

## European and External Relations Committee

### The EU referendum and its implications for Scotland

#### Written submission from Cancer Research UK

We welcome the opportunity to respond to the Committee's call for evidence on Scotland's relationship with the EU. This submission focuses on the implications of the EU referendum result on science. In negotiating a new relationship with the EU, the strength of Scotland and the UK's science base must be protected.

This submission reflects the calls that we have submitted to the UK Government. We would welcome the support of the Committee and the Scottish Government in making the case in support of science to the UK Government. A Scottish case study has been included here, however the same principles apply across our UK institutes.

Last year Cancer Research UK spent £432 million on research across the UK, including £33 million in Scotland. Of that, over £24 million was spent in Glasgow, primarily at our Beatson Institute, on some of the UK's leading scientific and clinical research, and nearly £5m in Edinburgh at the Cancer Research UK Edinburgh Centre. We are the biggest funder of cancer research in Scotland.

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. This is why it is so crucial that the UK maintains 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.

Medical research benefits patients here, as well as patients across Europe and worldwide. It's in the best interests of all patients that science remains strong and competitive across the UK.

In outlining the risks and opportunities for science following an exit from the EU, we will focus on three principal areas:

- Attracting and retaining talent
- Protecting investment in science
- Supporting collaboration through compatible regulation

#### Attracting and retaining talent

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

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. The mix of UK, European and international researchers within our research community is vital for the sharing of best practice, expertise and skills.

Scotland, like the rest of 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. Scotland also benefits from recruiting talented researchers who have received specialist training from centres in the EU and worldwide. Such recruitment is particularly important and sometimes necessary in areas of science where we have a UK-wide skills shortage such as researchers working in computational biology and big data<sup>1,2</sup>.

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 collaboration<sup>3</sup>. In Feb 2016, CRUK researchers across the UK were partnering with over 400 different organisations based in EU countries<sup>4</sup>.

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 papers<sup>5</sup>.

EU nationals are a significant and valuable part of our workforce dedicated to beating cancer sooner: 33% of Cancer Research UK PhD students and 39% of our research fellows are non-UK EU nationals<sup>6</sup>. Importantly, existing free movement rules, including the right to bring partners and dependents, enable us to recruit these talented researchers easily and cost-effectively.

**UK Government must consider mechanisms that allow research organisations across the UK to recruit the best talent – protecting the ease with which we can do so for EU nationals and developing policies that allow for more efficient recruitment of international talent. Scientists should remain a priority group in the UK's points-based system. We would welcome the Scottish Government's support in making this case to the UK Government.**

Many EU nationals are concerned about their ability to continue working here, and the UK's vote to leave the EU has also made some feel unwelcome. Such concerns have been raised directly with us by researchers that we fund. We are also concerned that this message is being heard by the international research community and is affecting the attractiveness of the UK as a place to come and work.

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<sup>1</sup> 'Bio-informatician' and 'informatician' are included on the Shortage Occupation List, valid from 6<sup>th</sup> April 2015

<sup>2</sup> Medical Research Council and Biotechnology and Biological Sciences Research Council (2014) Vulnerable Skills Survey 2014

<sup>3</sup> <https://www.ohe.org/publications/exploring-interdependencies-research-funders-uk>

<sup>4</sup> Based on data from Researchfish, a self-reporting tool for researchers, including those receiving funding from CRUK

<sup>5</sup> Elsevier, International comparative performance of the UK Research Base, 2013

<sup>6</sup> The PhD student figure is based on data from Researchfish, a self-reporting tool for researchers, including those receiving CRUK funding

**In addition to tangible policies that enable us to recruit talent, the First Minister should extend a positive message specifically to the international research community, including those already based in Scotland, to reassure that their contribution to science in Scotland – to the benefit of patients globally – is valued and encouraged.**

### **Case study 1 – The Beatson Institute**

As one of Cancer Research UK's core-funded institutes, the Beatson carries out a programme of world-class science directed at understanding key aspects of cancer cell behaviour, and tries to translate these discoveries into new therapies and diagnostic and prognostic tools to help cancer patients.

To participate in world-class science, the Beatson must attract world-class talent. This includes many researchers from the EU and further afield. Over 30 nationalities are currently represented at the Beatson.

Over half the Beatson's graduate students and 45% of its post-doctoral scientists are from non-UK EU countries, while none of the Beatson's junior group leaders are UK citizens.

Overall, almost 70% of the Beatson's research scientists are non-UK citizens.

Many of the research teams at the Beatson have benefitted hugely from European Research Grant (ERC) funding. Since 2011, the Beatson has been awarded ERC funding totalling over £5 million.

One team, working on better understanding colorectal cancer, has received just over £1.25m of ERC funding since 2012. To date, this funding has supported six peer-reviewed research publications. Around 50% of the scientists funded directly from that award are from EU countries.

### **Protecting investment in science in Scotland**

***Overall levels of investment in science across the UK, including Scotland, must be protected and grown in the longer term to ensure our science remains globally competitive.***

The UK received significant funding for cancer research from the EU: In 2015, this investment totalled £40 million<sup>7</sup>. Although Cancer Research UK does not receive any direct funding for research, in 2015/16, Cancer Research UK's institutes across the UK received £7.5 million income from EU grants; this was more than 4% of their total research funding<sup>8</sup>. Furthermore, universities at Cancer Research UK centres are currently supported by EU grants totalling more than £110 million<sup>9</sup>. This funding

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<sup>7</sup> This includes all grants given to cancer-specific and cancer-related research. NCRI analysis using data derived from the Global Grants Award Database and corresponding Dimensions Software platform, provided by UberResearch.

<sup>8</sup> Funding data reported directly to us from CR-UK institutes, including the Francis Crick Institute

<sup>9</sup> Self-reported data from universities at current CR-UK centre locations. Includes total award of active grants in August 2016

provides crucial support for individual labs and promotes research collaborations with other EU countries.

Cancer research is one of many fields of UK research that benefit from the financial support provided by the EU. Overall investment by the EU in UK science is significant: in 2014/15, UK universities attracted more than £836 million in research grants and contracts from EU sources. This represents 14.2% of all UK income from research grants and contracts in that year. The UK does disproportionately well in securing EU research funding, and successfully secured 15.5% of the funding allocated under the previous EU research and innovation programme (FP7).<sup>10</sup>

Beyond their financial benefit to UK researchers, EU grants offer prestige and promote global recognition owing to their competitiveness and broad pool of peer reviewers. Winning these grants therefore gives visibility to the UK's first-in-class science and research offer and promotes multi-national research collaborations.

Importantly, EU investment in UK research leverages further private investment: €4.4 billion invested in the UK through FP7 from 2007 to 2012, secured an additional €1.1 billion from other sources to meet total project costs of €5.5 billion<sup>11</sup>. This builds on evidence showing that UK public funding leverages significant investment from industry and charities<sup>12</sup>.

Every pound invested in cancer-related research by the taxpayer and charities returns around 27p to the UK economy each year<sup>13,14</sup>. Government's 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.

**UK Government should now ensure that with a UK exit from the EU, overall levels of investment in UK science and the diversity of funding are protected and grown in the longer term. We would welcome the Committee and Scottish Government's support in making this case to the UK Government.**

Supporting collaboration through compatible regulation

***UK standards and legislation governing the approval and conduct of research must be compatible with the EU to enable our continued participation in pan-EU research projects.***

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<sup>10</sup> <http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Pages/economic-impact-on-the-uk-of-eu-research-funding-to-uk-universities.aspx>

<sup>11</sup> Department for Business, Innovation and Skills, 2013, Leverage from public funding of science and research

<sup>12</sup> Economic Insight, What is the relationship between public and private investment in R&D?, 2015

<sup>13</sup> 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

<sup>14</sup> <http://www.kcl.ac.uk/sspp/policy-institute/publications/SpilloversFINAL.pdf>

The compatibility of regulation and standards across member states brings benefits to UK medical research. In areas such as clinical trials, the use of personal data in research and medicines approval, it supports scientific collaboration across EU member states and can streamline approval for large studies.

Cancer Research UK supports over 250 clinical trials by providing funding, expertise and facilitating partnerships. These trials recruit more than 25,000 patients each year. Of the trials that we directly fund – currently over 200 - more than a quarter involve at least one other EU country<sup>15</sup>. To set up and run pan-EU trials efficiently and effectively, it is important that the legislation, guidance and standards governing their approval and conduct is aligned across member states. Such trials are especially important for rarer cancers and childhood cancers, where trials are often only feasible because they are able to recruit from a large pool of patients across the EU.

The new Clinical Trials Regulation, due to come into force at the end of 2018, represents a significant improvement on the current Directive. Importantly it provides for a new streamlined and coordinated system for approving trials that take place across different member states. The UK has played a key role in shaping this new legislation so that it works for research in the UK and enables us to effectively collaborate across the EU.

**The Scottish Government should continue to work with the UK Government to ensure that the UK aligns with the new Clinical Trials Regulation and can take part in the coordinated, EU-wide system of trial approval. This will be necessary for the UK to easily set up, and take part in, pan-European trials; attracting industry investment and bringing benefits to patients in the UK and the rest of the Europe. If the UK does not align with this regulation, it may find itself closed to such trials, which would be bad for patients and for inward investment in UK science.**

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<sup>15</sup> Statistics from CRUK's internal databases and include clinical trials from our Clinical Research Committee, New Agents Committee and Centre for Drug Development.