

# Life Sciences Superpower: Growing the Leading Hub in the UK: Key Messages



- In 2022, ABPI commissioned PwC to produce a report on the life sciences sector. It revealed that this is one of the most valuable sectors in the UK, contributing:
  - **£36.9 billion in GVA** (Gross Value Added) to GDP
  - **584,000 jobs**
  - **18 per cent of all R&D investment** across the economy
- These benefits are felt across a diverse geographic presence, and there are significant R&D hubs in the North of England, Scotland, Wales, and Northern Ireland.
- However, the market is seeing signs of decline across R&D, clinical trials and pharmaceutical manufacturing (the largest segment of the UK life sciences sector):
  - **Phase I clinical trials collapsed by 13 per cent** from 2015 to 2019, falling a further **7 per cent in 2020**,
  - The UK's **share of global pharmaceutical R&D fell from 7.7% in 2012 to 4.1% in 2019**
  - **Manufacturing production volumes fell by 29 per cent** since 2009
- Achieving the ambition of the Government's Life Sciences Vision – to build the world's leading hub – remains feasible but the UK must act swiftly to fend off competitor countries who have become more adept at attracting investment.
- We need an attractive business environment, through improved fiscal incentives; a stronger manufacturing and research infrastructure, which can be achieved by raising pharmaceutical R&D investment in the UK; better investment in, access to and uptake of innovative medicines; and a renewed approach to the priority healthcare challenges identified in the Vision, which would mean cutting the overall burden on health of dementia, cancer, cardiovascular and respiratory disease and mental health.

## The Size of the Prize

If the Life Sciences Vision is implemented in full, the value includes:

- **£68 billion in additional GDP** over 30 years, due to the benefits of increased R&D investment alone
- **85,000 additional jobs** from increased pharmaceutical exports
- **40 per cent decrease in disease burden** across the UK
- NHS patients getting access to new medicines within **3 months of licensing**

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## Key Facts & Statistics

### Value of the Sector

- In 2019, life sciences contributed:
  - **£36.9 billion** to **UK GDP**
  - **£16.9 billion** to **direct UK GDP**
  - **584,000 jobs**
- These jobs are of high value, with the pharmaceutical manufacturing, medical technology and Life Sciences research segments ranking in the 86th, 71st and 87th percentiles, respectively, for median annual gross pay for all jobs.<sup>1</sup>
- The sector made a **tax contribution** of about **£10 billion** in 2019.

### Value of Clinical Research

- The sector's clinical research studies supported by the National Institute for Health and Care Research Clinical Research Network (NIHR CRN) generated **£2.7 billion** of GVA and supported **over 47,400 jobs** in the UK in 2018/2019.<sup>1</sup>
- Nearly **35,000 patients received early access to innovative medicines** through commercial clinical trials in the UK in 2020/2021.
- In the 2018/19 financial year, the NHS received around **£355 million in revenues for delivering clinical research and around £28.6 million in pharmaceutical product cost savings** from commercial clinical trials supported by the NIHR CRN.<sup>2</sup>
- For **each patient** recruited to a commercial clinical trial, the NHS in England received an average of £9,189 in clinical research revenues and **£5,813 in pharmaceutical cost savings** where a trial drug replaced the standard of care treatment.<sup>3</sup>
- For some therapeutic areas, such as oncology, the average figures are higher, with the NHS receiving £13,143 in revenues and cost savings of £17,971 per patient.<sup>4</sup>

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<sup>1</sup> PwC analysis of ONS (2021). '[Earnings and hours worked, UK region by industry by two-digit SIC: ASHE Table 5](#)', 3 November 2021.

<sup>2</sup> National Institute for Health Research (NIHR) and KPMG (2019). '[Impact and value of the NIHR Clinical Research Network](#)', July 2019.

<sup>3</sup> National Institute for Health Research (NIHR) and KPMG (2019). '[Impact and value of the NIHR Clinical Research Network](#)', July 2019.

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## The Value of R&D

- Industry spent over £4.7 billion on pharmaceutical R&D in 2019, which represents nearly a fifth (18 per cent) of all R&D spending by industry across the UK economy.
- Every £1 invested in private R&D today equates to £0.50 per year in perpetuity.<sup>56</sup>
- This means approximately £45.0 billion<sup>7</sup> in future economic benefits to the UK economy over the next 30 years from 2019's R&D investment alone.

## The Value of Manufacturing

- Taking its direct GVA and long-term R&D spill-over effects together,<sup>8</sup> pharmaceutical manufacturing (the largest segment of the sector) generated 1.25 times the economic value of the UK automotive sector and over 2.4 times that of the UK aerospace and oil and gas industries in 2019.

## Position of the UK Market

- In 2020, total global pharmaceutical **R&D spending was over £154 billion,<sup>9</sup> of which the UK's share was £5 billion.**<sup>10</sup> This represents just over 3.2 per cent of global pharmaceutical R&D
- There has been significant growth in private financing of early-stage life sciences companies (52% increase between Q3 2021 (£4.25 billion) and 2020 (£2.8 billion)).<sup>11</sup>
- The UK has 14 of the top 100 universities for Life Sciences. Continued growth of a Northern Life Sciences Supercluster has been estimated to generate an additional £16.5 billion in GVA to the UK economy.<sup>12</sup>

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<sup>5</sup> Office of Health Economics & RAND Europe (2010). ['Enhancing the benefits from biomedical and health research spillovers between public, private and charitable sectors in the UK'](#), 2010.

<sup>6</sup> Sussex et al. (2016). ['Quantifying the economic impact of government and charity funding of medical research on private research and development funding in the United Kingdom'](#), *BMC Medicine*, Vol. 14, Article no. 32 (2016). Doi: 10.1186/s12916-016-0564-z

<sup>7</sup> Discounted to net present value at 3.5% as per [Green Book \(2022\)](#) guidance with 2019 as base year

<sup>8</sup> As above, the net present value of R&D spillover effects from R&D investment in 2019 is presented

<sup>9</sup> Evaluate Pharma (2021). ['World Preview 2021 Outlook to 2026...'](#), July 2021.

<sup>10</sup> ONS (2021). ['Business enterprise research and development, UK: 2020'](#), 19 November 2021.

<sup>11</sup> JLL (2021). ['Venture Capital levels into Life Sciences hit record high'](#), 22 September 2021.

<sup>12</sup> NHTA and NP11 (2021). ['A Northern Life Sciences Supercluster: The Economic Potential of a Systemwide Approach'](#), September 2021.

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- The UK has a 12% share of global ATMP clinical trials and 20% growth in the number of ATMP trials in the UK in 2020, despite the COVID-19 pandemic.<sup>13</sup>

### Threat to the UK Market

- The UK's clinical trial activity has been declining.
  - Phase I clinical trials – i.e., early development of new medicines and treatments – initiated in the UK have **collapsed by 13 per cent** from 2015 to 2019, falling a further 7 per cent in 2020
  - The pandemic has exacerbated the downward trend in UK trials, with the number of Phase II and III trials falling by 18 per cent and 22 per cent in 2020, respectively
  - This has impacted innovation in the sector, with the UK's number of global clinical trial firsts falling year on year, from 24 in 2017/18, to 15 in 2018/19, to 14 in 2019/20. This figure continued to fall to 8 in 2020/21, reflecting the pressures of the pandemic on clinical trials.
- The UK's share of global pharmaceutical R&D has also been declining over the past decade, falling from 7.7% in 2012 to 4.1% in 2019, with only a marginal increase to 4.2% in 2020. This led to a loss of an average £3.2 billion in R&D spending per year for the past 8 years.<sup>14</sup> Between 2009 and 2017, the GVA of the average UK pharmaceutical sector employee fell by 12.3 per cent.<sup>15</sup> When inflation is taken into account, the direct GVA impact of the pharmaceutical sector in the UK has decreased in real terms since 2015.<sup>16</sup>
- Although the UK has a significant manufacturing base, since 2009 it has seen production volumes fall by 29 per cent and over 7,000 jobs lost.<sup>17</sup> This is especially damaging as pharmaceutical manufacturing jobs are high quality and well-paid and have a direct GVA contribution of around £128,000 per employee.

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<sup>13</sup> Catapult Cell and Gene Therapy (2021). '[Press release: 2020 clinical trials database report confirms the UK as an internationally attractive clinical space for the development of cell and gene therapies](#)', 23 February 2021.

<sup>14</sup> PwC analysis of data from Evaluate Pharma (May 2021) and ONS (2021). '[Business enterprise research and development](#)', 19 November 2021, Worksheet 2.

<sup>15</sup> University of Cambridge (2021). '[UK Innovation Report - Benchmarking the UK's industrial and innovation performance in a global context](#)', February 2021, Chart 3.1.

<sup>16</sup> PwC analysis using figures from PwC (2017), '[The economic impact of the UK life sciences industry](#)', March 2017, assuming 2% per annum inflation

<sup>17</sup> Clarke (2021). '[UK life sciences sector: do you have the Vision for innovation?](#)', *European Pharmaceutical Review*, 30 August 2021.

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- This is partly driven by the UK's stagnant volumes of gross pharmaceutical exports, relative to comparator markets since 2011 and its 6 per cent average annual reduction in gross pharmaceutical exports from 2015 to 2019 (and further 9 per cent reduction from 2019 to 2020).<sup>18</sup>

### The Size of the Prize

Life Sciences Growth could contribute to:

- A **40 per cent** decrease in total attributable burden of disease
- **£68.1 billion** in additional GDP over 30 years resulting from increased R&D investment
- **17,500 jobs** created from a greater volumes of UK life sciences IPOs sustained each year
- **£16.3 billion** additional GDP and **85,000 additional jobs** in total from increased pharmaceutical exports
- **£1.2 billion** additional GDP and **7,230 additional jobs** annually from greater foreign direct investment to life sciences each year
- **£165 million** additional revenues for care providers and **£32 million** NHS cost savings annually from greater UK share of global commercial clinical trial enrolment each year
- **Reduction in wide variation in time to patient access** of innovative medicines so that all new medicines are **made available within 3 months of licensing** and a **36-percentage point** improvement in patient uptake of innovative medicines collaboration ventures with them

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<sup>18</sup> Office for Life Sciences (2021). '[Life Science Competitiveness Indicators 2021](#)', Chart 9A: Global exports of pharmaceutical products.

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