



Migratory Advisory Committee Call for Evidence: EEA-workers in the UK labour market

Response by the Wellcome Trust

3 November 2017

Key messages

- The UK's excellent science system is built on its talented, international workforce – 28% of Wellcome's personal award holders are non-UK EEA nationals.
- Science depends on collaboration and mobility. Tackling the biggest problems in research will be impossible for any one individual to take on alone.
- As the UK leaves the EU, it must develop a quick, light-touch and transparent migration system that attracts researchers, technicians and innovators, and supports the range of mobility that underpins science and innovation.
- Wellcome is committed to the development of STEM skills in schools, universities and research institutes, and opening up vibrant careers in science and innovation to people across the UK.

The UK's science and innovation system

1. The Wellcome Trust is an independent charitable foundation dedicated to improving health. Over the next year, we'll invest over £1 billion in science, medical innovation, the humanities and social sciences, and public engagement – more than ever before. We're proud that the majority of this is spent in the UK as a direct result of Britain's scientific strength and excellent research workforce.
2. The UK has a world-leading science and innovation system which punches well above its weight: with 0.9% of the global population, 2.7% of R&D spend, 4.1% of researchers, 6.3% of articles, 10.7% of citations, and 15.2% of the most highly-cited articles in 2014.¹ Britain is also ranked first for early-stage Phase I Trials in Europe, and second for Phase II and Phase III.² This excellence makes the UK an incredibly attractive destination for the world's researchers: one third of Britain's Nobel Prizes in science have been awarded to people born outside of the country.³
3. This strong science base is also linked to growth and productivity. In 2015, life sciences companies directly employed 140,000 people, with a further 196,000 jobs created in the supply chain. Every £1 spent by the Government on R&D increases private sector output by 20p per year in perpetuity, and every £1 invested in medical research by public or charitable funders generates returns equivalent to 22-28p each year, forever.^{4,5}

¹ BEIS (2017) *UK Research Base: International Collaboration 2016*:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/651174/uk-research-base-international-comparison-2016.pdf

² ABPI (2016) *Open for Innovation: UK Biopharma R&D Sourcebook 2016*: http://www.abpi.org.uk/our-work/library/industry/Documents/Open_for_innovation_ABPI_Sourcebook_2016.pdf

³ In house analysis of Nobel data

⁴ Wellcome Trust (2008) *Medical Research: What's it worth? Estimating the economic benefits from medical research in the UK*: <http://www.wellcome.ac.uk/About-us/Publications/Reports/Biomedical-science/WTX052113.htm>

⁵ Sussex et al. (2016) *Quantifying the economic impact of government and charity funding of medical research on private research and development funding in the United Kingdom*: <https://bmcmmedicine.biomedcentral.com/articles/10.1186/s12916-016-0564-z>

4. Since the EU referendum, the Government has taken substantial action to demonstrate its support for science, including the largest increase in R&D investment since 1979. In January 2016, Prime Minister Theresa May included science and innovation as one of the Government's twelve priorities for Brexit negotiations in her Lancaster House speech. Science is also at the heart of the Government's upcoming Industrial Strategy.
5. However, for the UK to retain its scientific standing post-Brexit, it must remain open and welcoming to talent. This shouldn't just apply to the "brightest and the best" as outlined in the Government's recent future partnership paper on science and innovation, but must consider the research workforce at all levels and career stages, from technician, to PhD student, to eminent professor.

Collaboration and mobility underpin research excellence

6. By its nature, science is highly collaborative and researchers seek out the very best partners, institutions and facilities, wherever they are based. Solving complex problems like climate change, epidemics or the growing burden of dementia will depend on collaboration. The new 'International Brain Lab' is an excellent example of what can be achieved when scientists work together. It unites 21 leading neuroscience groups from the UK, Europe and America to test how the brain controls learning and decision making – a problem with a scale and complexity that far exceeds what can be tackled by any single laboratory.
7. The amount of international collaboration in research has been increasing over time, and the resulting publications have more impact⁶ and are on average more highly cited than UK domestic publications.⁷ In 2015, over half of all UK publications were the result of international collaboration and around 60% of the UK's co-authored papers were with European partners.⁸
8. The development of relationships between researchers in different countries is facilitated by mobility, and researchers moving to and from the UK. This includes short-term visits to attend a conference or give a lecture, temporary trips to work with a collaborator or use a research facility, or long-term migration with routes to residency. These connections are also enhanced by schemes like the Newton Fund and Global Challenges Research Fund which promote international partnerships and facilitate collaborations with different countries.
9. UK researchers are highly mobile compared to other leading research nations.⁹ Nearly half of the research population in the UK are transitory and have either stayed in the UK for less than two years or temporarily moved abroad for a similar period.¹⁰ Over 38% of National Academy Fellows and grant recipients have taken more than 20 trips abroad in the last five years.¹¹ This mobility also increases the impact of research – regardless of origin or current location, highly-performing mobile researchers have about 40% higher citation rates compared to their non-mobile peers.¹²
10. While emails, conference calls and skype facilitate connections, they cannot replace the benefits of physical proximity. This is reflected in AstraZeneca's decision to locate its new global R&D centre and corporate headquarters on the Cambridge Biomedical Campus, a hub that also houses the University of Cambridge's School of Clinical

⁶ Royal Society (2016) *UK research and the European Union: The role of the EU in international research collaboration and researcher mobility*: <https://royalsociety.org/~media/policy/projects/eu-uk-funding/phase-2/EU-role-in-international-research-collaboration-and-researcher-mobility.pdf>

⁷ Adams and Gurney (2016) *Implications of International Research Collaboration for UK Universities*: <http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/International/implications-research-digital-collaboration-uk-universities.pdf>

⁸ Royal Society (2016) *UK research and the European Union: The role of the EU in international research collaboration and researcher mobility*

⁹ BEIS (2017) *UK Research Base: International Collaboration 2016*:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/651174/uk-research-base-international-comparison-2016.pdf

¹⁰ *ibid.*

¹¹ UK National Academies (2017) *The role of international collaboration and mobility in research*: <https://acmedsci.ac.uk/file-download/96518966>

¹² Nature (2017) *Scientists have most impact when they're free to move*: <http://www.nature.com/news/scientists-have-most-impact-when-they-re-free-to-move-1.22730#/ref-link-6>

Medicine, Addenbrooke's Hospital and the Medical Research Council's Laboratory of Molecular Biology. It was also a major consideration in design of the Francis Crick Institute, which was built to enable serendipitous encounters between otherwise unrelated researchers.

The research workforce

11. Around 16% of the UK's academic workforce are non-UK EU nationals, and 12% are from outside of the EU.¹³ 9% of the technical workforce in universities are non-UK EU nationals.¹⁴ Britain must be open to this talent – not because there aren't excellent home-grown research staff – but because the arrival of people with new ideas and fresh thinking lifts standards and delivers outcomes that may not have otherwise been possible. It can also help the UK to harnesses scientific advances and build capacity in emerging areas.
12. Wellcome supports over 10,000 research staff in universities and institutes across the country. We invest over £200 million a year in our personal award schemes in the UK. These competitive grants provide support for individual researchers, encouraging them to collaborate, take risks and be bold and imaginative – 28% of these talented grant holders are non-UK EEA nationals. This proportion has increased from 16% in 2011/12, while the proportion of non-EEA national award holders has remained constant at around 12% over this period.
13. There has also been a steady increase in the number of non-UK EEA nationals supported by our intermediate career schemes, which support individuals leading on projects and establishing their own research teams, but we have not seen any other significant trends across the different career stages we support.
14. Over the next five years, Wellcome will invest £135 million in 14 centres across the UK. These bring people together from different disciplines and backgrounds with core support to improve our understanding of health and medicine, and to generate new knowledge and products. Many centres employ large numbers of non-UK EEA nationals and some rely on them to fill skills shortages, such as clinical scientists who are difficult to recruit from outside Europe because their qualifications are not always recognised in the UK.
15. High-quality technical expertise enables scientific discovery. Technicians make up 66% of the scientific workforce at the Wellcome Trust Sanger Institute, where UK-based researchers sequenced a third of the human genome. These technicians work in different areas, and come into science through different routes, including apprenticeships, technical diplomas and degrees. Almost half of technical and support staff are classed as skilled and experienced (33% of the workforce). This means that they have developed the knowledge and expertise to manage research projects and programmes, and create and refine the techniques and experiments that underpin cutting-edge research. Around 19% of these individuals come from the EU.

Migration post-Brexit

16. In the future, the UK must develop a quick, light-touch and transparent migration system for researchers, technicians and innovators, at every stage of their career, and for students, who contribute to the cultural richness of our universities. It must support the range of mobility that is essential to science: from short-term visits and temporary work, to long-term migration with routes to residency. It must be dynamic and responsive to advancements in science and skills shortages. Support should also extend to families and research teams because without this, people will not consider moving to the UK.

¹³ UK National Academies (2016) *Open for Business: A nation of global researchers and innovators*: <https://acmedsci.ac.uk/file-download/41610-582d965e166ae.pdf>

¹⁴ Russell Group (2017) *Impact of Brexit on the technical workforce at Russell Group universities*: <http://www.russellgroup.ac.uk/media/5571/impact-of-brexit-on-the-technical-workforce-september-2017-final.pdf>

17. We do not think that this could be delivered through an expansion of the current immigration system for non-EEA workers – the system is not quick or agile enough, and relies too heavily on salary and qualifications as a proxy for skill. In the longer-term, we urge the Government to consider how the UK might better compete with other countries in the speedy provision of visas for research staff from beyond the EU, and a reduction in bureaucracy wherever possible.

The impact of Brexit on UK research

18. We have already started to see a measureable decline in the flow of talent from the EU to the UK following the referendum. In the last year, the proportion of EEA researchers applying for Wellcome's early career schemes has fallen by 14%. The Sanger Institute has also seen a near 50% drop in postgraduate applications from non-British EU nationals.
19. We welcome the Government's recent assurances on the rights of EU nationals in the UK. Despite this, our non-UK EEA staff and researchers remain deeply concerned about their future right to live and work in Britain. This is not limited to academics: a survey of skilled workers employed by FTSE 200 companies found that more than half of EU nationals are likely to leave the UK before Brexit negotiations finish.¹⁵ If the country is to hold on to these talented individuals, they will need guarantees about their future as soon as possible.
20. Uncertainty around eligibility for Horizon 2020 grants after we leave the EU in 2019 is also having a chilling effect on UK science. Wellcome researchers have been excluded from grants or abandoned potential collaborations, and some have turned down our funding and chosen work in another country because of continuing uncertainty. The UK and EU need to give UK-based researchers and their collaborators certainty by reaching an early and strong deal on continuing UK participation in Horizon 2020 in the next phase of Brexit negotiations.

STEM education and skills in the UK

21. Wellcome has committed £5 million over five years to ensure that young people from across the UK have access to a high-quality science education. Currently, severe shortages of science teachers¹⁶ limit the realisation of this goal. Wellcome is collating evidence on the success of interventions to increase teacher supply because, despite ongoing efforts, recruitment targets continue to be missed¹⁷ and increasingly challenging circumstances in schools may make the situation worse.¹⁸ Teachers from outside of the UK make up a small proportion of the workforce,¹⁹ but given the persistent shortfalls, they are critical to schools. Physics and maths teachers must remain on the shortage occupation list.
22. As well as improving supply, we are working to address the disproportionately high rates of science teachers that leave the profession. Project ENTHUSE, match-funded by £20 million each from Wellcome and the Government since 2008, provides bursaries to teachers and technicians for continuing professional development (CPD). This training has a positive impact on teachers and their students, reducing the odds of teachers leaving the profession by 160%.²⁰ In line with the recommendations of the project's independent quinquennial review, we ask that the

¹⁵ Baker McKenzie (2017) *Brexit Employment Survey*: <http://www.bakermckenzie.com/en/newsroom/2017/06/brexit-employment-survey/>

¹⁶ National Audit Office (2016) *Training new teachers*: <https://www.nao.org.uk/report/training-new-teachers/>

¹⁷ Department for Education (2017) *Initial Teacher Training: trainee census 2016-17*: <https://www.gov.uk/government/statistics/initial-teacher-training-trainee-number-census-2016-to-2017>

¹⁸ National Audit Office (2017) *Retaining and developing the teaching workforce*: <https://www.nao.org.uk/report/supporting-and-improving-the-teaching-workforce/>

¹⁹ National Audit Office (2016) *Training new teachers*: <https://www.nao.org.uk/report/training-new-teachers/>

²⁰ Education Datalab (2017) *Improving science teacher retention*, Wellcome Trust: <https://wellcome.ac.uk/sites/default/files/science-teacher-retention.pdf>

Government commits £8 million of matched funding alongside Wellcome for 2018-2023.

23. Technical staff should receive the visibility, recognition and career development that they deserve, and Wellcome supports the Science Council and Gatsby Charitable Foundation's Technician Commitment as an avenue towards achieving this goal. The Government and research sector should also strengthen the range of routes into science, including apprenticeships from level 2 (GCSE equivalent) to level 8 (post-graduate equivalent), across universities, research institutes, industry and the NHS.
24. Universities are major contributors to STEM skills, providing education and training to both students and their own workforce. To maintain their international competitiveness and help meet future skills needs, they must continue to adopt new and innovative teaching methods, work in global networks to share best practice, and draw from the widest-possible talent pool in the UK. Wellcome's 32 postgraduate programmes are delivered at excellent universities across the UK and we are working to ensure that they support the development of a breadth of skills that underpin vibrant and varied careers.

Wellcome is the UK's largest charitable foundation. Over the next five years, we plan to invest up to £5 billion in biomedical research and the medical humanities in the UK and internationally. We also support the development of new commercial innovations to improve health.