

Cancer Research UK response to Labour's Industrial Strategy

February 2017

A successful Industrial Strategy will recognise and build upon the UK's strongest industries, such as the science and research sector, to deliver benefits to the economy and patients across the country. We welcome the Labour Party's focus on this issue and appreciate the opportunity to submit written evidence to its consultation.

Last year Cancer Research UK spent £432 million on research across the UK, including our £28 million contribution to the building of the Francis Crick Institute. Our ambition is to accelerate progress and see three in four cancer patients survive their disease by 2034. Research is at the heart of our plan to reach this ambition and see cancers diagnosed early and treated well.

We believe that it is crucial that science, research and innovation are at the heart of a Labour Industrial Strategy. A strategy that strengthens the global standing of our research base will not only increase the UK's productivity and stimulate the economy, but have tangible benefits for patients.

In the UK, one in two people will develop cancer at some point in their lives¹. Furthermore, as more people benefit from improved healthcare and longer life expectancy, the number of cancer cases is expected to rise. Labour should consider the importance of prioritising health within its social objectives for the strategy.

Science and research play a crucial role in driving the UK's economy. For every £1 spent by the government on R&D, private sector R&D output rises by 20p per year in perpetuity, by raising the level of the UK knowledge base².

Along with Industry and government, medical research charities play a vital role in stimulating and investing in innovation. Charities have invested nearly £10 billion in research in the UK since the sector started collecting data in 2008³. This demonstrates both a strong commitment to improving patient lives through medical and health research and an important contribution to UK life sciences and the economy. In the last 5 years, researchers funded by charities created at least 60 spin out companies and produced 300 medical products including drugs and medical devices⁴.

Cancer Research UK stimulates regional economies by funding research across the UK. Last year, we spent over £23 million on research in the North West of England, over £41 million in East Anglia and over £9 million in the West Midlands.

In this submission, we have responded to several of the consultation questions and have also outlined several priority areas which we believe should be addressed in the strategy:

- Protecting investment in UK science
- Supporting growth across scientific disciplines
- Attracting and retaining scientific talent
- Building the NHS' research capability to attract further industry investment

¹ Ahmad A S., Ormiston-Smith N., Sasieni P D, 'Trends in the lifetime risk of developing cancer in Great Britain: comparison of risk for those born from 1930 to 1960', *British Journal of Cancer* (2015) 112, 943–947

² Hughes & Haskel, *The Economic Significance of the UK Science Base*, 2014

³ AMRC, *Medical Research Charities: investing in research*, 2015

⁴ Data obtained from AMRC impact data, a rich dataset collected by 40 AMRC members (covering 45% of AMRC members' annual research spend) via the online platform Researchfish, for grants they awarded between 2012 and 2014

Protecting investment in UK science

Our science base is a national asset. Labour should pledge to strengthen the global standing of UK research by setting an ambitious target and roadmap for total public and private R&D spending in the UK to reach 3%. Labour should also commit to increasing the Charity Research Support Fund each year in line with inflation and in response to changes in charity investment.

The UK is currently a world-class centre for scientific research⁵⁶. We produce 16% of top quality published research findings, with less than 1% of the world's population⁷, and rank 2nd in the world for the quality of our scientific research institutions⁸. Life sciences contribute more than £60bn a year to UK GDP, with annual exports of £29.5bn⁹. Being a global leader in research is self-reinforcing; the more the UK is known for its research, the more investment and talent it will attract, supporting it to succeed further.

Every pound invested in cancer-related research by the taxpayer and charities returns around 27p to the UK economy each year^{10,11}. Government investment in research supports the UK economy in a number of ways. It attracts private investment from overseas, builds a skilled workforce and contributes towards the generation of income from commercialised products. Research fundamentally improves the nation's health and, as such, delivers savings to government by reducing the incidence of disease or limiting its impact.

Labour's new Industrial Strategy should put science at the heart of its plan for growth. A Labour government must ensure that its investment in science serves to attract further investment in UK R&D from industry and charities.

To do so, we believe Labour should set an ambitious target and roadmap for total public and private R&D spending in the UK to reach 3%. This target would be in line with our competitors and would send a clear signal globally that the government is committed to strengthening UK science and the UK is open for business.

It's vital that government's investment in science support quality research in UK universities, which underpins the excellence of our science base, through quality-related (QR) research funding. The charity-support element of QR funding, the Charity Research Support Fund (CRSF) aims to support charity investment in English universities. However this fund has decrease significantly in real-terms since 2010. This fund needs increasing to ensure it provides adequate support and to encourage charity investment. To provide long-term confidence in its support for charity investment, a Labour government should commit to increasing the CRSF each year in line with inflation and in response to changes in charity investment.

A successful Industrial Strategy would need to involve cross-departmental collaboration. Relevant departments such as the Department of Business, Energy and Industrial Strategy, the Department of Health and the Department for International Trade should set out plans that will enable the UK to grow its investment in science to strengthen the global standing of our research base. These

⁵ Elsevier, International Comparative Performance of the UK Research Base, 2013

⁶ World Economic Forum, Global Competitiveness report 2014-15

⁷ Elsevier, International Comparative Performance of the UK Research Base, 2013

⁸ World Economic Forum, Global Competitiveness report 2014-15

⁹ ONS Balance of Payments data, (data for 2015)

¹⁰ Health Economics Research Group (Brunel University), RAND Europe, and King's Policy Institute, medical Research: What's it Worth? Estimating the economic benefits of cancer-related research in the UK, 2014

¹¹ <http://www.kcl.ac.uk/sspp/policy-institute/publications/SpilloversFINAL.pdf>

departments would need to work with the Treasury and the medical research sector to consider a range of measures to grow investment including tax-breaks and public-private incentives.

These measures should include:

- Developing an effective R&D tax environment that supports pro-innovation investments made by industry and charities.
- Amending VAT rules on sharing of facilities for research to promote industry-academia collaborations and attract further investment in UK science.

Supporting growth across the scientific disciplines

A Labour government must preserve the critical balance of resource and infrastructure funding it provides and ensure its policies support growth across the scientific disciplines.

The life sciences ecosystem is supported by a diverse and unique funding model. The activities and funding of the charity, public and private sectors are complimentary and mutually reinforcing, delivering returns that are greater than the sum of their parts. National policies that support a diverse range of research funders enable local solutions that optimise the input of different partners.

In addition to the critical balance of infrastructure and resource funding provided through the dual support system, government must maintain a balance of funding across the research disciplines to support innovative research.

It is becoming increasingly important to draw together scientists from different countries and disciplines to solve today's biggest health challenges. That's why, in October 2015, Cancer Research UK launched our Grand Challenge, which will see international, multi-disciplinary teams collaborating to tackle some of the biggest problems in cancer research¹². The award was open to researchers across the globe, who will work in collaboration with UK-based scientists. We had 56 applications from 409 investigators, spanning 224 institutes and 25 countries. This month we confirmed we will be funding, in collaboration with other sources, four of the nine shortlisted applications.

Charity, industry and government funders of research need to work together to support multidisciplinary and international scientific collaborations (see case study 1). Such partnerships provide funders with the opportunity to leverage additional support and enhance progress through shared knowledge, resources and capabilities.

The time lag between initial investment in cancer research and eventual health benefits is around 15 years¹³. This highlights the importance of long-term strategic planning give confidence to all funders of UK research, providing sustained investment that will secure future health and economic gains. A strong Industrial Strategy would help provide this confidence and should also aim to include measures that reduce the time lag.

Labour should consider how it would build the prestige and global recognition of government research grants and consider how these may facilitate and promote international collaboration and drive international research consortia. There is an opportunity for UK Research and Innovation to play a lead role in developing such grants.

¹² <https://www.cancerresearchuk.org/funding-for-researchers/how-we-deliver-research/grand-challenge-award/challenges?wssl=1>

¹³ Health Economics Research Group (Brunel University), RAND Europe, and King's Policy Institute, 2014, Estimating the returns to UK publicly funded cancer-related research in term of the net value of improved health outcomes

Case study 1: CRUK-EPSRC multidisciplinary awards

We established a Multidisciplinary Project Award Scheme in August 2014 to encourage scientists from different disciplines to come together and find new ways to solve the challenges we face in cancer research. The high level of interest in this scheme has shown us that there is a huge appetite among the scientific community to do more collaborative work.

To extend the reach of this scheme, in March 2015, we established a partnership with the Engineering and Physical Sciences Research Council (EPSRC). The new partnership increases the amount of funding for collaborative research to up to £37.5M over five years.

The EPSRC is the main UK funding agency for training and research in engineering and physical sciences. Working with the EPSRC will not only increase support for collaborative cancer research projects, but will also unite the expertise and scientific networks of both organisations, to ensure that the highest quality multidisciplinary work will be funded.

Attracting and retaining scientific talent

The UK's ability to attract, efficiently recruit and retain scientific talent must be ensured to maintain the excellence of our science.

A strong science base requires a skilled workforce. The mix of UK, European and international researchers within our research community is vital for the sharing of best practice, expertise and skills. That is why the UK must develop an immigration system that enables us to attract and retain the best scientific talent from across the globe and recruit the staff needed for our NHS.

Cancer Research UK recruits post-graduate students and researchers from an international pool to ensure that we are working with the very best minds to conduct the highest quality research (case study 2). Non-UK nationals are a significant and valuable part of our workforce dedicated to beating cancer sooner: 46% of our PhD students and half of our research fellows are from outside of the UK¹⁴.

The UK plays a key role in training young researchers; many of whom go on to set up labs elsewhere, but maintain important collaborative relationships with research groups in the UK (see case study 2). The UK also benefits from recruiting talented researchers who have received specialist training from centres outside of the UK. Such recruitment is particularly important and sometimes necessary in areas of science where we have a national skills shortage such as researchers working in computational biology and big data¹⁵¹⁶.

In addition to the valuable contribution that international scientists make to our workforce, the movement of researchers between countries develops valuable networks. Networks are crucial for the building of collaborative partnerships which are common place and often necessary in many fields of science including cancer, where nearly 50% all UK research involves international collaboration¹⁷. In February 2016, CRUK researchers were partnering with over 400 different organisations based in EU countries¹⁸.

¹⁴ The PhD student figure is based on data from Researchfish, a self-reporting tool for researchers, including those receiving CRUK funding

¹⁵ 'Bio-informatician' and 'informatician' are included on the Shortage Occupation List, valid from 6th April 2015

¹⁶ Medical Research Council and Biotechnology and Biological Sciences Research Council (2014) Vulnerable Skills Survey 2014

¹⁷ <https://www.ohe.org/publications/exploring-interdependencies-research-funders-uk>

¹⁸ Based on most recent data available from Researchfish, a self-reporting tool for researchers, including those receiving funding from CRUK

These collaborations enable sharing of knowledge and expertise, as well as research materials, equipment and data. They also support training, the running of pan-EU clinical trials and establishment of consortia set up to inform policy. The importance of such collaboration is shown by its impact on the UK's research outputs: nearly 50% of the UK's scientific publications have non-UK authors and the impact of these papers is significantly higher than the average impact of UK papers¹⁹.

We need to ensure that the UK remains open and welcoming to researchers, innovators and specialist technicians. In the short-term, we believe that all current EU-national researchers working in the UK, and UK-nationals working in the EU, should be given the opportunity to live and work in their present location following the UK's exit from the EU. The rights of their partners and dependents should also be protected.

In addition to tangible policies that enable us to recruit talent, a positive and consistent message needs to be sent to researchers globally, including those already based in the UK, to reassure them that their contribution to UK science is valued and encouraged.

Case study 2 - Dr John Diffley, Francis Crick Institute

John Diffley is one of the world's leading experts in studying how cells grow and make copies of themselves - a process that goes wrong in cancer. Dr Diffley's discoveries will form the foundations for new ways to diagnose and treat cancer in the future.

John's world leading research has benefitted hugely from the European Research Grant (ERC) funding he was awarded in 2009. To date, this funding has supported 11 of his peer-reviewed research publications. Last year he was awarded another prestigious ERC Advanced Grant providing him with £1,455,294 for further research.

'The ERC is a fantastic scheme and has transformed my lab. The research I was able to carry out with the ERC grant enabled my lab to enter a new area of science, which would otherwise have been closed to us. It has had an enormously positive impact on our science.'

Dr John Diffley

Around 50% of the scientists in John's lab are from non-UK EU countries. Two of the current 15 are funded through the Marie Skłodowska-Curie actions - Research Fellowship Programme. This fellowship, which is part of Horizon 2020, encourages researchers to move between EU countries to conduct their research, sharing their knowledge and skills as they go.

Over the years, John has established strong collaborations with labs across Europe. Some of these have been the direct result of EU funding. Dr Monica Segurado was able to come and work in John's lab thanks to an EU Network Grant, awarded in 2002. Since establishing her own lab in Spain, Monica and John have continued to collaborate and have jointly published research.

Building the NHS' research capability to attract further industry investment

A Labour government should build the NHS' research capability to benefit patients and to effectively market the UK internationally as a single research hub; thereby attracting inward investment.

¹⁹ Elsevier, International comparative performance of the UK Research Base, 2013

The existence of historic, universal healthcare puts the UK in a strong position to conduct clinical trials, promote the uptake of innovation and fully realise the value of our wide ranging and comprehensive data sets, for example the cancer registries. By optimising research in the NHS and marketing the UK as a single research hub, we will be in a strong position to attract industry investment and world-leading researchers, and can provide innovative treatments to patients faster. The UK should take the opportunity to build and capitalise on this national asset.

Cancer Research UK partners with the NHS in order to bring treatments to patients. Our Centres drive local partnerships and high-calibre collaborations between universities, NHS Trusts and other cancer charities. We also fund the Experimental Cancer Medicine Centre (ECMC) network in partnership with National Institute of Health Research (NIHR) and the Departments of Health in Scotland, Northern Ireland and Wales. The ECMC network provides the infrastructure for early phase clinical trials that often receives support from pharmaceutical partners. In 2014/15, ECMCs in England alone leveraged over £72 million through partnering with industry²⁰.

In its Five Year Forward View, the NHS stated an intention to improve its ability to undertake research and apply innovation. In order to achieve this, a Labour government must continue to invest in clinical research infrastructure through the NIHR and ensure that the system is appropriately resourced to achieve its ambition of realising a truly digital NHS.

Specifically, researchers' access to patient data is crucial to improving our understanding of disease and treatments at a population level. To ensure such access, effective data capture systems are needed and the UK's major data-holding bodies must have appropriate analytical capacity

Other

The consultation included several other questions relevant to Cancer Research UK that we would like to respond to.

How can we best capture the benefits of digital and other advances for the economy and society as a whole?

Data is, and will continue to be, essential for the NHS. The information routinely collected by the NHS, in national datasets and in medical records, is vital – for research into the causes of disease, the effectiveness of treatments and interventions, and evaluating the quality of services. The NHS could do a lot more to realise the potential of the vast amounts of data it collects, and use this data to inform how services are best commissioned.

Big Data presents an exciting opportunity, particularly in genomics where new technologies enable rapid analysis of vast amounts of genetic material from tumours. These developments will lead to fundamental discoveries about the nature of disease and to the development of new targeted treatments.

With the NHS as a single provider, and with a large, socially and ethnically diverse population, the UK has the potential to become a world-leading centre for innovative digital healthcare. If successful, this movement could increase efficiency, attract investment, create jobs and improve patient experience. It has also been found that digitally facilitated research can lead to substantial efficiency savings²¹. We support the recommendations of the Wachter review and its overall messages that

²⁰ Experimental Cancer Medicine Network, Annual Report 2014-15

²¹ National Audit Office (2011) *'The National Programme for IT in the NHS – a Case History'*, University of Cambridge

successful digitisation requires careful planning and investment, as well as a strong informatics workforce²².

What protections should be included in future trade deals (i.e. ILO conventions protected by sanctions, trade defence mechanisms to prevent dumping)?

New trade agreements made with the EU, and other nations, must allow the UK to pursue regulation in the interest of public health.

An end to EU membership should not compromise people's health. As the UK enters negotiations with the EU, it must continue to ensure that health of people living in the UK remains a core and unwavering priority.

The food, alcohol and tobacco industries may seek to exploit trade deals to protect their interests through investor-state dispute settlements (ISDS), which can have both a 'chilling effect' on the willingness to introduce new public health legislation and generate new legal barriers to implementation.

The Department for International Trade should also work to grow science funding in the UK by ensuring that it provides strong representation internationally to effectively communicate the value and opportunity of investing in UK science.

What threats and opportunities does Brexit present, and what should be our priorities in entering Brexit negotiations?

It is crucial that, after its withdrawal from the EU, the UK is able to maintain its excellent science base and that cancer researchers across Europe and around the world can continue to work together to make the best use of our pooled talent and resources.

There are several key areas that we believe should be prioritised in entering Brexit negotiations:

- Attracting and retaining talent
- Protecting access to EU funding for UK science
- Supporting collaboration through compatible regulation
- Ensuring timely patient access to innovative treatments

How can we improve the quality and quantity of apprenticeships?

The Apprenticeship Levy is due to be introduced on April 6th 2017. As one of the largest UK funders of medical research, we are committed to skills development in science. We welcome the current Government's recent commitment towards degree apprenticeships. However, current apprenticeship standards do not enable the charity or medical research sector to develop skills relevant for these sectors to any significant extent.

In order to increase the number of high-quality apprenticeships within the charity or medical research sector, we would therefore welcome the possibility to transfer *more than* the required 10% of our levy funds to other organisations aligned to CRUK, whether these are universities, biomedical industry or other charities. We are working with other medical research organisations, including

²² Wachter R.M. (2016), 'Making IT Work: Harnessing the Power of Health Information Technology to Improve Care in England', The National Advisory Group on Health Information Technology in England.

fundings and universities, to look at the possible mechanisms for creating a level 8, PhD-level apprenticeship standard for 'biomedical researchers' to continue to develop skills relevant to our sector.

Cancer Research UK does not receive any government funding for its research and we are reliant on donations from the public. The public donate to our cause to fund our work. We are concerned that an element of these donations will now end up being spent on other organisations' apprenticeships and not in accordance with our charitable objectives as our donors would quite rightly expect.