



The Economic Impact of the Babraham Research Campus

AN EXPLORATION OF KEY FINDINGS

The Babraham Research Campus Partners:



Babraham Bioscience Technologies is responsible for the commercial development and management of the Babraham Research Campus; considered to be one of the UK's leading campus' to support early-stage bioscience enterprise. The Babraham Research Campus is distinct in its co-location of bioscience companies with the Babraham Institute. World class research and business come together to promote innovation and strengthen links between academia and the commercial world.

www.babraham.com



The Babraham Institute undertakes world-leading research into understanding the biology of how our bodies work, including what changes as we age and during disease. Our research is split into three programmes: Epigenetics, Signalling and Lymphocyte Signalling supported by strategic programme grants from the Biotechnology and Biological Sciences Research Council (BBSRC) and additional funding from research councils, the EU and charities.

We maximise the impact of our research through Knowledge Exchange Commercialisation and Public Engagement activities. We do this by collaborating with other academics, policy makers, charities, schools, the general public and industry, including companies on the Babraham Research Campus. Commercialisation is achieved in collaboration with the Institute's wholly-owned trading arm, Babraham Institute Enterprise Limited.

www.babraham.ac.uk



BBSRC is part of UK Research and Innovation, a new body which works in partnership with universities, research organisations, businesses, charities, and government to create the best possible environment for research and innovation to flourish. We aim to maximise the contribution of each of our component parts, working individually and collectively. We work with our many partners to benefit everyone through knowledge, talent and ideas.

We invested **£498 million** in world-class bioscience in 2017-18. We support around **1,600** scientists and **2,000** research students in universities and institutes across the UK.

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The Economic Impact of the Babraham Research Campus

The Babraham Research Campus: Background

The Babraham Research Campus (Figure 1) is a 430-acre freehold estate of the Biotechnology and Biological Sciences Research Council (BBSRC), (which is part of UK Research and Innovation (UKRI)), situated six miles south of Cambridge UK. It is home to a highly connected community of more than 60 biomedical organisations co-located with the Babraham Institute (BI).

The Campus supports UK bioscience through advancing discovery research and also providing facilities and capabilities for early-stage and growing commercial life-science organisations.

The Campus is managed and developed by Babraham Bioscience Technologies (BBT) on behalf of the BBT shareholders, UKRI-BBSRC and BI. The Babraham Research Campus brings together world class research and business to promote innovation and strengthen links between academia and the commercial world.

Figure 1: The Babraham Research Campus in 2019



Report Context and Objectives

In the summer of 2019, the Campus partners, BBT, UKRI-BBSRC and BI, commissioned a research team to identify and capture a comprehensive evidence-based understanding of the scientific, economic, and social benefits arising from the development and public investment in Babraham Research Campus.

The research team was led by Cambridge Economic Associates (CEA) and comprised the Cambridge University Centre for Business Research (CBR), Cambridge Econometrics (CE), Savills and Professor Lisa Hall, Professor of Analytical Biotechnology, Department of Chemical Engineering and Biotechnology, the University of Cambridge.

The outputs from this impact assessment will inform the future development of the Babraham Research Campus and provide an evidence-based understanding of the overall contribution the Campus makes to the Cambridge and UK economy.

The research was directed by Professor Peter Tyler, supported by Angela Brennan from CEA. Dr Andy Cosh, Senior Research Associate, directed the research team from the CBR, working with Dr Giorgio Caselli, Research Fellow at the CBR. Ben Gardiner, Director, led input from CE, supported by Project Managers Shyamoli Patel, Chris Thoung and Xinru Lin. The research input from Savills was directed by Mark Powney, Director, Planning and Ryan McKenzie, Associate Director, Planning and Economics. The research team was supported by Professor Lisa Hall.

The research team would like to thank the members of the Project Steering Committee for their help during the course of the assessment. They benefited greatly from discussions with Dr Andy Richards (Chairman, BBT), Derek Jones (Chief Executive, BBT), Dr Karen Lewis (Executive Director, Capability and Innovation, BBRSC), Dr Lee Glassbrook (Strategic Lead-Research and Innovation Campuses, Benefits Realisation, BBRSC) and Simon Jones (Chief Operating Officer, BI). They would also like to specifically note the valuable contribution of Professor Michael Wakelam, former Director of BI, who very sadly passed away prior to the formal publication of these findings.

During the scoping phase a number of interviews were held with those responsible for monitoring and tracking the performance of the Campus, some of whom were also represented on the Project Steering Committee. The research team are particularly grateful for assistance from BBT, namely: Nicola Kinsey (Director of Business Operations), Becky Paxton (Chief Financial Officer), Jackie Draper (Finance Manager), Dr Karolina Zapadka (Head of Babraham Accelerator), and from BI: Dr Simon Cook (Head of Knowledge Exchange and Commercialisation), Dr Hayley McCulloch (Public Engagement and Knowledge Exchange Manager) and Dr Caroline Glover (Grants Officer).

The research team would also like to thank the many companies, organisations and stakeholders who gave generously of their time.

The views expressed in this Report are those of the consultants alone.

The full report referenced can be found here:
www.babraham.com/news-events/2020/ImpactReport

Executive Summary:

The over-arching result of this study into the scientific, economic and social impacts of the Babraham Research Campus has been to evidence that considerable value can be realised by well targeted public sector investment into this extremely important (life sciences) sector, to the future benefit of both the UK economy and its citizens.

Serving a niche in the UK innovation system

The Babraham Research Campus caters to a segment of life science companies that is typically under-served UK wide; namely those in the early stage of incubation and with ambition to scale to an Initial Public Offering (IPO). The uncertain viability and therefore higher risk profile of these companies makes them far less attractive as tenants to more commercially orientated science parks. Furthermore, the standard commercial science park offering of shell and core buildings on long leases, are also unfavourable and unappealing to the companies and investors themselves.

This report provides evidence of the critical role public investment has played in enabling the Babraham Research Campus to overcome this clear market failure, to offer a stable and supported community within which these organisations are able to flourish. This, in turn, has led to faster growth in the life science sector in Cambridge.

In this respect, a UKRI-BBSRC supported research and innovation campus, such as the Babraham Research Campus, fills what is otherwise a largely unoccupied niche in the UK innovation system.

Making an impact locally, nationally and internationally

The Babraham Research Campus has made a significant contribution to the Cambridge high-technology and commercial property market, through the provision of specialised start up and scale up space; access to shared environments and world-class science-led facilities, on lease terms tailored to the needs of early stage companies. Over three quarters of Campus companies surveyed considered their location on the Babraham Research Campus as either a very important or critically important factor in helping them access laboratory and office space.

The evidence also suggests that the support structure provided by the Babraham Research Campus is a key factor enabling these companies to make an impact across local, national and international ecosystems.

To put this into context:

- Overall, companies estimated that being located on the Campus had on average accelerated their fundraising by three months and increased the amount of funds raised to date by 10%.
- The total market value of the largest fourteen companies on the Campus is £4.1bn which represents a 7.2 times return for investors, who have put in £636m in total.
- Babraham Research Campus tenant companies have attracted a significant amount of commercial investment over the last decade; raising over £1.2bn to date, of which more than £300m was received in 2018.
- Excluding virtual companies, the number of employees is estimated to be around 20% larger than it otherwise may have been as a consequence of being located on the Campus.

There is also evidence that the attractiveness of companies based on the Campus to life science and other investors has increased over time.

An environment ideally positioned to support life science entrepreneurs

It is clear from the evidence presented throughout the report that the Babraham Research Campus is regarded as providing a strong contribution to both the commercialisation of life science research, and the life science knowledge base; enabling entrepreneur driven businesses to form (including new academic spin-outs) and facilitating collaboration.

Companies based on Campus consider their ability to grow, attract and retain talent is enhanced by being part of the Babraham Research Campus community and that the speed and scale of their activity is expedited.

The evidence positions the Babraham Research Campus at the forefront in supporting the UK's early-stage bioscience enterprise...if not Europe.

Read on to explore the detail around the report's key findings.

Key Findings:

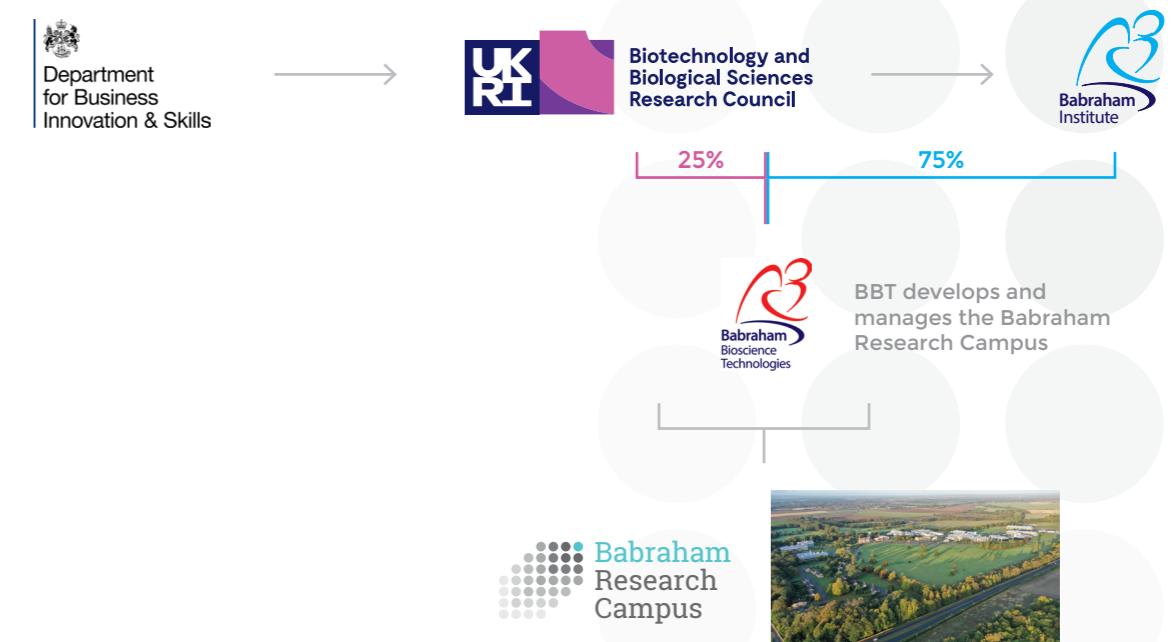
Enhancing the provision of high-technology and commercial floor-space

BBT is responsible for developing and managing the Babraham Research Campus on behalf of its shareholders; UKRI-BBSRC and BI. In addition to the provision of commercial laboratory and office facilities on site, BBT's mission, 'is to drive the development of a sustainable, world-leading campus environment which supports and nurtures the development of cutting edge science, capabilities and innovation in an entrepreneurial setting.'¹

BBT's role extends beyond campus and property management, to include support of early stage life-science companies through the provision of communal laboratories, accelerator programmes, such as Accelerate@Babraham, investor and cluster conferencing activities and the creation of a highly connected community.

Figure 2 provides the ownership overview.

Figure 2: Ownership Overview of the Babraham Research Campus



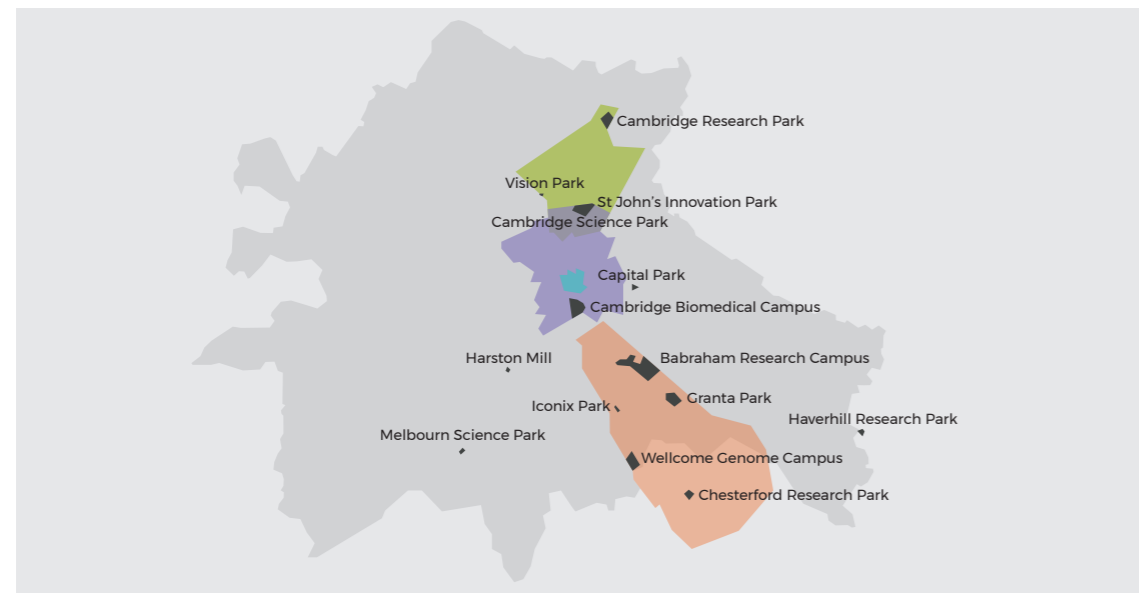
1. <https://www.babraham.com/campus/>

The evidence from this study indicates that the Babraham Research Campus has made a significant contribution to the Cambridge high-technology and commercial property market, providing specialised start up and scale up environments; access to shared spaces and world-class science-led facilities, on lease terms tailored to the needs of early stage companies.

The Babraham Research Campus is part of the Cambridge Southern Research Campus Sub-Cluster (Figure 3).

Combined with world-class life-science research of BI, the Babraham Research Campus provides a unique bioscience ecosystem that differentiates it from the many privately funded business parks. It provides start-up space designed to support new ventures on flexible lease terms, which differs from what a commercial landlord would offer. (Reported in Sections 8 and 9 Main Report).

Figure 3: Cambridge Sub-market and Clusters



Source: Savills - 2019

The early-stage life-science companies that locate at the Babraham Research Campus, are by their very nature high-risk endeavours, often with short funding cycles, and with a requirement to locate in and have access to specialised space and equipment. As tenants, these companies are often less attractive to many traditional landlords. In addition, the landlord's offering of long leases (perhaps on shell-and-core only properties) is unappealing to the life sciences companies themselves and their underlying investors. This leads to a risk of 'market-failure'. In that respect, a UKRI-BBSRC supported research and innovation campus such as the Babraham Research Campus fills what is otherwise a largely unoccupied niche in the UK innovation system.

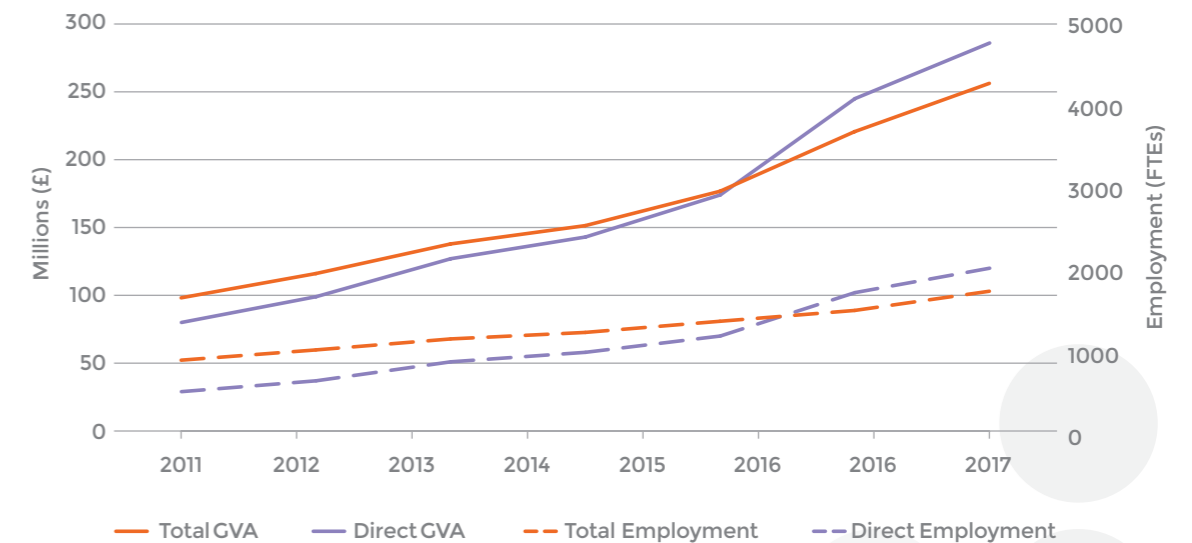
The evidence highlights the critical role of public investment in the Babraham Research Campus in helping to overcome this clear market failure, the removal of which has led to faster growth in the life science sector in Cambridge.

Operational impact of the Campus

The total Gross Value Added (GVA) impact of the operational activities of the Campus on the UK economy more than tripled over the period 2011-18, from £80m in 2011/12 to £286m in 2017/18.

This was driven by a large increase in the direct GVA impacts over this period from £29m to £120m, and the number of those employed on-site increasing by over 90% from approximately 900 employees in 2011/12 to 1,700 employees in 2017/18 (see Figure 4). The direct employment and GVA impact of the Campus accounts for about 40-50% of the total employment and GVA impacts.

Figure 4: Evolution of GVA and Employment Impact over Time



Source: CE

The indirect and induced impacts from the additional activity generated from supply chains and income effects contribute to the majority of the total GVA impact of the Campus on the UK economy (see Table 1).

Table 1: GVA Impact of the BRC on the UK Economy

GVA (£m)	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Direct	29.2	37.3	51.2	58.0	69.8	102.3	119.9
Indirect	14.3	18.1	23.3	26.3	31.7	46.1	54.3
Induced	36.1	43.6	52.8	59.0	72.5	96.5	111.4
Total	79.6	99.1	127.2	143.3	173.9	244.9	285.7
Employment (FTEs)							
Direct	870	996	1,131	1,211	1,348	1,481	1,717
Indirect	240	304	400	454	543	794	935

Source: Reported in Section 3 Main Report

Impacts on business²

Companies located on the Babraham Research Campus have achieved remarkable growth over the period 2011-2018 and performed well in comparison to companies located on other business and science parks in the Cambridge region.

The evidence suggests that the support structure provided by the Campus is a key factor enabling these companies to make an impact across local, national and international ecosystems.

The co-location of a vibrant community of start-up and scale-up companies with world-leading academic research from BI, as well as the opportunity for these companies to access a range of state-of-the-art scientific facilities made available by BI, are unique features of the Babraham Research Campus, all of which differentiate it from other life sciences campuses in the UK.

The track record of Campus companies to forge exclusive commercial partnerships with global pharma companies as a vehicle for international commercialisation is a significant measure of wider impact.

To assess the economic impact of the Campus required evidence to be collected from a large number of companies. 74% of the tenant companies located on the Babraham Research Campus participated in the research. (See Table 2 below for an overview of their key characteristics).

Table 2: Overview of Campus Companies selected for the study

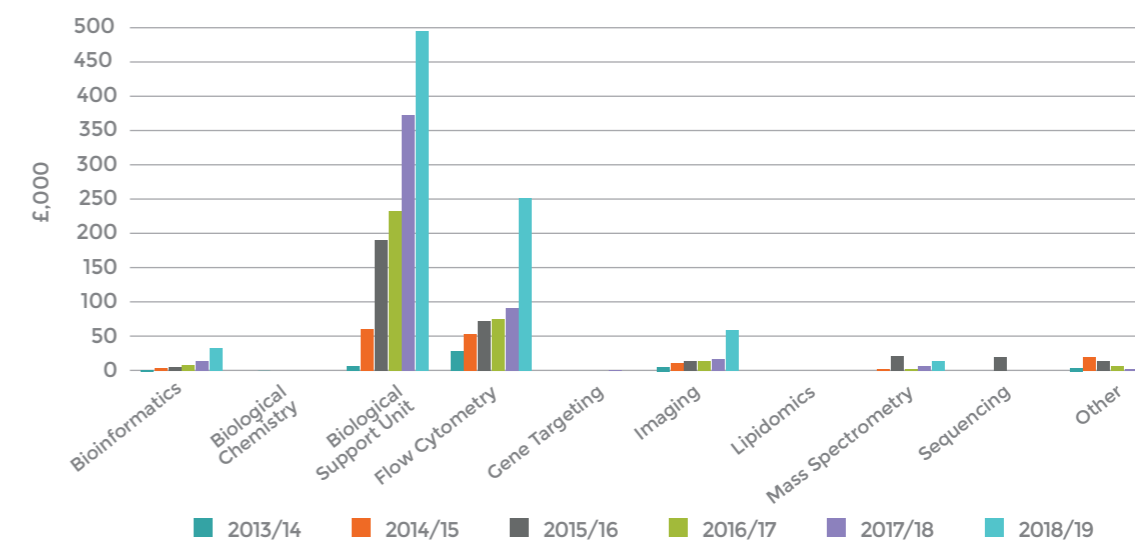
Variable	Value
Number of companies selected, of which:	46
a) Tenants	36
b) Virtuals	9
c) Communal lab users	1
Campus companies by science category:	
d) Drug discovery / development	34.1%
e) Biological therapeutic discovery platform	18.2%
f) Founded in <i>in silico</i> design of therapeutics	13.6%
g) Others	34.1%
Average age of the business (years)	5.8
Total employment worldwide (as at April 2019)	1,010
Funding raised to date (£M) [as reported by survey participants]	1,249
University of Cambridge spin-outs	34.8%
Campus companies using BI science services	60.9%
Number of companies that returned questionnaire	34
Response rate	73.9%

Source: CBR

The average age of a tenant company was 5.8 years. The 46 companies surveyed had raised £1.2 bn of funds at the time of the study. 35% of the companies analysed were spin-outs from the University of Cambridge. Some 61% of the tenant companies made use of BI science services. The income value to BI of these different service offerings is shown overleaf (see Figure 5).

2. Reported in Section 4 Main Report

Figure 5: Usage of BI's science services by Campus companies



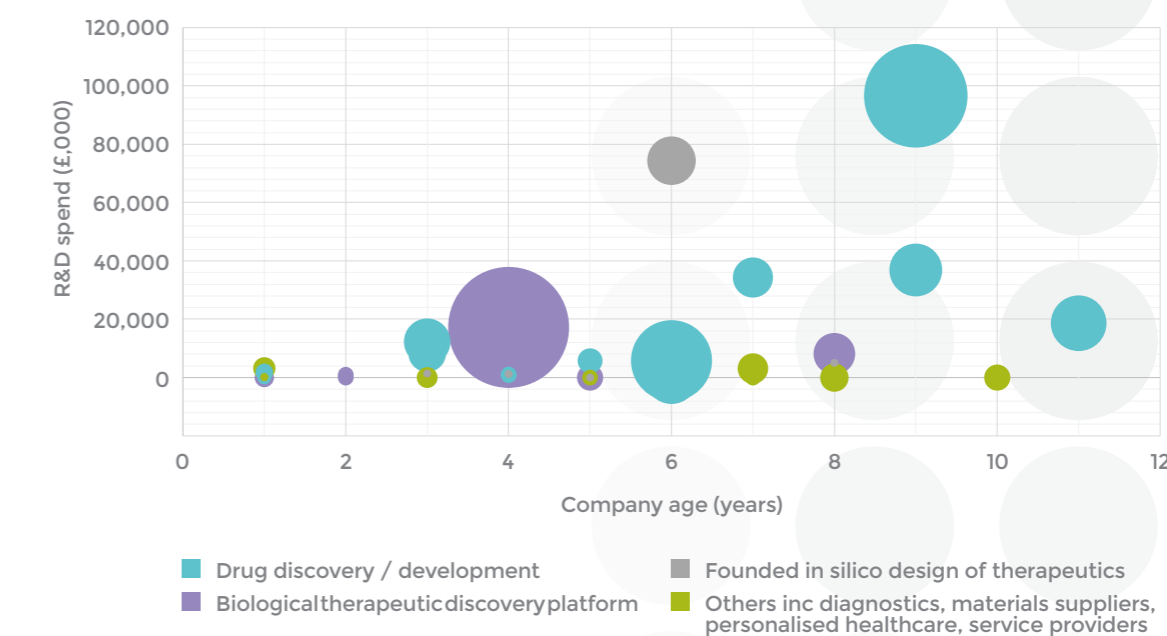
Source: CBR's Calculations based upon data from Babraham Institute Enterprise Ltd (2019). Sales by customer by year.

All of the R&D activity undertaken by companies on the Babraham Research Campus is carried out by companies operating in the life science sector. In the three years prior to the collation of data for this report in 2019, the Campus recorded one of the highest total R&D spends in life science across the entire Cambridge region.

Overall, R&D spend by companies on the Babraham Research Campus represents 15% of the total R&D spend by life science companies located on any of the Cambridge science parks.

Figure 6 shows R&D spend by age of company and specialism.

Figure 6: R&D Spend by Company Age



Notes: The chart shows the amount of R&D spend by companies aged between 1 and 11 years. The size of the bubble represents employment on the Babraham Research Campus in 2018/19.

Two companies are excluded from the analysis as their age (16 and 19) is significantly above the average age of all companies.

Source: CBR.

The key role of the Babraham Research Campus in attracting commercial investment and deal flow for Campus companies³

The Babraham Research Campus has played a central role in facilitating the fundraising activity of Campus companies. More than two-thirds of companies consulted regard their location on the Campus as having a degree of importance in facilitating their fundraising.

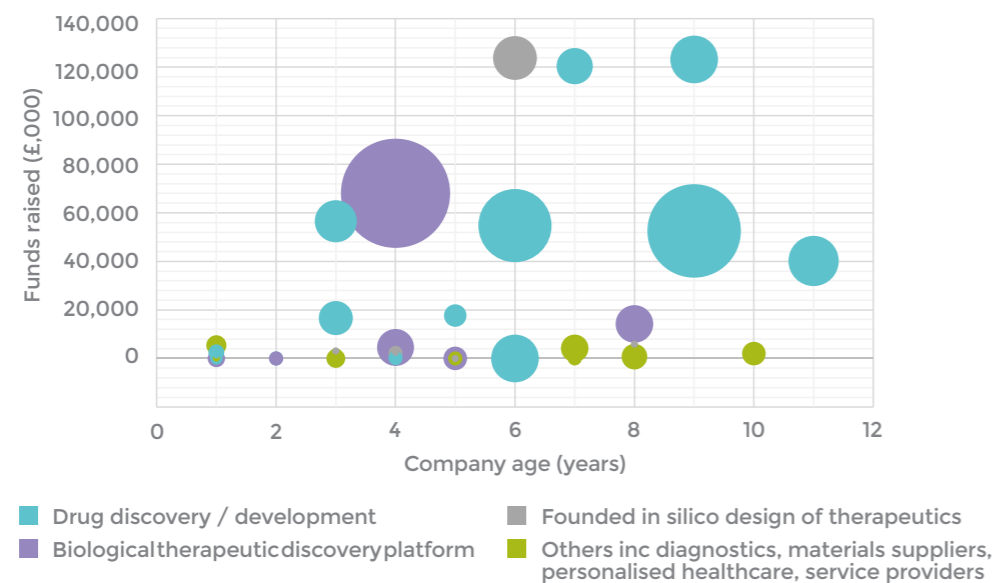
Overall, Campus companies estimated that being located on the Campus had on average accelerated their fundraising by three months and increased the amount of funds they have been able to raise to date by 10%.

Compared to the companies located elsewhere in the Cambridge region, the Babraham Research Campus tenants raised higher levels of funding in the three years prior to 2019. This amount accounts for over a quarter of the total funding that has been raised by companies on business and science parks during that period.

The funds raised by Campus companies in the three years prior to the collation of data for this report in 2019, are concentrated in the life science sector and span a variety of market segments within that sector (e.g. therapeutics, diagnostics, service providers, etc.) (Figure 7), with the Babraham Research Campus alone accounting for approximately 47% of total funding raised by life science companies operating on business and science parks in the Cambridge region.

Collectively, the findings point to the key role that the Campus plays in attracting large commercial investment into the wider Cambridge life science cluster (Evidence on the scale of investment in Campus companies and investor returns is reported in Section 5, Main Report).

Figure 7: Funds Raised by company age



Notes: The chart shows the amount of funds raised by companies aged between 1 and 11 years. The size of the bubble represents employment on the BRC in 2018/19.

Two companies are excluded from the analysis as their age (16 and 19) is significantly above the average age of all companies.

Source: CBR

³ Reported in Section 5, Main Report

The total market value of the largest fourteen companies on the Campus is £4.1bn which represents a 7.2 times return for investors, who have put in £636m in total. These values represent significant potential returns to the investors. The amount of capital raised by all the companies on Campus would of course be in excess of this £4.1bn from the largest fourteen.

The question of the scale of the value-added provided to the companies by their location on the Babraham Research Campus is difficult to estimate with precision, but estimates suggest a contribution to the growth in value of these companies of £191m – a sizeable achievement.

Tenant companies on the Babraham Research Campus have attracted a significant amount of commercial investment over the last decade. Overall, the survey of Campus companies shows that they have raised over £1.2bn to date, of which more than £300m funding was received in 2018. There is evidence that the attractiveness of Campus companies among life science and other investors has increased over time.

The ownership of the majority of the companies selected appears to have become more dispersed during the last five years. These results can be taken as evidence that companies on the Babraham Research Campus have been able to attract funding from a wide range of international and leading life science and technology investors including the IP Group, SV Health Investors, Morningside and Medixci Ventures and many global corporate fund venture investors such as Merck Ventures, SROne (GSK), Novartis Ventures and Pfizer Ventures. These investors have supported Campus companies at different stages of their growth, from seed financing to Series B and C rounds and on to IPO. Fundraising by the largest Campus companies has been facilitated further by the extensive support provided by the University of Cambridge, primarily through Cambridge Enterprise, its commercialisation arm, and Cambridge Innovation Capital, a preferred investor for the University.

Evidence on scientific impact⁴

BI's mission is to, 'undertake world-leading research into understanding the biology of how our bodies work, including what changes as we age and during disease.' This is in line with the BBSRC Strategic Priority 'Bioscience for an integrated understanding of health'. It is a bioscience research institute engaged in fundamental research with a clear 'academic' culture of discovery.

Scientific expertise is focused on the three Institute Strategic Programmes (ISPs):

- Immunology
- Signalling; and
- Epigenetics.

The research is guided by scientific advisory boards and BI adopts a pragmatic top-down control of the direction of research, with the ability to recruit a critical number of world leading and emerging group leaders with the desired scientific focus, moderated by the freedom in their research to be innovative.

BI's research is supported by world class facilities and core expertise that is an essential component in its make-up and success. The body of new knowledge and innovation is evidenced by high-quality publications, Intellectual Property (IP) agreements and translation (including the creation of new companies). This combines to create an output and contribution to the understanding of the basic bioscience of healthy ageing that is greater than the sum of the parts.

The fundamental research carried out by BI has led to major advances in the understanding of the biological mechanisms underpinning lifelong well-being and healthy ageing.

⁴ Reported in Section 6, Main Report

These advances have made substantial contributions to the academic community (see Section 6.1, Main Report), while paving the way for the translation and commercial development of BI's research.

To fulfil its mission of creating significant social and economic impacts, BI has been committed to the dissemination and exploitation of knowledge generated by and held within it. The translation and commercialisation of BI's research has been facilitated by two main support structures: the Knowledge Exchange and Commercialisation (KEC) programme and the wholly owned Babraham Institute Enterprise (BIE) Limited. Examples of this include the access to resources and expertise of BI science capabilities discussed previously, and activities such as the Translational Advisory Group, which provides funding to BI scientist to undertake additional work to explore the commercial viability of their concepts.

The role of the Babraham Campus in the Cambridge Innovation System

Local companies based on the Campus both compete and collaborate in bioscience, drug development and related life science fields, perhaps sometimes involving strategic alliances with similar firms elsewhere (including overseas). The Campus and its tenant companies interact with the knowledge system through participation with the institutions, networks, and agents that create the knowledge and ideas that form the basis for new inventions and sustained development.

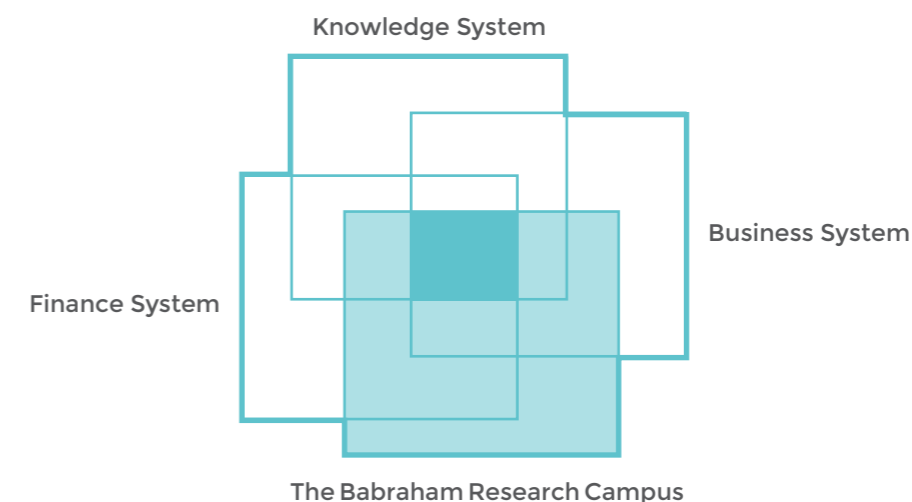
The Campus both runs and supports accelerator and soft-landing programmes that shape business development and it also assists businesses to obtain funding from a wide variety of sources. Venture finance from outside the Cambridge sub-region has become of increasing importance in recent years. The synergies between these different components become mutually reinforcing, acting to stimulate further innovation, enterprise and growth. There is also extensive interaction with the wider business community, which includes the commercial property agents, institutions, and formal and informal networks that facilitate enterprise and the development of globally competitive businesses, including business decision-makers, skilled labour, as well as the accountants, lawyers and consultants that provide the required business services.

Successful innovation requires interaction and collaboration between the business and institutions. The formal mechanisms by which this occurs are often quite weak. A role for research campuses is often to help to fill this gap to enhance interaction and the pathways by providing 'neutral space' for interaction to occur and also by encouraging educational programmes and research that will develop the conceptual understanding and personal and interpersonal skills required.

Research shows⁵ that success requires attention across all the systems including building the capacity of the knowledge base, the quality of the physical place and infrastructure including the provision of premises, the financing of enterprise and also entrepreneurship and the fostering of business and industry networks. Attention to branding, marketing and promotion is important. All the factors that facilitate change including planning, financial incentives and institutional development are important.

Figure 8 illustrates the key relevant interfaces of the Babraham Research Campus with the local innovation eco-system.

Figure 8: Understanding the role of the Babraham Research Campus in the Cambridge Innovation System



Source: *ibid*

The contribution of the Campus in the provision of new start-up and accelerator space was widely acknowledged and it was felt that it was overcoming constraints in the provision of space and facilities. Its ability to enhance the flow of funds going into life science companies was considered to be very extensive, particularly in attracting funds from Research Councils.

The Campus' significant contribution across a number of areas was highlighted, including;

- The commercialisation of life sciences research.
- Contribution to the life sciences knowledge base.
- Enabling the creation of entrepreneur driven businesses.
- Facilitating collaboration across business to business, business to academic and academic to academic partners.
- Support of the skills agenda for scientists and entrepreneurs.

The Campus was considered to be making a strong contribution to the overall Cambridgeshire sub-region and UK Life Sciences, particularly in generating jobs, enhancing the sector skill base and increasing the global impact and value from UK science. The Babraham Research Campus compared very favourably with other UK campuses.

Additional GVA and employment associated with the Babraham Research Campus⁶

Additionality is the real increase in social value *that would not have occurred in the absence of the intervention being evaluated*, where in this case the intervention supported is the Babraham Research Campus. There are benefits to society, and thus an increase in social value, from increased scientific discovery since this will translate into improvements in health and the welfare of people in society in the UK, but also around the world. Increased quality of life and reduced mortality result. These can be valued. It is also the case that additional activity created on the Campus translates into GVA and employment. In this impact study the emphasis has been to assess the direct business impacts.

A strict, *narrow* interpretation of additionality would focus simply on whether the activity would otherwise have occurred. No additionality means that all of the activity would

5. https://www.landecon.cam.ac.uk/pdf-files/cv/pete-tyler/copy_of_PRI_ENTERPRISING_REPORT1.pdf

6. Reported in Section 10 of Main Report

otherwise have occurred. Additionality of 100% would mean that all of the activity is additional. However, a broader interpretation should also include enhancements to quality of outcome and the ability of the intervention to speed things up.

The evidence suggests that the Babraham Research Campus has been able to increase both scale and speed of delivery of life-science research and its translation into benefits. It would be very unsurprising if it had not also improved quality as well, but that is inherently difficult to assess.

The additionality associated with enhanced business growth of Campus companies was assessed in relation to four main outcomes:

1. Providing flexible and affordable space

Over 75% of Campus companies considered their location on the Babraham Research Campus as either a very important or critically important factor in helping them access laboratory and office space on flexible and affordable terms. This result reinforces the findings which point to the availability of suitable premises on flexible lease terms as one of the major benefits these companies derive from being located on the Campus.

2. Accelerating scientific advances

About 88% of survey respondents from a campus wide questionnaire indicated that being located on the Babraham Research Campus has had some importance in accelerating their scientific advances, with more than half of respondents stating that their location has been either an important, very important or critically important factor.

3. Facilitating fundraising

Four out of five respondents perceive that operating on the Babraham Research Campus has facilitated their fundraising activity. Their location on the Campus is regarded as either a very important or critically important factor by 12% of respondents, suggesting that the supportive experience provided by the Campus and being at the heart of the Cambridge cluster may have made access to finance by Campus companies easier than it would have been otherwise.

4. Increasing the number of employees

Approximately two out of three respondents view their location as either a slightly important, important, very important or critically important factor in supporting their employment growth. About a third of respondents do not perceive that being located on the Babraham Research Campus has enabled them to increase the number of employees, though this figure tends to reflect responses from virtual companies with no physical presence on the Campus. Collectively, these results suggest that being located on Campus has benefited companies' ability to grow and attract talent.

Summary of impact

The results show that both virtual and other companies felt that their location on the Babraham Research Campus has significantly benefited their scientific discovery process and fundraising activity. The estimates of impact were particularly large for virtual companies, which may be explained by the fact that these companies tend to be younger compared with other companies on the Campus.

Once virtual companies are excluded from the sample, the number of people employed by tenant businesses is estimated to be around 20% larger as a consequence of being located on the Babraham Research Campus than it would be otherwise.

Taken together, these findings suggest that being located on the Campus has brought additional value to Campus companies by increasing both the speed and scale of their activity, in part through the provision of flexible and affordable space (Table 3).

Table 3: Impact of the location on the Babraham Research Campus All Companies

	Average Effect	
	Mean	Median
Accelerated scientific discovery by	5.1 Months	3 Months
Accelerated fundraising by	5.2 Months	3 Months
Increased fundraising to date by	11.4%	10%
Increase the number of employees by	21.6%	10%

Number of responses: 25
Source: CBR

Additional impact on GVA and employment associated with activity on the Babraham Research Campus

The study provided an assessment of the increase in GVA and employment associated with the Campus for the UK as a whole over broadly the period 2012-2018. This amounted to an increase in gross GVA of £206 million and increased employment of 800.

On the basis of the narrow measure of additionality based on the views of the businesses on the Campus, additional GVA would be of the order of £27 million.

Evaluation guidance varies on how long the GVA might be expected to persist and thus what should be the Net Present Value (NPV). Research on the valuation land and property market benefits created or supported by Government intervention has adopted a ten year profile but it is obviously possible to adopt different profiles and adjust the NPV accordingly with a lower option being only five years.

Using a ten year profile, which would seem appropriate given that the floor space on the Campus by its very nature is expected to continue to provide longer term benefit streams, would suggest a NPV of about £198 million assuming a discount rate of 6%.

This is the gross increase in GVA and employment and it is normal to allow for any displacement that might be associated with support for companies on the Babraham Research Campus leading to reduced activity on competing companies elsewhere in the local area and across the rest of the UK. Given the nature of the high-technology life science activity taking place on the Babraham Research Campus and considering it alongside other locations in the

sub-region did not suggest that there was a high level of displacement in the standard sense, as might be associated with manufacturing activity as an example. There are arguments that it is very low indeed at the local regional level - perhaps 10%. It is also not clear given the nature of the science being undertaken and its relative uniqueness to the Cambridge Cluster that the displacement increases substantially at the level of the UK. Perhaps something like 20% might be appropriate. Taking an average of 15% and applying to the gross estimates of impact suggest benefits of around £169 million.

The public sector contribution to the Babraham Research Campus and its development

The land that encompasses the Babraham Research Campus has been in public sector ownership since 1948. BI switched to its current biological research specialisations (epigenetics, signalling and lymphocyte signalling) in 1993. The provision of more commercially orientated premises to accommodate bioscience companies on the Campus dates from 1998.

The BBSRC has provided funding into the Campus distinct to that provided to BI of around £58.8 million over the period of this research (2012-2017).

It is not straight forward to assess the true level of overall public sector support that has underpinned the development of the Campus. A number of issues arise. The public sector has provided grants and loans to encourage the development of research and, in recent years, the economic development potential of the site (as in the case of the grant from the Regional Development Agency in 2002 (EEDA) for £1.95 million). The land is owned by the public sector and as the landowner the public sector could accrue ground rent, but it is understood that this has only been at a pepper corn level to-date and there has thus been a level of public subsidy in this. On the credit side of the account the public sector has seen a very substantial increase in the value of the site compared to when it was used for agriculture and therefore its return on the investment, should it ever seek to realise it. It is also the case that the increased commercial development of the site has generated increased tax revenue to HM Exchequer.

A further important issue is the period of time over which the payback from the public sector should be considered. It is to be remembered that part of the rationale for public sector support has been to encourage research that will provide health care benefits. Another part has been to enhance the economic development of the life science sector and the benefits it provides to the Cambridge and UK economy. In both cases these benefits will emerge over many years. The evidence suggests that the total market value of the Campus companies has now risen to over £4.07 bn. These values represent significant potential returns to the investors, but the forward momentum is such that there is likely to be substantial future growth in market value.

If the estimate of net economic impact of £169m NPV is taken and put alongside the £61m of direct research council grant the Benefit Cost Ratio is around three (3), which is impressive. However, this estimate does not value the wider medical and health benefits that will continue to benefit society and is subject to the basic assumptions and limitations referred to above.

The evidence on the economic impact of the Babraham Research Campus confirms that considerable value can be realised by well targeted public sector investment in life science, which is extremely important sector to the future of the UK economy and society.

The Babraham Research Campus partners:

