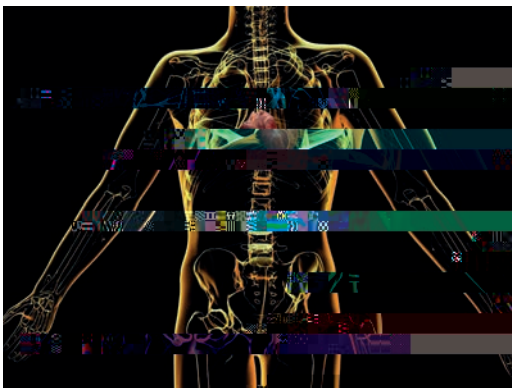




Key findings

Operating on a unique scale globally



International collaborations are associated with more impactful science

The reputation and standing of some streams of EU funding act as an international badge of quality.

EU researchers see the UK as a global scientific partner, but international collaborations benefit the UK and the EU in terms of the ability of scientists to address the grand challenges we face.

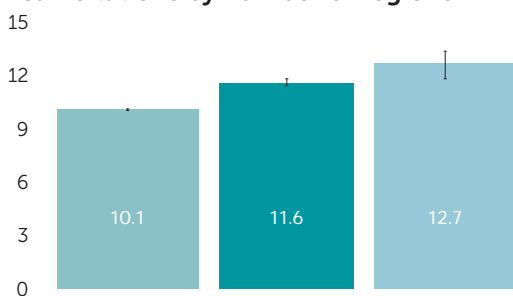


Cnidarian Anthozoa, PharmaSea

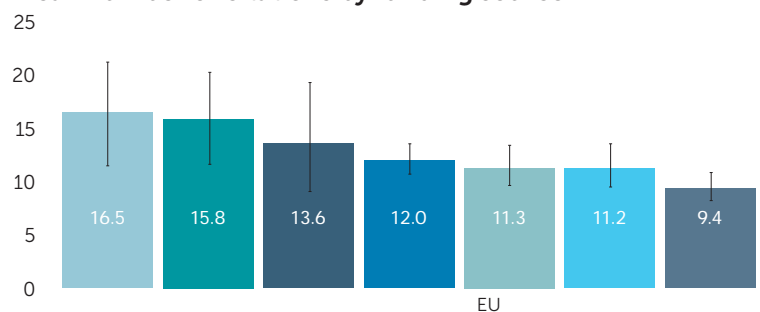
International collaborations, such as those EU Framework Programmes can facilitate, are associated with higher impact publications.

Higher international collaborations reduce, on average, higher impact publications.

Mean citations by number of regions



Mean number of citations by funding source



The vertical error bars are based on the standard deviation and the number of publications in each region of the dig category.

Partner countries and researchers based in different countries or regions have a higher number of citations than those with a partner from a single country or region.¹ Furthermore, the UK, European Economic Area (EEA) and those from the rest of the world cooperate together in collaborations, their publications have a higher average number of citations than a paper with just UK and EEA authors.

Research funded by EU programmes has a high average impact: significantly higher than research papers funded by UK Government funding sources.

For the authors that were a third of the researchers in the UK in 2017, it is clear that EU funded research received a higher number of citations than research funded by the UK government.

¹ It is important to note that while higher number of citations is a desired outcome for research, it is not the only one. It is also important to consider the quality of the research and the impact of the research on society.

One fifth of projects in Horizon 2020 were funded by UK scientists from 2015-16
CORDIS, cordis.europa.eu

“Since the Brexit vote I’ve been asked to be part of more EU science advisory boards and committees than ever before and, while they are afraid that we might lose the ability to have UK partners in H2020 and its successor, they still want the UK to provide expertise on advisory boards.”

Professor Marcel Janssen, PharmaSea

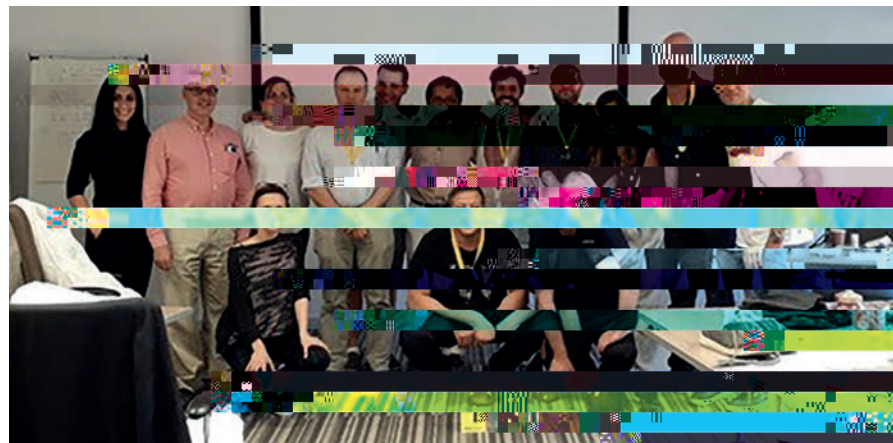
PharmaSea is an international collaboration led from the University of Aberdeen that is addressing the need for a global network of experts in the field of marine biotechnology.

Creating growth, jobs and investment in the UK

From programmes designed to support small and medium enterprises (SMEs) to prestigious competitive grants, EU funding supports UK businesses to grow and flourish in global markets and can help leverage further investment in local communities from industry.

The SME Instrument helps companies to access facilities, order their market, build their capability and brand, accelerate international trade, and access further growth opportunities to create a global presence.

With significant, competitive EU grant available, it can be a factor in large companies choosing to create a higher quality, high growth rate ear a higher, bring jobs and investment to the local economy.



The team at Smart Separations Ltd

“The SME phase 2 [grant] is a game changer for us [...] Our company would not exist today without it.”

Dr Hristina Machedon, Smart Separations Ltd

SME Instrument: Dr Hristina Machedon, a former ERA funded start-up, started a business with Smart Separations Ltd, which employed 14 people in the first year. The company has developed a cheap, efficient method for air filtration, which is a game changer for the industry. The company has developed a cheap, efficient method for air filtration, which is a game changer for the industry. The company has developed a cheap, efficient method for air filtration, which is a game changer for the industry.

“This technology is very applicable to both the UK market and internationally. We have spoken with companies in the UK but also some in Europe, including Belgium, Germany, and Switzerland.”

Nathalie Laroche, ANB Services

SME Instrument: ANB Services led a Horizon 2020 SME Instrument grant to carry out a feasibility study for the degree of automation in the production of high quality fibre optic cables.

96% of UK SMEs have received EU funding

For more information, visit ec.europa.eu/eurostat

£658m of EU funding for UK SMEs between 2007 and 2013
CORDIS, cordis.europa.eu

£81m of public-private investment in the UK from 2007 to 2013
CORDIS, cordis.europa.eu

“The ERC has a certain prestige to it [...] Large companies such as Unilever, when they are looking to invest in an area, bear these things in mind.”

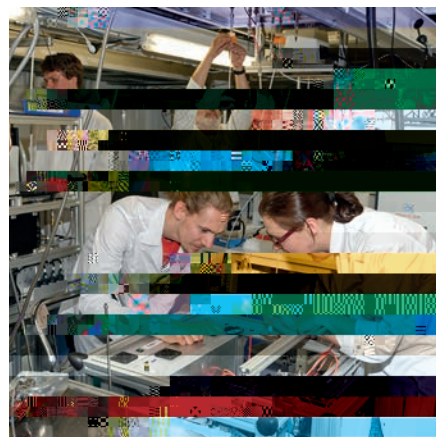
Professor Adam Cooper, RobOT

RobOT: Funding for the blue-chip research at the University of Liverpool led to the development of a better, faster and more efficient material.

Enabling science to inform and shape policy

Internationally collaborative research can inform and shape international policy at the early stages, locally and globally.

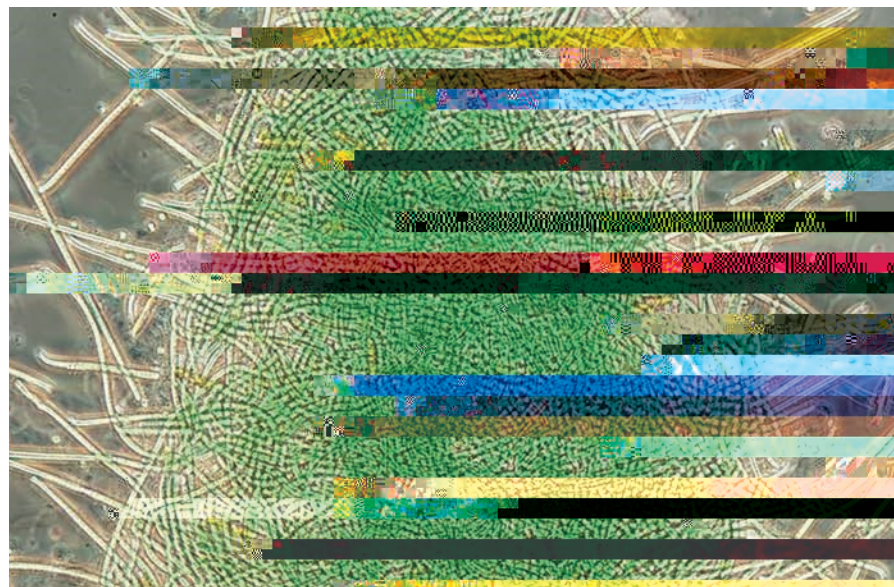
In the marine sector, scientific research can play a critical role in determining global climate targets and the pace of decarbonisation. For all - specific to the character of a discipline, international collaborative research that brings together the expertise of scientists from different areas can provide compelling evidence that actions needed to address climate change are specific to the sector.



Scientists at the LEAK closed chamber, Eurochem-2020



Marcel Jaar, PharmaSea



Algae activity: transforming a total alga, ALG-AD

UK science has also benefited from funding outside the Framework Programmes, for example through the European Regional Development Fund.

This can lead to improved technological solutions and different policy and regulatory approaches that benefit UK regions.

“60% of oceans are not covered by international laws to protect marine biodiversity. Our work showed what the commercial value might be of this deep sea biodiversity.”

Professor Marcel Jaar, PharmaSea

“Our activity is very closely watched by environmental agencies. I am aware that there is regulation in the pipeline because at some point, if the air quality in winter gets worse, you have to do something.”

Professor Hartmut Herrmann, EUROCHAMP-2020

EUROCHAMP-2020:

Diesel emissions from German cars contribute to Arctic late air pollution in the core free tier that affects the entire earth's climate.

“[...] our work is heavily engaged in long-term planning and communication to farmers, anaerobic digestive businesses, policymakers and regulators. It's bringing all those aspects together to make a complete solution.”

Professor Carole Llewellyn, ALG-AD Interreg

ALG-AD Interreg project circular economy research into algal technology that is agricultural waste to feed the livestock that can then be used to produce biofuels. This is a particularly interesting case in Wales, which has a large farming sector.

Facilitating vital movement of people

Enabling easy movement of scientists and their families to support a constant, steady flow of knowledge exchange is vital for science to progress.

For the area of research, recruiting internationally is essential because there are a lot of people with the highly specialised scientific skills and knowledge needed. For SMEs, being able to recruit the best people is a deal breaker for their growth and success.



For early career researchers, participating in EU projects supports their development and career progression.

Funding for travel and accommodation is essential for researchers to be able to attend conferences and workshops. It is also essential for researchers to be able to travel to their home countries to spend time with their families. It is also essential for researchers to be able to travel to their home countries to spend time with their families.

Although the effects are limited for the UK and for the EU, there is evidence that across all academic subjects, there are fewer international collaborations in research areas.² In the first three years, we led 31% of Horizon 2020 projects and made 53% of the total available.³ Evidence from the European Programme with their countries is that the number of international collaborations has decreased.⁴ We face a real barrier to international collaboration in the chemical sciences internationally, which activities in the European Programme can help address.

“[...] you look for people that have relevant experience in the types of tech you are doing and our employees have been working in groups inside and outside the UK on particularly strong research that just made them good candidates.”

Dr Rebecca Sells, CEO, Eclic Technologies

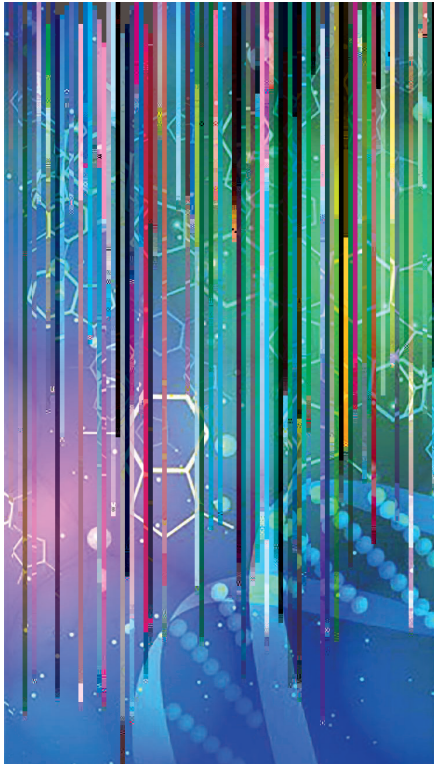
SME Instrument: Eclic Technologies is a SME partner

Complementing national research programmes

Bein

EU Framework Programmes can fulfil a different and complementary purpose to UK funding streams, broadening the kind of research UK-based scientists can do.

In addition, EU funding can enable longer-term, blue-skies research and bilateral collaborations that might otherwise be difficult to challenge. Furthermore, EU funding offers the opportunity to be effective across international borders, and to engage in training.



“Being able to access and influence EU funding from within the UK is crucial. UK based academics in chemistry are highly effective at bringing in EU funding.”

James Douglas, AstraZeneca

Non-Hermitian-2.6 (u)9.6 (t)-4.6 (a)1
effectivo ac3 (.)JEMC /Span Lang (en

“Increasingly funding is becoming challenge-led whereas the ERC is not, it is science-excellence driven.”

Professor Adam Cooper, RobOT

RobOT: Funding blue-skies research at the University of Liverpool is a challenge-led process that will drive the development of better, faster and more effective materials.

Developing member case studies

We asked our members to tell us about their experience of EU Framework Programme funding. Based on these, we produced a series of short case studies with researchers and their referees from across the UK and from the EU based in their own SME and large industrial businesses. All the case studies featured the following: a short profile of the Framework Programme 7 and Horizon 2020 funding, a case study of a research project funded by the European Regional Development Fund. The 10 case studies are available at [rsc.li/2PoeNCj](https://www.rsc.li/2PoeNCj).

Analysing our publications

We carried out a bibliometric analysis of 44 journals to determine differences in the impact of research done here compared to other regions. We analysed the performance of articles published between 2012 and 2016 received in their own field of publication, using data from CrossRef. Citations are a useful measure of research impact, although there are limitations to it.

The analysis looked at collaborations between five regions, elected based on the following: the UK, the rest of the EEA, the USA, China and the rest of the world, with regional data being based on the location of the first author.

With over 50,000 members, we are the largest scientific society in the world, and we are the largest scientific society in the world. We are the largest scientific society in the world, and we are the largest scientific society in the world. We are the largest scientific society in the world, and we are the largest scientific society in the world.

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