Submission to the Commons Science & Technology Select Committee
Leaving the EU: implications and opportunities for science and research

Written evidence from The University of Oxford

“Our success as a knowledge economy hinges on our ability to collaborate with the best minds from across Europe and the world.”

A strong science, scholarship, research and technology base is a key contributor to the knowledge economy and therefore vital to the UK’s future growth and prosperity. Being a member of the EU with full access to research and innovation programmes has been extremely beneficial for the progress of research and innovation. UK researchers have been extremely successful in securing large EU research grants with the UK overall getting a much larger share of the total EU research funding than other EU countries. Losing this funding route, if we do, will have damaging, long-term effects in terms of keeping UK research competitive and making UK an attractive place for research and scientific innovation.

However, our concerns are broader than potential financial implications. Science is a global pursuit and is most effective when ideas and people are mobile across borders. International collaboration and researcher mobility have been identified as being core to the maintenance and further development of the UK’s world-leading position as a research nation. Nearly half of all UK academic articles result from international collaboration and these articles typically have a higher impact (as measured by citations).

Access to EU programmes for research and innovation offers a tried and tested mechanism for international collaboration and participation in initiatives beyond the capability of a single country. The impact of some of the funding will be difficult to replicate at the national level and isolation of research effort is counter-productive in terms of economic growth and technological progress.

1. **What the effect of the various models available for the UK’s future relationship with the EU will be on UK science and research, in terms of:**

**Collaboration**
- It is vital that the UK government negotiates a relationship that will allow UK researchers to continue to collaborate with EU colleagues, have access to research infrastructures and participate in pan-European research and innovation initiatives.
- For the UK (and in particular UK universities), whilst participation in projects is, of course, desirable, future success and the UK’s competitive edge is also dependent on the ability to influence the content of future research programmes, the areas for large-scale investment in research as well as the content of EU directives that affect research in the UK (e.g., animal testing, open access & data mining). **It is vital that the UK is driving the research agenda rather than following the agenda of other member states.**
- International collaboration is particularly important for the study/clinical trials of rare diseases, such as childhood cancer, where only by joining forces can enough data be gathered to be of scientific value.

**Free movement of researchers**
- The free movement of talent, the networks, collaborations, critical mass of research activity and funding that we gain from EU membership contributes to the competitiveness of our leading universities and the UK economy as a whole.
H2020 proposals often include requirement to describe arrangements of equality & diversity, movement between institutions, employment rights etc. Having arrangements in the UK that diverge more widely than they do already will at best need more care at preparation and at worst produce a negative outcome at peer review and result in exclusion from future proposals.

The University of Oxford, like other leading UK HEIs, has benefitted enormously from its ability to attract bright individuals from the EU. A complex, expensive registration process (for example the Australian process) will deter top scientists from applying to work in the UK in the future and institutions may prefer to hire UK researchers rather than paying the additional expense for EU researchers to work in the UK. If that happens, our research quality will be threatened.

According to the latest figures, the University of Oxford currently employs 12,510 members of staff and one in six is from “other parts of the EU”. This would potentially represent the need for a further 2089 visas. Not only will this mean a cost to future employees but also has resource implications for the university with anything up to a tripling of work load in order to support and process these additional visa applications.

It may be argued that people would still be willing to come to the University of Oxford, whatever the cost and, indeed, this may be true. However, the issue is one that faces all UK universities and the impact may be severe for those without the ‘pulling power’ of Oxford, Cambridge or other leading research intensive universities.

Many of our senior appointees opt to bring existing grant funding with them and our ability to recruit eminent researchers with large funding portfolios may be damaged if our new relationship with the EU precludes participation in framework programmes or the hosting of ERC grants.

Free movement and status of students

At the moment, students from the EU pay the same fees as ‘home’ students. It has been suggested that a positive outcome of a UK withdrawal from the EU will be the charging of international student fees to EU students, thus giving UK Universities a huge boost in fee income. In theory, this sounds like an excellent proposition. However, those who deal with student recruitment believe that, in reality, there will be a huge drop in numbers from the EU as students chose to study at one of the many excellent universities in mainland Europe. The result would actually be a huge drop in fee income (as well as the loss of some excellent students). There is strong feeling that if EU fees are raised to the level of overseas students there will be a knock-on effect on the make-up of the students we see applying, as UK courses become exponentially more unaffordable (especially compared to other EU providers). We want to be attracting as wide a range of applicants as possible, and higher fees will disproportionately affect and deter those from less socioeconomically advantaged backgrounds.

For graduate students a change of status and therefore fees will be a major and direct blow. For example, Oxford’s Sir William Dunn School of Pathology has 40% of its DPhil students who are non-Brit EU. They aim to recruit the best in the world and think it very likely they will see a huge fall in the top applicants. This will directly affect research output. Moreover, because almost all are funded by various internal and external scholarships, the added cost of them being charged full overseas rates will not bring in much new money - just limit how many can be taken. This is a major problem and not to be made light of.

At Oxford almost one in seven of our students come from other EU countries (3422 out of a student body of 22,602) and even though it may be argued that students would still wish to attend Oxford whatever the cost, the reality may be rather different. Bringing EU research students into the ambit of the visa regime that governs other overseas students will be a disincentive to their choosing UK over other EU universities; and will have a dramatic effect on the volume of visa related administration in the University.

The Erasmus programme not only enhances under-graduate study programmes but also offers an opportunity for researchers to hone their skills abroad, boosting the profile of UK research.
Over **200,000** UK students and **20,000** UK university staff have spent time abroad through the Erasmus exchange programme.

- A recent report found that graduates who have studied, worked or volunteered abroad are more likely to have a job six months after graduating, and on average, are earning slightly more than other graduates: *Gone International: mobile students and their outcomes – Report on the 2012/13 graduating cohort*, UK HE International Unit.
- Networking, conference, workshop and other collaboration is made vastly easier by free movement of researchers across borders; we would be very concerned indeed if it was under threat. This is not just for EU researchers coming to the UK; it will affect us reciprocally. We know already how difficult Schengen visas are to obtain for students from non-EU countries - VFS, the visa documentation service, have extremely poor standards of customer service; visas are given for the exact duration of conferences, rather than for any extended period of time; a four day conference requires two trips to London to deal with documentation. It will be impossible if all of us are subject to this regime. (Of course students from India and elsewhere should not have to put up with this system either!) The international standing of all UK research will be endangered if UK academics cannot easily cross the Channel. The same is, of course, also true for business and all other international dimensions of the UK economy.
- There is the risk that both the time and the expense involved in applying for visas may deter potential collaborators who will choose not to bother trying to come to the UK but concentrate their research elsewhere in Europe.

**Access to funding**

- EU funding is increasingly valuable for funding ground-breaking, collaborative and interdisciplinary research. It is difficult to see how these benefits can be replicated without access to the collaborations, networks and infrastructures that EU funding supports.
- Oxford’s success in securing ERC funding in both Framework 7 and now Horizon 2020 is testament to both the quality of the institution and the calibre of researchers we are able to attract. Each ERC award creates a little ‘node of excellence’ which then attracts other excellent researchers/post docs and PhD students. If we are not able to host ERC grants, this will have a major impact on our ability to recruit and retain our world-leading researchers. The prestige of ERC is largely based on the international nature of the competition. To win an award is to be amongst the best in the world. In Horizon 2020 to date, Oxford has been awarded 60 ERC Fellowships which span all disciplines. This includes 9 awards in Humanities and 17 in Social Sciences which represents an irreplaceable source of funding and clearly demonstrates the excellence of the research in these domains. This must be protected.
- Access to funding can be compared to experiences with co-funded programmes with US federal funders, for example. UK research councils maintain tight control of peer review; as a consequence, co-funded calls with the NSF have been reviewed twice, which results in double jeopardy, mismatch of timescales, difficulties in mapping between funding models and nomenclature etc. By contrast a single EU funding mechanism, while not without its challenges, ensures an entire project is funded in one pass, or not at all. What financial commitments are reached is of course the major factor, but fragmentation of process is also damaging. If we do not have full Associate status and cannot therefore lead proposals, our scientific leadership and ability to attract and nurture the next generation of leaders will undoubtedly suffer substantially.
- EU structural funds such as ESIF and ERDF play an important role in supporting universities to engage in innovation and knowledge exchange in their regions. The regional funding lost as a result of the referendum must be replaced by the UK government to encourage future growth.
Access to EU-funded research facilities

- There are six Pan-European Research Infrastructures headquartered in the UK which support numerous high quality jobs and represents an important part of the UK research capacity. The government must take steps to ensure that these can continue to be hosted in the UK:
  - HIPER – High Power Laser Energy Research Facility (Harwell)
  - INSTRUCT – Integrated Structural Biology Infrastructure (Oxford)
  - ELIXR – European Life-science Infrastructure for Biological Information (Hinxton)
  - ISBE – Infrastructure for Systems Biology-Europe (Imperial College)
  - SKA – Square Kilometre Array (Manchester – Jodrell Bank)
  - ESS ERIC – European Social Survey (London – City University)

- In addition, UK researchers need access to EU-funded research facilities across Europe on the same terms and conditions as they enjoy now. If access is restricted in any way, this will have a detrimental effect on UK research.

IP and commercialisation

- If access to markets becomes more difficult, because of lack or fragmentation of trade agreements, then the commercialisation opportunities that drive investment in new products, services and companies will become higher risk, lower or slower return and thus may not happen at all.
- In contrast to focus of the UK research councils on IP and commercialisation, the EU programmes do recognise the importance of fundamental blue-sky research to create the broad knowledge base any future commercialisation is based on. Without the EU filling this very substantial gap, the scientific and technological progress in the UK may fall behind our competitors.

2. What should the science and research priorities for the UK Government be in negotiating a new relationship with the EU?

- UK-based researchers need to have complete confidence that there will be straightforward mechanisms available to lead and develop ideas in collaborations with EU colleagues and have clear mechanisms to have them funded.
- ERC grants are key to the recruitment and retention of excellent researchers (from UK, EU and beyond). It is vital that UK universities are able to host these prestigious and internationally renowned fellowships
- We need to negotiate continued, complete and unfettered access to the scientific infrastructure that the EU provides (research and innovation funding, mobility programmes as well as research infrastructures and networks)
- Freedom of movement for EU researchers and students should continue to be allowed and even encouraged, without the requirement for visas, or with a simplified visa system if one is deemed necessary. An EU-wide ‘Research Passport’ to ensure free movement in both directions would facilitate and safeguard future collaborations. In addition, students and research staff from the EU (and overseas) should also not be part of any immigration quotas imposed by the government.
- We must ensure that the UK has access to and is compliant with key regulatory bodies governing research across Europe

3. What science and technology-related legislation, regulations and projects will need to be reviewed in the run up to the UK leaving the EU?

- The UK’s relationship with the Community legal framework for a European Research Infrastructure Consortium (ERIC) will need to be re-negotiated and the interests of UK research centres that have ERIC status will need to be protected
• Continued membership of EFSRI (European Strategy Forum on Research Infrastructures). The 2016 Roadmap was developed with significant UK advice and the UK’s influence on future developments should be maintained.
• UK legislation/regulation on research-related issues such as open access, data protection; clinical trials, research integrity and ethics should remain EU-compliant to enable continued participation in research and innovation activities.

4. **The status of researchers, scientists and students working and studying in the UK when the UK leaves the EU, and what protections should be put in place for them.**
• Guarantees that any student that is currently enrolled on a degree course can finish it without any retrospective changes to fees or having to apply for a visa.
• Special rules should ensure that UK scientists (including non-UK citizens working in the UK) are not subject to travel restrictions that will impede pan-European collaborative projects and initiatives.
• Permanent and long-term members of staff, who are citizens of EU countries, should not be required retrospectively to sit “Life in the UK” and English-language tests or be charged visa and NHS charges. This exemption should also apply to their families.

5. **The opportunities that the UK’s exit presents for research collaboration and market access with non-EU countries, and how these might compare with existing EU arrangements.**
• This question implies that membership of the EU has somehow impinged negatively on our ability to generate research collaborations with non-EU countries. It has not – we work with many institutions globally and that will not change. Although new opportunities may surface, it is difficult to see at this point that they would be as beneficial for UK science as access to the EU science funding/community is. Geographical proximity and access to the single market for e.g. spin-off companies seem hard to beat.
• There is nothing that can be compared with the Erasmus project or to the EU-funded projects. The University already has in place other collaborations with non-EU institutions. However, for the medical domain, the UK shares a lot of similarities with the EU countries, which makes it very easy to collaborate with them and very challenging to collaborate with non-EU (e.g. India, China, but even the USA) as they have quite different systems. This is obviously true (and evident) for market opportunities. The EU will always be the first customer of services begun in the UK, and not having the possibility to access that market would be a huge loss.
• If the UK were to change legislation to facilitate the worldwide free movement of researchers in the very same way as has been possible within the EU so far, the UK research would benefit enormously.

6. **What other measures the Government should undertake to keep UK science and research on a sound footing, with sufficient funding, after an EU exit?**
• Reaching a co-financing agreement that allows UK researchers to continue to collaborate with EU funded researchers and EU projects
• The research and innovation funding levels from the EU regime must be at least matched. This will mean a significant rise in national research budgets, as the UK currently receives far more in grant income that it contributes.
• A higher percentage of GDP should be set aside for science and research and in the meantime, funding for science and research needs to be ring-fenced and protected.
• The EU recently set a target of 100 per cent Open Access by 2020. The UK government preference has been so far for ‘gold’ OA. Funding for ‘gold’ is currently dependent on RCUK (UKRI). Value for money for APCs should have higher priority. The ‘green’ route to OA will be even more necessary if the economic situation deteriorates. It is even more important that the UK’s research output is even more prominent, visible and accessible in the global research.
environment so that impact and other returns can be achieved. If this remains attached to ‘gold’, it will require additional funding.

- The government should ensure that the humanities and social sciences are not treated less favourably than STEM subjects. UK SSH receives significant funding from the EU (and in particular the ERC) and this support has allowed larger scale international collaboration than is possible from UK funding sources. It should also be noted that approximately 18% of ERC funding is allocated to SSH as compared to about 9% of RCUK budgets. The loss of this kind of funding would be hugely detrimental to researchers in these disciplines.

- The government should seek to protect the free movement of students and staff in both directions, to facilitate the academic research community’s collaborative efforts and ensure that the University can continue to work closely with EU institutions. Students and staff should be exempt from any immigration quotas that are put in place.