RUSSELL
INTERNATIONAL
EXCELLENCE
GROUP

Russell Group evidence for the Science and Technology Committee inquiry into the Science Budget

1. Summary

- The UK punches above its weight when it comes to excellence in research and higher education but this situation is unsustainable in the long-run without continued investment. We would like to see the proportion of GDP spent on excellent science and research increased in order for the UK to continue to be internationally competitive and to strengthen the pipeline for growth and jobs.

- Any further cuts to the science budget would imply a real, long-term threat for the UK's research, innovation and higher education systems.

- Public investment in R&D, including research conducted by universities, is strongly correlated with private industrial productivity growth and leverages investment from private, charity and international sources, rather than replacing funding from these sources.

- The continued ring-fencing of the science budget is critical in demonstrating the Government's long-term commitment to science and research, and protecting that investment from being diverted to other more short-term policy priorities.

- The combination of stable core funding through the Funding Councils and competitively awarded grants from the Research Councils ensures the diversity and breadth of research in the UK.

- We welcome the Government's commitment to maintaining capital funding for science and research in line with inflation at £1.1 billion a year until 2021. A similar commitment to fund the on-going resource costs associated with operating, maintaining and up-grading capital facilities is also needed.

- The current balance of research funding between basic and more applied areas is about right, but the overall level of investment should rise.

- By concentrating funding on excellence and critical mass the UK gets the biggest bang for its buck. Our global competitors are increasingly concentrating funding on their leading universities and reaping the rewards.

- There are a number of ongoing challenges which are putting pressure on science funding and/or preventing its most effective use. These include changes to immigration rules, a significant shortfall in funding for high-cost STEM subjects, the loss of additional research degree supervision funding, efficiency pressures, costs of open access publication and interpretation of VAT rules.

2. Context

2.1 The purpose of the Russell Group is to provide strategic direction, policy development and communications for 24 major research-intensive universities in the UK. We aim to ensure that policy development in a wide range of issues relating to higher education is underpinned by a robust evidence base and a commitment to civic responsibility, improving life chances, raising aspirations and contributing to economic prosperity and innovation.

2.2 We welcome the timeliness the Science and Technology Committee's inquiry on the science budget and the opportunity to contribute to this work. We understand that in order to achieve the goal of eliminating the deficit by 2019-20, the government is looking to deliver £20 billion of cuts to departmental budgets over the next four years. We are very concerned that as a result of protection in other areas there is a danger that major cuts may fall on non-ring-fenced departments, including BIS. Following the 2010 Spending Review, the BIS budget has already been cut by 25% in real-terms with further in-year cuts of £450 million for 2015-16 already announced. **The potential for further cuts implies a serious, long-term threat for the UK's research, innovation and higher education systems.**

2.3 The UK lags behind its main competitors in its level of investment in R&D and cannot continue to sustain its position as a world-leader without sufficient support. In order to ensure the UK can continue to compete internationally, as a priority we support:

- Increased investment in excellent science, research and innovation as a proportion of GDP;
- The continued ring-fencing of the science budget;
- Maintenance of the dual support system;
- Distribution of funding on the basis of true international excellence, with a clear recognition of the importance of critical mass.

3. The importance of the science budget

3.1 It is well known that the UK punches above its weight when it comes to excellence in research and higher education: with less than 1% of the world's population and just 4% of the world's researchers, the UK earns 12% of international citations and 16% of the most cited papers – of which nearly three-quarters are produced by Russell Group researchers.[1]

3.2 An international comparison of national higher education (HE) systems found that the UK's HE sector ranks second out of 50 countries for output (in terms of research and its impact, quality of the best institutions, and the production of an educated workforce which meets labour market needs), but 26th for resource inputs (i.e. expenditure by government and private sector on teaching and research – meaning that 25 of the 50 countries ranked spend more than the UK on HE teaching and research).[2] However, this situation is unsustainable in the long-run without continued investment.

3.3 Investing in science and research is essential for building a more resilient economy and to create highly skilled jobs across the country. Our universities are powerhouses

[1] Analysis provided by Elsevier through its SciVal system, August 2014.
[2] Universitas21 Ranking of National HE Systems 2015.

for economic growth and prosperity, and any cuts to funding for world-class research would be entirely counterproductive for the long-term health of the UK's economy. Indeed, any further cuts to research, innovation and higher education budgets would do significant long-term damage, which would be extremely difficult to rectify simply by future investment. Such an approach would create uncertainty for universities and investors, weakening the science and research base and long-term private sector investment.

3.4 The economic argument for reinforcing the science budget is clear. The provision of public funding for excellent research enables leading universities to strengthen their links with businesses and contribute to productivity growth in the private sector. **Public investment in R&D, including research conducted by universities, is strongly correlated with private industrial productivity growth**, delivering an average return of 20 per cent after only three years.[3] Support for basic research in particular has been shown to deliver greater market sector productivity impact than other types of spending, as well as generating a high rate of return on investment.[4]

3.5 **Public investment in R&D leverages investment from private, charity and international sources, rather than replacing funding from these sources.** It has been shown that the science budget has given rise to an estimated additional £1.2bn of private sector investment that would not have occurred if the budget had been cut in line with other government departments.[5]

3.6 Investment in science and research is not only essential to underpin economic growth and productivity across the whole country, but it has wide-ranging societal benefits, including the development of life-saving new medicines, tackling climate change, preserving the UK's culture and heritage and improving opportunities and quality of life, amongst many others.[6]

4. Level of spending

4.1 Public benefits from science and research require sustained public investment over years or even decades. The essentially flat-cash settlement for the science and research budget in the UK has meant that the value of public investment in science has been steadily eroded as a result of inflation since 2010-11, and is now worth over £300 million less per annum than in 2010-11. If a flat-cash settlement is continued to 2019-2020, the value of the ring-fenced science resource budget will have declined by over £600 million annually, or even more depending on inflation levels which may rise in coming years.[7] Increased costs and global competition mean that the UK's comparative performance in research cannot be maintained indefinitely on current levels of investment.

4.2 The UK currently spends less on science than almost all of its main competitors: in 2013, the UK spent 1.63% of GDP on R&D, compared to 2.08% in China, 2.73% in the

[3] Haskel, J. et al, *The Economic Significance of the UK Science Base*, a report by UK~IRC for the Campaign for Science and Engineering (2014).
[4] Haskel, J. and Wallis, G., *Public support for innovation, intangible investment and productivity growth in the UK market sector*' (2010).
[5] *What is the relationship between public and private investment in science, research and innovation?* Report for BIS by Economic Insight (July 2015).
[6] For further information on this, see our report on The Social Impact of Research at Russell Group universities: http://www.russellgroup.ac.uk/policy/publications/the-social-impact-of-research-conducted-in-russell-group-universities/
[7] Calculated using the Treasury's GDP deflator in 2010-11 prices

US and 2.85% in Germany, with the average in the OECD at 2.36%.[8] It is not only the overall level of R&D spending in the UK that is lower than other key countries; the proportion that the UK Government specifically spends is also much lower. In 2013, Government-financed R&D as a proportion of GDP was 0.44% in the UK, less than the average for OECD countries (0.67%), less than the US (0.76%) and half the proportion spent by the German Government (0.85%).[9]

4.3 This relatively low level of investment means it is increasingly difficult for the UK's leading universities to compete with better-resourced institutions internationally. **In order for the UK to continue to be internationally competitive in the long term and to strengthen the pipeline for growth and jobs the proportion of GDP spent on excellent science and research should be increased**.

4.4 Russell Group universities lead the world in producing excellent research from limited investment, but long-term sustainable growth requires long-term investment. **The continued ring-fencing of the science budget is essential** in demonstrating the Government's long-term commitment to science and research, and protecting that investment from being diverted to other more short-term policy priorities.

4.5 Other spending commitments should not be added to the ring-fenced science budget unless accompanied by concomitant funding. This includes research funding in Government departments, which should be kept separate from the science budget to avoid diluting the funding that underpins the science infrastructure of UK universities. Departmental spending on research should complement and not compete with funding provided through the science budget. The Russell Group has previously noted that there may be opportunities to improve joint working with Government departments to deliver joined-up research programmes and that the scope for delivering research for other Government departments and agencies through RCUK-coordinated programmes could be widened[10]; this is an area the ongoing Nurse Review may seek to address.

4.6 The Committee asks about the need to balance the benefits of expenditure on science and research against the opportunity cost of government expenditure foregone on other public services. However, it is important to note that investment in science and research makes a highly valuable contribution to a wide range of public services and is essential in supporting other publicly-funded areas, including by increasing the cost-effectiveness of public spending.

4.7 The REF impact case studies provide a plethora of examples of this, such as computer science research at the University of Leeds which has delivered cost-effective, efficient and reliable public transport[11]; mathematics research at Cardiff University which has engineered lifesaving improvements to UK healthcare systems, as well as realising net efficiency gains of £1.6 million per year in one hospital emergency department alone[12]; or education research at Durham University, which developed a widely-used resource to help schools in England determine their spending priorities for the Pupil Premium and to review their support for disadvantaged pupils.[13]

[8] OECD Main Science and Technology Indicators – GERD as a percentage of GDP: https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB
[9] OECD Main Science and Technology Indicators – Government-financed GERD as a percentage of GDP.
[10] See our response to the Triennial Review of Research Councils (February 2013): http://www.russellgroup.ac.uk/policy/policy-documents/triennial-review-of-the-research-councils/
[11] http://impact.ref.ac.uk/CaseStudies/CaseStudy.aspx?Id=6337
[12] http://impact.ref.ac.uk/CaseStudies/CaseStudy.aspx?Id=3387
[13] http://impact.ref.ac.uk/CaseStudies/CaseStudy.aspx?Id=11818

4.8 Any cuts to the science budget would therefore not only affect universities and other research-performing organisations, they would also seriously jeopardise the potential for innovative new solutions to be developed in support of vital public services, ranging from health, transport and education, to energy, the environment and defence.

5. The dual support system

5.1 Public investment through multiple funding sources is critical to supporting excellent research and ensuring impact can be delivered. The UK's dual support system plays an essential part in sustaining research of the highest quality, allowing universities to be responsive to current socio-economic needs, to build expertise in new and emerging fields and adjust to changing priorities.

5.2 Research Council funding supports world-class research across all academic disciplines, with grants awarded for specific research projects based on independent, expert peer review. This funding supports innovative, excellent research, as well as sustaining progression in established disciplines, capacity building in emerging areas, training of researchers, investment in strategic priorities and maintaining national capacity. The Nurse Review is currently exploring how to ensure that the Research Councils are as effective as possible and the Russell Group response to this review is available on our website.[14]

5.3 QR funding, as an un-hypothecated funding stream, complements funding allocated via the Research Councils. It allows universities to be strategic, forward-looking and pre-emptive in the funding of research activities. It provides them with essential flexibility and autonomy to use the funds to support a wide range of research activities in their institutions, depending on their own needs and strategic priorities. It also provides the stability of funding needed to ensure institutions are not wholly concentrating on shorter-term research needs. It may be used, for example, to:

(a) Encourage and support interdisciplinary research (the importance of this cannot be over stated: as the Deputy Vice-Chancellor at the University of Exeter explained recently, much of the inter-disciplinary research the university does would not possible without QR funding[15])
(b) Attract and retain top researchers and support staff development
(c) Develop collaborations and partnerships with other organisations
(d) Support areas of research that are cutting edge, curiosity-driven, niche or newly developing
(e) Develop and improve research infrastructure, facilities and equipment
(f) Underpin and leverage other funding sources, such as from businesses and charities
(g) Train and develop postgraduates and early career researchers
(h) Strengthen professional research management support

5.4 It can be hard to predict the exact benefits of individual pieces of research and the role of serendipity in scientific discoveries has been shown throughout history. Sometimes, when least expected, the most important discoveries and breakthroughs can be made by talented researchers who were, in fact, trying to prove something else. This is why the dual support system is so important, allowing a balance to be achieved between short- and long-term research needs and priorities and providing a sound basis on

[14] http://www.russellgroup.ac.uk/policy/policy-documents/response-to-the-nurse-review-of-research-councils/
[15] Professor Nick Talbot, 'University of Exeter grows by 'breaking down boundaries' *Politics Home* (16 January 2015) https://www.politicshome.com/education/articles/opinion/university-exeter/university-exeter-grows-%E2%80%98breaking-down-boundaries%E2%80%99

which universities can forge research collaborations and partnerships with other universities in and outside of the UK and with businesses, charities and other partners.

5.5 **The combination of stable core funding through the funding councils (including mainstream QR, RDP, business QR and extremely valuable charity QR element), and competitively awarded grants from the Research Councils ensures the diversity and breadth of research in the UK.**

Higher Education Innovation Fund (HEIF)

5.6 A slightly different but particularly valuable funding stream for Russell Group universities is the Higher Education Innovation Fund (HEIF). HEIF is now long-established, having evolved through various precursors, and we have welcomed that successive Science Ministers have confirmed it will remain as a permanent 'third stream' of funding. HEIF is currently worth £160 million per year, with the bulk of this money (75%) coming from within the Science and Research Resource budget.

5.7 The ability to access a dedicated fund over an extended period of time has allowed universities to develop professional expertise to support knowledge exchange and the creation of economic and social benefit.[16] Many universities in England use HEIF to support Proof of Concept funding – this is a crucial stage in commercialisation and development that helps to demonstrate that commercial returns are possible and thus reduces the risk to private sector investors. Such small scale funding is critical, before seed and further capital (such as venture capital) becomes available.

5.8 HEIF allocations are rightly performance based, with institutions only eligible to receive an allocation if they exceed a £250,000 allocation threshold related to their external income earnings and performance of the sector overall. However there is also a cap of £2.85 million on the amount of money individual institutions can receive – restricting the ability of research-intensive universities to receive funding in proportion to the full scale or excellence of their knowledge exchange activities. This cap should be raised significantly.

5.9 The Higher Education Innovation Fund (HEIF) is vital in helping universities translate research ideas, knowledge and technology strengths into both economic and social impacts – HEIF must be maintained and targeted to support research-intensive universities where it can have most effect.

6. Resource and capital

6.1 The UK's position as a world-leader in research and higher education and the benefits that flow from this for the economy and society will only be maintained if our research-intensive universities have the facilities and equipment needed to compete with better-resourced institutions internationally. **We therefore welcome the Government's commitment to maintaining capital funding for science and research in line with inflation at £1.1 billion a year until 2021. A clear commitment is also needed to fund the on-going resource costs associated with operating, maintaining and up-grading capital facilities.**

[16] A study by PACEC for HEFCE indicates that every £1 invested in HEIF results in £6.10 of gross additional income: http://www.hefce.ac.uk/media/hefce/content/whatwedo/knowledgeexchangeandskills/heif/pacec-report.pdf

6.2 Capital expenditure is an area where our universities are increasingly looking to maximise investments and they are extremely efficient in their use of equipment. Through the Research Partnership Investment Fund (RPIF) and in other collaborative arrangements they are helping to leverage investment from business, charities and others to multiply initial public investment. Where appropriate this has enabled sharing of facilities and equipment with each other, with other universities and with industry to enhance access and reduce duplication.[17]

6.3 While very large, specialist infrastructure such as synchrotrons, neutron sources and telescopes are operated primarily on an international or European basis, the majority of research undertaken in the UK relies upon access to small and medium-scale research infrastructure. Much of this infrastructure is located within leading research-intensive universities where it can also be used to deliver an excellent teaching and learning experience. Provision for infrastructure on this scale must continue to be at the heart of the Government's capital investment strategy including through the Research Partnership Investment Fund (RPIF) and as part of Research Council grants. The provision of capital funding directly to HEIs by a formula mechanism is also extremely valuable as it provides the freedom and certainty to invest in areas of scientific opportunity identified by our world-leading researchers.

6.4 A key on-going challenge is that the running costs associated with any new capital infrastructure must be met long after the initial funding has run out. In addition to maintenance and running costs, technological advances mean that scientific equipment can become obsolete in a relatively short timescale and require upgrading to maintain a facility's capabilities and competiveness. **It would be helpful to have a resource element separate from project resource, but tied to the original capital investment, to ensure facilities and equipment can operate to full capacity, and to enable vital upgrades and maintenance for the long-term.**

6.5 The House of Lords Science and Technology Committee echoed this need to tie capital and resource spending more coherently in their 2013 inquiry into scientific infrastructure:

> There is substantial evidence of a damaging disconnect between capital investment and the funding for operational costs...While we acknowledge the difficulties inherent in meeting varying operational costs, it must be a priority to ensure that facilities are exploited to the full. In essence, provision for operational costs must be budgeted for in conjunction with the decision to allocate capital.[18]

7. Funding priorities

7.1 One of the real strengths of the UK system is the support for the Haldane Principle. The autonomy of universities in deciding on their own funding priorities is crucial to their success. Likewise, the ability of the Research Councils to shape their respective portfolios as they see appropriate – supported by effective governance structures

[17] Some examples include the **Science and Engineering South Consortium (SES)**, which involves the Universities of Oxford, Cambridge and Southampton, Imperial College London and University College London, working to optimise shared infrastructure and training; the **N8 partnership** (Durham University, Newcastle University, the Universities of Leeds, Liverpool, Manchester, Sheffield and York, as well as the University of Lancaster), which works to maximise the use of new and existing research assets; and the **GW4 Alliance** of the Universities of Bristol, Exeter and Cardiff, alongside the University of Bath, who are working together across all academic activity and collaborating in common areas of shared facilities, learning, training and development.

[18] House of Lords Select Committee on Science and Technology, 'Scientific Infrastructure' (2013).

involving leading researchers, universities, business and other key stakeholders – is of utmost importance.

7.2 A balance has to be struck in making sure the research base is responsive to the needs of today, while ensuring it is sufficiently strategically placed to meet the longer-term requirements of tomorrow. As such, **the current balance of research funding between basic and more applied areas is about right, but the overall level of investment should rise.** Consideration should also be given to increasing investments to take research ideas closer to market, for example through HEIF and Research Council support for proof of concept activities.

7.3 If the UK is to remain a global leader then Government investment must be focused where it will have the most impact. If we are to continue to reap the economic and social benefits it is important to invest in major centres of excellence rather than spreading limited funds too thinly where they will have less impact.

7.4 Our leading universities have the critical mass of internationally competitive research, talent, infrastructure and resources needed to generate exciting new ideas, innovations and inventions on which wider social and economic impacts are founded. Public funding for research is most effective when distributed on the basis of true international excellence, with a clear recognition of the importance of critical mass.

7.5 Research shows that concentrating public research funding into research excellence is correlated with rising external sources of income through contract and collaborative research with business.[19] This means that investing in universities with a critical mass of research excellence maximises the impact of public funding as these universities are best able to leverage further funding from private sources.

7.6 Furthermore, a report produced for HEFCE on the value of QR (quality-related) funding outlined the economic and social benefits derived from QR funding (which is allocated based on excellent performance in the REF). The research found that the more QR income allocated to an institution, the more external organisations are willing to pay for a range of research-related activities and commercialisation; this is particularly the case at the upper end of the scale, so the biggest effects occur where the highest levels of QR funding are allocated.[20]

7.7 Another recent analysis also demonstrated that for every additional £1 of UK public investment in R&D Russell Group universities leverage almost three times as much private funding as other universities in the UK.[21]

7.8 **So by concentrating funding on excellence and critical mass the UK gets the biggest bang for its buck. Our global competitors are increasingly concentrating funding on their leading universities and reaping the rewards**.[22]

[19] Haskel et al, *The Economic Significance of the UK Science Base*, a report by UK~IRC for the Campaign for Science and Engineering (2014).
[20] *A Review of QR Funding in English HEIs: Process and Impact*. A report to HEFCE by PACEC and Centre for Business Research, Cambridge (December 2014).
[21] *What is the relationship between public and private investment in science, research and innovation?* Report for BIS by Economic Insight (July 2015).
[22] China in particular has reaped the benefits of increased investment (around ¥30 billion or £2.8 billion was spent over a decade to 2011 in a select few Chinese research-intensive universities), growing its share of global research production from 5.6% in 2003 to 14% in 2012. Its citation impact, long below world average, is also steadily improving.

8. Key challenges

8.1 As outlined above, the UK is a world-leader in science and research and the protection of the science budget is crucial to sustain this. However, in addition to the level of investment there are a number of key challenges which impact on science funding and which are preventing the science budget from being used most effectively. These include:

- **Immigration rules**: we are concerned that a number of significant changes to immigration policy introduced during the last parliament, as well as further radical changes which are currently being consulted on, could have a negative effect on our universities' ability to attract talented international students and world-leading researchers and academics. In particular, we are concerned that the proposals currently being considered as part of the review of the Tier 2 route (through which our universities recruit the majority of their international staff) would have a disproportionately negative impact on universities and the research base in the UK.[23] Hindering institutions' ability to recruit the 'brightest and best' talent from overseas (as well as from within the UK) will impact the UK's ability to maintain our position on the global stage as a world-leader in research and innovation and will not allow us to maximise the impact of UK-funded research. This is especially concerning because it is already extremely difficult for the UK to compete for the best researchers with leading institutions abroad, particularly in the US.

- **Shortfall in funding for high-cost subjects:** in March HEFCE revealed that funding per student in 2015/16 for very high-cost students (Band B+) would decrease from £1003 per student to £832. HEFCE also revealed that Band B funding would remain the same at £1,500. Then in July, HEFCE announced that £37m of 'unallocated funding' that we hoped might have been available to high cost subjects was being lost as part of £150m in-year cut agreed with BIS. Our own analysis is that there is a **significant high-cost subject funding shortfall that could be in the region of £100 million per annum** for home/EU students at Russell Group universities in England alone, but is almost certainly at least £72.5 million – this is unsustainable and needs to be addressed as a matter of priority.[24] The only way to address this would be to have a much more granular approach to banding of high cost subjects and to support universities in covering the real costs. Given the evident constraints on BIS and HEFCE funding, a solution allowing universities to increase their fees for high cost subjects may be needed in order to allow us to continue to provide the best possible science education and training.

- **Loss of PhD funding:** in March HEFCE announced that they would be providing a one-off transitional allocation of £24 million as a 'supplement to mitigate the real-terms decline in the rate of funding for RDP [Research Degree Programme] supervision in recent years and to emphasise the importance of investment in the next generation of researchers.' However, in July we were told that this funding would no longer be available as part of the £150m in-year cut agreed with BIS.

[23] Within these changes, the proposals to raise minimum salary thresholds would significantly restrict universities in their ability to recruit researchers and academics from overseas and the proposed restrictions on dependants' work rights could damage the attractiveness of the UK for globally mobile research talent. Further details can be found here: http://www.russellgroup.ac.uk/policy/policy-documents/review-of-salary-thresholds-for-skilled-worker-visas/

[24] Note that our calculations are based on TRAC (T) data for 2012/13, which we recognise have a number of flaws but are the best available data. We have then factored in inflation and have adjusted for a 'sustainability gap' factor to give a current cost in 2015. We have compared this to the tuition fee and additional high cost subject income available from HEFCE for each subject to calculate shortfalls at the subject level and then overall for English RGUs.

Russell Group universities would have won around £17m of this transitional allocation and so have been hit hardest by this cut at a time when universities continue to face pressures for funding postgraduate research supervision.

- **Efficiency pressures**: universities have been working hard to deliver efficiency savings and RCUK's annual monitoring of progress against Wakeham efficiency targets has shown that leading universities have worked well at achieving their targets. However, these targets have now become increasingly punitive. They have in effect delivered a 10% cut to three-year research funding grants and a cut of over 13% for five-year grants. Within this context, the extent to which further efficiency targets would incentivise greater efficiency as opposed to simply representing further cuts to the UK's capacity to undertake high quality research is questionable.

- **Open access:** the Russell Group is committed in principle to Open Access (OA) publication of research but we continue to have concerns about top-slicing the research budget in order to fund OA (in particular gold OA), not least because the true costs are as yet unknown and may not be fully known for some time. The funding for OA is being taken directly from Research Council budgets, which could otherwise be used to support research, doctoral training and knowledge transfer activities that have a more direct impact on economic growth, jobs and future quality of life. The so-called green OA route should be recognised a simple, genuine and cost-effective route to deliver OA and on-going support from RCUK for both green and gold routes is essential. Steps also need to be taken to address so-called 'double-dipping' because despite institutions now paying significant sums to publishers to cover article processing charges (APCs), subscription costs for many journals have not fallen, effectively requiring universities to pay twice.

- **Interpretation of VAT rules**: interpretation of VAT legislation is hindering collaboration between institutions by requiring institutions to levy VAT when charging to another institution's grants. This significantly reduces the financial benefits of collaborative research and equipment sharing, unless special arrangements such as Cost Sharing Groups are established. There are also barriers to universities collaborating with businesses because zero-rate VAT only applies to the construction of public research institutes if a minimum of 95% of the activities within the new building over a 10 year period are for non-business research. By disincentivising collaboration in this way, the opportunities to maximise the effectiveness, efficiency and ultimately the outputs of research funding are being hampered.

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