

Sir John O'Reilly FEng
Director General of Knowledge and Innovation
Department for Business, Innovation and Skills
1 Victoria Street
London
SW1H 0ET

17 May 2013

Dear Sir John,

As the Presidents of the **Academy of Medical Sciences**, the **British Academy**, the **Royal Academy of Engineering** and the **Royal Society** we are pleased to respond to your letter about '*Government strategic priorities for science and research funding*'. The spending decisions for financial year 2015-16 provide an important opportunity to strengthen the role of research¹ and innovation as drivers of UK growth and competitiveness, as part of the Government's wider industrial strategy and plan for growth. Our recent joint statement, *Fuelling prosperity*, made recommendations aimed at ensuring that the UK harnesses research and innovation to foster future prosperity; this letter is intended to supplement that statement.

Key priorities for the research base

The key priorities for the research base identified in your letter provide a good foundation for decision making. The UK has an excellent research base that is the most productive in the world and includes a higher education sector worth almost £60bn per annum in jobs, exports and added value. The Government's emerging industrial strategy should help to ensure that the UK generates maximum economic and social value from these assets. However, our international competitors are increasingly realising the value of research and innovation, and growing their investment. The Government should commit to increased investment in research and innovation to keep pace with other leading scientific nations. For such funding to deliver best value it needs to be aligned with properly planned and targeted policy in areas such as immigration and education, and accompanied by coordinated and sustained capital investment.

A focus on excellence is central to the success of the UK research base. However, concentration also carries risks and it is essential that we maintain broad national research and innovation capabilities if we are to ensure a supply of highly skilled people and to attract investment. For example, the UK pharmaceutical industry depends on the strengths of over 20 disciplines; a pattern that is mirrored in other sectors such as the video games industry. This breadth of expertise can only be achieved by supporting a broad range of research training and research activities, and through sustained QR funding that gives higher education institutions the autonomy to deliver knowledge and skilled researchers across a range of disciplines. Indeed, we recommend that your key

¹ For the purposes of this letter the term 'research' covers the whole spectrum of research including social, medical, physical, mathematical, biological, chemical and computer sciences, engineering and the humanities.

criteria should emphasise the need to maintain a flow of highly skilled people, who contribute to UK prosperity through roles in research and a wide variety of other vibrant and important sectors, such as the creative industries and information technology.

Researchers are working hard to improve the efficiency of publicly funded research, for example by sharing equipment through partnerships such as the N8 group of universities across the North of England and the UNIQUIP network for UK higher education facilities and equipment sharing. Public funders are increasingly evaluating the impact of their schemes and in 2010-11 the higher education sector saved £462 million through efficiency measures. However, the impact of efficiency savings should be closely monitored to avoid harm to the research base.

A long-term investment framework that leverages private and charitable investment

While research can have rapid impacts, its benefits often emerge over relatively long horizons. Turning the funding tap off then on again disrupts discovery. Such unpredictability in public funding hampers long-term approaches needed both to train skilled professionals such as doctors and engineers, and to tackle challenges such as finding sustainable sources of energy; and it makes it difficult to capitalise on past investments. Uncertainty in public funding also risks losing internationally mobile researchers, and investment by companies and charities, to other countries.

In contrast, stable long-term funding plays a vital role in stimulating investment and exploitation by industry. This has been demonstrated by the sustained successes of the Fraunhofer Institutes in Germany, and will be necessary to realise the full potential of the Government's sector-specific strategies. Public investment produces a multiplier effect that leverages industry and charitable investment from home and abroad. For example, each £1 that the Technology Strategy Board invests in collaborative R&D between business and researchers typically returns around £7 in Gross Value Added. The strength of our research base is also one of the reasons that the UK has the highest percentage of funding from overseas sources for R&D in the G8. However, cuts in public funding are likely to cause a reversal of the multiplier effect described above.

Government is already improving support for activities that leverage investment such as the UK Research Partnership Investment Fund, the Technology Strategy Board's Catapult Centres and the Charity Research Support Fund. Such initiatives send the right signal to existing and potential private and charity funders, and dialogue should continue with these funders to ensure these initiatives continue to meet their needs. A long-term strategy for research, innovation and skills, at the heart of an industrial strategy and plan for growth, will give UK and international funders the confidence that they need to maintain and grow their investment.

The ring fence and the balance of capital and resource funding

The ring fence around the 'science budget' provided by the Treasury offers stability, protects against short-term cuts, supports strategic planning, encourages long-term collaborations and sends a strong signal about the UK's commitment to research to the wider community of funders. However, a number of BIS budget lines that are central to the health of the UK's research base lie outside the ring fence, including teaching support for high-cost undergraduate courses, post-graduate teaching and capital. These are particularly vulnerable to potential reductions in funding. We strongly support the continued ring fencing of the 'science budget' but also urge Government to ensure that the UK's research and innovation capabilities and performance are not damaged by cuts to important elements of funding that fall outside the ring-fence.

The appropriate balance between capital and resource will vary between disciplines. Capital investment that is not matched with adequate resources risks creating new buildings and facilities without having the people to use them. The converse situation – of having staffing resources but insufficient capital – is no less problematic. The additional £1.5bn invested by the Chancellor has redressed some of the decline in capital investment since 2010. While this significant additional funding has been very welcome, upfront allocation of stable and sustained capital funding would enable long-term planning and growth in research that is required to harness future opportunities. The focus of this additional funding on strategic priorities means that the replacement of equipment required simply to keep the UK internationally competitive has been limited. Capital investment should therefore include refurbishment and replacement, as well as new buildings and facilities.

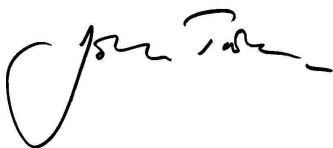
The UK's public research and innovation funding landscape

The UK's public funding landscape extends beyond the 'science budget' within the Department for Business, Innovation and Skills (BIS). Many Government departments and public bodies also invest heavily in research and innovation. This plurality provides resilience. For example, the Medical Research Council, under BIS, and the National Institute for Health Research, under the Department of Health, provide distinct and interdependent funding streams for health science, especially translational research. A further example is the Global Food Security programme, which exploits the synergies of funding between the breadth of disciplines across the research base (through the Research Councils), the Department of Health, the Department for International Development and the Department for Environment, Food and Rural Affairs. Such interdependencies mean that the 'science budget' cannot substitute for reductions in departmental research budgets and *vice versa*.

To escape our present economic troubles we need a new innovation revolution with UK research front and centre. Bold leadership and decisive action is required now to achieve this goal. The four UK National Academies already play an important role in providing policy advice, highlighting the value of research and innovation, helping researchers maximise the value of funding, and supporting the translation of knowledge into public benefits. We look forward to continuing to work with you, your colleagues, other policymakers, industry and broader society to secure the UK as the best place in the world to explore, discover and innovate.

For further information please contact Laurie Smith on +44 (0) 20 7451 2282 or laurie.smith@royalsociety.org

Yours sincerely,



Sir John Tooke PMedSci



Sir Adam Roberts PBA



Sir John Parker GBE FREng



Sir Paul Nurse PRS FMedSci