

## Russell Group universities and the European Union

### Membership of the European Union enhances world-class research at Russell Group universities

**The UK should remain at the heart of a modernised, competitive and outward-looking European Union to drive world-class research and innovation at our leading universities.**

Research and innovation are global pursuits and are most effective when ideas and people are mobile across borders. 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.

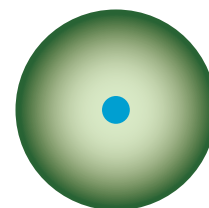
The EU is not perfect and we support reforms which enhance our universities' ability to benefit further from forging productive collaborations across Europe. But leaving would mean we lose our seat at the table and our influence over EU-wide programmes and funding which enhance world-class collaborative research.



Russell Group universities won over **half a billion pounds** in EU research grants and contracts in 2014/15 – equivalent to the amount received from almost three of the seven UK research councils.

Research investment

£3.2 billion



Economic impact

£35 billion

During the last EU spending round Russell Group universities coordinated research worth **£3.2 billion**, with an estimated economic impact of **£35 billion** through innovations, new technologies and products.

£3.7 billion

EU students at UK universities contribute **£3.7 billion** to the UK economy each year and support around **34,000 jobs**.



There are **22,880** members of staff from other EU countries working at Russell Group universities – they make up **one fifth** of our academic staff and contribute to our world-class research and teaching.

# Our leading research intensive universities influence and secure vital EU investment

Russell Group universities received over half a billion pounds a year in EU investment in 2014/15. This is equivalent to almost the entire budget of the Medical Research Council.

The UK leads Europe in the quality of our research and drives excellence across the continent. Our researchers have won many more awards from the European Research Council (ERC) than our nearest competitor – the UK wins 22% of ERC grants (with the Russell Group winning 17% of the total on its own), compared to Germany's 14%.

There is no guarantee that if the EU source of investment was removed, that it could be replaced with funding from national budgets and sustained long term.

The UK has played a key role in shaping the design and implementation of the EU's research programmes, ensuring funding is allocated on the basis of excellence. Under the current funding stream Horizon 2020 the UK leads far more projects than any other nation – two thirds more than Germany.

## Creating and safeguarding jobs by working with industry

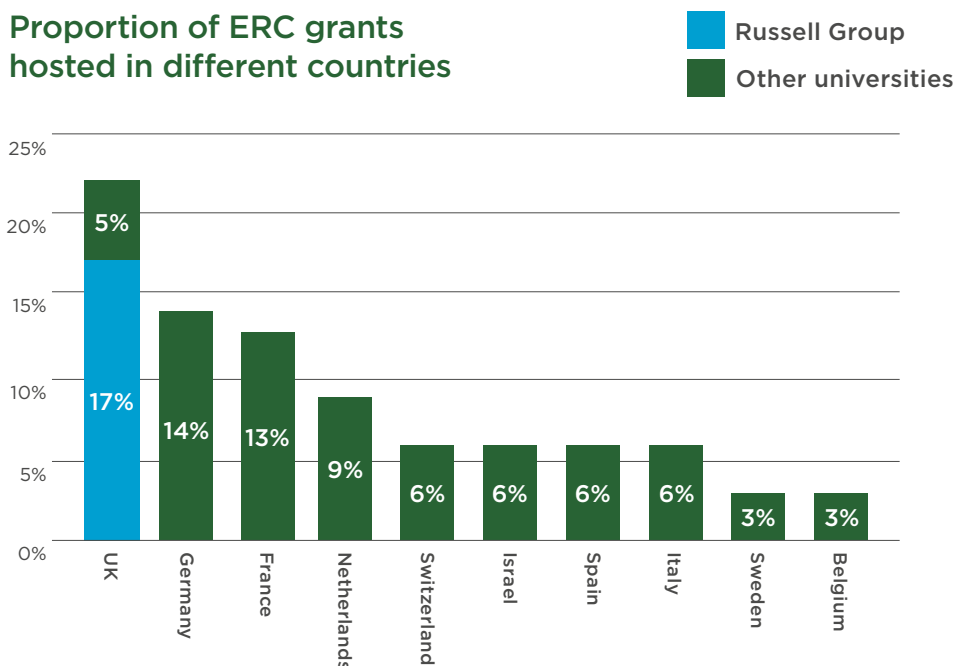
**University of Manchester** physicist Konstantin Novoselov received one of the first European Research Council starting grants to investigate the 'Physics and Applications of Graphene', following his discovery, with Andre Geim, of the revolutionary material in 2004. Both scientists went on to win the 2010 Nobel Prize for Physics.

The ground-breaking work on graphene at Manchester led to the establishment of the National Graphene Institute at the University, which is part of a wider £90 million UK government investment in graphene.

Alongside this, the European Commission has invested €54 million into a Graphene Flagship project and will be investing a further €50 million a year from 2016. The **Universities of Manchester, Cambridge, Nottingham, Oxford and Sheffield, University College London, Queen Mary University London and Imperial College London** are all partners.

Graphene is the world's thinnest material yet is 200 times stronger than steel with the potential to revolutionise the electronics industry and has applications in energy, medicine and technology. The Flagship project will bring academic and industrial researchers together to take graphene from academia to application within 10 years - generating growth, new jobs and new opportunities.

## Proportion of ERC grants hosted in different countries



Working together the **28 countries of the EU collectively spend \$357 bn on research and development** and this helps us keep pace with the annual \$457 bn spending of the US.



During the last EU funding round the **UK led one in five** of all health-related research projects.



**The EU Unitary Patent** protects university innovation with a single patent that covers 25 different EU countries.

# Our leading universities attract the best and brightest staff and students from across the EU

Freedom of movement makes it easier for the best researchers to bring their specialist skills and expertise to the UK. One fifth of Russell Group academics are EU nationals who bring diverse approaches to tackle complex global challenges.

EU academics working at British universities win funding that goes to the UK. More than 50% of the prestigious European Research Council Consolidator Grants awarded to UK universities, worth up to €2 million each, were won by EU academics working here.

EU students studying at UK universities make a vital contribution to the success of our universities. 87% of students agree that studying alongside students from other countries will improve their world view and benefit their education.

The Erasmus exchange scheme allows our students to study at leading European universities, boosting their skills and employability. Students who did an Erasmus placement are 50% less likely to experience long-term unemployment.

## Scientists from other EU countries collaborate with UK researchers to fight cancer

A scalpel that tells surgeons immediately whether the tissue they are cutting is cancerous or not was developed by Hungarian researcher, Professor Zoltán Takáts, at **Imperial College London** – transforming cancer surgery and saving lives.

Professor Takáts' cutting-edge research was made possible by European Research Council grants that helped to take the original research idea through to market. Surgery is often the most effective treatment for cancer.

But even the best surgeons can find it impossible to know if they have removed all traces of cancerous material. The iKnife can tell surgeons whether the tissue they are cutting is cancerous or not. As it cuts it 'sniffs' out cancer and even cross checks the exact type of tissue being cut with a database.

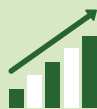
This technology is expected to generate future research grants worth millions for **Imperial College London**.

*“Britain's EU membership made moving to Imperial an easier, more attractive proposition. European funding and collaboration has helped drive my research forward.*”

*Developing new medical technologies in Britain as an EU member-state gives us immediate access to a market covering 28 countries. If the UK left Europe, it would become harder to operate at this scale.”*

**Professor Zoltán Takáts**

The work of Professor Dimitrios Nikolopoulos, a computer scientist at Queen's University Belfast, has won over £50 million of funding, led to improvements in the performance of supercomputers and had knock-on impacts in medicine, meteorology and science.



Dr Roxana Carare, originally from Romania and Honorary Consul for Romania, is a world-leading authority on neurodegenerative diseases, working currently at the University of Southampton conducting research to prevent and cure dementia.



The research of internationally-renowned Italian academic Dr Paola Crippa at Newcastle University is helping to reduce the impact of wildfires and other air pollutants on human health.



Professor Constantin Coussios, originally from Greece and now working at the University of Oxford, has created a way of delivering cancer drugs closer to tumours using ultrasound – helping to reduce the side effects of chemotherapy.



Dr Lorenzo Di Michele, an Italian physicist, discovered a new material at the University of Cambridge which could underpin whole new types of biological sensor and ways of delivering drugs.



German academic Professor Hanns Lochmüller is co-ordinating a cross-European effort from Newcastle University to develop new diagnostic tools and treatments for people with rare diseases which while individually uncommon – affect one person in every 17.



# Research collaboration across the EU is tackling global challenges affecting all of our lives

As members of the EU, we are part of a wider network with a critical mass of excellent researchers working together, making us even more globally competitive.

Through the EU, our researchers work on large-scale, complex projects and access cutting-edge facilities and infrastructure that would not be possible at a national level because of scale or costs.

EU-level collaboration is making a significant impact on our most complex global challenges – transforming the future of industry with novel uses of graphene; tackling the effects of climate change; and providing access to health data sets to find new approaches in the fight against cancer, Alzheimer’s disease and HIV.

## Collaboration puts the UK at the centre of space research and industry

Supporting over 30,000 high value jobs and already worth £12 billion a year to the UK economy, the space sector is one of the UK’s fastest growing industries. This is underpinned by excellent research at the UK’s leading universities working in collaboration with universities and businesses right across Europe.

**The University of Edinburgh, the University of Cambridge and University College London** are key participants in Gaia, the European Space Agency satellite launched in 2013. Funded by ESA and the EU’s FP7 Programme, Russell Group universities are delivering the scientific know-how to map the properties of 100 million stars.

The Gaia project has already brought £80 million of industrial contracts to the UK. Our expertise in software, sensors and satellite technology advanced through the project will also feed into new developments in aerospace and medical imaging.

Being able to share expertise across the EU, having access to massive data sets and large-scale university-business collaborations means the UK can compete with other big players in space technology and research such as the US, Russia and China.

## More than 150,000 collaborative links were made between UK and EU universities during the last funding period leading to breakthrough discoveries in medicine, science and technology.



EU membership gives our staff and students access to over 800 top research facilities.



Six pan-European research facilities are headquartered in the UK – driving our leadership in space technology and medicine.



80% of our internationally co-authored papers are written with partners from other EU countries.

