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Science Needs Strong European Cohesion

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Short abstract for graphical table of contents (80 words)

Decades of scientific collaboration have brought innovation, prosperity, and wide societal benefit to Europe. However, recent political events have impacted pan-European research and collaborations, and solutions are yet to materialise. Here, we argue that a vibrant, united European Research community led by its members and independent from political bodies is needed for Europe to remain a successful, interconnected scientific hub and keep delivering globally competitive science. The Federation of European Neuroscience (FENS) is in an ideal position to play a paramount role in this endeavour.

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Importance of European Coherence in Science:

After decades of prosperous cooperation and collaboration across Europe, events in recent years, and particularly the last few months, remind us that political stability is fragile and that harmonious dialogue between countries can vanish overnight. When society turns inward and borders take precedence over international cooperation, many of our collective achievements risk being reversed, or worse, become tools or bargaining chips in conflict. Science, with its transformative capacity and reliance on borderless cooperation is particularly vulnerable. It is vital that we protect it for its own sake and for the sake of Europe's societal progress and economic prosperity.

Scientific and technological achievements since the late 19th century are responsible for all of the technology that has boosted life expectancy and has made the possibility of global food security and means of combating disease possible. At the heart of many successful endeavours has been international academic collaboration and exchange. In an age where most scientific breakthroughs can only be achieved via collaboration, threats to a functioning European research culture can be devastating, long lasting and difficult to reverse.

Among scientific disciplines, Neuroscience is particularly dependent on an international community. The sheer resources required for experimental work, the highly specialised expertise of different fields, and the need to sample human and clinical data across large, varied cohorts means that no small country can realistically support cutting edge research by itself. The European research area is thus vital for the success of each country's academic prosperity. Indeed, Europe not only has one of the longest continuous research traditions and hosts the oldest Universities, it is also home to some of the best educated young researchers [1] and collectively boasts the largest world economy. European Union (EU) research and innovation programmes have been instrumental for scientific cooperation, both facilitating sustainable partnerships within Europe, and strengthening the scientific leadership on a more global scale. It is incumbent on our governments, the EU and the wider European community outside the EU to nurture these assets.

The past few years taught us that this responsibility will be abdicated unless the scientific community acts and makes its voice heard. The UK was one of the most successful collaborative partners in EU programmes, pioneering scientific and technological discoveries on the global landscape. In April, following the UK and EU's continued failure to negotiate a satisfactory customs and border agreement, the successful European Research Council (ERC) was forced to issue an ultimatum to successful ERC grant applicants based in the UK: either relocate to the EU or lose ERC support. This escalatory move compounds the existing damage from loss of UK participation in other major collaborations, most notably Erasmus and Erasmus+. For another troubling example, Switzerland, a third-party member of Horizon Europe, has for the second time lost ERC participant status as a consequence of tangential political

decisions about the county's prospective links with the EU. Despite a history of scientific success that includes hosting the Large Hadron Collider (LHC), the world's biggest and most powerful particle accelerator, and delivering state-of-the-art global health research and quantum technologies, Switzerland now risks being cut off from the research networks that supported this research.

What's at Stake:

Such breakdowns cause long-lasting damage to research but are also a major setback for technological innovation, education and economic growth. Start-ups will lose the opportunity to get direct funding and business acceleration services via the Horizon 2020-EIC Accelerator Programme, a scheme which provides mentoring, access to investors and corporates, and support in certification and commercialisation of devices. This targeted support is crucial to allow companies to capitalise on cutting-edge academic research to deliver innovative products and services at a market scale.

Reduced cohesion between European countries jeopardises the European research community both within and outside the EU. This results in self-inflicted damage to European society that go beyond the inevitable disruptions that political borders cause, such as delays in customs, additional taxes, constraints in international mobility and hiring international researchers. The manifold benefits of a world class scientific and technological community, including education and training opportunities for young people are only achieved by coordinating resources and activities at scale. Such coordination takes generations to achieve. Tragically, this can be undone in a matter of years or less.

This is particularly worrying as European science is threatened to fall behind other continents. The rate of investment in research in Europe now lags firmly behind both the USA and China [2]. Research policy and regulatory oversight of research, particularly use of animals and distribution of reagents and specimens are not harmonised across European countries.

For these reasons it is of critical importance to strengthen European Cohesion. This is more urgent now than it has ever been. And it needs to be led by scientists as we have learned that politicians are volatile partners. We cannot rely on politicians or even public institutions to protect science. Instead, we must organise across political boundaries at every level, from the ground up.

Call for Action:

Some pan-European initiatives have started to emerge with the aim to prompt EU leaders to put science collaboration before politics. For example, the 'Stick to Science' campaign advocates an open and barrier-free collaboration among Europe's research

and innovation players, via the association of the UK and Switzerland to Horizon Europe. Yet much more work is needed if we want to raise the voice of European scientists -and neuroscientists in particular- for an open science landscape without political barriers. We propose that FENS, the Federation of European Neuroscience, should play a critical role in this endeavour. With its member countries not bound by political alliances, it is independent, still relatively young and continues to grow in engagement with schools and biannual meetings attracting many thousands of researchers. Ultimately, FENS is a society built on individual vision, will and community spirit. This spirit does not need a larger organisational structure to yoke it.

Crucially, European neuroscience needs to find its voice in lobbying policy makers both at EU level and in member states. Ultimately, politicians make decisions of how to allocate funding and develop the laws and regulations that constrain and enable our research and training. But if they do not hear from us, they do not hear from us. Everyone agrees that brain health and a better understanding of the mind are both central to society's wellbeing. It is also increasingly clear that neuroscience and related fields such as artificial intelligence, behavioural data science and neurotechnology will fundamentally transform our world and may hold the key to safeguarding humanity through the next century. But many in the corridors of power are blind to the challenges that face European neuroscience, and unaware of the opportunities and outcomes that can come from ambitious investment into fundamental, investigator lead research. Neuroscientists need to learn from other successful lobby groups and engage with policy makes in a way that is active, sustained, and above all strategic.

National neuroscience societies, which are by default part of the FENS, have proven helpful to propel interactions between scientists from different backgrounds and build support for neuroscience. Similarly, researcher networks provide opportunities to enhance scientific and intellectual exchange across Europe. The FENS-Kavli Network of Excellence [3], funded by FENS and the Kavli Foundation, represents a successful example of cross-border scientific cooperation. Furthermore, many successful models include low-cost, self-organised scientific networks, e.g. on line communities based on a shared experimental system or technique [4, 5]. As many of us learned during the COVID pandemic, our colleagues are often only a few keystrokes away. Online conferences, journal clubs and nascent international collaborations are all teaching us that we can work together productively and self-organise despite impediments to travel. European Neuroscience needs cohesion, but this can and must start at home.

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Abbreviations

European Research Council (ERC), European Union (EU), the Federation of European Neuroscience (FENS), the Large Hadron Collider (LHC), United Kingdom (UK).

Information about the authors

The authors are scholars of the FENS-Kavli Network of Excellence (FKNE). FKNE is a network of 30 outstanding early to mid-career European neuroscientists that join efforts to shape the future of neuroscience by putting young researchers in the driver's seat. The Network was established in 2014 through a collaboration by the Federation of European Neuroscience Societies (FENS) and The Kavli Foundation.

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Conflicts of interests

We have no conflicts of interest to disclose.

Author contributions

All authors contributed equally.

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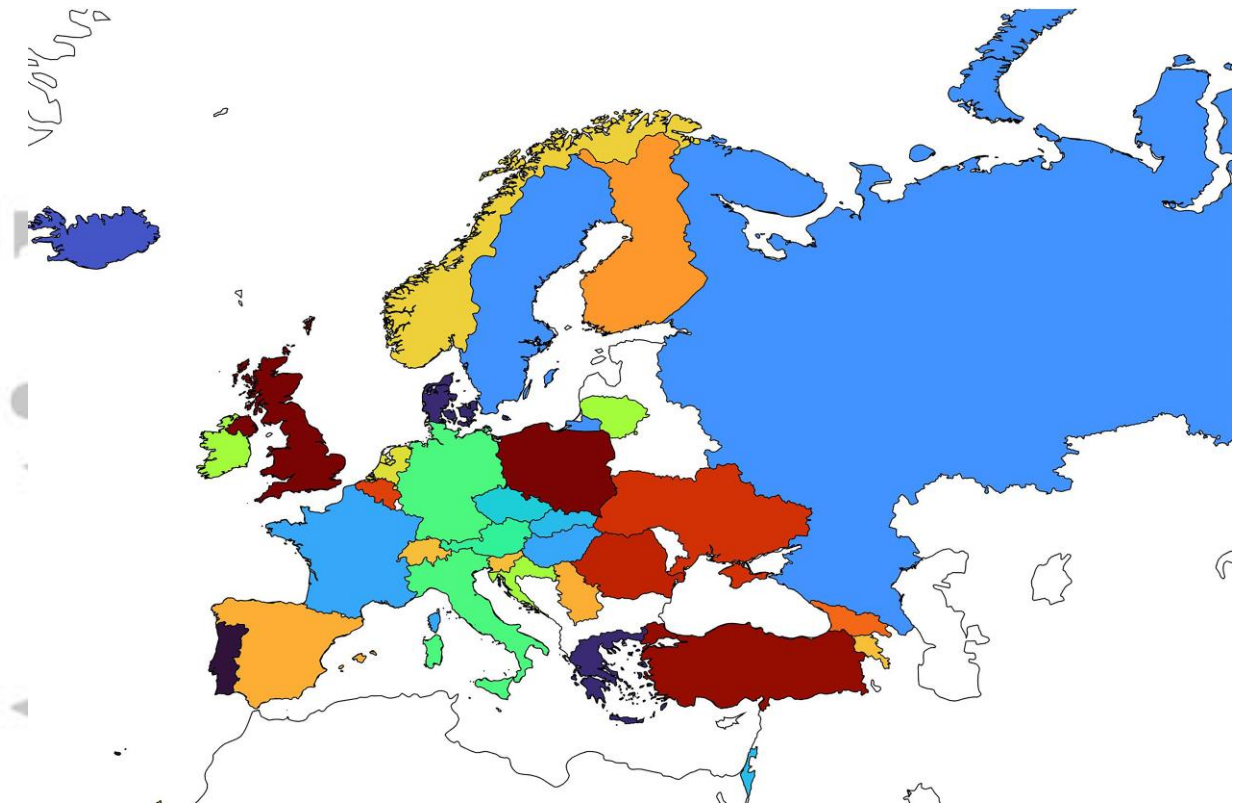


Figure 1: A map of FENS member countries

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