

BIA submission: BEIS Business Productivity Review July 2018



Introduction

The BIA welcomes the government's focus on improving the productivity of the UK's businesses, especially those described as "the long tail" of low-productivity firms. As the review covers all industries, types, and sizes of businesses, this submission offers an overview of the UK's bioscience sector to provide context for the review's analysis and potential conclusions. In particular, we wish to highlight that the long R&D timelines and requirement for significant equity investment before profitability distinguishes the bioscience sector from most others in the UK economy, and this has significant implications for analyses of productivity and policy recommendations.

UK life sciences: a successful and productive sector

The UK is globally recognised as a world leader in the life sciences. Beyond the benefits of better health outcomes for patients, improved living standards, and rewarding high-value jobs spread across the UK, this competitive advantage can support long-term sustainable economic growth across the whole country.

An independent analysis by PwC estimated that the UK life sciences sector contributed £30.4 billion to the economy in 2015 and supported 482,000 jobs¹. The same analysis showed that workforce productivity in the sector is twice the UK average, with Gross Value Added (GVA) per employee equaling £104,000. The activities of life science companies directly contributed £14.5 billion to the economy in 2015, with an additional £15.9 billion provided through the supply chain and employee spending. The sector invests more in R&D than any other in the UK (£4.1 billion in 2016²) and sustains high-quality jobs across the UK, with two-thirds outside London and the South East³.

"Since 2011 the UK has secured over £7.5 billion of inward investment in the sector, leading to the creation of 18,000 new jobs, and today, the UK has one of the strongest and most productive health and life sciences industries in the world."

Lord Prior of Brampton and Lord O'Shaughnessy of Maidenhead³

The UK life sciences innovation pipeline is fed by small, entrepreneurial bioscience firms. They are producing the medicines and technologies of tomorrow, growing into profitable companies, and feeding innovation into the larger pharmaceutical and healthcare industries. There are also significant spill-overs into other sectors. This strong and vibrant bioscience sector is complemented by the most productive and

¹ PwC (2017), commissioned by ABPI, BIA, BIVDA and ABHI, *The economic contribution of the UK life sciences industry*: <https://goo.gl/6sMhrB>

² Office for National Statistics (2017), *Business enterprise research and development, UK: 2016*: <https://bit.ly/2MXrtjr> (the figure given is for the pharmaceutical sector and does not capture all areas of life sciences R&D)

³ HM Government (2017), *Strength and opportunity 2017*: <https://bit.ly/2L4vbqP>

high-quality academic science base in the world⁴. For example, the UK is home to two of the world's top three universities for life sciences⁵.

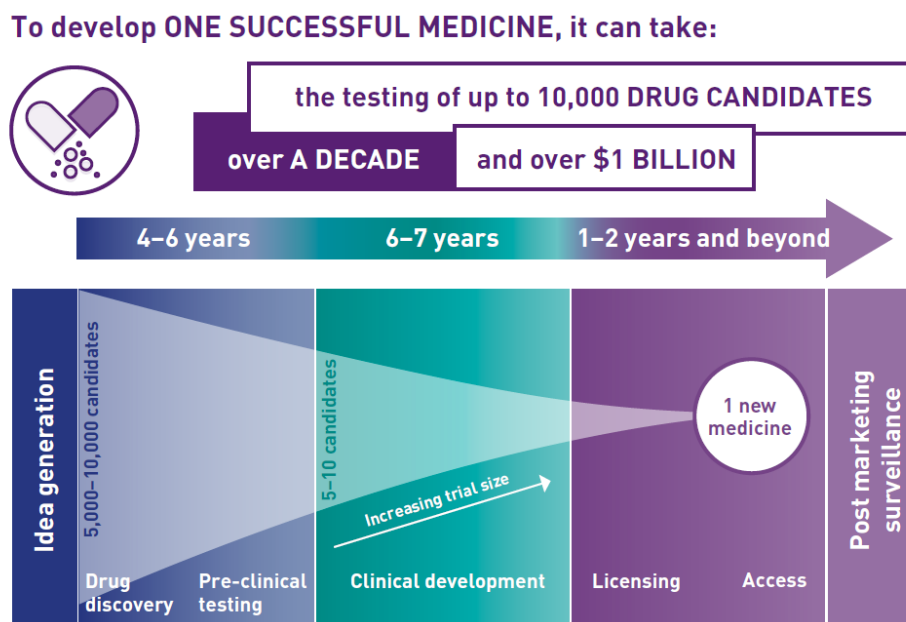
There is great depth and breadth in UK bioscience: from a strong and emerging regenerative medicine and cell therapy sector, to specialist biomanufacturing companies developing therapies for cancer treatment, to personalised treatments and new antimicrobials. Advances in technologies such as synthetic biology are not only leading to new types of therapeutics but new production methods in a range of industries beyond medicine, from agriculture to fashion.

The Speke corridor near Liverpool has a long history of major clinical and commercial biologics manufacturing and continues to attract significant investment, such as Allergan's Biologics R&D Centre of Excellence. Ipsen manufactures Botox in Wrexham and snake venom antidote is produced by BTG in rural West Wales. The UK's two largest pharmaceutical companies, GSK and AZ, have almost 23,000 employees spread over 25 sites from Scotland to the South West of England. This shows that the value of the sector reaches all parts of the UK. This is strength that the government's Industrial Strategy can build upon and extend excellence into the future.

UK life sciences: a sector with unique challenges

There are unique challenges in life sciences R&D that set the sector apart from others in the economy, even other R&D-intensive industries. Medical research, development and licensing timelines are long – typically over 12 years – due to the need to extensively test products for human use through phased clinical trials and the cost of development can exceed £1 billion⁶ (Figure 1). However, our ever-increasing understanding

Figure 1: The challenge of drug development



⁴ Elsevier (2013), commissioned by the Department of Business, Innovation and Skills (BIS), *International Comparative Performance of the UK Research Base – 2013*: <https://goo.gl/dxX5rq>

⁵ QS World University World Rankings 2016/17: <https://goo.gl/pf3Ob6>

⁶ ABPI (2012), *Time to flourish – Inside innovation: the medicine development process*: <http://goo.gl/XLQDys>

of biology and disease, and new technologies such as inexpensive whole-genome sequencing and Artificial Intelligence, is allowing more efficient drug R&D, which will bring down this timeframe and cost and increase the productivity of the industry further. UK bioscience SMEs are very much at the vanguard of this revolution.

Bioscience SMEs are generally focused on developing a specific technology and often do not have other assets on the market generating profits. They also burn through cash at a high rate due to the need to conduct R&D quickly in order to beat competitors to patent and market. This means they must rely on successive equity fundraising rounds to maintain cash flow, either from private investors or the public markets. Thus R&D and fundraising comprise the majority of bioscience companies' business activities for the first five, ten, or more years of their existence. Another consequence of this business model is that productivity is hard to measure, as tangible economic products and revenue are not being produced for much of the companies' life. This is recognised for start-ups in the consultation document (paragraph 3.4) but many unprofitable life science businesses would not be classed as a start-up. These companies are, however, producing intangible capital, such as patents, data required for regulatory approval, and other forms of IP. These are the fundamental value within bioscience companies; however, it is difficult to fully account for these in economic analyses⁷. Furthermore, a common business model in the sector is to be bought in a trade-sale or out-license products for the final, highly-expensive Phase III clinical trials and commercialisation. If sold in a trade-sale, a company will technically never become revenue generating in its own right, further complicating productivity measurement.

Implications for policy

As noted, the life sciences sector is highly productive. UK bioscience companies are naturally operating at the leading-edge of innovation and in a highly-competitive environment in which funding is hard to secure and only the best ideas and most efficient companies survive. This means they are likely to be quite distinct from the companies in the "long tail". When forming its conclusions and making recommendations, it is important that this review recognises this distinction in the UK's SME community. We are also of the view that there are few features of practice in successful and productive bioscience companies that are readily translatable to other sectors.

Due to the long-development timelines and the complexity of the science involved in biomedical R&D, the early stages of drug development are considered high risk, which limits sources of finance typically to few and specialist investors. Indeed, the government's Patient Capital Review identified the life sciences sector as one of the most significantly affected by low and short-term investment⁸. The BIA supports actions taken forward as part of the government's Industrial Strategy, especially the outcomes of the Patient Capital Review and the investment of approximately £500 million to date in life sciences R&D through the Industrial Strategy Challenge Fund, in addition to funding through Innovate UK programmes like the Biomedical Catalyst. These initiatives to increase access to long-term finance for companies and grant funding from government are vital to ensure the continued vitality and productivity of the UK's bioscience SMEs.

⁷ Jonathan Haskel and Stian Westlake (2017), *Capitalism without capital: The rise of the intangible economy*

⁸ HM Treasury (2017), *Financing growth in innovative firms: consultation*: <https://bit.ly/2hiliJC>

About the BIA

The BIA is the trade association for innovative life sciences in the UK. Our goal is to secure the UK's position as a global hub and as the best location for innovative research and commercialisation, enabling our world-leading research base to deliver healthcare solutions that can truly make a difference to people's lives.

Our members include:

- Start-ups, biotechnology and innovative life science companies
- Pharmaceutical and technological companies
- Universities, research centres, tech transfer offices, incubators and accelerators
- A wide range of life science service providers: investors, lawyers, IP consultants, IR agencies

We promote an ecosystem that enables innovative life science companies to start and grow successfully and sustainably.

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