Invest 2035: The UK's Modern Industrial Strategy

Cancer Research UK (CRUK) Written Submission

November 2024

As the second largest independent funder of research in the UK, funding around 50% of non-industry funded cancer research and having funded over £4 billion of research in the last decade, Cancer Research UK (CRUK) is a strategically important pillar of the UK life sciences ecosystem.[i,ii]

- **International funder:** We fund foundational life sciences research across the UK and globally. In the UK we play a central role in developing the cancer research workforce, while our network of state-of-the-art centres and institutes drive local collaborations and world-class research to accelerate our progress to beating cancer. We work through our innovation engine Cancer Research Horizons to translate our research into products, tests and treatments that benefit patients, while Cancer Grand Challenges (CGC), our partnership with the US National Cancer Institute (NCI), empowers global, interdisciplinary teams to take on the toughest challenges in cancer.
- **Real-world impact:** Our research and innovation has led to more than 50 cancer drugs used across the UK and around the world. Three in four people prescribed cancer drugs on the NHS receive drugs linked to our research – and our science helped bring around 50% of the world's essential cancer medicines to life.
- **Taking a mission-based approach:** Our unique breadth across the cancer R&D pipeline includes an exceptional portfolio spanning discovery research, translation, commercialisation and clinical trials. As mission-based funder, we do more than simply fund research – we leverage our scale, expertise, and partnerships to create a world where everybody can lead longer, better lives, free from the fear of cancer.

Role of the cancer research system in the Industrial Strategy

We were delighted to see life sciences recognised as a growth-driving sector in the Industrial Strategy Green Paper, and we welcomed the Government's backing of UK R&D to drive economic growth at the recent budget.

In an increasingly competitive international environment, **cancer research is a UK national asset**, and it is vital Government works with us to protect it – or risk losing our competitive edge in life sciences, jeopardising the government's growth and health missions.

Through the industrial strategy and the recently announced intention to create a new cancer plan for England, we have an opportunity to set the UK up as the natural home for cancer research. The UK cancer research ecosystem has real strengths – from the world class R&D infrastructure such as the Francis Crick Institute and leading global university system, to a health system well-placed to leverage health data assets and clinical research. We believe that these strengths, when combined with the scale of the cancer challenge, provide the impetus for Government to work with the sector and make the cancer research system a sub-category of the Industrial Strategy and life sciences sector plan.

The scale of the cancer challenge is incomparable. Cancer in the leading cause of death in the UK and affects all age groups. Significantly more potential years of life (i.e. years of life lost before age 75) are lost to cancers than other major non-communicable diseases (NCDs), placing a big burden on individuals, society and the economy. The challenge is also growing – by 2040, there will be a projected 500,000 cases per year by 2040, an increase of ~20% on today.[iii]

Along with the transformative impact research continues to have on cancer outcomes, cancer research plays a central role in driving growth across the UK. In 2020/21, there was £1.8bn of investment in cancer research. This generated more than £5bn of economic impact.[vi]

For an industrial strategy to deliver for cancer research, it must address the key barriers and enablers of a thriving life sciences environment. We were pleased, therefore, to see this Green Paper cover people and skills, RDI adoption and diffusion, commercialisation, regulation, and the role of clusters and infrastructure.

Below, we set out how the industrial strategy and life sciences sector plan can help tackle the barriers each of these areas presents.

Q4: What are the most important subsectors and technologies that the UK government should focus on and why?

1. In the last 50 years, overall cancer survival in the UK has doubled.[iv] Life sciences research has been central to this. Working together, public, charity and private funding can accelerate research across the UK from the lab bench to the bedside, and save and improve more lives.
2. We, therefore, welcome the recognition in the Industrial Strategy Green Paper that life sciences are a growth-driving sector for the UK, and look forward to the life sciences sector plan.
3. Along with the transformative impact research continues to have on cancer outcomes, the UK's internationally competitive cancer research plays a central role in driving growth across the UK. In 2020/21, there was £1.8bn of investment in cancer research. This generated more than £5bn of economic impact.[v]
4. The role of both Government and charity funding of cancer research driving private investment in UK R&D cannot be understated – with 2020 government-commissioned research finding that in the long run, every £1 of government R&D spend stimulates between £1.96 and £2.34 of private R&D.[vi]
5. Similarly, the strength of the UK science base – across universities, health data assets, skills and funding – has a substantial impact on how global industry investment decisions are made in the oncology landscape.
6. We believe that there are significant challenges facing the sector in the next decade, in particular in the funding landscape. Across the areas covered in this Green Paper, we see barriers to making the most of the opportunities presented by UK cancer research.
7. As such, we believe that the cancer research system merits particular attention in the development this industrial strategy, and would be well-placed for the Government to focus on as a sub-sector.
8. Last year, we set out in detail our proposals for how Government can help meet the potential of cancer research in the UK in *Longer, better lives: A programme for UK Government for cancer research and care*. In this, we identified a particular issue around the resilience of the funding landscape for cancer research.
9. For decades, charities have had to pick up the burden of under-investment in cancer research by government. Around 38% of non-industry cancer research funding comes from the government, compared to around 62% from charities.
10. This situation, where charities make up a significant proportion of research funding, is unique internationally, and creates a challenge for the resilience of the

system in the UK. Long-term research programmes are being funded through charitable income generation, which is highly exposed to changes to the environment – such as rising costs and changes in consumer behaviour and the economy.

11. Lessons from the impact of the COVID-19 pandemic are a stark reminder of the risks associated with a research funding landscape that lacks resilience, with significant reliance on one dominant funding source. If used effectively, the industrial strategy can provide a valuable framework for ensuring the partnership between charitable, government and commercial funders of research has the stability it needs to capitalise on the UK's global strength in cancer research and make the breakthroughs that will transform outcomes for people affected by cancer.
12. The UK's leading position in cancer research has also meant that the impact of cancer research extends far beyond cancer with positive impacts across a wide range of areas of health, further building the case for specific attention for cancer in the Industrial Strategy.
13. CRUK's research into cancer cell biology has provided crucial insights into the cellular processes that underlie neurological disorders, leading to new therapeutic possibilities. For example, insights from cancer cell biology research have been vital in understanding the cellular mechanisms of neurological diseases such as epilepsy and amyotrophic lateral sclerosis (ALS). Similarly, more than half of the world's essential cancer medicines have been developed by or with CRUK – and several of these drugs have been repurposed to treat other serious conditions, such as heart failure and hypertension, thanks to insights gained from understanding cellular pathways in cancer. And the genomic sequencing techniques developed for cancer research have revolutionised our understanding of genetic variations in other diseases, paving the way for personalised treatment approaches.

Q8: Which barriers relate to people and skills (including issues such as delivery of employment support, careers, and skills provision), what UK government policy solutions could best address these?

14. People are at the heart of research, but our research community are facing recruitment challenges. This is contributed to by a variety of challenges including

the ability to attract and retain talent in UK pipelines and tap into the global talent pool.

15. International talent contributes to UK life sciences beyond simply filling skills gaps, including by bringing connections which open opportunities for UK labs to form international collaborations, new skills that they can share with the UK workforce to propagate scientific fields and technical capability in the UK, and diverse ideas and expertise that help spark innovations in UK labs. Future policy action by the UK Government must recognise this value.
16. We are pleased to see the recognition of the need for international talent in the Industrial Strategy green paper, particularly for life sciences, and support the establishment of Skills England. We have seen some positive changes to the UK immigration system in recent years, most notably the introduction of the Global Talent Visa. Through targeted engagement with our Institutes, we have seen awareness and use of the visa rise substantially – demonstrating the impact a renewed communications programme from Government could have.
17. But we are concerned that UK Government immigration policies – particularly high visa costs and the Immigration Health Surcharge – damage our ability to attract talent. The total annual cost at our Institutes will increase by 44% to nearly £700,000 a year as a result of the increases introduced by the previous UK Government.[vii] Costs are mostly covered upfront by researchers and all CRUK Institutes reported challenges to recruit in 2023/24, citing costs as the biggest barrier.
18. We are pleased to see the establishment of Skills England. To deliver for cancer research, it must consider the skills needs of the life sciences sector to improve the domestic pipeline. We have heard that there are particular challenges facing recruitment in some job roles, for example that the recruitment of bioinformaticians is a concern and we have consistently heard of challenges in postdoctoral recruitment, and that regional variation in the ability of labs to recruit the skills they need persists. When mapping the skills needed to deliver the future of life sciences R&D, it is vital that Government consults across the R&D ecosystem, including major strategic funders such as CRUK.

Q10: Which barriers relate to RDI and technology adoption and diffusion, what UK government policy solutions could best address these?

19. To drive market dynamism regulatory institutions must be appropriately staffed and funded. Fundamental challenges causing MHRA delays should be urgently addressed, including capacity, staff retention and funding, with staff currently overburdened, while pay cannot compete with industry rates.
20. The 2023 'Pro-innovation Regulation of Technologies Review' for Life Sciences found that regulators are struggling to recruit staff with the necessary skillset and expertise in competition with the private sector. This is impacting their ability to meaningfully engage with innovators and risks delaying the application of regulations to new technologies.
21. In recent years, the MHRA has been struggling to meet the 30-day approval target. For example, the UK is not keeping pace with the EU on innovative medicine approvals – between 2021 and 2023, MHRA approval for oncology medicines came on average, 50 days later than European Medicines Agency approval.[viii]
22. Progress has been made to address these delays and backlogs, but sustained funding and investment in the talent pipeline is needed to protect the organisation's long-term capacity. This will be particularly important as we expect increasing numbers of cancer innovations to come down the pipeline in the next five to ten years, thus increasing regulatory and approvals workload.
23. Meeting targets for approvals and delivering these in a timely manner will be vital to achieving an efficient and streamlined approvals pathway for innovation, thus increasing market dynamism.
24. The newly created Regulatory Innovation Office has an important role to play in driving market dynamism. There is an opportunity for the Office to act as a coordinator of regulators, approval agencies and key stakeholders, improving integration and streamlining approvals.
25. Clinical research also plays a critical role in translating discoveries into safer, kinder and more effective diagnostics and treatments. Through trials, patients can access cutting-edge drugs and technologies while determining their suitability for use in the NHS. There is not enough capacity for - or prioritisation of - research within the NHS, in large part due to wider pressures facing the health service. Strengthening the research culture in the health service, speeding up and streamlining clinical trial set-up, and creating time for research would all support this, as outlined in our 2023 survey of the UK clinical research workforce.[ix]

Q11: What are the barriers to R&D commercialisation that the UK government should be considering?

26. The commercialisation of life science research is the critical way that innovations are progressed from the lab bench to the patient's bedside. It brings significant health benefits as well as growth opportunities.
27. At CRUK, we play an integral role in the commercialisation of UK cancer research – driving it through our innovation engine Cancer Research Horizons (CRH). Through CRH and its predecessor, £3 billion has been raised by companies within our portfolio, £600 million+ has been reinvested into CRUK to fund further research, and 8 in 10 NHS cancer patients treated with cancer drugs receive a drug that CRUK helped develop. We have formed 79 start-ups, with 23 exits from our portfolio.[x]
28. Government efforts to improve the UK's commercialisation landscape have recently focused in increasing the number of spin-outs in the UK. But when compared to the US we spin out a comparable number of companies for the relative size of our research base.[xi] In the UK life sciences ecosystem, what we need are stronger spin-outs that thrive and grow into successful companies. In particular, we need the UK commercialisation ecosystem to produce spin-outs with access to the capital and skills they will need to scale up and deliver impact for patients.
29. We also need an increased government focus on licensing – the primary route for the majority of oncology assets delivered into the health service. Within our own portfolio, Cancer Research Horizons has helped bring 35 oncology assets to market, with 32 of them being through licencing. Looking at the HE-BCI survey data we see a similar picture across the wider knowledge transfer sector.[xii] There were 22,458 licenses issued in 2023/4 compared to 165 new spin-outs. Oncology license arrangements faces distinct challenges in managing a complex IP (intellectual property) landscape, university-funder agreements, as well as researchers' ability to access the capital that they have secured.
30. Pension reform, allowing the delivery much needed capital into growing life science business, needs to progress. It's positive that there has been some movement here with the Pensions Minister's Review underway. Any changes to the system must free up capital to invest in high growth sectors.
31. R&D tax credits encourage firms to perform R&D, and are particularly valuable for the life science sector. We were pleased that the government chose to keep the current rate of between 15-27% in the latest budget, but this is below the most

competitive international standards – Australia for instance has a rate of around 44% and France 30%.

32. Increasing entrepreneurship training opportunities in UK universities would give greater business skills to founders, allowing them to work in a complex landscape more effectively. We have heard from both academics and investors that there is often a lack of the skills needed to effectively run a life science spin-out and although it is getting better, there is still a culture of stigmatisation when it comes to commercialisation with publications significantly prioritised ahead of knowledge transfer.

Q15: How can investment into infrastructure support the Industrial Strategy? What can the UK government do to better support this and facilitate co-investment? How does this differ across infrastructure classes?

33. The industrial strategy must support strategic major infrastructure investment to catalyse cluster development and enable capacity to increase laboratory space, including through innovative partnership models with major private and charitable investors and research funders.
34. Wider factors that impact the attractiveness and capacity for expansion of an area can limit the development of clusters even if the ingredients are present for excellent research, including public services like housing and transport.
35. Transport in Cambridge has been an issue for the CRUK Cambridge Institute. The development of a new railway station in Cambridge South, approved by the Secretary of State for Transport in 2022, to strengthen Cambridge's transport links and enable better access to the growing biomedical campus is therefore strongly welcomed by the Institute. The COO of the CRUK Cambridge Institute anticipates the new station will increase the attractiveness of both working at and visiting the Institute, bringing more people to the campus. This could increase collaboration and knowledge sharing opportunities and "enhance the campus and our ambition to be a biomedical powerhouse for the UK." Similarly, the announcement of support in the Autumn Budget for East West Rail to connect Oxford and Cambridge, with the intention to support the wider Cambridge life sciences cluster and open land for laboratory space, is welcomed.
36. Partnerships between public, charitable and private organisations that co-fund research projects or infrastructure, facilitate collaboration and boost research capacity in a cluster, and should be encouraged by the industrial strategy. The

world-leading Francis Crick Institute was born from a major partnership between MRC, Wellcome and CRUK. The Francis Crick Institute has recently partnered with British Land, BlackRock and Reef Group to create new commercial lab space in London's Knowledge Quarter (close to GSK, AstraZeneca and Google), to incubate innovative life sciences companies who can partner with and learn from Crick-based scientists and accelerate scientific discovery.[xiii]

37. We have identified the need and potential for a world leading new biomedical research cluster in Scotland. We are working closely with a range of stakeholders in Scotland and England on developing a proposal for a new multi-disciplinary, multi disease biomedical institute in Edinburgh. This would be of a similar scope to the biggest and most innovative institutes in the world, such as the Francis Crick Institute in London or the Koch Institute in Boston.
38. Delivering multi-disciplinary, multi-disease research with an uncompromising focus on research excellence, this institute would be a nexus for a new life sciences cluster in Scotland and ensure Scotland maintains a globally-significant critical mass and a reputation for global excellence for research well into the next decade. Our analysis has found that a new Scottish Health and Biomedical Institute (SHBI) has the potential to contribute £3.3bn of gross value added (GVA) to the UK economy, driven by high value-adding research activity together with construction activity in building the institute.[xiv]

Q20: Do you have any suggestions on where regulation can be reformed or introduced to encourage growth and innovation?

39. There are significant opportunities to streamline and reform regulation for health innovation and clinical trials – both central to the success of UK life sciences.
40. We welcome the establishment of the Regulatory Innovation Office which could provide a useful vehicle to hold regulators accountable for driving innovation across the health system and for clinical trials, and where relevant considering wider changes to the regulatory environment which address some of the barriers identified below.
41. Within health innovation, innovators need certainty that their products have a route to adoption. Without this, they may be less likely to develop or seek market approval for their products in the UK. However, for innovations that are not traditional medicines, the pathways to adoption are at best unclear or

inconsistent, and at worst non-existent. The pace of adoption is also too slow, particularly for MedTech innovation.

42. Where formal processes exist, such as MHRA and NICE approval, these should be joined up through clear pathways to adoption, as is the case with the Innovative Licensing and Access Pathway (ILAP) and the Innovative Devices Access Pathway (IDAP).
43. These efforts to create clearer routes for adoption are welcome, but represent limited opportunities for innovators, and would need to be scaled up to meaningfully encourage and support health innovation.
44. This should include comprehensive horizon scanning for early identification of promising innovations and mechanisms, with health services signalling clinical need to the research community, for example where unmet need exists and treatment options are lacking.
45. Routes to adoption for emerging innovations such as AI, digital tech and diagnostic tests must be more clearly defined, from pre-market authorisation to commissioning. These should be developed by DHSC, the MHRA and NICE, collaborating with NHSE, and outline responsibilities of the relevant partners, evaluation criteria, evidence thresholds and cost-effectiveness requirements.
46. Speedier approval processes must be balanced with maintaining patient safety- efficiency should be coupled with robust procedures for quality and evidence.
47. Clinical research leads to future breakthroughs, provides current patients with early access to new and improved treatments and diagnostics, is associated with higher quality of care and staff retention, and brings substantial economic gains in contribution to GVA and job creation.
48. Streamlining the set-up of clinical trials will bring innovations to patients faster and ensure the UK has internationally competitive timelines to compete for global industry in the growth-driving life sciences sector.
49. Regulation has a role to play – it is vital that it is proportionate, maintains patient safety and that UK regulations are compatible with the EU and beyond to foster global research collaboration.
50. Streamlining set up of trials and medicines approval will rely on building on existing work for standardise trial costing and contracting nationally to avoid site level inefficiencies and provide adequate and sustained funding and support for MHRA to speed up approval of trials & subsequent licencing and post market surveillance.

Q26: Do you agree with this characterisation of clusters? Are there any additional characteristics of dimensions of cluster definition and strength we should consider, such as the difference between services clusters and manufacturing clusters

51. Life sciences clusters have the capability to connect the full life cycle of research and propel research from discovery through to societal impact.[xv,xvi,xvii] For cancer, this means delivering kinder, more effective treatments and better care and prevention more quickly. Clusters have a positive impact on the economy and productivity, both locally through driving local innovation and skilled job creation, and nationally by boosting overall R&D which drives for growth and attracts foreign and private investment.[xviii] The industrial strategy must therefore address barriers that inhibit the growth of high-potential clusters.
52. It is important to ensure tailored support for the different needs of clusters at different stages of development. Cambridge, for example, is world-class and has immense draw for research organisations and industry. But there are some key infrastructure challenges that may limit the potential of Cambridge to match the scale of areas such as Boston. This contrasts with earlier stage clusters where attracting talent and industry investment remains the priority.
53. The success of clusters is dependent on criteria including: a critical agglomeration of diverse research performing organisations; opportunities to create connection and collaboration to spark innovation and accelerate research pipelines; access to talent, sustainable finance, research infrastructure; political will with a strategic approach and an attractive local environment with opportunities that attract talent and investment. We have shared a briefing with the Department containing more detail on each of these criteria which we plan to publish in early 2025.

Q31: How should the Industrial Strategy Council interact with key non-government institutions and organisations?

54. It is vital that there are regular opportunities and forums for organisations across the life sciences ecosystem to input into the government's actions and priorities around life sciences. We do not feel the status quo provides this. As a major UK funder, having funded over £4 billion of research in the last decade, and supporting numerous drugs and treatments into the NHS, CRUK has a unique position in the wider cancer research system. CRUK would be well-placed to support government in delivering their life sciences priorities through the

industrial strategy, but without a broadening of the existing governance structures, for example the Life Sciences Council, we risk missing out on some opportunities to do so.

55. Our underpinning role in the UK's cancer research infrastructure and skills landscape, close connection with patients and the public, and exceptional partnerships across industry and government make us well-placed to support the government. Our potential to do this effectively would be enhanced if governance structures were reformed to account for voices from across the life sciences ecosystem.

For any queries or for more information, please contact Nick Jones at nick.jones@cancer.org.uk.

---

[i] Independent funder defined as non-Government, non-industry

[ii] Cancer Research UK. Longer, better lives: A programme for UK Government for cancer research and care. 2023.

[iii] The Guardian. More than 500,000 people in UK 'will be diagnosed with cancer each year by 2040'. 2023.

[iv] Cancer Research UK. Cancer survival statistics. 2024

[v] PA Consulting. Understanding the Economic Value of Cancer Research. 2022.

[vi] Department for Business, Energy & Industrial Strategy. The relationship between public and private R&D funding. 2020.

[vii] Cancer Research UK. Impact of UK immigration system changes on cancer research. 2024.

[viii] EFPIA. European Access Hurdles Portal: Results from the second year of data collection. 2024.

[ix] Cancer Research UK. 2023 Survey of the UK Clinical Research Workforce. 2024.

[x] Cancer Research Horizons. Annual review 2023/24. 2024.

[xi] National Centre for Universities and Business. New HE-BCI survey data: A deep dive into university-business interactions. 2024.

[xii] National Centre for Universities and Business. New HE-BCI survey data: A deep dive into university-business interactions. 2024.

[xiii] The Francis Crick Institute. The Crick builds unique partnerships to boost London's Knowledge Quarter. 2024

[xiv] PA Consulting. Unpublished analysis for Cancer Research UK using Economic Impact Assessment Model. 2023.

[xv] Sharon Belenzon and Mark Schankerman. Spreading the Word: Geography, Policy, and Knowledge Spillovers. Review of Economics and Statistics 2013;95(3):884–903.

[xvi] A. Varga. Spatial Knowledge Spillovers and University Research: Evidence from Austria. In: ed. Manfred M. Fischer. Innovation, Networks, and Knowledge Spillovers. Berlin, Germany: Springer, 2006:211–232.

[xvii] Octávio Figueiredo, Paulo Guimarães, and Douglas Woodward. Industry Localization, Distance Decay, and Knowledge Spillovers: Following the Patent Paper Trail. Journal of Urban Economics 2015;89: 21–31.

[xviii] UK Government. UK Research and Development Roadmap. 2020.