Cancer Research UK's Submission to the Nurse Review of Research Councils
April 2015

Cancer Research UK

1. Cancer Research UK is the world's largest independent cancer charity dedicated to saving lives through research. We support research into all aspects of cancer: from exploratory biology to clinical trials, as well as epidemiological studies and prevention research. This is achieved through the work of 4,000 scientists, doctors and nurses.

2. In 2013/14, we spent £386 million on research in institutes, hospitals and universities across the UK – including the £35 million contribution we made to the Francis Crick Institute. In our research strategy we have set out an ambition to increase our total spend on research in the UK by 50% over the next five to 10 years[1]. Although we receive no Government funding for our research, we depend on Government's support for UK science to realise the impact of our investment.

Executive Summary

3. Government should continue to invest in science through the dual support system to ensure the high quality of infrastructure in UK higher education institutions (HEIs) and provide a stable research environment in which all funders can invest. Effectively leveraging funding from charities and industry enables researchers, and ultimately patients, to benefit from a thriving UK research environment.

4. We are strongly supportive of the Haldane principle. It is important that this principle is upheld to allow the Research Councils to consult with a range of stakeholders in the research community when developing their priorities. We would welcome greater transparency and an emphasis on excellence as the primary guiding principle for decision making within a wider strategic vision of investment in research capital.

5. It is becoming increasingly important to draw together scientists from different disciplines to solve today's biggest health challenges, and research funders need to work together to achieve this. We have active partnerships with several of the Research Councils. We value these enormously and consider them to be crucial to achieving our vision of bringing forward the day when all cancers are cured. Our response to this call for evidence focuses predominantly on area 2: Collaborations and Partnerships. Based on our experience of collaborating with the Research Councils, we have made a number of recommendations that we believe would strengthen their effectiveness and further empower them to build partnerships with external organisations. In summary:

    - Government should provide clearer guidance to ensure that Research Councils are confident to explore innovative partnership models with charities and industry, and can be proactive and flexible in their approach.

    - Research Councils should share best practice models of collaboration with each other and external partners and have clear principles by which they engage with partners such as charities.

    - Research Councils should be more open to developing coordinated research strategies with charities and other partners that enable better long-term planning by both sides.

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[1] http://www.cancerresearchuk.org/funding-for-researchers/how-we-deliver-research/our-research-strategy
[1] Health Economics Research Group (Brunel University), RAND Europe, and King's Policy Institute, 2014, *Estimating the returns*

Government investment through dual support

6. The dual support system, whereby Government invests in Higher Education Institutes (HEIs) through both the quality related Funding Council stream and Research Council grants, ensures the high quality of infrastructure in these institutions and provides the stable environment that is critical for charities and industry to invest.

7. We welcomed the Government's commitment to protect the £4.6 billion science budget and to increase capital investment for research. However, an essential interdependence exists between capital and resources, and whilst capital investment has been restored to pre-2010 levels and guaranteed in real terms for the next five years, a flat cash arrangement for resource has led to the erosion of the science budget since 2010 due to inflation.

8. **It is essential that Government provides a long-term plan to support both resource spending on science and capital spending on research infrastructure.** The time lag between initial investment in cancer research and eventual health benefits is around 15 years[1]. This highlights the importance of long-term strategic planning to give confidence to all funders of UK research; maintaining investment that will secure future health and economic gains.

9. Government investment in medical research produces substantial returns to the economy, for every pound spent on cancer research, roughly 40p is returned to the UK economy[2]. It does this in a number of ways:

    - It attracts private investment from overseas[3];
    - it builds a skilled workforce;
    - it contributes towards the generation of income from commercialised products and supports the development of more efficient treatments, allowing commissioners to make savings while also improving outcomes;
    - it helps to develop interventions that can prevent disease as well as more sophisticated screening techniques that allow us to diagnose disease earlier.

10. By investing in science, the UK Government leverages investment from charities and industry, generating further scientific and economic growth. Research has shown that universities that receive higher levels of public funding generate more research income from other sources (such as charity, industry and overseas)[4].

The importance of collaboration among research funders

11. In the UK, research is often supported by multiple funders. A recent study indicated the extent of this collaboration using the field of cancer as an exemplar: two thirds of cancer research publications in the UK in 2011 that acknowledged external support, relied on multiple funders, while just under half benefited from overseas funding and a fifth were also supported by industry[5].

[1] 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*.
[2] 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.
[3] Haskel. J., Hughes. A., and Bascavusoglu-Moreau. E., 2014, The Economic Significance of the UK Science Base.
[4] Haskel. J., Hughes. A., and Bascavusoglu-Moreau. E., 2014, The Economic Significance of the UK Science Base.
[5] OHE and SPRU, 2014, Exploring the interdependencies of research funders in the UK.

12. This research also revealed the detail of these co-funding relationships. For example, Cancer Research UK, the UK's Departments of Health and the Medical Research Council (MRC) supported the largest number of cancer-related research publications in 2011 (949, 890 and 477 papers respectively). Of these, Cancer Research UK co-funded 216 papers with the MRC, 44 papers with the Engineering and Physical Sciences Research Council (EPSRC) and 21 papers with the Biotechnology and Biological Sciences Research Council (BBSRC).

13. It is becoming increasingly important to draw together scientists from different disciplines to solve today's biggest health challenges, and research funders need to work together to achieve this. Partnerships provide funders with the opportunity to leverage additional support and enhance progress through shared knowledge, resources and capabilities. The Francis Crick Institute (Case Study 1), the Stratified Medicine Programme (Case Study 2) and the Biomedical Catalyst[6] are key examples of this concept.

14. Innovate UK has played an important role in both the Stratified Medicines Programme and Biomedical Catalyst. Through such initiatives, Innovate UK is facilitating the translation of UK medical research into health interventions. **This model should be championed and further initiatives that support partnerships between Innovate UK and the Research Councils should be promoted.**

15. To strengthen our collaboration with the public sector, pharmaceutical and biotechnology companies, other charities, and international partners, we recently established a Strategic Partnerships team. We have also established more innovative approaches to funding cancer research, including our Multidisciplinary Project Award Scheme[7] and Cancer Research UK's Grand Challenge[8]. Our Grand Challenge will see international, multi-disciplinary teams collaborating to tackle the biggest problems standing in the way of beating cancer. With an annual award of up to £20m, it will be our most ambitious research programme to date. In addition to partnerships, it is important that funders work together to develop their strategic vision for funding research in the UK. We consulted broadly when developing our research strategy in order to get a range of views, insight and advice[9]. In addition to other funders, we consulted representatives from industry and scientists from leading cancer institutes outside of the UK.

16. We welcomed the fact that the Science and Technology Funding Council (STFC) consulted us when developing their cancer strategy, published in March 2015[10]. Our Directors and members of our Executive Board fed into initial thinking around the strategy and were asked to comment on the draft. This strategy has a strong alignment with our own strategic focus, in particular in the areas of radiotherapy and early diagnosis. Importantly, the strategy emphasises the importance of developing partnerships in order to deliver the STFC's vision. We hope to see further details on the level of investment and the mechanisms that will be put in place to deliver this strategy.

[6] http://www.mrc.ac.uk/funding/science-areas/translation/biomedical-catalyst/
[7] http://www.cancerresearchuk.org/funding-for-researchers/our-funding-schemes/multidisciplinary-project-award
[8] http://www.cancerresearchuk.org/funding-for-researchers/how-we-deliver-research/grand-challenge
[9] http://www.cancerresearchuk.org/sites/default/files/cruk_research_strategy.pdf
[10] https://www.stfc.ac.uk/3546.aspx?utm_source=HomePage&utm_medium=FlexSlider&utm_campaign=CancerStrategy

17. We think the consultative approach adopted by the STFC when developing their cancer strategy should be promoted among the other Research Councils. Furthermore, the **Research Councils should be more open to developing coordinated research strategies with charities and other partners that enable better long-term planning by both sides.**

Building partnerships with the Research Councils

18. Several of our partnerships with the Research Councils have successfully built capacity in areas of critical need. For example, our collaboration with the EPSRC resulted in £7 million investment in the UK for training in cancer imaging, and our collaboration with the MRC has resulted in the world's largest and most comprehensive centre for research in radiation oncology and biology – the Cancer Research UK/Medical Research Council Oxford Institute for Radiation Oncology. More recent joint initiatives include co-funding a stratified medicine consortium with the MRC (Case Study 3) and the CRUK-EPSRC Multidisciplinary Project Award Scheme (Case Study 4).

19. Our experience in establishing partnerships with the Research Councils has been broadly positive. Both the MRC and the EPSRC have always been very receptive to partnering with us and have been enthusiastic in their approach. However, there can sometimes be a resistance from the Research Councils to establish new, innovative models of partnership. There is a sense that they are anxious not to extend themselves beyond their remit, which can be problematic, especially for cross-discipline collaborations. **Government should provide clearer guidance to ensure that Research Councils are confident to explore innovative partnership models with charities and industry, and can be proactive in their approach.**

20. Working in partnership will always require a degree of flexibility. This is particularly true for the funding model, which will be predominately designed around the organisation leading the initiative. The Research Council's approach to these collaborations will therefore need to vary depending on whether they are the lead organisation or not. On the whole, we have found the Research Councils to be very effective at this. **It is important that Government policy supports the Research Councils to have a flexible approach to future partnerships.**

21. Finding a suitable funding model can be one of the biggest hurdles we face when developing a partnership with the Research Councils. How to deal with the full economic costs of research in such partnerships can be particularly difficult to resolve. From our experience, this has been made more challenging by a lack of awareness among individuals in the Research Councils around the collaborative models that they are able to adopt. This can act as a barrier to decision making and cause delays when negotiating the terms of the partnership. **Research Councils should share best practice models of collaboration with each other and external partners and have clear principles by which they engage with partners such as charities.** This guidance would ensure that Research Council staff, who are responsible for establishing collaborations with external organisations, are able to effectively negotiate partnerships. Case studies would be particularly useful for external organisations that have little previous experience of partnering with the Research Councils.

Case Study 1 – The Francis Crick Institute

The Francis Crick Institute, scheduled to open in 2015, will be a world-leading biomedical research centre in central London. The partnership forged to develop the Francis Crick Institute includes Cancer Research UK, the Wellcome Trust, the Medical Research Council, University College London, King's College London, and Imperial College London.

The organisations in the consortium will invest a total of around £650 million to establish the Institute. When it is fully operational, it will employ 1,500 staff, including 1,250 scientists, and have an operating budget of over £100 million per year.

The core of world leading researchers and cutting edge technologies within the Francis Crick Institute will be a magnet for the brightest and best scientists from around the world. In addition, through these founding partners, the institute will build upon existing strong relationships with research centres across the globe, laying solid foundations for international collaboration.

Case Study 2 – Stratified Medicine Programme

Cancer Research UK's Stratified Medicine Programme (SMP) is a fantastic example of how Government, charity and industry, can work together to bring the benefits of forefront research and discoveries to patients within the NHS.

The first stage of the programme, SMP1, leveraged £4 million from its pharmaceutical partners AstraZeneca and Pfizer. This supplemented Cancer Research UK's funding and support from Innovate UK, the NIHR National Cancer Research Network (NCRN) and Experimental Cancer Medicines Centres (ECMC).

Together, the programme provided real-time, genetic analysis for over 9,000 NHS cancer patients' tumours over two years. As a direct result, additional pharmaceutical companies have been working with Cancer Research UK to set up genetically stratified clinical trials in the UK.

In SMP2, Cancer Research UK is going even further to drive the development of the next generation of targeted cancer therapies within the UK by developing a nationally recruiting, multi-armed trial - The National Lung Matrix Trial.

Case Study 3 – MRC-CRUK stratified medicine consortium co-funding

The 13 stratified medicine consortia funded by the MRC will see investment totalling over £52 million – part of the government's £130 million commitment to stratified medicine set out in the UK Life Sciences Strategy.

These consortia have already attracted more than fifty small, medium and large pharmaceutical and biotechnology partners from across the UK and also from Europe, the US and wider afield, including China and Japan. They also include thirty-two academic partners and a number of charities, including Cancer Research UK.

The MRC and CRUK have agreed a 50:50 funding partnership of £2.5m each over 5 years to support the 'Stratification in COloRectal cancer: from biology to treatment prediction (S-CORT) consortium' led by Professor Timothy Maughan, University of Oxford. This project brings together the leading colorectal cancer research groups in the UK and has both pharma and diagnostic companies amongst its collaborators. The clinicians involved have played a key role in the development of the FOCUS-4 trial, a flagship study in molecular stratification, which is supported by both the MRC and CRUK.

This partnership represents a more aligned working relationship in the continued development of the UK's approach to stratified medicine and has allowed us to strengthen the CRUK-MRC relationship.

"The goal of stratified medicine is to provide patients with the best treatments by ensuring that existing medicines are targeted at those who will derive most benefit but also by accelerating the development of new therapies. Achieving this goal requires partnerships that harness the diverse mix of knowledge, expertise and commitment of academia, industry and patients.

"Here in the UK, we're ideally placed to be at the forefront of this field because we can combine excellence in research with access to some of the highest quality clinical resources and data in the world. This is attracting small, medium and large companies from across the UK and internationally to partner with us. The consortia we are supporting are keen to work with new partners and we shall be considering further disease areas that might benefit from this approach."
Professor Sir John Savill, Chief Executive, MRC.

Case Study 4 – CRUK-EPSRC multidisciplinary awards
It is becoming increasingly important to draw together scientists from different disciplines to solve today's biggest health challenges. To facilitate this, we established a Multidisciplinary Project Award Scheme[11] in August 2014. 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. Joint awards will be issued by Cancer Research UK, with the first awards decided in April 2015.

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.

"This new partnership will build further on our existing collaborative work which is already reaping rich rewards for scientists, engineers, clinicians and of course, patients. We are confident that the strength of these collaborations will inspire more researchers to work with CRUK, EPSRC and other partners. This partnership will help the UK acquire tools and skills we need in our collective battle against cancer."
Professor Philip Nelson, Chief Executive of the Engineering and Physical Sciences Research Council.

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[11] http://www.cancerresearchuk.org/funding-for-researchers/our-funding-schemes/multidisciplinary-project-award