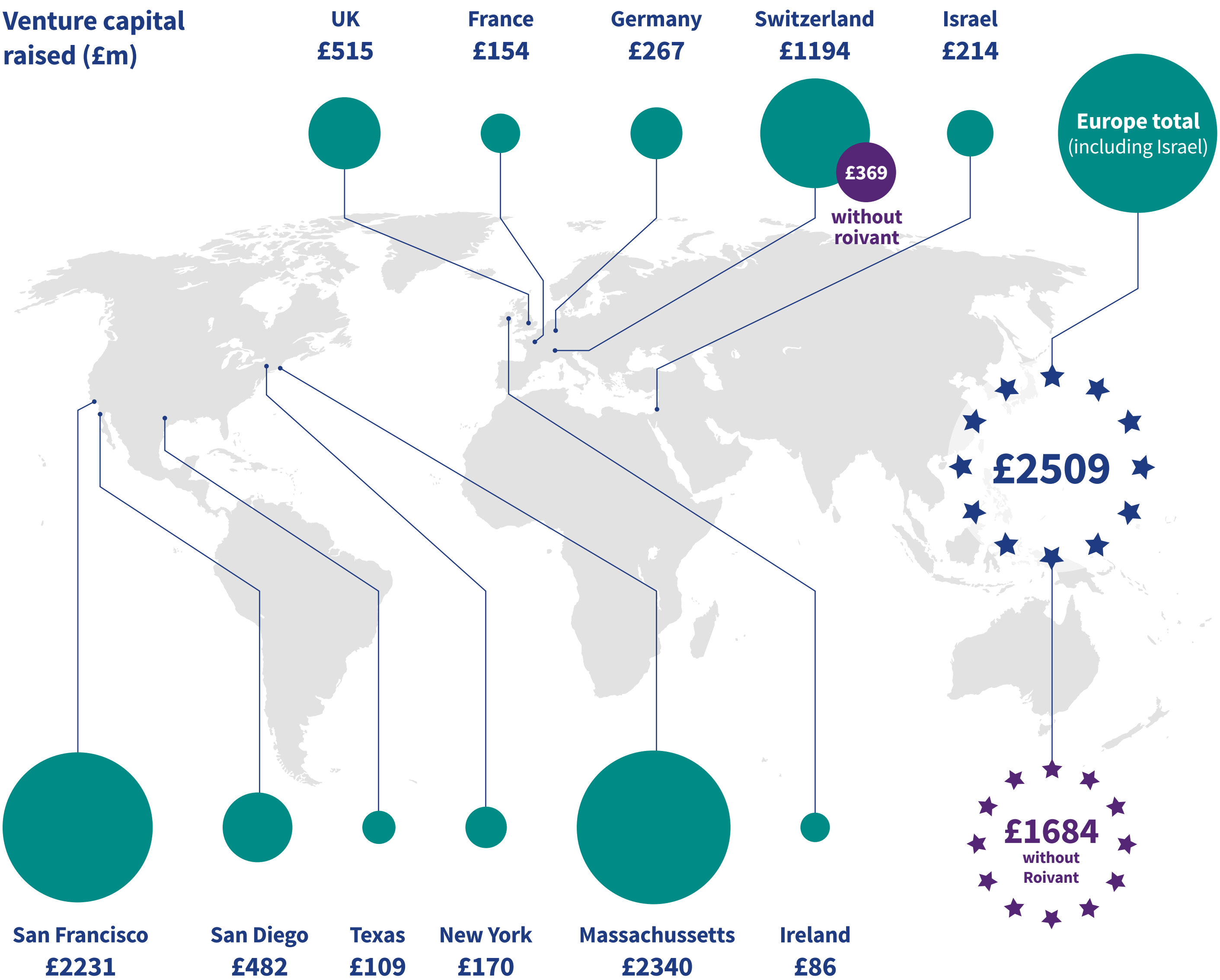
Both these changes will be effective as of April 2018 and already have State Aid clearance.



Venture capital raised – rest of Europe and USA

The European venture capital picture was skewed by a large fundraising by Swiss company Roivant raising $1.1bn. Roivant acts as a vehicle for investing in its wholly-owned pharma subsidiaries and also in third party biotechnology companies such as Portola and Arbutus Biopharma.

Without this raising the venture capital picture across Europe remains much the same with around 30% of European venture capital going to the UK – however the inclusion of Roivant drops the UK share down to 20%. Excluding the Roivant deal, the UK is still third globally and this supports the BIA's vision for the UK to be the third global biotech cluster.



Source: Informa; Strategic Transactions, Scrip

Public markets

UK IPOs for 2017

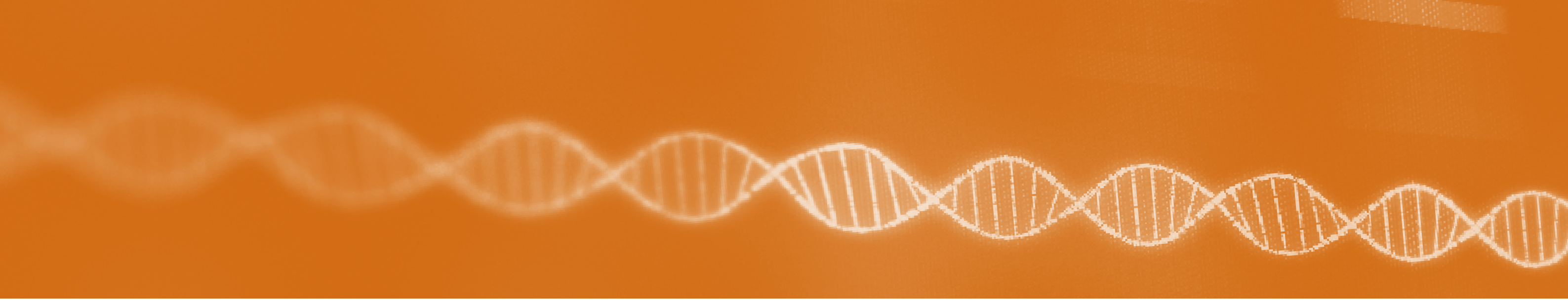
2017 was a return to form for the public markets, with excellent results for biotech companies from across the UK. Two UK companies launched on AIM, raising £19.5m between them, whilst three opted to IPO on Nasdaq raising £214.9m. The two case studies below highlight how floating on the public markets can help to transform an organisation's plans for the future.

The listings on Nasdaq show global demand for UK business technology and innovation, yet many of the companies on this year's IPO list wouldn't exist without the strength of UK based venture capital and support for the early part of their development. The vibrancy of the UK ecosystem can be seen in the amount of UK based technology and innovation that has spread across the world and this will be even more important as UK companies look to compete in a post-Brexit environment.

Destiny pharma's innovative AIM launch and Chinese investment strategy may prove to be a pathfinder for an alternative scale up strategy and shows that the UK can look both east and west for funding.

Company	Amount £m	Date	Market
NuCana plc	85.5	27/09/2017	Nasdaq
Nightstar Therapeutics plc	65	27/09/2017	Nasdaq
Verona	64.4	–	Nasdaq
Destiny Pharma Ltd.	15	04/09/2017	AIM
SkinBioTherapeutics plc	4.5	05/04/2017	AIM

Source: Informa, Strategic Transactions and Scrip



Hugh S. Griffith

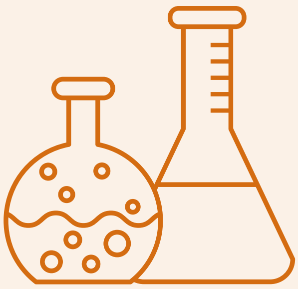
Founder and Chief Executive Officer, NuCana plc

NuCana® is a clinical-stage biopharmaceutical company focused on significantly improving treatment outcomes for cancer patients by applying our ProTide technology to transform some of the most widely prescribed chemotherapy agents, nucleoside analogs, into more effective and safer medicines.

While these conventional agents remain part of the standard of care for the treatment of many solid tumours, their efficacy is limited by cancer cell resistance mechanisms and they are often poorly tolerated. Utilising our proprietary technology, we are developing new medicines, ProTides, designed to overcome key cancer resistance mechanisms and generate much higher concentrations of anti-cancer metabolites in cancer cells.

Our most advanced ProTide candidates, Acelarin® and NUC-3373, are new chemical entities derived from the nucleoside analogs gemcitabine and 5-fluorouracil, respectively, two widely used chemotherapy agents. Acelarin is currently being evaluated in three clinical studies for patients with ovarian cancer, biliary cancer or pancreatic cancer. NUC-3373 is currently in a Phase I study for the potential treatment of a wide range of advanced solid tumours.

In October 2017, NuCana completed a successful IPO raising approximately $114m and listing its shares on NASDAQ under the ticker symbol "NCNA".



focused on significantly improving treatment outcomes for cancer patients

Jan-Anders Karlsson

CEO, Verona Pharma plc

At Verona Pharma, our vision is to become a leader in developing and commercialising innovative treatments to improve the health and quality of life of the millions of people affected by chronic respiratory diseases.

To help achieve this, in April 2017, we listed on the NASDAQ market raising c.$90m as part of a Global Offering. This was a transformational event for Verona Pharma and allows us to advance our lead candidate, RPL554, a first-in-class, inhaled, drug in clinical development for COPD and other respiratory diseases, through a Phase 2b clinical trial in COPD patients, and to fund additional Phase 2 studies in COPD and cystic fibrosis.

The NASDAQ listing was a natural evolution in the company's corporate strategy to focus on the US market, which is the largest market for the treatment of COPD and other respiratory diseases. It has also given Verona Pharma access to a larger pool of investors who have a deep understanding of the healthcare market. Not only did the listing allow Verona Pharma to raise significant financial capital, it also enabled us to build our profile in the global biotech sector, and increase awareness of the potential of RPL554 in addressing a gap in the market for novel treatments for respiratory diseases.

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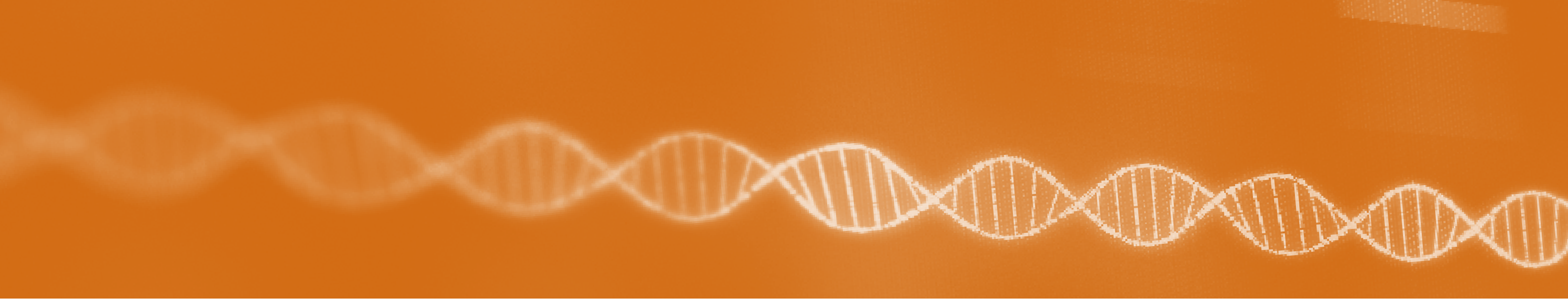


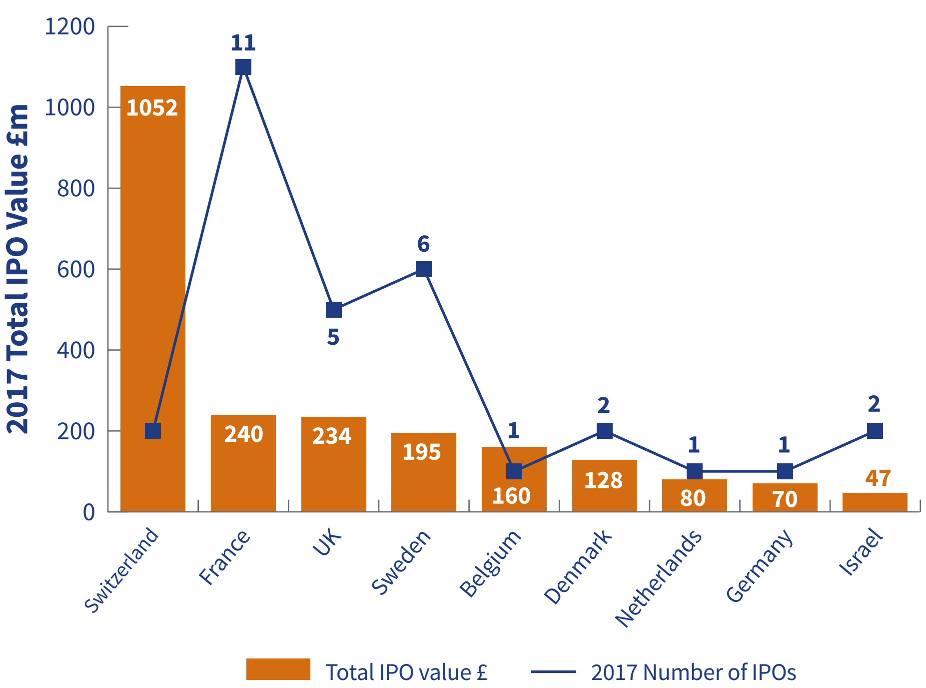
UK and European IPOs

The European market for life science IPOs was generally quiet in 2017 with two major exceptions, in Switzerland and Sweden. In Switzerland, the acquisition of Actelion by Johnson & Johnson for $30bn in June 2017 returned a huge amount of cash to Swiss investors, some of which was almost instantly recycled into Idorsia Ltd, a 600-person publicly quoted spin-off encompassing Actelion's drug discovery operations and early-stage clinical development assets. With the additional of substantial loan capital from J&J, Idorsia's IPO was worth around £825m.

In Sweden, part of the stimulus for a plethora of new biopharma IPOs in 2017 was Mylan's $8bn acquisition of Meda in 2016. Sweden enjoyed a buoyant IPO market across all sectors in 2016 and 2017. In 2017, life sciences became the dominant sector with 11 IPOs taking place together worth around £200m. The largest of these were neurology firm BioArctic AB and cancer concern Oncopeptides AB each of which raised around £60m.

Despite new sources of funding on the horizon for 2018 and most importantly increased access to patient capital – there is a significant challenge that overshadows 2018 funding, the second iteration of the Markets in Financial Instruments Directive (MiFID II) legislation, which kicked in on 3 January 2018. The case study on the next page provides more information on how this could have an impact on sector funding.

European IPOs 2017



Source: Informa; Strategic Transactions, Scrip

Alex Shaw

Senior Account Manager, Instinctif Partners

To date, banking research on companies has provided an effective route to reach fund managers. MiFID II will change this landscape dramatically in 2018, as fund managers will now have to explicitly pay for research.

Consequently, there's a belief MiFID II may cause a drop of up to 75% in trading commissions, focusing research priorities on larger stocks.

It's all a question of economics

A broker usually takes half of all trading in a 'house' stock in the SME sector, leaving a significantly smaller opportunity for others.

A non-house stock, according to Hardman research, requires £30,000 in commission per year to maintain. At today's commission rates for any stock, there is no commercial case for non-house coverage below £200m market capitalisation.

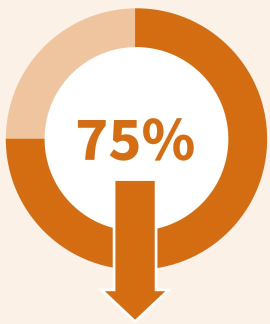
If the 75% trading commission reduction is also taken into account, the outlook is bleaker still. The threshold figure of £200m gets pushed up to £500m for a Main Market business before non-house coverage becomes viable; for AIM, the figure is even higher at £700m.

What's the impact for smaller listed biotech and medtech companies? If corporate research becomes scarcer, these companies are going to have to work much harder to promote themselves to investors. The key will be clear corporate messaging through the right channels. Communicating will be more important than ever before.

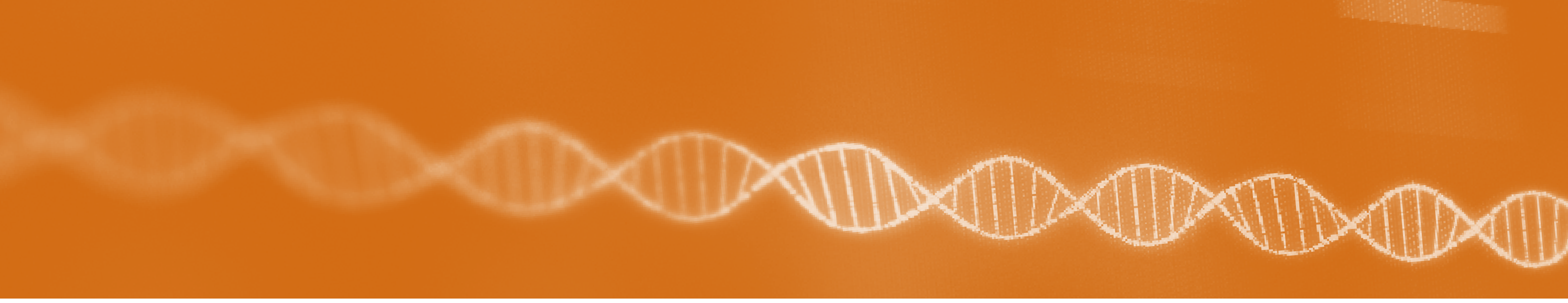
In January, the BIA published a new best practice guide to help bioscience companies communicate their R&D progress clearly and effectively to investors and the wider public.

It can be accessed at http://bia.me/RDcommsguide

MiFID II may cause a drop of



in trading commissions



Follow on financing on the London Markets and Nasdaq

UK financial markets are still a strong source of follow on finance for UK biotechnology companies.

Horizon Discovery raised £80m on AIM in August, wound care company Tissue Regenix raised £40m also in August while Abzena raised £25m in April.

AIM investors appear to be attracted to companies like Abzena, Horizon Discovery, and Abcam that have a significant immediate income streams from supply research and development markets.

AIM also attracted non-UK companies as a launch venue. Hong Kong based pharmaceutical developer Hutchison China Meditech was the primary overseas beneficiary raising £114m in placings, with Faron Pharmaceuticals and Maxcyte adding another £30m between them.

UK company Verona Pharma raised £70m added through a combination of a Nasdaq IPO of American Depository Shares and smaller placements of its ordinary shares on AIM.

UK companies have also continued to attract follow-on investment on overseas exchanges in 2017: AdaptImmune, Oxford Immunotec Global and Summit Therapeutics raised $120m (£90m) between them in secondary offerings on Nasdaq in 2017.

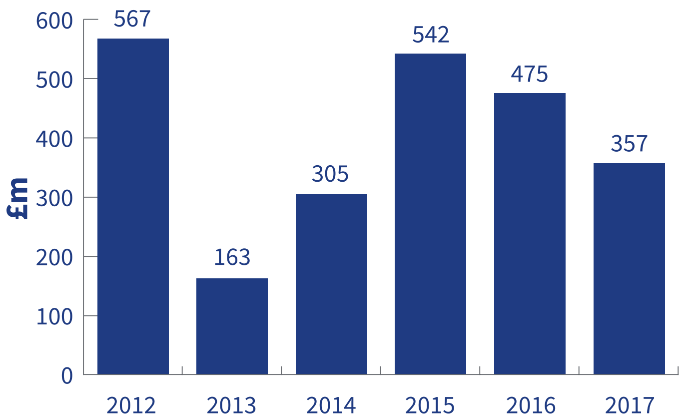
The total of secondary public equity finance raised by UK-based biopharmaceutical companies was £452m to November 2017.

Another interesting point from the public markets in 2017 was that Main Market investors have been keen to invest indirectly in biotech, through vehicles that fund the biopharma sector, including private companies. For instance, late-stage life science investment vehicle Arix Bioscience plc raised £113m on London Stock Exchange's Main Market in February 2017. Over 60% of the capital it raised came from Woodford funds and Woodford clients. Arix has made 11 investments so far, two of them in UK-based companies – Autolus and Verona Pharma – as well as investing in French, Irish and US firms.

Biopharma Credit plc is an investor in late-stage life science companies that raised £606m on London Stock Exchange's Main Market in March and added a further £110m ($150m) in December. It provides "debt capital for the life sciences industry" and thus far has offered loan facilities of up to $700m (£525m) to two commercial-stage US companies, Tesaro and Lexicon. We take a further look at debt financing later on in this report.

In June, IP Group raised £200m on London Stock Exchange's Main Market for its investment work with early stage university spin-outs. It subsequently merged with Touchstone Innovations, formerly AIM-quoted Imperial Innovation Group, in effect consolidating UK spinout activity. In 2016 Touchstone Innovations extended its spin-out reach from Imperial College to Oxford and Cambridge Universities. In parallel with the 2017 fundraising, IP Group also expanded its operational remit from its base in the UK to encompass a group of nine universities in Australia and New Zealand.

AIM 2PO



Source: LSE/Nasdaq

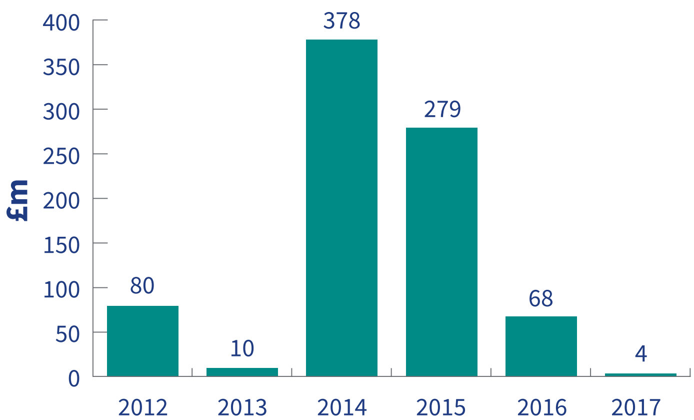
James Clark

Head of Tech and Lifesciences, Primary Markets, London Stock Exchange

Bringing breakthrough science and innovative technology to the market is not only critical for long term public health but also the creation of new high quality jobs and economic growth across the UK. It has become increasingly clear that London Stock Exchange Group, through its Main Market and international growth market, AIM, occupy a unique place in the global public markets for funding life sciences companies.

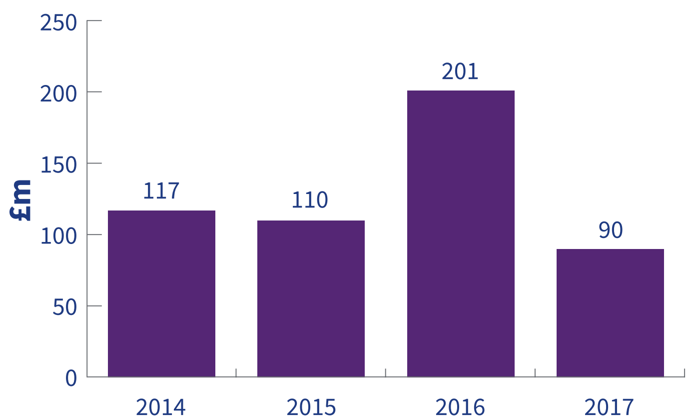
Through London's markets, life sciences companies have access to a unique financial services ecosystem: deep, liquid pools of multicurrency investor capital; robust, transparent and trusted markets and blue chip investors who want to invest in these businesses for the long term. London's markets support life sciences companies throughout their growth journeys, not only at IPO, allowing them to raise follow on capital during the course of their public lives. And with the growing need for medicines across the world, we are excited to see innovation taking place across the sector. London's markets have welcomed a number of UK listed vehicles that are investing in the development of global life sciences companies.

Main Market 2PO



Source: LSE/Nasdaq

Nasdaq 2PO



Source: LSE/Nasdaq

Partnering and deal making

Mergers and acquisitions

The theme of maturing UK companies continues when we look at the figures for M&A activity for 2017 as we saw Horizon acquiring Dharmacon from GE. We also saw some promising biotechs being acquired by the big players. Puridify span out of University College London in 2013 and their revolutionary bioprocessing platform purification technology, FibroSelect caught the eye of major player GE who acquired the company in November.

Although not a biotech acquisition – a merger that will change the funding landscape in the UK in 2018 was that of IP Group and Touchstone Innovations. The merger first kicked off in July 2017, after IP Group raised £184m on the London Stock Exchange. The deal was given the go-head by Competition and Markets Authority in October and brought together two of the UK leading university spin-out bodies. The deal was worth £490m based on the relative value of the two companies' shares.

Table of deals

Acquirer	Target	Value £m	Date
Reckitt Benckiser	Mead Johnson	13,275	February
LivaNova	Imthera	169	December
Smith & Nephew PLC	Rotation Medical	158	October
Clinigen Group	Quantum Pharma plc	149	June
Horizon Discovery	Dharmacon (GE Subsidiary)	64	July
BTG	Roxwood Medical	49	October
GE Healthcare	Puridify Ltd	undisclosed	November

Source: Informa, Medtrack

Dr Darrin Disley

Chief Executive Officer, Horizon

The life sciences are in the midst of a period of rapid change. Researchers and drug developers are increasingly pursuing a more precise approach for their programmes, using the wealth of genetic information now available to drive development of lower-cost genetically-targeted medicines that promise to deliver more personalised treatments for common and rare diseases.

Horizon addresses this opportunity through its catalogue of over 23,000 cell lines that reflect the genetic disease of real patients, generated by the world's broadest gene editing platform. This was further bolstered in August 2017 by the acquisition of Dharmacon from General Electric for $85m, adding gene modulation to Horizon's platform, creating a world leader in the building, engineering, and modulation of cells able to provide comprehensive support for genomic research.

The integration process is proceeding smoothly and there are already significant operational, commercial and financial synergies between the two organisations being realised, supporting the enlarged Group's efforts to accelerate revenue growth and margin expansion as the Horizon drives towards profitability.

To fund the acquisition, Horizon completed an over-subscribed placing, raising gross proceeds of £80m from UK investors and a significant number of specialist US healthcare investors, which now make up c.27% of Horizon's register.

Catalogue of over

23,000 cell lines

that reflect the genetic disease of real patients

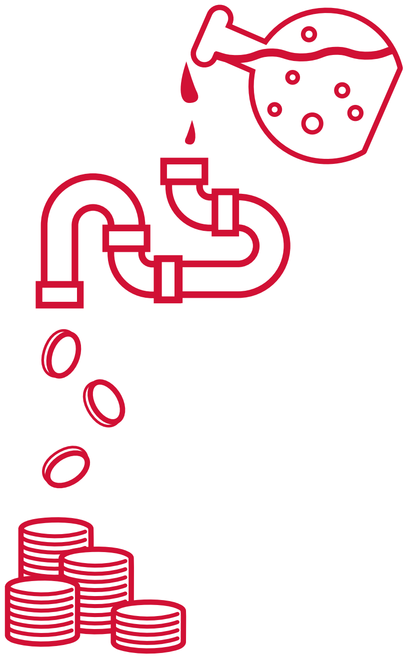
Debt financing

We are starting to see some companies accessing debt financing and as we move into 2018 we have seen Mereo Biopharma using this source of finance. On 7 August the Group finalised a new £20m debt facility with Silicon Valley Bank and Kreos. Currently this is not a widely used source of finance in the UK but as companies grow in size and become more sophisticated the option of using debt financing may become more attractive and we will continue to monitor trends in this area.

Region	Full year 2017 Debt* total £m	Count	Average £m
Massachusetts	2450	21	117
California	1163	15	78
Switzerland	844	5	169
San Francisco	728	7	104
Ireland	687	3	229
New Jersey	524	9	58
Canada	407	14	29
San Diego	374	3	125
Pennsylvania	199	7	28
Netherlands	167	3	56
UK	62	5	12

* Debt, senior and convertible notes
Source: Informa - Strategic Transactions and Scrip

Pipeline



UK innovation remains strong. British companies have the greatest number of products in both preclinical and clinical pipelines in Europe. Some of the strength of this pipeline can be attributed to the significant amount of funding that the UK invests in early stage and translational science and reflects the quality of our universities.

The data for 2017 shows a greatly increased level of preclinical activity across all the European nations. This reflects the extension of the Pharma Projects database to include those companies which only have preclinical projects; previously the database recorded preclinical projects associated with companies that also had clinical-stage programmes.

Country	Preclinical*	Phase I	Phase II	Phase III
UK	351	43	70	15
France	192	23	39	11
Germany	147	34	38	6
Sweden	137	10	37	8
Switzerland	115	16	24	10
Netherlands	100	11	19	4
Spain	96	9	23	3
Italy	62	4	11	6
Austria	56	14	5	2
Denmark	49	12	13	7
Belgium	43	13	14	6
Poland	41	1	1	1
Finland	33	-	4	1
Ireland	30	10	8	-
Portugal	14	2	2	-
Hungary	8	2	-	-
Slovakia	1	-	1	-
Czech Republic	1	-	3	1

Source: Informa pharma Projects

David Cox

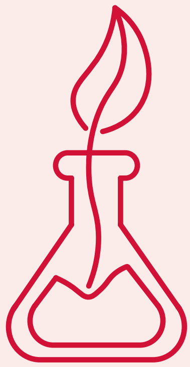
Healthcare Specialist Sales, Panmure Gordon

Panmure Gordon
AND COMPANY

2018 is set to be a very busy year for UK life science companies. In biopharma there are a number of important readouts, many of them late-stage, that could potentially transform valuations in UK healthcare. Couple this with the fundamental long-term trends of ageing populations, rising global healthcare spending and an improving regulatory environment, as the FDA takes a more pragmatic approach to approvals, the potential for outperformance continues to be favourable – even in the context of the UK quoted sector having nearly doubled in value over the past 18 months.

Most of the significant events for UK biotech are currently anticipated in the first 6 months of this year, including approvals, Phase III readouts, and licensing deals. Key events include the highly anticipated Phase III result from Faron for its treatment of ARDS (acute respiratory distress syndrome). Another imminent high profile readout is the interim (24 week) data from Summit Therapeutics' Phase II PhaseOut Duchene Muscular Dystrophy due in Q1. Both Faron and Summit could bring game changing, first-in-class treatments to their respective indications, each having the potential to be a blockbuster.

Looking back, 2017 saw both Novartis and Kite get first approvals in CAR-T therapy for haematological tumours. This year will see AIM-listed MaxCyte initiate its own CAR-T trial addressing solid tumours with a rapidly accelerated non-viral transfection technique to genetically modify T-cells into powerful targeted anti-cancer agents. There is much more to talk about than can be highlighted here, but 2018 is set to be a stellar year for UK biopharma.



2018 is set to be a very busy year for UK life science

Accessing Analysts in 2018

As you will have read in the report – the MiFID II legislation that came into force on 3 January 2018 will make it more challenging for investors to access analysts, which could have a detrimental impact on the funding coming into the sector. In a bid to raise the profile of the analysts that cover UK biotech, the following list has been compiled by Consilium Strategic Communications.

Bank	Analyst
ABG Sundal Collier	Morten Larsen, Daniel Thorsson
ABN AMRO	Mark van der Geest, Rene Verhoeff
Alm. Brand Markets	Michael Friis Jørgensen
AlphaValue	Armelle Moulin, Marion Scherzinger
Arden Partners	Chris Thomas
Banco de Sabadell, S.A.	Javier Esteban
Banco Espirito Santo de Investimento	Luis Navia
Bank am Bellevue	Bruno Eschli, Stephen Leventhal
Bankhaus Lampe KG	Heiko Feber, Frank Neumann
Barclays	Israel Akinrinsola, Olivia Capra, Emmanuel Papadakis, (Himanshu Chaturvedi)
Berenberg Bank	Frazer Hall, Scott Bardo, Alistair Campbell, Klara Fernandes, Joseph Lockey, Tom Jones, Mike Ruzic, Laura Sutcliffe, Charles Weston, (Abigail James)
Bank of America Merrill Lynch	Jamie Clark, Ines Duarte da Silva, Ying Huang, Sachin Jain, Jenny Leeds, Amanda Li, Aspen Mori, Justin Morris, Graham Parry, Qian Weng, (Dan Lundquist)
Bryan, Garnier & Co	Eric Le Berrigaud, Mickael Chane-Du, Marion Levi, Hugo Solvet, Gary Waanders, (Dominic Wilson)
CA Cheuvreux	Marcel Brand, Laurent Flamme, Richard Koch, Oliver Reinberg
Cantor Fitzgerald	Paul Taylor, Brian White
Caja Madrid Bolsa	Ana Isabel González García
Carnegie Bank	Niels Granholm, Philip Lagnetoft, Kristofer Liljeberg-Svensson, Carsten Lonborg Madsen, Henrik Sinding, Lars Topholm
Cenkos Securities	Chris Donnellan
Charles Stanley	Jeremy Batstone-Carr, Rae Ellingham
Citigroup	Liav Abraham (US), Andrew Baum, Alex Glasner, Peter Verdult, Patrick Wood, (David Rawley)
CM-CIC Securities	Agnès Blazy, Arsene Guekam

Bank	Analyst
Commerzbank	Volker Braun, Daniel Wendorff
Cowen International	Christine Arnold (US), Ken Cacciatore, Joshua Jennings, Phil Nadeau, Anant Padmanabhan, Charles Rhyee, Steve Scala, Doug Schenkel, Eric Schmidt, Simos Simeonidis, (David Kirkpatrick)
Credit Suisse	Hans Bostrom, Christoph Gretler, Jo Walton, Matthew Weston, Trung Huynh, (Phil Gestrin)
Danske Equities	Thomas Bowers, Mattias Häggblom, Hans Jeppsson, Martin Parkhøi, Søren Samsøe
Deutsche Bank	Holger Blum, Jeremy Lai, Richard Parkes, Tim Race, Gunnar Romer, Yi-Dan Wang, Sarah Thomas, (Alex Evans)
Degroof Petercam	Ricky Bhajun, Stéphanie Put
DnB NOR	Rune Dahl
DZ Bank	Christa Bähr, Elmar Kraus, Thomas Maul, Peter Spengler
Edison	Susie Jana, John Savin, Juan Pedro Serrate, Jonas Peciulis, Daniel Wilkinson
Equinet Institutional Services	Edouard Aubery
Equity Development	Emma Ulker
Exane BNP Paribas	Simon Baker, Florent Cespedes, Julien Dormois, Nicolas Guyon-Gellin, Luisa Hector, Kerry Holford, Vincent Meunier, Romain Zana, (John Aldersley)
fairesearch GmhH & Co	Martin Schnee
finnCap	David Buxton, Mark Brewer, Alex Pye
Goetz Partners	Martin Brunninger, Melina Reisenberg, Chris Redhead
Goldman Sachs	Krishna-Chaitanya Arikatla, Veronika Dubajova, Divya Harikesh, Keyur Parekh, Joanna Tucka, (Mick Readey)
Handelsbanken Capital Markets	Klaus Madsen, Björn Olander, Peter Sehested
Hardman and Co	Martin Hall, Dorothea Hill, Gregoire Pave
Helvea	Daniel Jelovcan, Odile Rundquist, Olav Zilian
HSBC	Steve McGarry, Julie Mead, Lucy Acton, Murielle André-Pinard
ING	Giel-Jan Triest, Sjoerd Ummels, David Vagman
Investec	Cora McCallum, Andrew Whitney
Jefferies	Lucy Codrington, Ian Hilliker, Jeff Holford (US), Kit Lee, Lyra Li, Ken Rumph, James Vane-Tempest, Harry Sephton, Peter Welford, (Jan Scherer)
JP Morgan Cazenove	David Adlington, Alex Comer, James Gordon, Richard Vosser, (Marjan Daeipour)
Jyske Bank	Frank Andersen, Peter Andersen
KBC Securities	Sandra Cauwenberghs, Lenny Van Steenhuyse
Kempen & Co	Alexandru Cogut, Anastasia Karpova, Suzanne van Voorthuizen
Kepler Capital Markets	Mark Belsey, Moritz Dullinger, David Evans, Maja Pataki, Martin Voegtli, Fabian Wenner
Landesbank Baden-Wuerttemberg	Timo Kuerschner
Liberum Capital	Graham Doyle, Roger Franklin

Bank	Analyst
Merck Finck & Co	Konrad Becker, Carsten Kunold
Mirabaud	Nick Turner
M.M. Warburg Investment Research	Ulrich Huwald
Morgan Stanley	Alex Gibson, Michael Jungling, Simon Mather
N+1 Singer	Sheena Berry, Chris Glasper, Jens Lindqvist, Sahill Shan, (Brough Ransom)
Natixis Beatrice	Muzard Grevet, Philipe Lanone
New Street	Stuart Harris, Steve Putnam, (Richard Goldsborough)
NIBC	Dylan van Haaften, Anita Ye, Pau Vidal Tarruella
Nordea Markets	Patrik Ling, Hans Mahler, Michael Novod, Olle Sjolin
Nord/LB	Holger Fechner, Thorsten Strauss
Numis	Sally Taylor, Paul Cuddon, Stefan Hamill, (Ceri Morgan)
Oddo Securities	Christophe-Raphael Ganet, Sebastien Malafosse
Panmure Gordon	Mike Mitchell, Julie Simmonds, (David Cox)
Pareto Securities	Finlay Heppenstall, Ulrik Trattner
Peel Hunt	Miles Dixon, Anchal Verma, Amy Walker, (Catherine Isted)
Portzamparc Gestion S.A.	Arnaud Guérin
RBC Capital Markets	Zoe Karamanoli, Nick Keher, Sebastian Sauter
Redburn	Anita Vasu
Rx Securities	Samir Devani, Joseph Hedden, Michael King
Sanford C Bernstein	Lisa Clive
Santander	Manfred Jakob, Patricia López del Río
SEB Enskilda	Lars Hevreng, Henrik Simonsen, Peder Strand
Shore Capital	Adam Barker, Tara Raveendran
Société Générale	Patrick Jousseaume, Delphine Le Louët, Justin Smith, (Erland Sternby)
Standard & Poors	Sho Matsubara, Jacob Thrane
Stifel	Christian Glennie, Max Herrmann, James Mainwaring, (Chris Eccles)
Swedbank	Johan Unnerus
Trinity Delta	Franc Gregori, Mick Cooper, Lala Gregorek
UBS	Ian Douglas-Pennant, Michael Leuchten, Jack Scannell, Sebastien Walker
Westend Brokers Research	Claudia Lakatos
Zeus Capital	(Hugh Kingsmill Moore)
Zürcher Kantonalbank	Michael Nawrath

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