COST Actions approved by the Committee of Senior Officials on 19 May 2025

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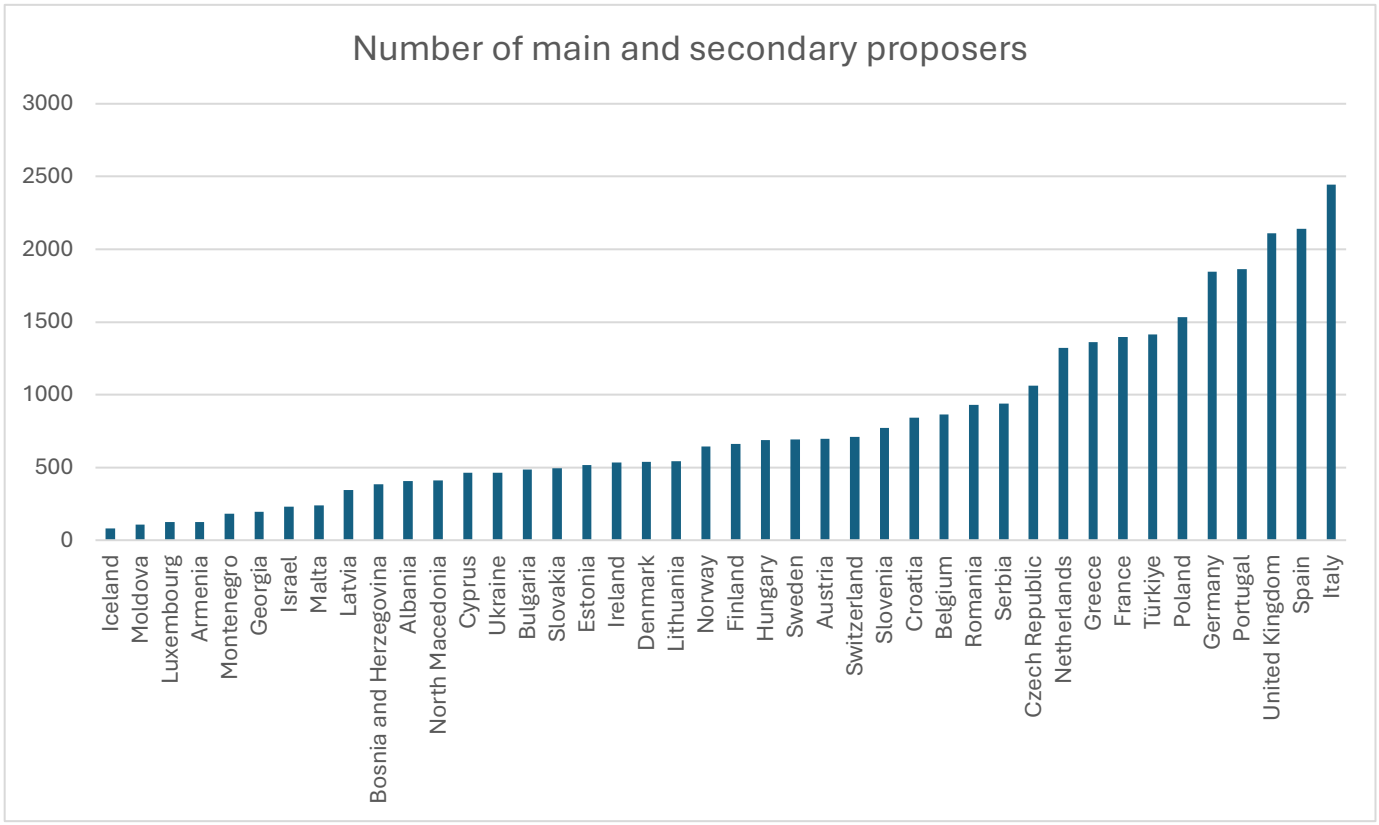
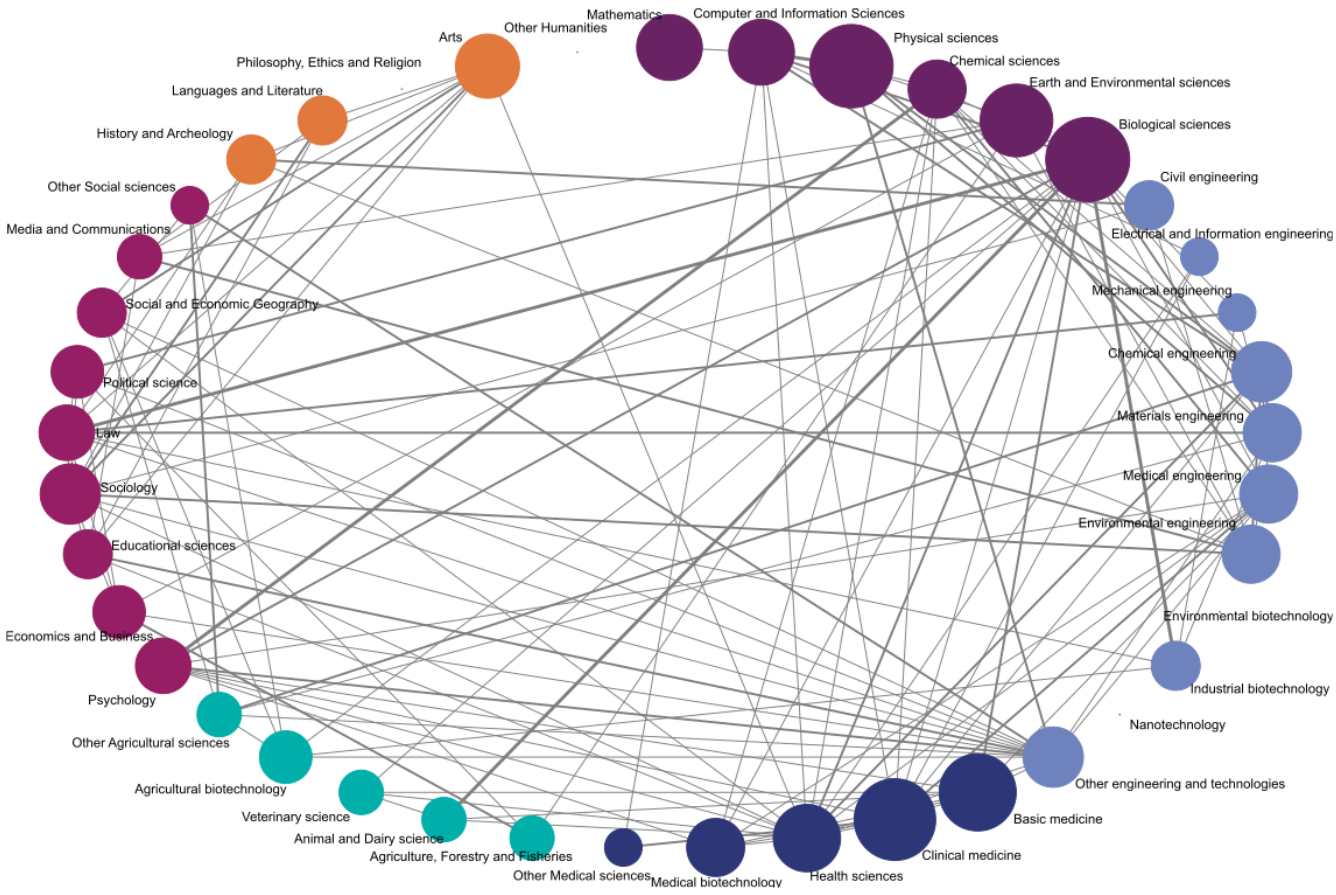
STATISTICAL SUMMARY





CA24101
Testing Fundamental Physics with Seismology
(OC-2024-1-27085)

SUMMARY
The FuSe Action tackles challenges in fundamental physics by exploring seismic phenomena and earthquake precursors, providing new opportunities for testing. It aims to bridge the gap between fundamental physicists and Earth scientists, leveraging advanced technologies such as Big Data, machine learning, and AI, and working with small technological enterprises to translate theoretical insights into practical applications.

At the heart of FuSe is the belief that **seismic phenomena** could reveal **new aspects of fundamental interactions** and lead to the discovery of new physics. By analysing seismic data and studying the underlying physical principles, FuSe aims to explore imprints of unknown physics that may be embedded in these natural processes. On the other hand, the study of fundamental physics can also improve our knowledge of the Earth. This effort draws on interdisciplinary expertise, with a focus on how seismic events could deepen our understanding of the fundamental forces that govern the universe.

FuSe's innovative approach combines diverse scientific fields to pursue both theoretical and practical advancements. This synergy has the potential to transform our knowledge of both fundamental physics and seismic activity, contributing to a broader understanding of Earth's interior and the cosmos.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Fundamental interactions and fields (theory) 2. Earth and related Environmental sciences: Physics of earth's interior, seismology 3. Earth and related Environmental sciences: Databases, data mining, data curation, computational modelling	1. Fundamental physics 2. Seismology 3. Geophysics 4. Material science 5. Big Data

COST Members
Main Proposer: Poland
Network of Proposers:
Full Member: Austria, Belgium, Croatia, Cyprus, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Lithuania, Malta, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 44,7% YRI / 43,4% Women / 62,50% ITC

International Cooperation
Near Neighbour Country: Egypt
International Partner: Brazil, Chile, China, Japan

Specific Organisations
European RTD Organisation: Istituto Nazionale di Geofisica e Vulcanologia; Consiglio Nazionale delle Ricerche - Istituto per le Applicazioni del Calcolo
International Organisation: European Synchrotron Radiation Facility; European Synchrotron Radiation Facility

Industrial Dimension
SMEs: Czech Republic, Italy, North Macedonia, Poland

CA24102
A Glossary of Technical Construction Vocabulary in 17th-18th Century European Court Residences
(OC-2024-1-27100)

SUMMARY
The aim of the Action is to **develop common strategies and create a comprehensive network on Construction History** that brings together the technical knowledge of historic building sites, fostering collaboration and knowledge exchange among participating countries. **The main output is a glossary of technical terms used in 17th and 18th- century construction processes at European court residences, with special attention to records and drawings drafted by craftsmen and artisans. The glossary will be initially produced in English**, with draft translations generated using Artificial Intelligence (AI) for participants from all involved countries. **The glossary will be adapted to the linguistic and cultural contexts of each country, resulting in multiple language versions that reflect an inclusive approach and linguistic diversity.**
The glossary will be integrated into a **comprehensive digital platform that centralizes data on construction techniques, materials, craftsmen, and technical terminology**. The digital database enhances **access to dispersed archival documents**, minimizing the need for travel to physical archives, and improves research efficiency while contributing to a **reduction in CO2 emissions** and the carbon footprint associated with research activities. The platform mitigates the financial burden of travel for young researchers from ITCs, **promoting inclusivity and equal opportunities in scholarly pursuits**.
The Action offers insights for conservation professionals and heritage authorities, providing critical knowledge to support the preservation of cultural heritage sites. Furthermore, it seeks to **engage local communities by making historical construction knowledge more accessible**, fostering a deeper connection with their heritage. EUROGLOSS advances research in construction history while promoting preservation and community engagement.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Arts: History of art and history of architecture 2. History and Archeology: Preservation of cultural heritage	1. Glossary 2. Construction History 3. Interactive digital platform 4. European Court Residences

COST Members
Main Proposer: Italy
Network of Proposers:
Full Member: Croatia, France, Germany, Greece, Italy, Malta, Sweden, Türkiye

Main and secondary proposers: 72,7% YRI / 54,5% Women / 50,00% ITC

CA24103
EUropean COllaborative Network on electroCatalysis for Efficient Renewable Technologies
(OC-2024-1-27105)

SUMMARY
Electrocatalysis is fundamental for the advancement of renewable energy technologies, offering pathways to sustainable fuel production and energy conversion processes.
However, the efficiency and selectivity of these processes are largely determined by complex interactions at solid-liquid interfaces, which remain poorly understood. The proposed EU-CONCERT aims to establish a collaborative European network dedicated to advancing the fundamental understanding and practical application of solid-liquid interfaces in electrocatalysis.

The network will bring together theoretical and experimental groups to develop and validate advanced computational methods, while conducting rigorous experimental benchmarking. By focusing on model systems and collecting high-quality, reproducible data under controlled conditions, the Action will enable the development of accurate simulation methods that incorporate key phenomena such as solvent effects, electrolyte behavior, and potential-dependent reactions. The main objectives are to enhance the accuracy and efficiency of simulations, bridge the gap between theory and experiment, and promote a data-sharing culture within the electrocatalysis community.

Working groups will address the following core areas:

- Advanced Theoretical and Computational Approaches: Developing new methods for simulating electrochemical interfaces.
- Collection of experimental data on designed model systems and comparison with simulations: Designing and performing experiments to validate computational predictions.
- Benchmarking and Data Sharing: Establishing standardized protocols for data collection, benchmarking, and sharing.
- Communication, Dissemination, Exploitation and Capacity Building: Promoting knowledge exchange, training researchers, and engaging stakeholders to maximize the impact.

This initiative will not only support the rational design of new catalysts but also foster interdisciplinary collaboration, train future researchers, and contribute to the EU's green energy transition goals.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Chemical sciences: Theoretical and computational chemistry 2. Physical Sciences: Structure of solids and liquids (theory) 3. Chemical sciences: Electrochemistry, electrodialysis, microfluidics, sensors 4. Chemical engineering: Catalysis 5. Chemical sciences: Chemical reactions: mechanisms, dynamics, kinetics and catalytic reactions	1. Electrocatalysis 2. Computational Methods 3. Electrified interfaces 4. CO2RR 5. Water splitting

COST Members
Main Proposer: Italy
Network of Proposers:
Full Member: Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Iceland, Italy, Netherlands, Poland, Portugal, Serbia, Slovenia, Spain, Türkiye, United Kingdom

Main and secondary proposers: 45,00% YRI / 47,5% Women / 50,00% ITC

Specific Organisations
EU Institutions, Bodies, Offices and Agencies (EC/EU): Technical University Berlin

Industrial Dimension
Large companies: Netherlands, Spain

CA24104
Stochastic Differential Equations: Computation, Inference, Applications
(OC-2024-1-27157)

SUMMARY
Stochastic differential equations (SDEs) are used to model phenomena under the influence of random noise and uncertainty and are useful in an extraordinary range of applications. In health, SDE models of tumour growth can help medical practitioners design interventions. In clean energy, they can model airflow around wind turbine blades, and enable multiscale modelling of entire wind farms and energy grids by representing small scale effects as noise. In computing, SDEs can be used to develop training algorithms for deep learning algorithms.

The development and effective deployment of stochastic models requires input from a broad range of specialist experts: applied modellers, theoretical mathematicians, numerical analysts, and statisticians, all guided by the needs of stakeholders in academia and industry. However, in the current European research landscape, there is no large scale framework enabling these communities to interact, and opportunities for goal-driven research progress that is informed by all relevant expertise are being lost.

Under the umbrella of computational stochastics, STOCHASTICA will bring together members of all of these communities to create a network of researchers with common goals informed by academic and industry partners. The work of the Action will generate a computational toolbox including a database of test problems, implementation guidance, and accessible descriptions of mathematical quality that empower non-specialist experts to make appropriate and routine use of stochastic models in applications such as natural resource management, renewable energy transmission, medical and public health applications including epidemiology and models of tumour growth.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Mathematics: Numerical analysis 2. Mathematics: Probability 3. Mathematics: ODE and dynamical systems 4. Mathematics: Statistics 5. Mathematics: Theoretical aspects of partial differential equations	1. Stochastic modelling 2. Qualitative analysis 3. Numerical approximation methods 4. Bayesian inference

COST Members
Main Proposer: Ireland
Network of Proposers:
Full Member: Austria, France, Germany, Greece, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Türkiye, Ukraine, United Kingdom

Main and secondary proposers: 25,00% YRI / 50,00% Women / 50,00% ITC

Specific Organisations
European RTD Organisation: Foundation for Research and Technology - Hellas

Industrial Dimension
SMEs: Poland, Ukraine
Large companies: France, Netherlands

CA24105
Enabling Translation of Retinal Disease Diagnosis and Therapies: A Roadmap for Future
(OC-2024-1-27160)

SUMMARY
Retinal diseases are significant contributors to visual impairment, imposing a substantial global economic and well-being burden. Once retinal degeneration occurs, there are currently no therapeutic solutions that can completely cure retinal diseases. It is imperative to prioritize efforts aimed at accelerating European research translation in the field of retinal disease therapies. This includes improving early diagnosis, enhancing retinal imaging tools and functional diagnostics, and identifying new structural, functional, and molecular biomarkers for disease and its progression. Additionally, it is crucial to develop innovative therapeutic approaches for the early stages of these diseases to prevent their progression into severe forms that could compromise vision. These developments have the potential to control the progression of retinal diseases before they adversely affect vision.

The primary objective of *Retina4Future* is to **expedite the translation of European vision research into novel biomarkers and advanced therapies for retinal diseases**. This will be achieved by establishing a research and innovation network and promoting interdisciplinary research. To accomplish this, the network will encompass a diverse group of contributors, including **basic and clinical researchers, clinicians, small and medium- sized enterprises (SMEs), patient organizations, ethics experts and policymakers.**

The ultimate goal is to improve the quality of life and healthcare for patients and their families while also fostering the career development of young researchers and innovators. This COST will benefit clinical, social, and economic sectors in Europe.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Basic medicine: Sensory systems (e.g. visual system, auditory system) 2. Clinical medicine: Ophthalmology 3. Medical biotechnology: Gene therapy, stem cell therapy, regenerative medicine for medical biotechnology 4. Basic medicine: Pharmacology, pharmacogenomics, drug discovery and design, drug therapy	1. Retinal diseases 2. Vision 3. Advanced Therapies 4. Early diagnosis 5. Patient-oriented research

COST Members
Main Proposer: Portugal

Network of Proposers:

Full Member: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Estonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Netherlands, Poland, Portugal, Romania, Serbia, Spain, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 31,3% YRI / 47,8% Women / 52,17% ITC

International Cooperation
International Partner: Canada, India, United States

Specific Organisations
International Organisation: Retina International; University of Alberta

Industrial Dimension
SMEs: Greece, Italy, Netherlands, Portugal, Spain, Switzerland

CA24106
Building Education and One Health with Adaptive Convergence and Open Networks
(OC-2024-1-27164)

SUMMARY
The BEACON Action aims to set a new gold standard in health education for high school students across Europe. This collaborative initiative unites interdisciplinary experts and stakeholders to develop an innovative educational platform that promotes well-being, diversity, mutual respect, and understanding among students. Structured around five key groups, BEACON seeks to empower students to become informed and healthy members of a global community, capable of tackling both local and individual challenges.

The initiative aspires to inspire a proactive generation of young individuals who will not only improve their own lives but also contribute positively to the well-being of their communities. By leveraging cutting-edge technology and engaging local experts to address specific local issues while maintaining a focus on global challenges, BEACON will significantly enhance health education not just in Europe, but also in other regions around the world. Through its comprehensive approach, the BEACON Action is positioned to create lasting impacts on health education and community health outcomes globally.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Health Sciences: Health services, health care research 2. Educational sciences: Education: training, pedagogy, didactics 3. Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty 4. Health Sciences: Public and environmental health 5. Other engineering and technologies: Ethics of other engineering and technologies	1. Health education 2. One health 3. Education technologies 4. Well-being 5. Global challenges

COST Members
Main Proposer: Albania
Network of Proposers:
Full Member: Albania, Austria, Bulgaria, Estonia, France, Georgia, Germany, Greece, Iceland, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Türkiye, Ukraine, United Kingdom

Main and secondary proposers: 32,7% YRI / 63.6% Women / 52.38% ITC

International Cooperation
International Partner: Indonesia

Industrial Dimension
SMEs: Bulgaria, Netherlands, Sweden

CA24107
Patient SAFety Related Outcome Measures in European ICUs
(OC-2024-1-27168)

SUMMARY
The Intensive Care Unit (ICU) is a complex environment, where nurses are trained to deliver highly specialized care to critically ill patients. The ICU is a rapidly changing environment with new treatments and interventions emerging. However, despite advancements in care practices and treatment protocols, there remains significant variability in patient safety related outcomes. The World Health Organisation estimates that 1 in 10 patients are harmed in healthcare settings and that as many as 80% of these harms are avoidable.

Nurses are active participants in preventing and reducing the incidence of avoidable harms. Pressure ulcers, healthcare-associated infections (HCAI), and delirium are some of the most frequently cited patient safety related outcomes in the ICU. However, there are inconsistencies in how these outcomes are measured across the world. Future efforts are needed to standardise and harmonise how we measure these outcomes across European countries and to identify factors that contribute to their prevention which would guide preventative care strategies. If these outcomes were measured in the same way across countries, this would facilitate further research with the aim of reducing the incidence of these avoidable harms and therefore enhancing the quality of patient care in ICUs. This network will work towards advancing patient safety through standardised measurement of three identified patient safety outcome measures (pressure ulcers, HCAIs and delirium).
The processes and systems that contribute to the development of these outcomes will also be explored. This network will enable larger scale research studies of groundbreaking interventions to reduce the incidence of these avoidable harms.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Health Sciences: Nursing	1. nursing 2. critical care 3. Intensive Care

COST Members
Main Proposer: Ireland
Network of Proposers:
Full Member: Belgium, Croatia, Cyprus, Denmark, Estonia, France, Germany, Greece, Ireland, Italy, Latvia, Malta, Netherlands, North Macedonia, Norway, Poland, Slovakia, Türkiye, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 20,00% YRI / 64,00% Women / 50,00% ITC

International Cooperation
International Partner: China

CA24108
Oxidative stress at the CrossroAds of adverse outcome Pathways - peSTicides - ONe hEalth
(OC-2024-1-27173)

SUMMARY
Oxidative stress plays a central role in ecosystem disturbance and human pathologies. Some pesticides have already been banned due to their pro-oxidative properties which are linked to their adverse effects in both humans or in off-target organisms in ecosystem.
However, several classes of pesticides are still authorized and could lead to oxidative stress, particularly those that target mitochondria, the main site for reactive oxygen species generation in all living organisms.
There is an increasing scientific, societal, and politic concern about pesticides within the One Health framework.

In this context, **the challenge of the Action is to identify pesticides' adverse effects linked to oxidative stress that are relevant for both humans and ecosystems, and to describe the Key Events involved in these effects.** This **Pan-European network** will develop a new research strategy based on **Adverse Outcome Pathways (AOPs)**.

The Action will work within the One Health concept, **promoting interdisciplinary breakthroughs** between ecotoxicology, toxicology, bioinformatics, epidemiology and risk assessment. It will include scientists from academia, industry, regulatory agencies, a National Social Protection Scheme in charge of agricultural workers and operators, and Non-Governmental Organizations.

This Action will work in **collaboration with other international initiatives** (AOP-Wiki, PARC project) to implement science without duplication.

As there is an increasing interest of **New Alternative Methods** such as AOPs that has been identified as **keys areas of regulatory challenges**, the Action will **provide scientific input to the pesticide industry and regulatory agencies, disseminating science to a broad audience that include pesticide consumers, civil society, and policy makers.**

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Health Sciences: Environment and health risks including radiation 2. Biological sciences: General biochemistry and metabolism 3. Biological sciences: Systems biology 4. Biological sciences: Metabolomics 5. Biological sciences: Biodiversity, comparative biology	1. pesticide 2. oxidative stress 3. AOP (Adverse Outcome Pathways) 4. ecotoxicology 5. toxicology

COST Members
Main Proposer: France
Network of Proposers:
Full Member: Croatia, Czech Republic, Denmark, France, Italy, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden

Main and secondary proposers: 30,8% YRI / 60,3% Women / 53.33% ITC

International Cooperation
Near Neighbour Country: Kosovo*
International Partner: United States

Industrial Dimension
SMEs: France

CA24109
Many-body Open Quantum Systems
(OC-2024-1-27193)

SUMMARY
QOpen aims to substantially boost understanding of complex many-body quantum systems that interact with their environment, leading to decoherence and dissipation. While these effects pose challenges for observing quantum coherent dynamics and have often impeded the development of quantum technologies, they can also be leveraged, e.g. for dissipative quantum error correction. Moreover, exploring non-equilibrium open quantum systems offers the opportunity to discover states of matter that are not achievable in thermal equilibrium.

The Action aims to address key challenges, such as understanding integrable and chaotic dissipative dynamics, thermalization, and the emergence of new, non-equilibrium quantum states of matter. It seeks to advance characterization and control methods for open quantum platforms and promote the development of novel numerical and analytical approaches for modeling these systems. A significant focus is placed on leveraging noisy intermediate-scale quantum (NISQ) devices, which are inherently dissipative many-body platforms, for these investigations.

QOpen establishes a collaborative European framework, bringing together experts from various disciplines and regions, with particular attention to inclusiveness target countries (ITCs). The project highlights capacity-building through training and mentoring young researchers, engaging with the quantum industry, and promoting interdisciplinary and international collaborations. It aims to create a sustainable, inclusive research network to fuel future research and innovation in the field.

While prioritizing fundamental research, the Action engages with the quantum industry sector and aligns with Europe's goals of maintaining leadership in quantum technologies.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Quantum physics 2. Physical Sciences: Transport properties of condensed matter (theory) 3. Physical Sciences: Statistical physics (condensed matter) 4. Physical Sciences: Metrology and measurement (theory) 5. Physical Sciences: Mesoscopic physics (theory)	1. integrable and chaotic dissipative dynamics 2. Thermalization and pre-thermalization 3. non-equilibrium quantum states of matter 4. numerical approaches for open quantum systems 5. noisy intermediate-scale quantum (NISQ) devices

COST Members
Main Proposer: Portugal
Network of Proposers:
Full Member: Czech Republic, France, Germany, Hungary, Norway, Portugal, Romania, Serbia, Slovenia, Ukraine

Main and secondary proposers: 45,8% YRI / 25,00% Women / 70,00% ITC

Specific Organisations
European RTD Organisation: International Iberian Nanotechnology Laboratory

CA24110
Resource-Inclusive Renewable Materials: Leveraging Global Biomass for Sustainable Innovations
(OC-2024-1-27201)

SUMMARY
Modern society still relies heavily on fossil-based feedstocks for materials production, driving additional carbon emissions. Harvesting atmospheric carbon, so as to close the carbon-cycle, is of the utmost importance. Given the abundance of biologically sequestered carbon as a byproduct of our society, e.g. agricultural and forestry residues, pathways to their use in future materials production are sought.

The advancement of biomass deconstruction techniques has resulted in the production of more uniform and well characterised biomass-derived chemical and material streams, which are being used to develop sustainable bio-based products. However, to this day biorefinery processes which are able to operate on a feedstock-agnostic basis are not the norm, and the difficulty of predicting how the isolated fractions and building blocks will affect material properties make the whole value chain extremely expensive, causing a bottleneck in the development of novel products from laboratory to industrial scale.

Our ReInvent COST Action will convene European and international competence, aligning scattered research efforts from across the globe to leverage various expertise for trans- and multidisciplinary science and realise our vision of resource inclusive renewable materials. We will bring together experts in chemistry, engineering, agriculture and forestry, biomass deconstruction, chemical analytics, separation, and materials science to focus on feedstocks-agnostic processes and the early-stage prediction of material properties, as well as techno-economic and environmental feasibility of the whole value chain. Ultimately, we will push society beyond the status quo, accelerating the transition towards truly sustainable and inclusive solutions.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Chemical engineering: Characterization methods of materials 2. Chemical sciences: Colloid chemistry, macromolecular chemistry, polymer chemistry 3. Environmental engineering: Sustainable engineering 4. Chemical engineering: Green chemistry 5. Materials engineering: Structural properties of materials	1. Resource agnostic biomass 2. Evaluation of materials properties 3. Early stage evaluation 4. Sustainability evaluation 5. Chemistry, biorefinery and materials

COST Members
Main Proposer: Sweden

Network of Proposers:

Full Member: Austria, Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye, Ukraine, United Kingdom

Main and secondary proposers: 25,00% YRI / 50,00% Women / 50,00% ITC

International Cooperation
International Partner: Canada, Indonesia, South Korea, United States

Specific Organisations
EU Institutions, Bodies, Offices and Agencies (EC/EU): Åbo Akademi University

Industrial Dimension
SMEs: Cyprus, Finland, Greece, Sweden
Large companies: Sweden

CA24111
European Network for Valorizing Food Processing Waste into Sustainable Fibers
(OC-2024-1-27213)

SUMMARY
The **ENFiber** COST Action addresses the challenge of food processing waste by transforming it into high-value fibers using innovative and sustainable methods. This initiative meets the environmental and societal demand for waste reduction and circular bio- economy solutions. With food by-products often discarded or underutilized, **ENFiber** unlocks their potential by promoting scalable green extraction technologies and implementing advanced characterization techniques.

The main challenge is to scale fiber production from food processing waste, making it both commercially viable and environmentally sustainable. To achieve this, **ENFiber** will identify fiber-rich waste streams, explore non-destructive analytical methods, develop extraction methodologies to maximize yields, assess the environmental impact of the processes, and pursue product development opportunities. Collaboration between researchers, industry, and policymakers will ensure alignment with regulatory frameworks and market demands.

ENFiber is organized into Working Groups focused on extraction, characterization, product development, sustainability, and dissemination. The network will promote capacity building through training schools, Short-Term Scientific Missions (STSMs), Virtual Mobility (VM) grants, and industry-academic partnerships, providing opportunities for early-career researchers to develop expertise and expand their networks.

Aligned with the EU's circular economy and Green Deal objectives, **ENFiber** promotes sustainable waste management and aims to contribute to the reduction of greenhouse gas emissions. It also supports global environmental goals by creating value-added products for the food, pharmaceutical, and packaging industries. **ENFiber** aims to deliver tangible outcomes such as new fiber-based products, market-ready technologies, and regulatory recommendations, contributing to sustainable food systems and reducing the environmental impact of waste.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Other agricultural sciences: Sustainable production 2. Materials engineering: Sustainable engineering 3. Chemical engineering: Chemical engineering: processes and products (others) 4. Chemical engineering: Characterization methods of materials	1. Fibers 2. Waste 3. Food Processing 4. Scale-Up 5. Characterisaton

COST Members
Main Proposer: Türkiye

Network of Proposers:

Full Member: Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Malta, Moldova, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Türkiye, United Kingdom

Partner Member: South Africa

Main and secondary proposers: 41,53% YRI / 52,3% Women / 64,52% ITC

International Cooperation
Near Neighbour Country: Egypt, Lebanon

Specific Organisations
EU Institutions, Bodies, Offices and Agencies (EC/EU): Kaunas University of Technology

Industrial Dimension
SMEs: Egypt, Germany, Greece, Malta, Netherlands, Romania, Spain

Large companies: Belgium, Italy

CA24112
Implementation of Tear Fluid Biomarkers in Precision Medicine
(OC-2024-1-27225)

SUMMARY
Tear fluid is a dynamic and multifaceted biological fluid crucial for ocular surface health. Often underestimated, its complexity transcends its lubricating function. Recently, tear fluid has gained widespread attention as an non-invasive source of biomarkers, offering insights into ocular health, but also providing glimpses into systemic and neurological well- being. This emerging field of tear biomarkers holds great promise for diagnostic and therapeutic advancements, potentially reshaping the landscape of precision medicine.
Nevertheless, the path from discovery to clinical implementation is marked by significant challenges and complexities.

One of the most significant hurdles lies in the variability observed in tear fluid research, attributable to the lack of standardized methodologies for tear fluid collection, storage (biobanking), normalization and reporting. These variations significantly affect the development of tear-based point-of-care tests, causing a delay in the clinical use of tear biomarkers. Fragmentation of tear fluid research groups and institutions exacerbates these challenges. Collaboration between researchers is hindered by this lack of generalized standards and guidelines, as well as the absence of a common platform for knowledge and resource sharing.

TEAR-Precision action aims to address these challenges. It will bring together a multidisciplinary and international network of clinicians and researchers in the field. Creating consensus-based protocols and recommendations for best practices will bridge the gap between scientific discovery and clinical implementation. The anticipated knowledge creation and transfer will ensure that Europe can stay at the forefront of tear fluid research and its clinical applications in the field of precision medicine.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Clinical medicine: Ophthalmology 2. Basic medicine: Proteomics 3. Medical biotechnology: Proteomics for medical biotechnology 4. Basic medicine: Sensory systems (e.g. visual system, auditory system) 5. Medical engineering: Diagnostic tools (e.g. genetic, imaging)	1. Tear Fluid 2. Ophthalmology 3. Biomarkers 4. Precision medicine 5. Point-of-care tests

COST Members
Main Proposer: Netherlands
Network of Proposers:
Full Member: Belgium, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Lithuania, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Türkiye, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 43,68% YRI / 54,4% Women / 50,00% ITC

International Cooperation
International Partner: Australia, Canada, Colombia, Hong Kong SAR, India, New Zealand, Singapore, United States

Specific Organisations
EU Institutions, Bodies, Offices and Agencies (EC/EU): University of Crete Medical School
International Organisation: Association for Research in Vision and Ophthalmology; Schepens Eye Research Institute; Schepens Eye Research Institute; Tan Tock Seng Hospital; Vision Research Foundation, Sankara Nethralaya; Cincinnati Children's Hospital Medical Center

Industrial Dimension
SMEs: Canada, Netherlands, Switzerland, United States
Large companies: Switzerland

CA24113
Global network on Culture Heritage Conservation Under Climate Change (Go2CHANGE)
(OC-2024-1-27283)

SUMMARY
Go2CHANGE is a global network aimed at addressing the significant vulnerabilities of cultural heritage sites and their communities in the face of climate change. The initiative seeks to develop locally adaptable climate action strategies that respect the integrity and authenticity of cultural heritage while aligning with local contexts. The network focuses on four key areas: climate risk assessment, climate change adaptation, climate change mitigation, and community involvement. These issues are explored through Urban Living Labs (ULLs) in selected heritage cities, which serve as case studies and test beds for co- creating climate-resilient strategies.
The network adopts a people-centered, place-based approach, engaging interdisciplinary experts and local stakeholders, including communities, heritage managers, and municipalities. Go2CHANGE aims to develop methodologies for assessing cultural heritage at risk, integrating heritage risk management into broader climate frameworks, reducing greenhouse gas emissions in heritage conservation, and enhancing social resilience through community involvement.
Through a series of workshops, training schools, and analysis seminars, Go2CHANGE facilitates collaboration and knowledge exchange. The outcomes, including policy briefs and best practices, will inform local and international climate action strategies, contributing to the EU's Green Deal and the UN's 2030 Agenda for Sustainable Development Goals.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Environmental engineering: Risk assessment, prevention and mitigation 2. Civil engineering: Architecture engineering 3. Sociology: Anthropology, ethnology, cultural studies 4. Environmental engineering: Preservation of cultural heritage 5. History and Archeology: Preservation of cultural heritage	1. Cultural Heritage 2. Climate Change Risk Management 3. Urban Living Lab Heritage Cities 4. Place-Based and Best-Practice 5. People-Centred and Rights-Based

COST Members
Main Proposer: Norway
Network of Proposers:
Full Member: Austria, Cyprus, Estonia, Germany, Italy, Latvia, North Macedonia, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Türkiye, United Kingdom

Main and secondary proposers: 30,00% YRI / 48,3% Women / 56,25% ITC

International Cooperation
International Partner: Canada, Nepal, United States

Specific Organisations
International Organisation: International Center for the Study of Preservation and Restoration of Cultural Property

Industrial Dimension
SMEs: Canada
Large companies: Türkiye

CA24114
EUROPEAN NETWORK OF SoHO ESTABLISHMENTS FOR RAPID AND SUSTAINABLE ACCESS TO ATMPs

(OC-2024-1-27300)

SUMMARY

BTCs4ATMP aims to create an European collaborative network of Blood, Tissue and Cell processing centres (BTCs) involved in the development and/or manufacturing of Advanced Therapy Medical Products (ATMP). This initiative will provide a framework for successful development and validation of cost-effective manufacturing and reliable quality control (QC) testing, in compliance with strict pharmaceutical quality management standards to promote standardisation of procedures and harmonisation of assays by sharing protocols and reagents through biobanks. This strategy not only will boost the state-of-the-art of the research in the fields of cell-based immunotherapy and regenerative medicine but also contribute to Europe's leadership through medical, scientific, economic, and social development while strengthening Europe's competitiveness capacities. This network includes all the relevant stakeholders: procurement of substance of Human Origin (SoHO) and processing centres, biobanks supplying starting materials and reagents for use in bioprocesses and QC; Good Manufacturing Practice (GMP)-compliant laboratories, immunology experts, safety testing laboratories, chemistry and manufacturing controls, regulatory bodies, National Agencies, and ethics experts. The challenge will be approached essentially by networking with all the stakeholders' involved sharing knowledge, standardizing methodology and developing an educational training programme for researchers, technicians and clinicians.

BTCs4ATMP is promoting the participation of developers from Inclusiveness Target Countries (ITC), who will have access to research facilities, training courses, mentoring of ITCs and YRIs who will participate spreading excellence and widening the programme.
Furthermore, key leadership positions in the Action Management are reserved to ITC's YRI.

BTCs4ATMP will pioneer approaches that will foster developments to facilitate patient access to ATMPs.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Medical biotechnology: Gene therapy, stem cell therapy, regenerative medicine for medical biotechnology	1. blood, tissue and cell establishment 2. substances of human origin 3. advanced therapy medicinal products 4. translational medicine 5. quality and regulatory compliance

COST Members

Main Proposer: Spain
Network of Proposers:
Full Member: Czech Republic, Estonia, Finland, France, Greece, Hungary, Ireland, Latvia, Lithuania, Netherlands, Poland, Portugal, Spain

Main and secondary proposers: 12,5% YRI / 56,3% Women / 61,54% ITC

International Cooperation

International Partner: Canada, United States

CA24115
Connecting an INternational Network of Academic Manufacturers of ONcoimmunotherapies
(OC-2024-1-27314)

SUMMARY
CAR-T cell therapy represents a breakthrough in cancer treatment but faces challenges in accessibility, standardization, and expertise across Europe. Improvement of health outcomes and addressing inequalities in advanced therapy medicinal products (ATMPs) are major European challenges according to European Medicines Agency (EMA).
Currently, CAR-T manufacturing, regulatory, research and clinical capabilities are unevenly distributed, particularly in Inclusiveness Target Countries (ITCs). The urgency stems from the growing demand for cutting-edge therapies.

The main aim of CINNAMON is to establish a collaborative network of European centres to standardize, expand and optimise CAR-T cell therapy expertise. This involves promoting equitable access to these therapies, fostering innovation in ATMPs, and providing comprehensive training programs for scientists, innovators and clinicians, particularly in (but not limited to) ITCs. CINNAMON will assemble a multidisciplinary team that will bridge gaps in knowledge and technology, thereby improving the overall quality and reach of CAR- T cell therapies.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Medical biotechnology: Gene therapy, stem cell therapy, regenerative medicine for medical biotechnology 2. Clinical medicine: Adaptive immunity 3. Clinical medicine: Oncology 4. Clinical medicine: Hematology	1. CAR-T therapy 2. Immunotherapy 3. Oncology 4. Cell manufacturing 5. Regulatory

COST Members
Main Proposer: Spain
Network of Proposers:
Full Member: Austria, Belgium, Bulgaria, Croatia, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Portugal, Spain, Switzerland, Türkiye

Main and secondary proposers: 27,5% YRI / 50,00% Women / 50,00% ITC

International Cooperation
Near Neighbour Country: Jordan, Lebanon, Morocco
International Partner: United States

Specific Organisations
European RTD Organisation: Foundation For Research And Technology - Hellas, Institute Of Computer Science

Industrial Dimension
SMEs: United States
Large companies: Estonia

CA24116
Multidisciplinary consortium to accelerate plant cell wall knowledge
(OC-2024-1-27350)

SUMMARY
The plant cell wall was one of the first biological objects observed under the microscope in the 17th century. While the knowledge of this complex and dynamic structure has come a long way, current gaps in the understanding prevent people from achieving the full potential of this important resource in agriculture, food, feed, bioenergy, and material science. This Action aims to bring together scientists from distant disciplines to overcome barriers in the understanding of the complex nature of cell walls. More than ever, holistic and collaborative approaches are required to gain a deeper knowledge of cell wall composition, structure, biomechanics, and orchestration with other cellular activities.
Multidisciplinary cooperation can help to identify and overcome current research bottlenecks, as well as improve research methods in cell wall visualization, analysis, computation and modelling. The aim of this Action is to propose strategies to address gaps in the knowledge, start building data and knowledge-based infrastructure on the topic, and enhance multidisciplinary research efforts through effective networking and collaboration. Plant cell wall research will be defragmented through cooperation, mobility, and the formation of a common language to form a modern research community. This Action will provide COST Member States with a competitive advantage, helping the EU to achieve the objectives set out in the Green Deal and European Research Area.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Biological sciences: Plant biology, Botany 2. Biological sciences: Biological systems analysis, modelling and simulation 3. Biological sciences: Biophysics 4. Computer and Information Sciences: Machine learning algorithms	1. plant cell wall 2. mechanobiology 3. microscopy 4. modelling 5. multidisciplinarity

COST Members
Main Proposer: Czech Republic
Network of Proposers:
Full Member: Czech Republic, Denmark, France, Germany, Netherlands, Poland, Portugal, Slovakia, Sweden, Ukraine

Main and secondary proposers: 33,33% YRI / 46,7% Women / 50,00% ITC

CA24117
Innate lymphoid cells – the European quest for innovative cancer prognosis and immunotherapy
(OC-2024-1-27351)

SUMMARY
Since their discovery in the early 2010s, innate lymphoid cells (ILC) have been increasingly recognized for their roles in cancer pathogenesis, exhibiting both pro- and anti- cancer activities. However, the inconsistent use of phenotypic markers for their identification has hindered progress in utilizing ILC for cancer prognosis and therapy.

ILCquest aims to overcome this obstacle by standardizing methodologies for the identification, isolation, and cultivation of ILC, thus enabling accurate and reproducible quantitative and qualitative assessment of ILC during cancer pathogenesis, and design of novel ILC-targeting drugs.

Leveraging a comprehensive pan-European network of experts in basic and clinical immunology, systems biology, synthetic chemistry, biochemistry, computational modelling, medical biotechnology and clinical oncology, this initiative will create a unique collaborative platform - the European ILC Network. This network will facilitate consortia creation for joint research proposal applications and serve as a hub for training and capacity-building, promoting best practice, and elevating ILC research quality and reproducibility, that way ensuring sustained impact beyond the project's lifespan. Through close communication and dissemination of ILCquest results to policymakers, R&D professionals, and biotechnology and pharmaceutical companies, the use of ILC in cancer prognosis and therapy will be significantly advanced.

By integrating diverse expertise and embracing the fresh perspectives of early-career investigators and innovators, ILCquest aims to deepen our understanding of ILC in cancer. This systemic approach will pave the way for future clinical trials and support the development for novel cancer diagnostic tools and immunotherapies, addressing a critical and growing global health challenge.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Basic medicine: Innate immunity 2. Basic medicine: Cell differentiation, physiology and dynamics 3. Clinical medicine: Oncology 4. Basic medicine: Systems biology 5. Basic medicine: Biological basis of immunity related disorders	1. Innate lymphoid cells 2. Cancer 3. Immunotherapy 4. Prognostic markers 5. Tumor organoids

COST Members
Main Proposer: Serbia
Network of Proposers:
Full Member: Albania, Belgium, Croatia, Czech Republic, France, Germany, Greece, Hungary, Ireland, Italy, North Macedonia, Poland, Serbia, Slovenia, Spain, Sweden, Türkiye, United Kingdom

Main and secondary proposers: 26,47% YRI / 41,2% Women / 55,56% ITC

International Cooperation
International Partner: China, Japan

Industrial Dimension
SMEs: Belgium

CA24118
Advancing human brainstem MRI and its application in clinical research and practice
(OC-2024-1-27355)

SUMMARY
The brainstem, the phylogenetically oldest part of our brain, has traditionally been considered beyond the realm of standard brain imaging due to its small size and complex anatomical layout with a multitude of small structures. A particular vulnerability of brainstem structures characterizes the pre-symptomatic phase of many neurodegenerative conditions, rendering brainstem imaging an important tool for prodromal biomarkers.
Moreover, dysfunctions in brainstem activity characterize a wide range of psychiatric or neurophysiological disorders but can currently not be considered for personalized treatments. Recent advances in magnetic resonance imaging (MRI) now render the human brainstem accessible also in standard clinical imaging setups. However, knowledge of and the ability to image the brainstem is still relatively sparse in clinical brain research.
This disconnect between research developments and their clinical translation comes at a potentially enormous price, as assessing the brainstem in humans holds great promise for improved diagnoses and treatments of various pertinent health conditions in Europe. The Action will create a multidisciplinary network to facilitate and extend the use of brainstem MRI in clinical research and practice. It will a) establish a dialogue between methods development and clinical applications to define best practices suitable for clinical research and practice; b) train clinicians and young researchers to use advanced brainstem MRI; c) harmonize methods to establish big datasets across various clinical conditions; and d) establish the multidisciplinary research network necessary to support methods development for mapping currently uncharted areas of the brainstem and establishing new and reliable brainstem MRI biomarkers.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Basic medicine: Neuroimaging and computational neuroscience 2. Clinical medicine: Neurological disorders (e.g. Alzheimer's disease, Huntington's disease, Parkinson's disease) 3. Basic medicine: Neuroanatomy and neurophysiology 4. Clinical medicine: Psychiatric disorders	1. Magnetic Resonance Imaging 2. Brainstem Mapping 3. Brainstem disorder 4. Prodromal Neurodegeneration

COST Members
Main Proposer: Austria
Network of Proposers:
Full Member: Austria, Bulgaria, Croatia, Czech Republic, Germany, Greece, Hungary, Netherlands, Poland, Portugal, Romania, Türkiye, United Kingdom

Main and secondary proposers: 50,00% YRI / 53,8% Women / 69,23% ITC

International Cooperation
International Partner: Australia, Mexico, United States

Specific Organisations
EU Institutions, Bodies, Offices and Agencies (EC/EU): university of Padova
International Organisation: University of Melbourne

Industrial Dimension
SMEs: Poland

CA24119
Cultural Property Protection for All
(OC-2024-1-27362)

SUMMARY
The discovery of a message stating "With the trafficking of works of art we support our family" in the hideout of Mafia Boss Messina Denaro, who was arrested after 30 years on the run, highlights the strong link between art trafficking and organized crime. Although it is difficult to quantify the total illegal revenues due to the challenge of detecting and monitoring these activities, criminals continue to profit from the illicit trade of cultural artifacts, depriving humanity of valuable archaeological insights and pieces of our shared heritage. This problem is not confined to any specific region or failed-state environment; it is a widespread issue affecting many EU Member States. Despite some sporadic initiatives, a comprehensive approach involving all stakeholders is essential but has yet to be fully realized.

To address this gap, this Action aims to build a network of excellence that will integrate, harmonize, and disseminate existing knowledge while developing innovative services and tools. This will enhance knowledge accessibility and Cultural Property Protection across Europe and beyond. CPP4All will consist of several Working Groups that will coordinate activities related to technological innovations, awareness-raising, legislative gaps, and policy-making.

To achieve these objectives, the Action has brought together a diverse group of professionals from various disciplines (archaeology, engineering, law, social science, and humanities) and sectors (Academia, Industry, Research, Civil society, and the Public sector). The initiative will expand to include COST countries, International Partner Countries, and Near Neighbor Countries, ensuring gender balance and promoting the active participation of young researchers and innovators.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. History and Archeology: Preservation of cultural heritage 2. Arts: Preservation of cultural heritage 3. Law: International law	1. Illicit trade in Cultural goods 2. Illegal archaeological excavations 3. Provenance and authenticity 4. Art and heritage policy

COST Members
Main Proposer: Cyprus
Network of Proposers:
Full Member: Albania, Armenia, Bosnia and Herzegovina, Cyprus, Finland, France, Germany, Greece, Hungary, Italy, Montenegro, Netherlands, North Macedonia, Norway, Portugal, Spain, Switzerland, Türkiye, Ukraine, United Kingdom

Main and secondary proposers: 9,67% YRI / 38,7% Women / 55,00% ITC

International Cooperation
Near Neighbour Country: Egypt

Industrial Dimension
SMEs: Greece

CA24120
Sustainable Thermoelectrics European Network
(OC-2024-1-27397)

SUMMARY
The strategies outlined in the European Green Deal and the EU Action Plans on Critical Raw Materials and the Circular Economy highlight the need for an sustainable development of renewable energy ecosystems and the efficient use of resources to promote a decarbonized society. Thermoelectric (TE) technology is regarded as alternative and environmentally friendly technology for harvesting and recovering heat, which is directly converted into electrical energy, as well as for cooling, heating and hybrid applications. The TE technology indeed holds significant potential for sustainable energy practices and the integration of the TE systems could lead to a new era of energy efficiency and contribute substantially to the EU energy sustainability efforts. Although the range of applications that can benefit from the use of devices based on this technology is very wide, there is still a supply chain to be developed. SUSTENET will address this issue by accelerating collaborative interdisciplinary knowledge generation and engagement with industrial partners, maximizing impact through knowledge creation and transfer, conducting environmental impact assessments and promoting research excellence.
Additionally, SUSTENET will promote career development through workshops, seminars, and training schools, and will engage in extensive dissemination activities to amplify the impact of the outcomes. To achieve these goals, SUSTENET will be organized into 4 interconnected working groups:

WG1 - Scaling Sustainability through Artificial Intelligence WG2 - Applications and User Cases
WG3 - Business Development and Supply Chain WG4 - Dissemination, Communication and Training

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Materials engineering: Solid state materials 2. Materials engineering: Semiconductors, material growth, physical properties for materials engineering applications 3. Other engineering and technologies: Sustainability for other engineering and technologies 4. Materials engineering: Databases, data mining, data curation, computational modelling 5. Physical Sciences: Semiconductors, material growth, physical properties (theory)	1. Thermoelectric Technology 2. Renewable Energy Ecosystems 3. Sustainable Development Goals 4. Decarbonized society 5. Knowledge Sharing

COST Members
Main Proposer: Portugal
Network of Proposers:
Full Member: Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Türkiye, Ukraine, United Kingdom

Main and secondary proposers: 17,24% YRI / 37,9% Women / 52% ITC

International Cooperation
International Partner: Japan, South Korea, United States

Industrial Dimension
SMEs: Belgium, Denmark, Germany, Norway, Poland, Portugal
Large companies: Italy, Netherlands, Portugal, Spain

CA24121
Knowledge Graphs in the Era of Large Language Models
(OC-2024-1-27398)

SUMMARY

Knowledge Graphs (KGs) have gained attention due to their ability to represent structured and interlinked information. KGs represent knowledge in the form of relations between entities, referred to as facts, typically grounded in formal ontological models. Such machine-readable formats enable AI systems to make decisions using clear and verifiable data. Consequently, KGs have become essential elements in web search engines, recommendation systems, etc. Large Language Models (LLMs) have revolutionized the landscape of AI and are widely utilized in various NLP tasks such as natural language understanding, question answering, etc. Despite their remarkable performance, LLMs suffer from some significant drawbacks. First, they are trained on general-purpose data and have lower performance in domain-specific tasks and low-resource languages. Secondly, they often reflect societal biases present in training data, which can result in biased outcomes. Third, LLMs sometimes produce inaccurate or made- up information, termed "hallucinations". Finally, understanding the decision-making process of LLMs is challenging and their outputs may lack consistency. A potential solution to all these problems is to integrate LLMs with KGs, since KGs
can provide factual information and the ability to perform reasoning. This would boost the LLM's domain-specific reasoning, and interpretability, and mitigate biases and hallucinations. A notable challenge with KGs is their requirement for frequent updates, usually performed by processing and integrating information from vast textual datasets, LLMs can aid in generating and refining KGs.
Therefore, combining LLMs and KGs
offers a promising opportunity to advance both technologies and represents a pivotal challenge in the contemporary research landscape.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Computer and Information Sciences: Artificial intelligence, intelligent systems, multi agent systems	1. Large Language Models 2. Knowledge Graphs 3. Machine Learning 4. Deep Learning

COST Members

Main Proposer: Italy
Network of Proposers:
Full Member: Armenia, Austria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Netherlands, North Macedonia, Poland, Portugal, Romania, Slovenia, Sweden, Switzerland, Ukraine, United Kingdom

Main and secondary proposers: 25,80% YRI / 25,8% Women / 50,00% ITC

Industrial Dimension

SMEs: Slovenia
Large companies: Ireland, Italy

CA24122
multiscale Stochastics, Patterns, and Analysis of Combinatorial Environments
(OC-2024-1-27431)

SUMMARY
Multiscale systems, where intricate dynamics arise from the interplay of interactions across various scales, are pervasive in nature and society. sPACE seeks to establish a rigorous mathematical foundation for understanding and analyzing them.

By focusing on both theoretical foundations and real-world modeling, we will explore discrete, continuous, and hybrid systems. We will advance the understanding of large- scale and long-time behavior of both natural and synthetic systems with different levels of geometry and/or randomness.

We will apply our framework to real-world phenomena, particularly in materials science. We will bring together leading research groups and, thus, foster an interdisciplinary approach. This will enable us to investigate a wide range of linear and nonlinear models and to address challenges such as network transportation, biological systems, and especially, microstructure optimization in materials science.

mSPACE will bridge the gap between mathematical concepts and practical applications. By uniting researchers from diverse fields, we aim to advance fundamental research, foster knowledge transfer, and drive long-term breakthroughs. Our collaborative approach will strengthen the European research landscape and benefit society.

We will address imbalances in research activity by committing to adequate and fair representation of female and junior researchers in key roles of the Action. We will also prioritize engagement with stakeholders from regions with lower research output. Through COST's educational programs, we will proactively include these participants in our network. Furthermore, we will trigger connections with non-academic entities and catalyze collaborations between European laboratories and startups focused on the green transition.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Mathematics: Analysis 2. Mathematics: Geometry 3. Mathematics: ODE and dynamical systems 4. Mathematics: Theoretical aspects of partial differential equations	1. multiscale analysis 2. non-smooth analysis and discrete analysis 3. random geometry and applications to materials science 4. spectral geometry 5. gradient flows

COST Members
Main Proposer: Germany
Network of Proposers:
Full Member: Austria, Belgium, Croatia, Czech Republic, Denmark, France, Germany, Hungary, Italy, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Türkiye, Ukraine, United Kingdom

Main and secondary proposers: 56,81% YRI / 52,3% Women / 50,00% ITC

Specific Organisations
EU Institutions, Bodies, Offices and Agencies (EC/EU): Riga Technical University

Industrial Dimension
SMEs: Italy, Poland, Ukraine
Large companies: France

CA24123
Extended Reality Neurorehabilitation of Spatial Neglect and Related Disorders After Brain Injury
(OC-2024-1-27433)

SUMMARY
This COST Action addresses the important need for improving health and function in a large group of people with acquired brain injuries (ABI) by leveraging extended reality (XR) technology for personalised and cost-effective neurorehabilitation of spatial neglect (SN) and related disorders. Extended reality, an umbrella term for virtual, mixed, and augmented reality, offers exciting new possibilities for assessment and treatment of SN, a common cognitive disorder after ABI. Individuals affected by SN pay no or insufficient attention to the side of space opposite to the injured brain hemisphere. SN independently predicts prolonged hospitalisation, poor rehabilitation outcomes, and slows recovery. Thus, SN constitutes a substantial burden for the individual, their caregivers, and health services. Conventional assessment and treatment of SN have insufficient diagnostic accuracy and efficacy.

Advances in XR technology allow for combined cognitive-motor assessment and treatment that is costeffective and reduce the impairment of ABI survivors and the financial burden to society. XR neurorehabilitation will improve the assessment of SN and related disorders (differential diagnostics) and individually tailored treatment (precision medicine) to increase specificity and intensity of neurorehabilitation across the continuum of care, including self- and telerehabilitation. This collaboration of experts such as researchers, clinicians, developers, patients and caregivers will result in a platform for sharing knowledge, defining XR guidelines, promoting coordinated research projects and increasing the technical readiness level of XR neurorehabilitation. The Action will drive the technological and scientific development in XR applications for neurorehabilitation and contribute to positioning the EU as a major player in health technologies.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Psychology: Neuropsychology 2. Clinical medicine: Clinical neurology 3. Medical engineering: Medical engineering and technology 4. Medical engineering: Databases, data mining, data curation, computational modelling	1. Brain injury 2. Spatial neglect 3. Extended reality 4. Neuropsychology 5. Neurorehabilitation

COST Members
Main Proposer: Denmark
Network of Proposers:
Full Member: Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Germany, Greece, Iceland, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Serbia, Spain, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 41,81% YRI / 60,00% Women / 55,00% ITC

International Cooperation
International Partner: Canada, Ecuador, United States

Industrial Dimension
Large companies: Czech Republic

CA24124
Network for the Advancement of Neutropenia Research and Patient Support
(OC-2024-1-27439)

SUMMARY
Chronic Neutropenia (CNP) is a rare disorder characterized by persistently low absolute neutrophil counts and may occur as idiopathic entity or as a manifestation of a wide spectrum, mild to life-threatening, congenital or acquired, diseases. The principal challenge of the **Network for the Advancement of Neutropenia Research and Patient Support** (Neutro-NARPS) is to establish a multi-disciplinary consortium of top-level European and International experts and young investigators with high interest in CNP from the fields medicine, molecular biology, bioinformatics and computational biology. These partners will work in close collaboration with patient Registries and Organizations, biotech and pharmaceutical companies, the European Haematology Association, and Competent Authorities to bridge the gap between basic research, translational medicine, and clinical practice. The Action's network will focus on (a) the understanding of the pathogenesis and natural history of CNP, (b) improvement of diagnosis, (c) development and translation to the clinic of novel, repurposed or targeted treatment approaches including gene therapy, and (d) evaluation of the effect of the disease and treatment on patients' Quality of Life (QoL). Neutro-NARPS envisions elucidating the pathogenetic mechanisms particularly associated with newly recognized CNP entities, investigating the role of nutrition and inflammation on disease initiation and evolution, identifying biomarkers for targeted therapies, and enhancing diagnostic and prognostic precision by applying machine learning (ML) technologies. The Action also aims to facilitate the translation of novel and potentially curative therapies from bench-to-bedside and to improve QoL by developing novel tools for the evaluation of patient reported outcomes (PROs).

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Clinical medicine: Hematology	1. Neutropenia 2. Congenital and Acquired Neutropenia 3. Drug-induced Neutropenia 4. Machine Learning 5. Quality of life

COST Members
Main Proposer: Greece
Network of Proposers:
Full Member: Albania, Armenia, Austria, Belgium, Bosnia and Herzegovina, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Germany, Greece, Italy, Malta, Moldova, Montenegro, Netherlands, North Macedonia, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Türkiye, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 40,29% YRI / 49,3% Women / 64,29% ITC

International Cooperation
Near Neighbour Country: Egypt
International Partner: United States

Specific Organisations
International Organisation: SCNIR an der Medizinischen Hochschule Hannover

Industrial Dimension
SMEs: Austria, Greece
Large companies: Portugal

CA24125
Cultural Heritage in Crisis. Transdisciplinary Assessment of Legal and Regulatory Frameworks
(OC-2024-1-27487)

SUMMARY
CRICULT is an initiative aimed at safeguarding cultural heritage during times of crisis. Cultural heritage often bears the brunt of various crises, be they human-made or caused by natural disasters. CRICULT seeks to create transdisciplinary research networks to enhance our understanding of how crises impact the cultural heritage sector and, most importantly, to develop sound policy proposals for its protection.
In the past, research and teaching on cultural heritage security during crises have been fragmented and sparse. CRICULT aims to change this by uniting experts from diverse backgrounds, each offering unique perspectives on the subject. The way we perceive, and address crises is significantly influenced by disciplinary and cultural viewpoints. The examination of a wide range of crises affecting cultural heritage will be conducted through six dedicated Working Groups. These crises encompass trafficking of artifacts, climate change and natural disasters, threats to intangible heritage, crises arising from warfare, historical injustices, forced migration, and issues related to overtourism and heritage neglect.
CRICULT's core objective is to create comprehensive crisis and solution matrices. They will encompass a wide range of potential factors that can lead to crises and the methods to identify them. Subsequently, we'll identify potential solutions for crisis situations and compile them into a solutions matrix to be used for research and policy formulation.
The success of CRICULT hinges on the collective efforts of an international, interdisciplinary team comprising both Early Career and experienced researchers. Its impact will extend beyond academia; external stakeholders, from non-academic circles will also be engaged.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Law: Legal theory, legal systems, constitutions, comparative law 2. Arts: Preservation of cultural heritage 3. Sociology: Anthropology, ethnology, cultural studies 4. Arts: History of art and history of architecture	1. cultural heritage law 2. comparative law 3. cultural security 4. heritage and emergency management 5. cultural heritage policy

COST Members
Main Proposer: Poland
Network of Proposers:
Full Member: Bulgaria, Cyprus, Denmark, France, Georgia, Germany, Hungary, Italy, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Switzerland, Türkiye, Ukraine, United Kingdom

Main and secondary proposers: 34,21% YRI / 60,5% Women / 59,09% ITC

International Cooperation
Near Neighbour Country: Palestine**
International Partner: United Arab Emirates, United States

Industrial Dimension
Large companies: United Kingdom

CA24126
Fostering Nature-Centred BioDESIGN to Explore regenerative futures
(OC-2024-1-27508)

SUMMARY
DESIGNAE aims to cultivate an interdisciplinary, nature-centered design paradigm for a regenerative future. It addresses global challenges through sustainable biodesign solutions, integrating knowledge from biology, material science, engineering,
chemistry, with design and law. The Action is organized into six Work Groups (WGs) focusing on biodesign observation, materials and technologies, computational approaches, practical application of nature-centered biodesign, and advancing ethical and regulatory discussions in this emergent field.

DESIGNAE explores cutting-edge technologies like nanotechnology and green biochemistry for applications in architecture, healthcare, and emerging fields. It investigates scaling potential by experimenting with at least two embryonic biodesign projects providing real-world insights into the challenges of implementation.

The network comprises 63 members from 21 countries, with 62% from Inclusiveness Target Countries (ITCs), fostering more inclusive collaborations. Over 30% of participants are Young Researchers and Innovators, forming a cornerstone of this Action, that will actively engage in carefully curated workshops, training schools, and Short-Term Scientific Missions defined across all WGs of the Action.

DESIGNAE prioritizes public engagement and open-access dissemination through peer- reviewed publications, a comprehensive website, social media presence, two international conferences, and a public exhibition. These initiatives aim to foster dialogue between the scientific community and the general public.

By transforming human-nature interactions and equipping a new generation with advanced biodesign skills, DESIGNAE aims to drive innovation that harmoniously integrates human living, technological progression, and natural systems. Ultimately, it strives to pave the way for a more sustainable and empathetic future, addressing critical global challenges through innovative, regenerative solutions that respect and enhance the natural world.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Mechanical engineering: Product design, ergonomics, mechanical engineering aspects of man-machine interfaces 2. Biological sciences: Ecology 3. Materials engineering: Characterization methods of materials for material engineering applications 4. Industrial biotechnology: Other bioproducts (products manufactured using biological material as feedstock) 5. Law: Legal aspects of environmental regulations and climate negotiations	1. biodesign solutions 2. material science and emerging technologies 3. interdisciplinary research 4. environmental ethics and regulation 5. ecosystem regeneration

COST Members
Main Proposer: Portugal
Network of Proposers:
Full Member: Austria, Croatia, Cyprus, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Latvia, Netherlands, North Macedonia, Poland, Portugal, Serbia, Slovenia, Spain, Türkiye, Ukraine, United Kingdom

Main and secondary proposers: 33,33% YRI / 52,4% Women / 61,90% ITC

Specific Organisations
EU Institutions, Bodies, Offices and Agencies (EC/EU): Riga Technical University

Industrial Dimension
SMEs: Cyprus, Netherlands

CA24127
Action Pan European Commission on Photoantimicrobial Testing
(OC-2024-1-27509)

SUMMARY
Drug discovery, followed by preclinical and clinical testing, is a prerequisite for any new medicine. Approximately 15,000 new chemical entities are tested for each marketed drug. In vitro and in vivo drug discovery screens are therefore essential to provide robust, internationally standardised, and comparable data that can be used in hit-to-lead approaches.

Currently, novel antimicrobial strategies are needed, as newly approved antibacterial drugs have limited innovation and thus restricted clinical benefit over existing treatments. Photodynamic inhibition (PDI) therapy -utilizing the synergistic effect of drugs and light- is such an innovative broad-spectrum approach according to WHO criteria. Promising in vitro and in vivo studies show the potential, but PDI treatments are not recognised by pharmaceutical companies and are rarely part of university curricula. As a result, PDIs suffer from low awareness and high levels of scepticism. In addition, preclinical results from the community are difficult to compare due to a lack of standardised protocols.

PanEuCOPT, as a pan-European initiative, aims to bring together the leading European photobiologist with their medical colleagues and pharmaceutical as well as technical companies to generate a united force allowing the implementation of photodynamic inhibition. The COST action PanEuCOPT is planned over four years and is based on four pillars. PanEuCOPT will realize in an agile manner i) standardized testing protocols, ii) irritation device guidelines, iii) education, and iv) terminology. The vision of PanEuCOPT is pushing the PDI towards clinical studies/ EMA approvements so that a functional alternative to the prescription of classic antibiotics can be established.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Chemical engineering: Pulp and paper 2. Medical engineering: Medical laboratory technology (including laboratory samples analysis diagnostic technologies) 3. Health Sciences: Infectious diseases 4. Biological sciences: Microbiology 5. Chemical sciences: Photochemistry	1. Photoantimicrobial 2. Testguideline 3. Photodynamic inhibition 4. antibacterial photodynamic therapy

COST Members
Main Proposer: Austria
Network of Proposers:
Full Member: Austria, Croatia, Italy, Lithuania, Poland, Portugal, Slovakia, Spain, United Kingdom

Main and secondary proposers: 34,61% YRI / 61,5% Women / 55,56% ITC

International Cooperation
International Partner: Argentina, Chile

Industrial Dimension
SMEs: United Kingdom

CA24128
European Network to Advance the Development and Implementation of Vocal Biomarkers
(OC-2024-1-27512)

SUMMARY
The recent emergence of Artificial Intelligence (AI) methods and audio signal processing techniques open new perspectives on the use of voice to detect or monitor diseases. The vocal biomarker research field is booming but is facing, like other AI-driven fields, a reproducibility and generalisability crisis. To move this promising field of research forward, there is an urgent need to develop a common research framework in Europe, with standardization principles and definitions of good practices and guidelines to help it reach its full potential. A multidisciplinary approach is necessary to tackle this complex task impacting all stakeholders in healthcare virtually.

eVoiceNet aims to establish Europe as a leader in vocal biomarkers, create a collaborative and multidisciplinary network, and facilitate knowledge sharing, standardisation, and the development of privacy-aware solutions, by creating an international network of clinicians, AI experts, speech/voice processing specialists, voice pathologists, privacy/data protection experts, go-to-market specialists, venture capitalists and other providers of financial resources, patients organisations, policymakers as well as industrial partners and other stakeholders (end users, regulators, and other decision-makers), to overcome the major challenges and boost the integration of voice technologies into clinical practice.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Health Sciences: Health services, health care research 2. Electrical engineering, electronic engineering, Information engineering: Statistical data processing and applications using signal processing (eg. speech, image, video) 3. Computer and Information Sciences: Artificial intelligence, intelligent systems, multi agent systems 4. Clinical medicine: Integrative and complementary medicine (alternative practice systems) 5. Clinical medicine: Databases, data mining, data curation, computational modelling	1. Digital Health 2. Audio Signal Processing 3. Telehealth and remote patient monitoring 4. Personalised Healthcare 5. Vocal biomarkers

COST Members
Main Proposer: Luxembourg
Network of Proposers:
Full Member: Armenia, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, North Macedonia, Poland, Portugal, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom

Main and secondary proposers: 47,61% YRI / 48,8% Women / 54,84% ITC

International Cooperation
Near Neighbour Country: Tunisia
International Partner: Burkina Faso, Canada, Colombia, United States

Industrial Dimension
SMEs: Czech Republic, Estonia, Germany, Slovenia, Sweden, Tunisia
Large companies: Greece

CA24129
European Media and Born-digital Art Conservation and Knowledge Network
(OC-2024-1-27513)

SUMMARY
Since the 1960s, European artists have been experimenting with emerging technologies, incorporating film, video, sound, slides, software and networked environments into their art production. Acknowledging media art's unique significance within the intersecting histories of art, technology and society, a diversity of museums, archives and art organisations across Europe have actively collected media art for decades. However, Europe's heritage institutions are struggling to maintain their media art collections, as they lack critical access to specialized conservation research, expertise, practice and infrastructure. For the last 15 years, the European heritage field has been addressing its growing need for specialized conservation expertise by establishing academic university curricula in media conservation, and by dedicating specialized conservation staff to media art collections.

However, the new expertise is still relatively scarce and scattered across disconnected institutions and small university departments. Existent knowledge, tools and practices remain siloed and inaccessible, and there is no shared understanding of current practices across Europe. With the goal to avert the preservation crisis, the ambitious pan-European **EMBARK (European Media and Born-Digital Art Conservation and Knowledge Network)** aims to strengthen Europe's ability to safeguard its collections of media art–an overlooked and underestimated segment of Europe's cultural heritage and research infrastructure–for current and future generations. EMBARK connects academic researchers, heritage professionals and relevant experts from the creative and technology industries, including conservators, art historians, anthropologists, curators, archivists, artists, digital preservationists, information and computer scientists, legal experts and engineers.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Arts: Preservation of cultural heritage	1. media art conservation 2. contemporary art conservation 3. media art heritage 4. digital cultural heritage 5. born-digital art

COST Members
Main Proposer: Germany
Network of Proposers:
Full Member: Austria, Bulgaria, Croatia, Cyprus, Czech Republic, France, Germany, Greece, Italy, Latvia, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain,
Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 21,95% YRI / 56,10% Women / 60,00% ITC

Industrial Dimension
SMEs: France, Poland, Romania, Spain
Large companies: Türkiye

CA24130
Psychedelic renaissance: turn on, tune in and drop in
(OC-2024-1-27517)

SUMMARY
Given the current stagnation in developing new treatments based on traditional drugs and mechanisms in the neurosciences, the resurgence of psychedelics has opened up a new, rapidly expanding field of research into consciousness, mental disorders and their treatment. Psilocybin, LSD, DMT or MDMA have already shown efficacy in the treatment of depression, anxiety and addiction. Recent advances in neuroimaging have made it possible to understand in detail the processes behind their unique effects, and groundbreaking
discoveries about the therapeutic effects of psychedelics are finding their way into the world's most prestigious journals. Despite all this, academic psychedelic research still suffers greatly from a lack of coordination at the international level in the areas of developing new molecules and formulations, understanding the underlying neurobiology from the molecular level to neuroimaging, conducting multicentre academic clinical trials, and sharing and standardising data to generate big data. At the same time, it is crucial to address the necessary adjustments to outdated regulatory frameworks to enable their wider therapeutic use. The current project aims to network academic scientific institutions from all these research areas with the pharmaceutical industry and organisations working on the reclassification of psychedelics.

The aim is to create a platform for psychedelic research that will pave the way for the submission of large collaborative research projects, multicentre academic clinical trials at European level, open access data sharing, big data analysis and the conditions for the implementation of psychedelics in mental health care.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Clinical medicine: Psychiatry 2. Psychology: Neuropsychology 3. Biological sciences: Biological systems analysis, modelling and simulation 4. Chemical sciences: Molecular architecture and structure 5. Medical biotechnology: Databases, data mining, data curation, computational modelling	1. Psychedelic 2. Mental disorders 3. Neurobiology research 4. Academic clinical trials 5. Open source data sharing

COST Members
Main Proposer: Czech Republic
Network of Proposers:
Full Member: Belgium, Bosnia and Herzegovina, Croatia, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Lithuania, Malta, Netherlands, Poland, Portugal, Spain, Sweden, Switzerland, Ukraine, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 31,32% YRI / 49,40% Women / 50,00% ITC

Specific Organisations
International Organisation: International Pharmaco EEG Society

Industrial Dimension
SMEs: Germany, Spain

CA24131
European Network for radiation-detection based Research and Innovation addressing increasing societal CHallenges
(OC-2024-1-27525)

SUMMARY
The ENRICH (European Network for radiation-detection based Research and Innovation addressing increasing societal CHallenges) COST Action aims to build a **European network of researchers and stakeholders working on radiation-detection based experiments and applications.**

Numerous researchers work with photon detection daily, applying it in astrophysics, nuclear and atomic physics, material science, data analysis, simulations, detectors, electronics, optics, medicine, cultural heritage, food safety, fraud detection and others. However, **the community remains fragmented,** with sub-communities (e.g., nuclear physics, synchrotron users) often working in silos. This **lack of cross-disciplinary collaboration limits knowledge exchange** and the transfer of technologies from large- scale facilities to smaller labs and industries.

ENRICH seeks to unite these diverse communities, allowing **collaboration across sectors and disciplines** to accelerate scientific and technological advances in radiation detection.

Such a collaboration will, first of all, focus on **pressing scientific questions** related to radiation detection in research fields like fundamental physics, nuclear and astrophysics, data analysis, and X- and Gamma-ray spectroscopy or imaging.

In addition, the scientific outcomes of ENRICH's activities will enhance **Europe's industrial competitiveness** by contributing to tackling key societal and technological challenges Europe faces, such as energy autonomy, food security, faster medical diagnostics, and more. These challenges require, indeed, **advances in analytical sciences**, with radiation-based technologies playing a crucial role across various sectors of science and society.

ENRICH will be **grounded on inclusiveness**, and special attention will be paid to young researchers, those with caregiving responsibilities, and participants from ITC countries, through mentoring programs, training in proposal submissions, and special initiatives.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Instrumentation - telescopes, detectors and techniques	1. Radiation Detection based applications 2. X-ray and Gamma-ray detectors and electronics 3. Imaging and spectroscopic applications 4. Medical and societal applications 5. Optics, photon sources and MC simulations

COST Members
Main Proposer: Italy
Network of Proposers:
Full Member: Albania, Belgium, Croatia, Cyprus, Czech Republic, France, Germany, Greece, Italy, Latvia, Lithuania, Netherlands, North Macedonia, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom
Partner Member: South Africa

Main and secondary proposers: 20,37% YRI / 40,70% Women / 59,09% ITC

Specific Organisations
European RTD Organisation: Charles University, Faculty of Mathematics and Physics
International Organisation: European Synchrotron Radiation Facility

Industrial Dimension
SMEs: Germany, Sweden, Switzerland, United Kingdom
Large companies: Czech Republic, Germany

CA24132
Accelerating Innovation and Development of European Microbial Foods
(OC-2024-1-27546)

SUMMARY
With the rapid population growth, demand for food is quickly increasing and meeting protein supply requirements is becoming a global problem. Plant proteins have been proposed as alternatives to animal proteins, but their production needs big extensions of arable land and demands huge volumes of freshwater which results in considerable environmental issues. A promising solution are microbial protein for food and feed applications.

This COST action, entitled Accelerating Innovation and Development of European Microbial Foods (Mic2Food), aims to facilitate the development of new microbial foods for the European market. Mic2Food will create a unique network with a balanced geographic distribution to tackle scientific and technological challenges to make microbial food substitutes a reality. Collectively, Mic2Food aims to:

(1) isolate and identify new, non-pathogenic microorganisms with desired properties for their application as microbial foods, including their protein content and lipid composition, and micronutrient content, and optimise their production properties in line with food regulations.
(2) develop and upscale their production processes from lab scale over pilot scale to industrial scale.
(3) establish downstream processing (DSP) (e.g. removal of RNA) and formulations to produce appealing products that can be commercialised.
(4) monitor regulatory changes for microbial food and facilitate commercialisation of microbial food products in Europe and worldwide.
(5) quantify the nutritional and mechanical properties of the microbial strains and food products in a standardised way throughout the development.
(6) accelerate the translation from academic research to tangible products through close collaboration with established industrial partners.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Biological sciences: Microbiology 2. Industrial biotechnology: Food microbiology 3. Industrial biotechnology: Industrial bioengineering, bioreactors 4. Agricultural biotechnology: Sustainable production 5. Agricultural biotechnology: Biotechnology (non-medical)	1. Microbial Food 2. Biomass fermentation 3. Alternative Protein 4. Up-scaling 5. Food Chemistry

COST Members
Main Proposer: United Kingdom
Network of Proposers:
Full Member: Belgium, Denmark, Estonia, Georgia, Germany, Greece, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Romania, Spain, Sweden, Türkiye, United Kingdom

Main and secondary proposers: 36,11% YRI / 47,20% Women / 52,94% ITC

Specific Organisations
European RTD Organisation: INRAE Centre Ile-de-France Jouy-en-Josas - Antony

Industrial Dimension
SMEs: Denmark, Spain
Large companies: Netherlands, Sweden, Türkiye

CA24133
European network for animal evolutionary immunology: interlinking laboratory and wildlife infection biology
(OC-2024-1-27547)

SUMMARY
Infectious diseases pose serious threats to human health, to food security in agriculture, and to the conservation of vulnerable wildlife. These challenges can be addressed through novel strategies involving evolutionary applications in immunology. However, the current lack of personal connections between evolutionary ecologists and immunologists hampers development of such promising interdisciplinary solutions. EVIM-NET will bridge this gap via establishing a European collaborative research network in evolutionary immunology.
Through this innovative framework, the Action will construct conceptual unity between the currently dissociated fields and set up standard methodologies and procedures crucial for effective interdisciplinary research and knowledge transfer. EVIM-NET interlinks scientists and practitioners with top expertise in i) immunogenomics and bioinformatics (comparative genomics, transcriptomics, proteomics and structural bioinformatics), ii) evolutionary analyses (positive / balancing selection testing, phylogeny-phenotype matching, convergent evolution), iii) classical “hardcore” immunology (functional in vitro protein variant testing, analysis of immunological regulation, immunomonitoring, cellular phenotyping), and iv) animal and veterinary science to explore immunogenetic and molecular phenotypic diversity effects on immune responses across a wide variety of domestic, as well as wild animal species and populations.

The Action aims to 1. define principles and means for genome-based evolutionary prediction of molecular effects on variation in immune function, 2. develop standards and toolkits for immune phenotype variation testing, and 3. improve access to skill-oriented training in immune phenotype prediction for Young Researchers and Innovators.

Societal benefits and future applications will be achieved through dissemination of the results to key stakeholders and policy makers: veterinary therapeutics manufacturers, diagnostic laboratories, wildlife conservation bodies, and breeder’s societies.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Biological sciences: Systems evolution, biological adaptation, phylogenetics, systematics 2. Biological sciences: Biological basis of immunity related disorders 3. Biological sciences: Genomics, comparative genomics, functional genomics 4. Veterinary science: Databases, data mining, data curation, computational modelling 5. Animal and dairy science: Prevention and treatment of infection by pathogens (e.g. vaccination, antibiotics, fungicide)	1. immunity evolution 2. ecoimmunology 3. biodiversity 4. molecular function prediction 5. immunological testing

COST Members
Main Proposer: Czech Republic
Network of Proposers:
Full Member: Austria, Belgium, Bosnia and Herzegovina, Croatia, Czech Republic, France, Germany, Greece, Hungary, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 33,33% YRI / 52,40% Women / 52,17% ITC

Specific Organisations
European RTD Organisation: INRAE Centre Ile-de-France Jouy-en-Josas - Antony; Institute of Food Safety, Animal Health and Environment BIOR

Industrial Dimension
SMEs: Croatia, Netherlands
Large companies: Czech Republic, Portugal

CA24134
Observatory of Innovative Strategies for Repurposing Terrain Vague
(OC-2024-1-27548)

SUMMARY
OBSERVISTA aims to innovate our approach to urban vacant spaces, commonly known as 'terrain vague', by creating a pan-European knowledge hub for innovative repurposing strategies. In an era of rapid urbanisation and environmental challenges, these overlooked spaces present unique opportunities for addressing pressing urban issues such as climate resilience, biodiversity loss, and social inequity. However, current approaches to terrain vague are fragmented across disciplines and sectors, limiting their potential impact.

This Action seeks to bridge these knowledge gaps by:

1) Mapping the diverse interpretations and types of terrain vague across Europe;

2) Analysing how different stakeholders interact with and transform these spaces;

3) Synthesising collective understanding of effective repurposing strategies;

4) Identifying critical areas for further research and innovation.

OBSERVISTA will establish a collaborative network infrastructure to achieve these goals, bringing together urban planners, ecologists, social scientists, artists, architects and community organisers from at least 10 European countries. The Action will facilitate knowledge exchange through a dynamic online platform, case study visits, and interdisciplinary training workshops and networking events. It aims to develop a common language around terrain vague, create best practice guidelines for repurposing projects, and train a new generation of researchers and practitioners in innovative approaches to urban vacant spaces. By linking academic research with on-the-ground initiatives, OBSERVISTA will generate actionable insights for stakeholders such as policymakers, urban designers, and community groups to catalyse a paradigm shift in how we perceive and utilise urban vacant spaces from neglected areas into valuable hubs of social inclusion, health restoration, ecological regeneration, and climate adaptation.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Social and economic geography: Spatial development, land use, regional planning 2. Social and economic geography: Social and industrial ecology 3. Health Sciences: Public and environmental health 4. Arts: Visual arts	1. Terrain Vague 2. Landscape Ecology 3. Applied Ontology 4. Community of Practice 5. Participatory Design

COST Members
Main Proposer: United Kingdom
Network of Proposers:
Full Member: Cyprus, Greece, Hungary, Ireland, Italy, Portugal, Romania, Serbia, Sweden, United Kingdom

Main and secondary proposers: 32,60% YRI / 56,50% Women / 60,00% ITC

International Cooperation
Near Neighbour Country: Egypt

Specific Organisations
European RTD Organisation: University of Patras

Industrial Dimension
SMEs: Cyprus, Ireland, United Kingdom
Large companies: Italy, United Kingdom

CA24135
European Atmospheric Research LIdar COoperation on Science and Technology
(OC-2024-1-27550)

SUMMARY
EARLICOST action aims to deepen our understanding on atmospheric composition and improve the capabilities of atmospheric lidars to address critical gaps in aerosol characterization, temperature, and water vapor profiling. The vertical distribution of these key atmospheric variables provides crucial insights on air quality, public health, weather, and climate. In particular, aerosols are among the most significant drivers of climate change, and one of the largest sources of uncertainty in climate models which stems from their complex interactions with radiation and clouds. Thus, it is widely recognized that the spatiotemporal variability of aerosol properties plays a major role in numerous atmospheric processes that affect our lives. Despite breakthroughs in atmospheric lidar design and capabilities, achieved by independent research groups and the industry, there is still a need to facilitate knowledge-sharing and collaboration between the different communities. The EARLICOST action aspires to address this gap by fostering a collaborative network that brings together academic researchers, industry experts, policymakers, commercial and scientific end-users. Through this multidisciplinary approach, EARLICOST builds on and extends the current state of the art in lidar technology, seeks to harmonize methodologies across measurement networks, standardize aerosol, water vapor, and temperature lidar retrievals, and develop new techniques to improve the accuracy of atmospheric profiling monitoring. EARLICOST will play a pivotal role in advancing lidar technologies, fostering technological innovation and improved data-sharing practices, and will enhance the understanding of atmospheric processes, ultimately delivering broad societal benefits through more accurate climate predictions, environmental policies and enhanced air quality monitoring.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Environmental engineering: Remote sensing 2. Earth and related Environmental sciences: Meteorology, atmospheric physics and dynamics 3. Earth and related Environmental sciences: Atmospheric chemistry and composition 4. Earth and related Environmental sciences: Climatology and climate change 5. Environmental engineering: Air pollution	1. Atmospheric lidar 2. Technology and science 3. Cooperation and networking 4. Atmospheric profiling

COST Members
Main Proposer: Greece
Network of Proposers:
Full Member: Albania, Cyprus, Finland, France, Georgia, Germany, Greece, Italy, Netherlands, Poland, Portugal, Romania, Serbia, Spain, Switzerland, United Kingdom

Main and secondary proposers: 35,00% YRI / 42,50% Women / 50,00% ITC

International Cooperation
International Partner: Brazil, United States

Specific Organisations
European RTD Organisation: Institute of Methodologies for Environmental Analysis (IMAA) of the National Research Council of Italy (CNR); Institute of Methodologies for Environmental Analysis (IMAA) of the National Research Council of Italy (CNR); Institute of Methodologies for Environmental Analysis (IMAA) of the National Research Council of Italy (CNR)

Industrial Dimension
SMEs: France

CA24136
Interactions between Control Theory and Machine Learning
(OC-2024-1-27553)

SUMMARY
This Action will exploit the deep interconnections between Control Theory (CT) and Machine Learning (ML). It will boost applications of tools from CT to ML and vice versa, and explore the great applicative potential that can be released by combining these two rapidly evolving research areas. In particular, it aims to
(i) strengthen the control-theoretical foundations of ML methods,
(ii) leverage modern ML tools to tackle complex and high-dimensional CT problems,
(iii) develop hybrid and data-driven models for highly complex application scenarios,
(iv) transform theoretical results into software solutions and practical implementations in industry and society.

Bringing together participants from multiple fields (mathematical analysis, numerical mathematics, control engineering, computer science, data science, etc), the Action will foster interdisciplinary and cross-sector collaboration within a diverse group of experts from academia and industry. It will also combat fragmentation and communication barriers between the ML and CT communities, which often work in parallel on similar problems but using different terminology and tools, and without sufficient communication with each other. This will allow the Action to combine different approaches, creating synergies that will benefit both sides, and leading to progress in both theoretical investigations and applications.

Through the targeted transfer of knowledge and technology to the industrial sector, the Action will bring benefits to broader society. Focus will be given to implementation options in energy systems and personalised medicine, with the aim of improving the sustainability and environmental profile, as well as healthcare outcomes of European citizens.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Mathematics: Control theory and optimization 2. Computer and Information Sciences: Machine learning algorithms	1. high dimensional control problems 2. data driven modelling 3. neural networks 4. optimal control 5. reinforcement learning

COST Members
Main Proposer: Croatia
Network of Proposers:
Full Member: Croatia, Czech Republic, France, Germany, Italy, Montenegro, Poland, Portugal, Romania, Spain, Switzerland, Ukraine, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 44,44% YRI / 30,60% Women / 50,00% ITC

Industrial Dimension
SMEs: Croatia, Switzerland
Large companies: Czech Republic, Germany

CA24137
Literary multilingualism and social transformations in superdiverse societies

(OC-2024-1-27565)

SUMMARY

The COST Action 'Literary multilingualism and social transformations in superdiverse societies' (MultiLiLiTrans) is creating an innovative and robust network between academia (literary studies, comparative studies, translation studies, film and theatre studies), practitioners in education and artistic communities with the core aim of mainstreaming multilingualism in all its diverse aspects in European contexts and beyond.

Many structures of European societies (i.e. education, literary, theatre and film scenes) follow a monolingual paradigm which is not reflecting their multilingualism and superdiversity. Through the academic lens of literary multilingualism and broadening its application to characterise societies and understand societal challenges, MultiLiLiTrans aims at filling this gap. Enhancing academic and societal awareness of the importance and impact of multilingualism in our societies equals fostering social, cultural, scientific and economic equality and fairness and prevents marginalization, racism and unequal access to societal infrastructures.

The COST Action impacts the following three fields:

Research: MultiLiLiTrans questions, subverts and transforms outdated notions around national philologies and monolingualism from bottom-up with the aim of modelling innovative and creative structural patterns and of fostering changes which will outlive the Action.

Education: Literary multilingualism has still to become a central part within the field of education. MultiLiLiTrans contributes to making some radical changes to education shaped by monolingual structures.

Literary scene: Through close collaboration with practitioners their needs are identified, and innovative writing and translation practices will be fostered. Additionally, MultiLiLiTrans reflects practices surrounding literary awards, festivals and scholarships leading to the rethinking of current frameworks and the development of alternative models.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Languages and literature: Literary theory and comparative literature, literary styles 2. Languages and literature: Translation and interpretation 3. Educational sciences: Education: training, pedagogy, didactics 4. Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty 5. Sociology: Migration, interethnic relations	1. Literary Multilingualism 2. Social Transformations and Migration 3. Superdiverse Societies 4. Multilingual Education 5. Translation Practices

COST Members

Main Proposer: Ireland

Network of Proposers:

Full Member: Austria, Belgium, Czech Republic, Estonia, Germany, Greece, Hungary, Ireland, Italy, Slovakia, Slovenia, Switzerland

Main and secondary proposers: 0,00% YRI / 75.00% Women / 50,00% ITC

CA24138
EU-Resolution Biology Network
(OC-2024-1-27569)

SUMMARY
In 2021, governmental healthcare costs in the EU totaled €1,179 billion, accounting for 8.1% of GDP. Despite significant advances in understanding the mechanisms driving inflammatory diseases and the development of new therapeutics, the socio-economic burden of these conditions within the EU remains disproportionately high. This underscores the urgent need for more effective therapies to treat both acute and chronic inflammatory conditions.

In recent years, there has been a paradigm shift in our understanding of how inflammation resolves, with the discovery that its resolution is an actively regulated biochemical and cellular process. While our knowledge of these processes has expanded considerably, significant gaps remain in understanding the mechanisms that govern the resolution of inflammation. Bridging these gaps would not only enhance our understanding of fundamental biological processes but also offer insights into disease mechanisms and open new opportunities for treating inflammatory conditions by targeting the resolution pathways.

To address this gap, EU-RESOLVE aims to create a multidisciplinary, pan-European network of excellence in Resolution Biology. This network will bring together academics, clinicians, biotechnology companies, and other stakeholders. EU-RESOLVE will advance the understanding of the mechanisms that regulate the resolution of inflammation and accelerate the translation of these findings into more effective treatments for patients with inflammatory diseases.

EU-RESOLVE will achieve this by:

1. Consolidating fragmented expertise to foster synergy through the sharing of state- of-the-art knowledge and innovative techniques.
2. Providing cutting-edge and innovative training to build research and clinical capacity.
3. Establishing an open-access, integrated database to serve as an educational resource for the research and clinical communities.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Biological sciences: Biological basis of immunity related disorders 2. Biological sciences: Bioinformatics 3. Biological sciences: Biochemistry 4. Basic medicine: Phagocytosis and cellular immunity 5. Clinical medicine: Non-communicable diseases	1. Inflammation 2. pro-resolving mediators 3. disease mechanisms 4. resolution mechanisms 5. Immunology

COST Members
Main Proposer: United Kingdom
Network of Proposers:
Full Member: Albania, Armenia, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye, Ukraine, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 33,73% YRI / 57,20% Women / 56,41% ITC

International Cooperation
Near Neighbour Country: Kosovo*
International Partner: Singapore, United States

Specific Organisations
European RTD Organisation: Egas Moniz Health Alliance

Industrial Dimension
SMEs: France, Sweden, Ukraine
Large companies: Belgium, France, Germany, Norway, Spain, United Kingdom

CA24139
Superfluid Condensates in Astrophysics and Laboratory Experiments
(OC-2024-1-27605)

SUMMARY
Superfluidity is a striking phenomenon observed in many quantum fluids, which can flow without viscosity when cooled to low temperatures. Recent experimental advances allow us to study and visualise the complex flows of these systems in the presence of vorticity, and track the dynamics of quantum vortices far from equilibrium, both for bosonic and fermionic superfluids. Experiments with helium-4 and helium-3 allow the analysis of quantum turbulence on different scales, while cold atomic gases allow exquisite studies of single vortex dynamics in a variety of regimes, spanning the entire crossover from molecular Bose-Einstein condensates (BEC) to Bardeen-Cooper-Schrieffer (BCS) superfluids. Moreover, a growing body of theoretical and observational evidence suggests that nucleons in neutron stars are paired and form a fermionic superfluid, the dynamics of which is thought to be at the origin of the observed radio pulsar glitches. The next years will bring a wealth of data on neutron star dynamics, from new radio observatories such as the Square Kilometer Array (SKA), but especially from gravitational wave observations with next-generation detectors, like the planned European Einstein Telescope (ET). Direct laboratory analogues of superfluid neutron stars are now being studied with superfluids on rotating platforms, but this connection is neither systematically explored nor disseminated among the relevant scientific communities. SCALES will bring together novel laboratory experiments, emerging massive parallel simulations, and neutron star experts to kickstart this new avenue of superfluidity research and pave the way for new discoveries across different scales.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Superfluids (theory) 2. Physical Sciences: Transport properties of condensed matter (theory) 3. Physical Sciences: Ultra-cold atoms and molecules 4. Physical Sciences: Gravitational astronomy 5. Physical Sciences: Nuclear astrophysics (theory)	1. Superfluids 2. Neutron Stars 3. Quantum vortex dynamics 4. Quantum turbulence 5. Ultra-cold gases

COST Members
Main Proposer: Poland
Network of Proposers:
Full Member: Armenia, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Türkiye, Ukraine, United Kingdom
Partner Member: South Africa

Main and secondary proposers: 27,39% YRI / 27,40% Women / 53.57% ITC

International Cooperation
International Partner: Australia, United States

CA24140
One Health zoonotic Hepevirus Network
(OC-2024-1-27616)

SUMMARY
Zoonotic Hepeviruses, such as Paslahepevirus (HEV) and Rocahepevirus (RVHE) are a major health threat in Europe. Despite HEV is the main cause of viral acute hepatitis in the continent, most countries lack standard procedures since control is not supervised at either EU or governmental levels, not recognized as notifiable disease at the animal and human level. Furthermore, there is currently no common European scheme for efficient surveillance in animals and humans, harmonized molecular diagnostic protocols, or specific drugs or approved vaccines for HEV and RVHE. Consequently, the main challenge is to control the spread of zoonotic Hepeviruses to protect human health. The main objective of ONWARD is to create an interdisciplinary expert network to develop a comprehensive view of Hepevirus and its impact on human health to better manage and prevent the disease in Europe. The Action network will i) adopt a One Health approach for the comprehensive study of zoonotic Hepeviruses, ii) increase and promote HEV and RVHE virological and epidemiological data sharing, iii) promote the implementation of the screening and surveillance of zoonotic Hepeviruses, iv) foster the evaluation of clinical and therapeutic approaches, v) favour the implementation of control measures at the farm and food chain levels, and vi) establish the network as a counterpart of European health policy- makers. Because of the One Health integrative approach, the network integrates multidisciplinary experts on Hepeviruses covering the following fields: virologists, clinical microbiologists, animal health and food-safety researchers, veterinary practitioners, epidemiology and public health experts, medical doctors, and innovative tool designers.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Health Sciences: Infectious diseases 2. Health Sciences: Epidemiology 3. Veterinary science: Veterinary medicine (miscellaneous) 4. Animal and dairy science: Virology 5. Basic medicine: Virology	1. Hepevirus 2. Zoonoses 3. One Health 4. Hepatitis E 5. Rocahepevirus

COST Members
Main Proposer: Spain
Network of Proposers:
Full Member: Belgium, Bulgaria, Croatia, Finland, France, Germany, Hungary, Italy, Lithuania, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Türkiye, Ukraine, United Kingdom

Main and secondary proposers: 30,88% YRI / 52,90% Women / 59,09% ITC

Industrial Dimension
SMEs: United Kingdom

CA24141
Climatic Resilience Initiative for Pavement Infrastructure
(OC-2024-1-27631)

SUMMARY
Climate change exerts considerable impacts on the performance, integrity, resilience, and durability of pavements. The resulting impacts have far-reaching consequences for the safety, society, sustainability, economic viability, mobility, and reliability of pavement systems requesting a holistic convergent approach. This collaborative effort aims to understand the ramifications of climate change on pavements, optimize current standards and materials, and expedite the development of advanced methods to enhance the global resilience of pavement infrastructure. While the selection of materials holds utmost importance in the road industry, equal attention should be paid to the integrity of the pavement systems. Sustainable pavements should be pursued, considering that the detrimental effects of climate change can exacerbate distresses stemming from poor construction practices. It is thus essential to facilitate the integration of innovative technologies that monitor pavement construction and performance, taking into account the connection between pavement constituents, sustainability, climatic factors, and their lifespan. This holistic approach ensures a comprehensive understanding of climate change impacts and examines whether the employed practices align with sustainability goals. To foster inclusivity, equity, and geographic balance, CRIPI aims to provide access to developed and developing technologies for both ITC and non-ITC countries. CRIPI will serve as a platform for exchanging expertise. This platform will effectively disseminate knowledge related to new road design, monitoring, and performance, as well as the resilience and sustainability of pavements affected by climate change. By bringing together diverse stakeholders, CRIPI facilitates collaborative efforts toward overcoming the challenges posed by climate change in the realm of pavement infrastructure.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Civil engineering: Construction engineering 2. Civil engineering: Sustainable engineering, adaptation to long-term environmental changes	1. Pavement resilience 2. Climate change 3. Construction materials and designs 4. Innovative road infrastructure health monitoring 5. Sustainability

COST Members
Main Proposer: Belgium
Network of Proposers:
Full Member: Austria, Belgium, Croatia, Cyprus, Czech Republic, Estonia, France, Germany, Greece, Ireland, Italy, Lithuania, Netherlands, Poland, Portugal, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 40,69% YRI / 34,90% Women / 52,17% ITC

International Cooperation
International Partner: United States

Specific Organisations
International Organisation: Infrastructure Analytics Company

Industrial Dimension
SMEs: Belgium, Greece
Large companies: Greece, Poland, Sweden

CA24142
Precision Medicine for Cardiac Arrest
(OC-2024-1-27643)

SUMMARY
Out of hospital cardiac arrest (OHCA) is a major health problem occurring in individuals of all sexes, ethnicities, and socioeconomic positions. OHCA is responsible for approximately one third of deaths in people aged under 50 years, yet our understanding of OHCA in this age group is sparse. Evidence suggests that inherited cardiac diseases underlie a significant proportion of OHCA cases in younger people, but we do not fully know the distribution of causes of OHCA which makes treatment and management of OHCA victims challenging. The PREMEDICARE Action brings together a multi-disciplinary group of experts to better understand the causes of OHCA and its long-term effects with the aim of facilitating the development and adoption of precision medicine strategies to alleviate the burden of OHCA in people under 50-years throughout Europe. Members of the PREMEDICARE network will work together to develop standardised procedures for better recording of data to enable identification of at-risk individuals across Europe, better understand geographical differences in the treatment of young OHCA patients and facilitate better management of long-term limitations linked to OHCA survival. The ultimate goal of the Action is to establish the tools and resources necessary to support the uptake and use of precision medicine approaches for the treatment and management of OHCA in the clinic.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Clinical medicine: Cardiac and Cardiovascular systems 2. Clinical medicine: Critical care medicine and Emergency medicine 3. Basic medicine: Genetic epidemiology	1. Out of hospital cardiac arrest 2. Cardiogenetics 3. Resuscitation 4. Sudden Cardiac Death 5. Genetic Testing

COST Members
Main Proposer: Netherlands
Network of Proposers:
Full Member: Cyprus, Denmark, Germany, Greece, Italy, Netherlands, Poland, Portugal, Romania, Slovakia, Sweden, Switzerland

Main and secondary proposers: 19,04% YRI / 42,90% Women / 50,00% ITC

Industrial Dimension
SMEs: Netherlands

CA24143
LEonardo's Codex Atlanticus and other miscellaneous Folios: A Digital Reconstruction
(OC-2024-1-27770)

SUMMARY
The Action LEonard's Codex Atlanticus and other miscellaneous Folio: A Digital Reconstruction (LEAF) is dedicated to the digital reconstruction of Leonardo's original folios, whose fragments are now dispersed across several major collections, including the Codex Atlanticus at the Veneranda Biblioteca Ambrosiana in Milan, the Windsor Codices in the Royal Library at Windsor Castle, and the Codex Arundel at the British Museum in London. Building on the groundbreaking research of Carlo Pedretti, this Action advances his methodologies, incorporating the latest investigative technologies. Pedretti's work, started in the mid-20th century, successfully demonstrated the possibility of digitally reuniting separated pages by identifying connections in drawings or text sequences across folios. His reconstructions of over
90-page pairs, involving parent-child relationships between fragments and their original sheets, serve as the foundation for this endeavor, exploring an additional 92 unpublished reconstruction hypotheses.

The Action's primary goal is to establish a comprehensive reference database of these digitally reconstructed folios, enabling a thematic and chronological recontextualization of Leonardo's manuscripts. This facilitates a deeper understanding of his intellectual evolution, thematic explorations, and the interconnectedness of his diverse pursuits. By virtually restoring the original integrity of these pages, the project enhances scholarly knowledge of Leonardo's creative processes and the broader contexts in which he worked. The initiative also involves organizing workshops, fostering interdisciplinary collaboration, and culminating in a public exhibition of the digitally reconstructed folios, **offering new insights into Leonardo's legacy and dispelling oversimplified interpretations of his genius.**

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Arts: History of art and history of architecture	1. Leonardo's Folios 2. Codex Atlanticus 3. rebuilding

COST Members
Main Proposer: Italy
Network of Proposers:
Full Member: Croatia, Cyprus, France, Hungary, Italy, Portugal, Slovenia, Spain, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 21,42% YRI / 53,60% Women / 54,55% ITC

International Cooperation
Near Neighbour Country: Morocco
International Partner: China, United States

Specific Organisations
International Organisation: Nuova Fondazione Rossana e Carlo Pedretti

CA24144
ANTICIPATE: extended-range multi-hazard predictions and early warnings
(OC-2024-1-27784)

SUMMARY
Operational extreme weather forecasts and early warnings are generally limited to timescales of up to around 10 days and to predicting single events, such as flooding or a heatwave. However, a new generation of experimental 'extended-range' weather predictions that extend up to 46 days have been developed over the last decade by the world's leading meteorological centres. A key motivation of exploring this prediction timescale is to bridge the gap between timescales, incorporate the latest 'multi-hazard' approaches, and improve early warnings and anticipatory actions. Currently, however, the extended-range prediction and the multi-hazard communities are largely disconnected. To date, there has been no coordinated effort to build a network that connects these disciplines and communities towards the development of operational systems. However, it is essential that these communities come together to explore windows of opportunity and instigate a step-change in the way forecasts are designed, produced and used. To address this challenge, ANTICIPATE will create the first pan-European network focused on extended-range multi-hazard predictions and warnings. ANTICIPATE will bring together existing but largely disconnected disciplines, operational practitioners and stakeholders (including extreme weather forecasting, extended-range prediction and climate dynamics, disaster risk reduction, multi-hazards, and communications) to drive forward advancements in the science, training, communication and application that will support next generation of effective early warnings that enable preparedness and action across hazards and forecasting lead times. ANTICIPATE will provide vital leadership in multi- hazard predictions and warnings, address gaps and challenges, and educate the next generation of forecasters and communicators for societal benefit.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Earth and related Environmental sciences: Meteorology, atmospheric physics and dynamics 2. Earth and related Environmental sciences: Climatology and climate change 3. Environmental engineering: Risk assessment, prevention and mitigation 4. Media and communications: Databases, data mining, data curation, computational modelling 5. Earth and related Environmental sciences: Hydrology, water resources	1. Multi-hazards 2. Forecasting 3. Extreme weather events 4. Early warnings 5. Anticipatory action

COST Members
Main Proposer: United Kingdom
Network of Proposers:
Full Member: Albania, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 52,17% YRI / 52,20% Women / 53,85% ITC

International Cooperation
International Partner: United States

Specific Organisations
European RTD Organisation: Vilnius University; European Centre for Medium-Range Weather Forecasts
International Organisation: World Meteorological Organization (WMO); International Institute for Applied Systems Analysis; International Institute for Applied Systems Analysis

CA24145
International Food Techno-functionality - Data
(OC-2024-1-27790)

SUMMARY
The production of food products that meet all societal requests (e.g. sustainable, biodiversity-friendly, healthy and affordable) is impaired due to a lack of data. To be specific, techno-functionality data is needed to formulate new food products. The data is currently being obtained by a widespread analysis of techno-functionality using different techniques by food companies and research groups. The result is a lack of comparable, accessible and reusable data, which thus hampers the food formulation process, especially in terms of predictive decision-making.

Therefore, INFOTECH-DATA (International FOod TECHno-functionality – DATA) aims to create a network and facilitate the creation of open-access databases with comparable techno-functionality data of food ingredients. The Action will create methodologies with the whole EU food science community to achieve this. The methodologies will consist of 1) standardised techno-functionality method and 2) blueprints from database architecture and data management strategies. Consensus on these methodologies will lead to an immense scientific milestone within the community and have immense technological and socio- economical impact on the food industry.

Additionally, this Action will host an extensive educational programme to empower young, talented researchers, who will play a key role in implementing these methodologies in the future. By bringing together food techno-functionality and data scientists, INFOTECH- DATA will be able to create effective methodologies that will accelerate the production of healthy, sustainable and affordable foods, and, at a same time, build an interactive and collaborative community which will support these methodologies and collaborate in long- term joint research.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Other engineering and technologies: Food science and technology	1. Food 2. Techno-functionality 3. Method standardisation 4. Open-access data 5. Data storage

COST Members
Main Proposer: Netherlands
Network of Proposers:
Full Member: Austria, Belgium, Croatia, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Poland, Portugal, Serbia, Slovakia, Spain, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 38,70% YRI / 54,80% Women / 50,00% ITC

CA24146
Machine Learning and Quantum Computing for Future Colliders
(OC-2024-1-27816)

SUMMARY
This COST Action aims to advance theoretical, experimental, and technological efforts for developing future particle colliders by leveraging cutting-edge computational technologies, including **Machine Learning (ML)** and **Quantum Computing (QC)**. The action will bring together experts from **High-Energy Physics (HEP)**, ML, and QC to form an interdisciplinary network that will explore and exploit synergies between emerging computing paradigms and HEP theory and experiments.

Future colliders pose complex challenges, from designing accelerators and experiments to managing and analyzing the enormous datasets they will produce. The large-scale data- taking and processing required in the next era of very-big-data physics will demand novel ML algorithms for efficient event selection, background reduction, pattern recognition, anomaly detection, and more. Additionally, QC offers possibilities for solving optimization problems related to collider design, simulating quantum systems, and improving theoretical predictions.

This COST Action will foster collaboration between theorists, experimentalists, and computational experts to address these challenges across all stages of collider research. It will focus on developing advanced ML techniques for real-time data analysis, enhancing theoretical predictions to match the precision expected in future experiments, and exploring QC applications in both theory and data processing.

Furthermore, the action will play a key role in training and supporting early-career researchers, fostering interdisciplinary and intergenerational collaboration to ensure long- term continuity and growth of the field. By building a strong European research network, this action will accelerate scientific discoveries and push the frontiers of physics and technology.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Particle physics (theory) 2. Physical Sciences: Instrumentation - telescopes, detectors and techniques 3. Computer and Information Sciences: Machine learning algorithms 4. Computer and Information Sciences: Quantum information processing 5. Physical Sciences: Quantum physics	1. Particle Physics 2. Machine Learning 3. Quantum Computing 4. Future Colliders 5. High Energy Physics

COST Members
Main Proposer: Italy
Network of Proposers:
Full Member: Belgium, Croatia, Cyprus, Czech Republic, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Serbia, Slovenia, Spain, Switzerland, United Kingdom

Main and secondary proposers: 46,77% YRI / 33,90% Women / 52,63% ITC

International Cooperation
International Partner: Mexico, United States

Specific Organisations
European RTD Organisation: CERN
EU Institutions, Bodies, Offices and Agencies (EC/EU): university of Padova
International Organisation: Oak Ridge NAtional Laboratory

Industrial Dimension
Large companies: United States

CA24147
Artificial Intelligence Driven Dental AgEstimation Network
(OC-2024-1-27833)

SUMMARY
Accurate estimation of biological age is essential in clinical and forensic fields, particularly in legal medicine, pediatrics, and orthodontics. Dental age estimation, involves several methods that rely on the analysis of teeth development, structure, and wear. Current dental age estimation techniques while effective, exhibit significant variability due to the lack of standardization and interindividual differences. This variability can result in inconsistent and sometimes unreliable outcomes, which may carry serious legal and clinical consequences.

The primary goal of this COST action is to develop artificial intelligence (AI)-driven models that enhance accuracy and reliability in dental age estimation, by analyzing dental radiographs (panoramic, periapical, and cone-beam CT).

The project aims to foster a collaborative research environment by bringing together experts in dentistry, AI, radiology, and forensic science. This will be achieved through working groups focused on data collection, AI model development, validation, and clinical integration.
AI models will be developed and trained to analyze dental development stages, such as tooth mineralization and root formation, with the aim of automating and improving the accuracy of traditional methods. The software tools developed will be user-friendly to ensure widespread adoption in medical and legal contexts and account for genetic, environmental, and socio-economic factors. The long-term goal is to establish global standards for dental age estimation techniques, with the potential for widespread adoption in both clinical and legal fields.
This project promises to revolutionize dental age estimation by integrating cutting-edge AI with traditional methods, enhancing precision, and facilitating more reliable and standardized practices worldwide.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Clinical medicine: Dentistry, oral surgery and medicine 2. Other medical sciences: Forensic science 3. Computer and Information Sciences: Artificial intelligence, intelligent systems, multi agent systems 4. Clinical medicine: Radiology, nuclear medicine and medical imaging	1. dental age estimation 2. artificial intelligence 3. radiology 4. forensic science

COST Members
Main Proposer: Türkiye
Network of Proposers:
Full Member: Croatia, Czech Republic, Germany, Hungary, Italy, Portugal, Serbia, Switzerland, Türkiye

Main and secondary proposers: 44,44% YRI / 55,60% Women / 66,70% ITC

International Cooperation
Near Neighbour Country: Kosovo*

Industrial Dimension
SMEs: Türkiye

CA24148
EEG101: Fundamentals of Open & Rigorous EEG Science
(OC-2024-1-27869)

SUMMARY
Electroencephalography (EEG) is one of the most widely used brain imaging techniques. Its popularity stems from its ability to non-invasively measure brain activity with millisecond- level precision, providing deep insights into cognitive and neural processes at a relatively low cost.

Despite its widespread use and significant potential for societal benefits—from motor rehabilitation to neuromarketing—EEG research faces substantial challenges that limit its application and translation. The primary issue is the considerable heterogeneity across laboratories at every step of the research pipeline. Variations in hardware, data acquisition protocols, analytical methods, and signal interpretation lead to inconsistencies that hinder reproducibility and comparisons. Overcoming these challenges is crucial for enhancing the reliability of EEG research and laying the foundations for impactful clinical and commercial applications.

Launching 101 years after the discovery of the EEG signal, the EEG101 COST Action will build on ongoing discrete community-driven open science initiatives and create a cohesive collaborative network.

EEG101 will develop standardized tools and protocols for analysis and reporting, curate and harmonise large datasets, establish centralized platforms for resource sharing and collaboration, deliver Summer Schools on cutting-edge techniques and a distributed conference model that engages and empowers local communities. Through dedicated funding streams for underrepresented groups and early-career researchers, alongside grants to support engagement with industry partners, charities and policymakers, EEG101 will position Europe as a global leader in open and rigorous EEG science. Ultimately, this COST Action will directly benefit the international neuroscience community and contribute to realising the potential of EEG technology for societal impact.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Psychology: Cognitive and experimental psychology: perception, action, and higher cognitive processes 2. Other engineering and technologies: Sustainability for other engineering and technologies 3. Medical engineering: Medical engineering and technology 4. Basic medicine: Neuroimaging and computational neuroscience 5. Basic medicine: Databases, data mining, data curation, computational modelling	1. EEG 2. Open Research Practices 3. Reproducibility 4. Standardized Reporting 5. Data Harmonization

COST Members
Main Proposer: United Kingdom
Network of Proposers:
Full Member: Belgium, Bosnia and Herzegovina, Croatia, Cyprus, Denmark, Estonia, France, Germany, Greece, Hungary, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Spain, Sweden, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 30,00% YRI / 46,70% Women / 58.33% ITC

CA24149
Extreme Plasma Network for Advanced Discovery
(OC-2024-1-27910)

SUMMARY
The universe teems with fascinating compact objects such as black holes and neutron stars that push our fundamental understanding of nature and capture the imagination of scientists and the public alike. The magnetospheres of these astrophysical objects are filled with relativistic plasmas (ionized gas) under extreme conditions of pressure, density, and electromagnetic field strength that play a critical role in shaping the flow of energy, the acceleration of particles, and the radiative signatures of these environments. However, their properties depart greatly from those of traditional plasmas in space and in the laboratory and as such our understanding of these extreme plasmas is still rather poor.
New discoveries together with unique observational opportunities insist on the need to push the boundaries of our understanding and develop the necessary tools to study extreme plasma physics. At the same time, rapid progress and strong investments in high- intensity laser and accelerator facilities are opening new frontiers to study relevant extreme plasma conditions in the laboratory for the first time.

This Action aims to 1) push the boundaries of our understanding of extreme plasma physics by bringing together and sharing the expertise and tools from different groups to maximize production of new knowledge and breakthrough discoveries, 2) connect researchers across countries around a cohesive community focused on extreme plasma physics, 3) boost the careers of young researchers in this multidisciplinary field by fostering opportunities for training, increasing visibility and integration, and 4) share the results and excitement with the scientific community and with the public.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Gas and plasma physics (theory) 2. Physical Sciences: Astrophysics, astronomy, space sciences 3. Physical Sciences: Relativistic astrophysics 4. Physical Sciences: High energy and particles astronomy, X-rays, cosmic rays, gamma rays, neutrinos 5. Physical Sciences: Lasers, ultra-short lasers and laser physics	1. Plasma Physics 2. Plasma Astrophysics 3. High-Energy Astrophysics 4. Laser-Plasma Physics 5. Strong-Field Physics

COST Members
Main Proposer: Portugal
Network of Proposers:
Full Member: Belgium, Czech Republic, Estonia, Finland, France, Germany, Greece, Netherlands, Poland, Portugal

Main and secondary proposers: 51,85% YRI / 22,20% Women / 50,00% ITC

International Cooperation
International Partner: United States

CA24150
Values in Turbulent Times: Navigating Social Changes and Challenges
(OC-2024-1-27912)

SUMMARY
In an era marked by overlapping crises – spanning health, environmental, economic, and geopolitical domains – alongside rapid technological advances, societal values are experiencing unprecedented strain. Prolonged instability, driven by successive crises and profound social shifts, is reshaping citizens' values, with significant implications for social cohesion and coexistence. In response, this Action aims to establish an interdisciplinary network to advance research on value orientations during periods of crisis and social transformation. The Action will investigate how external disruptions interact with internal social dynamics to reshape values across Europe. Key objectives include: a) analyzing the multifaceted impact of societal crises on citizens' values, b) contextualizing the role of generational shifts, c) exploring regional and cultural variations, d) identifying cross-cutting themes in value transformation, and e) examining how technological advancements influence these shifts. By applying an interdisciplinary approach and integrating diverse perspectives from both within and beyond academia, the Action will offer a comprehensive understanding of the factors driving value change. This collaborative effort will enhance our understanding of how societies navigate rapid social transformations and external pressures, particularly their effects on citizens' value systems. Through the creation, transfer, and dissemination of knowledge, the VISTA Action seeks to establish a robust foundation for sustained research on value changes and the critical forces shaping the evolution of social structures and collective behavior.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty	1. Values 2. Social Changes 3. Crises

COST Members
Main Proposer: Italy
Network of Proposers:
Full Member: Austria, Belgium, Czech Republic, Estonia, Finland, Italy, Netherlands, Poland, Romania, Slovakia, Spain, Türkiye, Ukraine

Main and secondary proposers: 30,00% YRI / 50,00% Women / 53.85% ITC

CA24151
Towards PERsonalized Cancer Chronotherapy
(OC-2024-1-27920)

SUMMARY
Chronotherapy consists in the administration of treatments according to circadian rhythms. This concept has now been taken up by many excellence research and clinical teams worldwide. Linking them through the PERCC network will critically advance the clinical benefits of chronotherapy and the mechanisms at work, toward the personalization of treatment in patients suffering from cancer. PERCC involves multidisciplinary teams from eleven countries, thus making EU at the forefront of the field. Disruptive medical progress based on circadian rhythms has become possible because of ground-breaking discoveries in biological clocks science, and advances in technologies and algorithmics that measure, trace and model host and tumor circadian clocks. Striking clinical findings have revealed consistent time-of-day dependencies in the efficacy and tolerability of anticancer medications, with recent emphasis on immunotherapies and endocrine therapies, as well as gender- and age-related specificities. Randomized chronotherapy trials are ongoing. Clinicians, biologists, oncologists, mathematicians, statisticians, engineers, patient representatives, and health and regulation advisors from academic or private sectors compose five working groups in PERCC: (1)Timing in Patients; (2)Dosing Time Effects Mechanisms; (3)Circadian Biomarkers; (4)Technology and Regulations for Timing; (5)Chronotherapy in Health and Society. The five groups interact and generate a practice- changing comprehensive portfolio, involving multidisciplinary chronotherapy research, training, regulation, and patient engagement. PERCC is the first European action that integrates the circadian clock dimension into precision cancer medicine, ranging from drug discovery and development, to experimental, artificial intelligence, technology, and clinical research, chronotherapy logistics and regulation. PERCC paves the way toward a comprehensive European vision of Circadian Medicine worldwide.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Clinical medicine: Oncology 2. Biological sciences: Biological systems analysis, modelling and simulation 3. Basic medicine: Applied mathematics, statistics, non-computational modeling	1. Chronotherapy 2. Cancer 3. Circadian 4. Biomarkers 5. Immunotherapy

COST Members
Main Proposer: France
Network of Proposers:
Full Member: Czech Republic, France, Germany, Greece, Netherlands, Portugal, Romania, Slovenia, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 23,40% YRI / 55,30% Women / 54,55% ITC

International Cooperation
International Partner: Canada, United States

Specific Organisations
International Organisation: The University of Chicago John W. Boyer Center in Paris

Industrial Dimension
SMEs: France, Germany

CA24152
Epitranscriptomics and ncRNAs for climate-change-resilient and sustainable crops
(OC-2024-1-27924)

SUMMARY
This COST action aim is to boost the research in the fields of post-transcriptional regulation through epitranscriptomic modifications and actions of non-coding RNAs (long and microRNAs), both rising stars and very promising mechanisms in the context of crop responses and adaptation to climate change. The growing interest attracted by these two molecular mechanisms, so far under investigated, comes hand in hand with new methodological developments, including the introduction of new next-generation sequencing technologies, allowing their study in detail and in a high-throughput manner. This scenario brings new challenges and requires agreements and standardization regarding workflows, data analysis pipelines and management procedures, results interpretation and transference in the crop breeding sector that would be only possible in the frame of a topic-specific multidisciplinary network such as the one typically developed in a COST action. This action aims to bring together a cross-disciplinary group of people from all over the continent, including, among others, scientists from the fields of crop and plant sciences, molecular biology and epigenetics, agronomy, plant pathology, bioengineers, bioinformatics. In addition, the consortium is aiming at involving stakeholders, such as agronomists, breeders, biotech companies, growers and their associations, and policy makers in the agricultural sector.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Agriculture, Forestry, and Fisheries: Sustainable Agriculture	1. epitranscriptomics 2. ncRNAs 3. agriculture sustainability 4. climate change 5. crops

COST Members
Main Proposer: Spain
Network of Proposers:
Full Member: Albania, Bulgaria, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Malta, Poland, Portugal, Romania, Serbia, Spain, Sweden, Türkiye, United Kingdom

Main and secondary proposers: 40,50% YRI / 51,90% Women / 60,00% ITC

International Cooperation
Near Neighbour Country: Algeria, Azerbaijan
International Partner: Argentina, Brazil, India, United States

Industrial Dimension
SMEs: Italy, United Kingdom
Large companies: Portugal

CA24153
Edge Deep Learning for Particle Physics
(OC-2024-1-27926)

SUMMARY
Deep Learning applications are becoming ubiquitous in science. Particle physicists in particular are relying more and more on neural networks for crucial tasks in their data processing. Often, they are confronted with unique technological challenges, such as the need to operate deep neural networks in real time and in extreme computing environments, such as the event filtering systems of the experiments at the Large Hadron Collider. Low latency and reduced computing resources imply strong constraints for the algorithms operated on-edge, i.e., as close to the detector as possible. To take advantage of the power of deep learning under these conditions, one needs to develop compression techniques and make the networks efficient without losing their expressivity. This COST action aims at gathering researchers across Europe interested in this challenging problem, to advance AI-powered on-edge inference for next-generation particle physics experiments like the High Luminosity LHC and future colliders. Through the technological advancements envisioned, many other fields and sectors relying on fast AI-based decision making and on-edge computation such as smartphones, automotive, portable medical devices, drones, or satellites may too profit from our initiative on Edge deeP learnIng foR pArticle PHYsics, EPIGRAPHY.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Instrumentation - telescopes, detectors and techniques 2. Computer and Information Sciences: Machine learning algorithms	1. Particle Physics 2. Fast inference 3. Deep learning 4. Real-time data processing

COST Members
Main Proposer: United Kingdom
Network of Proposers:
Full Member: Croatia, Cyprus, Estonia, Germany, Greece, Italy, Poland, Portugal, Serbia, Sweden, Switzerland, Türkiye, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 32,14% YRI / 39,30% Women / 57,14% ITC

Specific Organisations
European RTD Organisation: CERN; CERN

CA24154
Networking European Security Knowledge
(OC-2024-1-27931)

SUMMARY
The Networking European Security Knowledge (NetSec) COST Action addresses the critical challenge of fragmentation of Europe's intellectual and analytical base in the field of security studies. This fragmentation, spanning academic, policy, and practitioner communities, hinders the EU's pursuit of strategic autonomy and its ability to respond effectively to complex security challenges. NetSec aims to create an inclusive, multidisciplinary network that integrates diverse perspectives on European defense and security, fostering synergies across different national and local epistemic communities, bridging the academia-policy divide, and cultivating the next generation of security scholars. The Action is structured around three core objectives: (1) Creating an Inclusive Network for Knowledge Exchange, (2) Translating Knowledge into Policy Impact, and (3) Developing Skills, Methods, and Tools to Address Fragmentation. These objectives are pursued through four interconnected Working Groups focused on management, framework development, tools and training, and inclusion, stakeholder engagement, and dissemination. NetSec will implement various measures to maximize impact, including interdisciplinary research collaborations, annual conferences, policy workshops, a mentorship program, and a summer school. The Action emphasizes geographical and disciplinary diversity, addressing gender and generational imbalances in the field. By fostering a cohesive European security studies community, NetSec aims to contribute significantly to overcoming Europe's strategic fragmentation and advancing its strategic autonomy in an increasingly complex global security environment.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Political Science: International studies, strategic studies, human rights, global and transnational governance	1. Security Studies 2. European defense 3. Strategic autonomy

COST Members
Main Proposer: France
Network of Proposers:
Full Member: Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Moldova, Netherlands, Poland, Portugal, Serbia, Slovakia, Slovenia, Sweden, Türkiye, United Kingdom

Main and secondary proposers: 44,23% YRI / 53,80% Women / 65;00% ITC

Specific Organisations
European RTD Organisation: Vilnius University

Industrial Dimension
Large companies: Sweden

CA24155
Climate Reference Upper-air, Column and In-Situ measurements
(OC-2024-1-27933)

SUMMARY
The proposed COST Action, named CRUCIS (Climate Reference Upper-air, Column and In-Situ measurements), addresses the critical needs for traceable measurements to the International System of Units (SI) and robust uncertainty quantification in atmospheric and climate research. The primary objective of CRUCIS is to foster collaboration and harmonization among researchers, institutions, and stakeholders across Europe, and beyond, to enhance the quality, reliability, and credibility of observational data in climate science. The final aim is to ultimately improve confidence in detecting climate trends and predicting severe events. The key goals of CRUCIS are:

1. Metrological traceability to SI units
2. Uncertainty quantification and communication
3. Streamlining existing reference networks, optimising network design and coverage, and disseminating best practices
4. Capacity building and knowledge exchange
5. Engagement with stakeholders, manufacturers and end-users

The approach will start from reference-level measurements (e.g. GSRN, GRUAN) and extend to baseline systems. The proposed research will identify metrologically-robust methods and quality assurance frameworks for selected key Essential Climate Variable (ECV), covering upper-air and near-surface observations such as temperature, pressure, water vapour and precipitable water vapour, wind, and precipitation.

CRUCIS will actively engage with stakeholders from academia, governmental bodies, agencies, SMEs, and NGOs, ensuring a transfer of knowledge at different levels. The aim of CRUCIS is to create a cooperation hub where the identified groups can share their respective expertise on temperature, water vapour and precipitation measurements and their usage for climate studies and applications.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Earth and related Environmental sciences: Climatology and climate change 2. Earth and related Environmental sciences: Meteorology, atmospheric physics and dynamics	1. Climatology 2. Metrology 3. Reference measurements 4. Upper air 5. Ground-based networks

COST Members
Main Proposer: Italy
Network of Proposers:
Full Member: Bosnia and Herzegovina, Bulgaria, Estonia, Finland, France, Italy, Netherlands, Poland, Romania, Slovenia, Spain, United Kingdom

Main and secondary proposers: 16,66% YRI / 38,90% Women / 50,00% ITC

CA24156
Seed Priming Solutions: Boosting Crop Resilience for a Sustainable Future

(OC-2024-1-27944)

SUMMARY

The PrimSeedPower Cost Action aims to develop scalable and efficient seed priming technologies to enhance crop resilience against the effects of climate change. The project explores biological, chemical, and physical priming agents to improve plant tolerance to abiotic stresses such as drought, salinity, and extreme temperatures. By leveraging cutting- edge omics technologies, PrimSeedPower will investigate the molecular mechanisms triggered by these priming agents, identifying key biomarkers that predict enhanced stress responses. This will lead to the creation of standardized, field-validated protocols adaptable to various crops and environmental conditions. PrimSeedPower places a strong emphasis on the involvement of early-career researchers, offering them extensive training opportunities through workshops, short-term scientific missions, and leadership roles within the project's work packages. These initiatives aim to equip young researchers with critical skills in molecular biology, data analysis, and agricultural innovation, fostering the next generation of experts in sustainable agriculture. Additionally, the project prioritizes synergy between academia and industry by actively engaging industry partners, seed producers, and agricultural technology firms to ensure the commercialization of seed- priming innovations. Through collaborative pilot-scale trials, knowledge transfer, and the co-development of best-practice protocols, PrimSeedPower aims to bridge the gap between laboratory research and practical, scalable applications. By promoting eco- friendly, resource-efficient farming practices, the project aligns with global sustainability goals and supports a transition toward climate-resilient agricultural systems.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Agricultural biotechnology: Sustainable production 2. Biological sciences: Molecular biology and interactions 3. Biological sciences: Metabolomics	1. seed priming 2. abiotic stress 3. crop resiliance 4. climate change 5. sustainable agriculture

COST Members

Main Proposer: Bosnia and Herzegovina

Network of Proposers:

Full Member: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, France, Germany, Greece, Hungary, Italy, Lithuania, North Macedonia, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Türkiye, Ukraine

Main and secondary proposers: 38,09% YRI / 50,00% Women / 80,95% ITC

International Cooperation

Near Neighbour Country: Egypt
International Partner: Oman

Industrial Dimension

SMEs: France

CA24157
COordinated and STandardized Monitoring of Permafrost Response to Climate Change
(OC-2024-1-27952)

SUMMARY
Permafrost has been dramatically warming and degrading in most mountain and polar regions, with farreaching
and long-term implications for natural and anthropogenic environments. In this context of rapid
changes and large socio-economic impacts, the increased scrutiny from the society and the growing demand
for sound data from stakeholders make permafrost monitoring a timely and highly relevant field of research. Documenting, analysing, and assessing the response of permafrost to climate change requires fundamental cross-disciplinary and cross-geographic knowledge that can only be achieved through coordinated and standardized monitoring activities. For years, European research groups have been at the forefront of operational and innovative permafrost monitoring activities, but they have not been able to further coordinate their activities or to establish widely accepted standards for data acquisition and processing.

The PermaCOST Action aims to bring together European permafrost researchers, stakeholders, and practitioners with expertise in different measurement techniques and permafrost conditions to work towards a coordinated and standardized monitoring of permafrost response to climate change.
Through this
unprecedented network of experts and early career investigators, the Action will specifically (1)
identify key novel permafrost monitoring methods, homogenise (2) permafrost data acquisition standards and (3) data processing standards, (4) assess the state and evolution of permafrost in Europe and (5) promote the
development of operational permafrost monitoring networks at national, regional, and European scales.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Earth and related Environmental sciences: Physical geography 2. Earth and related Environmental sciences: Climatology and climate change 3. Earth and related Environmental sciences: Hydrology, water resources	1. permafrost 2. climate change 3. long-term monitoring 4. cryosphere 5. geophysics

COST Members
Main Proposer: Switzerland
Network of Proposers:
Full Member: Austria, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye, Ukraine

Main and secondary proposers: 45,65% YRI / 41,30% Women / 50,00% ITC

International Cooperation
International Partner: Canada, Chile, New Zealand, United States

Industrial Dimension
SMEs: Austria

CA24158
Disparities In Surgical Specialization and Education in Cancer Training
(OC-2024-1-27961)

SUMMARY
Cancer surgery remains a key treatment for solid malignancies, particularly in low- and middle-income countries (LMICs) where access to newer therapies is limited. With the growing global cancer burden, the demand for high-quality surgery will rise. As precision medicine advances, cancer surgeons need not only technical expertise but also an understanding of multidisciplinary cancer care, preventive and palliative care, clinical trials, and effective communication. However, disparities in surgical oncology training exist across Europe, affecting access to complex cases, clinical trials, mentorship, and research facilities. These variations are linked to economic disparities, leading to differences in patient outcomes.

The DISSECT project aims to identify and address these disparities in cancer surgery training in Europe. By fostering knowledge exchange between high- and low-resource settings, the project will enhance multidisciplinary training, mentorship, and research capacity. It aligns with Europe's Beating Cancer Plan to ensure equitable access to high standards of care and to reduce cancer-related inequalities. DISSECT seeks to create a sustainable impact on cancer surgery outcomes through improved training and innovation in surgical education.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Clinical medicine: Oncology 2. Clinical medicine: Surgery	1. Disparities in patient treatment 2. Cancer Surgery 3. Multidisciplinary Knowledge Exchange 4. Surgical Mentorship 5. Artificial Intelligence in Surgical Oncology

COST Members
Main Proposer: Belgium
Network of Proposers:
Full Member: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Germany, Italy, Latvia, Malta, Montenegro, Netherlands, Poland, Portugal, Romania, Serbia, Spain, United Kingdom

Main and secondary proposers: 41,66% YRI / 41,70% Women / 52,94% ITC

International Cooperation
International Partner: Brazil, India, United States

CA24159
Structure and spectroscopy of hadrons research project
(OC-2024-1-27998)

SUMMARY
The goal of hadron physics is to understand the fundamental structure and dynamics of hadrons. Hadrons are bound objects confined by the strong interaction, and Quantum Chromodynamics (QCD) is the gauge theory describing it. Yet, many of its features are difficult to explain quantitatively, since the strong coupling becomes large in the energy regime where quarks form hadrons. Therefore, methods based on perturbative QCD are of limited use. Instead we rely on phenomenological models and lattice QCD that however need experimental data for input or benchmarking. SHARP will provide a new platform for addressing this.

Hadron physics addresses two main branches: structure and spectroscopy. Hadron structure encompasses the spatial and momentum distributions of quarks and gluons. The proton, the most stable composite building block of matter, has been a main focus of study. Its properties are described by theoretical universal quantities, like the parton distribution functions and the generalised parton distributions, but they require experimental validation. The selection of the most suitable observables for this purpose is a topic of debate. Hadron spectroscopy predicts a vast spectrum of bound states, including exotic mesons, tetraquarks, molecules of hadrons and glueballs. However, many of these are difficult to identify unambiguously. Increased collaborative efforts between experimental and theory communities are imperative to understand the observed spectra and enter uncharted hadronic territories.

SHARP will establish a strong interconnection within the hadron physics community, whose common focus is to understand how elementary quarks and gluons give rise to the complex visible matter of the universe.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Fundamental interactions and fields (theory) 2. Physical Sciences: Particle physics (theory) 3. Physical Sciences: Nuclear physics (theory) 4. Computer and Information Sciences: Machine learning algorithms	1. Quantum Chromodynamics 2. Hadron Structure and Spectroscopy 3. Spin physics 4. Machine learning techniques in HEP 5. Experimental techniques

COST Members
Main Proposer: Portugal
Network of Proposers:
Full Member: Armenia, Austria, Croatia, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Italy, Lithuania, Montenegro, Netherlands, Poland, Portugal, Spain, Sweden

Main and secondary proposers: 43,10% YRI / 46,60% Women / 52,94% ITC

Specific Organisations
European RTD Organisation: CERN
EU Institutions, Bodies, Offices and Agencies (EC/EU): Kaunas University of Technology

CA24160

Comics and Sciences through Multidisciplinary Investigation and Collaboration

(OC-2024-1-28036)

SUMMARY

The **COS-MICs (Comics and Sciences through Multidisciplinary Investigation and Collaboration)** Action aims to explore the intersection of comics and science, focusing on how comics can be used to communicate scientific concepts, foster public dialogue, and support educational efforts. Nowadays, science communication faces challenges in reaching diverse audiences, and comics offer a powerful medium for bridging this gap.

However, the relationship between comics and science is still marginal, with few structured resources and limited collaboration between the scientific and comic communities. COS- MICs will address it by structuring an international federating network of researchers, professionals, and end-users on comics and science to gather research works and improve access to it and to the sources. This collaborative network will focus on enhancing the representation of science in comics, exploring their potential in education, and understanding their impact on society and public perceptions. The Action will promote cross-cultural dialogues, bringing together diverse voices and perspectives to improve the circulation of scientific knowledge through comics in Europe and beyond.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Educational sciences: Education: training, pedagogy, didactics 2. Languages and literature: Literary theory and comparative literature, literary styles 3. Arts: Visual arts 4. Media and communications: Media and communications, social aspects of information science and surveillance, socio-cultural communication	1. comics 2. sciences 3. multidisciplinarity 4. science communication

COST Members

Main Proposer: France

Network of Proposers:

Full Member: Belgium, Cyprus, Czech Republic, France, Italy, Lithuania, North Macedonia, Poland, Portugal, Romania, Slovenia, Spain, Türkiye, United Kingdom

Main and secondary proposers: 38,23% YRI / 55,90% Women / 64,29% ITC

CA24161
Improving Neuroimaging Data for Sharing
(OC-2024-1-28045)

SUMMARY
Human neuroimaging technologies such as MRI, MEG, EEG, and fNIRS are vital for advancing cognitive neuroscience and medical diagnostics. However, the human neuroimaging field faces reproducibility challenges due to intransparent research practices and a lack of standardized data processing and reporting. Data sharing across disciplines and countries can enhance efficiency, address reproducibility issues, increase transparency, and accelerate new developments, including AI applications. Therefore, funding agencies and publishers increasingly mandate data sharing and repositories are being established at both national and EU levels. However, despite broad consensus on data sharing benefits for the field, neuroimaging researchers exhibit reluctance to share data due to unclear individual benefit, missing or unknown standards, and uncertainties regarding data privacy regulations. When data are shared, they are often of limited use due to insufficient quality assessment/control, missing or idiosyncratic metadata, or poor documentation of preprocessing.

This COST Action aims to overcome key challenges in efficiently sharing human neuroimaging data. Our consortium includes experts in different neuroimaging modalities that are linked to major open neuroimaging initiatives and experienced in the development of data and metadata standards (such as BIDS), open software tools, data privacy regulations, and in maintaining large data repositories. With this expertise, we are well- positioned to incubate and lead impactful networking activities across the EU and beyond, establishing standards, guidelines, tools, and training. Through these efforts, we will improve data sharing practices, ensuring neuroimaging data is findable, accessible, interoperable, reusable, and ethically compliant, promoting a more robust, reproducible, and economically efficient field of human neuroimaging.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Psychology: Databases, data mining, data curation, computational modelling 2. Medical engineering: Databases, data mining, data curation, computational modelling 3. Basic medicine: Neuroimaging and computational neuroscience 4. Health Sciences: Medical ethics 5. Psychology: Cognitive and experimental psychology: perception, action, and higher cognitive processes	1. Neuroimaging 2. Data Sharing 3. Open Science 4. Data Engineering 5. Privacy protection

COST Members
Main Proposer: Germany

Network of Proposers:

Full Member: Belgium, Czech Republic, France, Germany, Greece, Netherlands, Poland, Portugal, Serbia, Slovenia, Spain, Türkiye, United Kingdom

Main and secondary proposers: 53,33% YRI / 53,30% Women / 53.85% ITC

CA24162
Adaptive and acquired resistance in gastrointestinal cancers-contemporary and emerging resolutions
(OC-2024-1-28054)

SUMMARY
Gastrointestinal (GI) cancers (oesophageal cancer, gastric cancer, colorectal cancer, pancreatic cancer and liver cancer) are a group of diseases with high incidence and mortality, whose management is impeded by the development of chemoresistance. The exact mechanism of adaptive changes underlying chemoresistance in GI cancers remains elusive although different intrinsic and extrinsic factors may play a role in this process.
Proposed action AdResCanCER will serve as a platform for bringing together for the first time researchers, young investigators, clinicians and SMEs working in the field of GI related to basic and clinical oncology, molecular biology, drug discovery and development and computer science to boost research excellence in understanding and overcoming chemoresistance in GI cancers, to enable the generation of advanced knowledge, skills and technology transfer, to promote high level of training for young researches and to facilitate the development of novel clinically relevant therapeutic solutions and monitoring tools for recurrent GI cancers. Main aims of AdResCanCER include: 1) creating a platform to bring together scientists from different disciplines, clinicians, regulatory bodies and society; 2) optimizing and standardizing generation and use of research data, clinical data and various -OMICS analytical workflows; 3) providing rational design, development and evaluation of novel medicines and compounds targeting the resistance phenotype; and 4) actively engage with regulatory bodies, policy makers and patient organizations in framing the activities to promote the proper approach at the right time in the GI cancer management.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Clinical medicine: Oncology 2. Computer and Information Sciences: Machine learning algorithms 3. Chemical engineering: Medicinal chemistry, drug synthesis 4. Biological sciences: Systems biology 5. Biological sciences: Molecular genetics, reverse genetics and RNAi	1. GI cancer therapeutic resistance 2. GI cancer genetics and epigenetics 3. therapeutic approaches 4. data management 5. mulit-OMICS

COST Members
Main Proposer: Croatia
Network of Proposers:
Full Member: Croatia, Cyprus, Finland, Germany, Greece, Italy, Netherlands, North Macedonia, Portugal, Romania, Serbia, Slovenia, Spain, Türkiye, United Kingdom

Main and secondary proposers: 31,57% YRI / 60,50% Women / 60,00% ITC

International Cooperation
International Partner: United States

Specific Organisations
European RTD Organisation: University of Aveiro

Industrial Dimension
SMEs: Greece, Slovenia

CA24163
Modelling cross-sectoral cascading climate impacts on Europe to design coherent policy reponses
(OC-2024-1-28070)

SUMMARY
Traditional climate impact studies have focused on biophysical impacts emerging in one place, e.g. drought affecting crop yields in one region. However, climate impacts can also spread from their origin across borders into other countries through trade and supply chains, financial flows or migration. To understand these cascading climate impacts on Europe and to develop coherent response policies, the chains through which impacts are transmitted need to be considered, e.g., changing crop yields affecting exports and prices which in turn affect security and migration in importing countries. Research on such cascading climate impacts is fragmented since the individual research communities related to impact transmission chains such as trade or migration have historically been separated and only recently started including biophysical climate impact data and models. Therefore, CROSS-CASCADE aims to develop common protocols, harmonised datasets and a joint understanding of how to conduct cross-sectoral, multi-model climate impact studies at regional and global scales that cover both initial biophysical impacts and impact transmission chains to foster projections of cascading climate impacts affecting Europe and to develop coherent policies for adapting to them. The Action will focus on key interactions of climate impacts, especially extreme events such as droughts or floods, across sectors and their propagation through trade, finance, migration and other impact transmission chains. CROSS-CASCADE will use COST networking instruments to train young researchers to conduct cross-sectoral cascading climate impact simulations, use novel methods for analysing them and to disseminate the data, code and results to scientists and stakeholders.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Earth and related Environmental sciences: Climatology and climate change 2. Economics and business: Macroeconomics, business cycles 3. Political Science: Public administration, public policy 4. Earth and related Environmental sciences: Hydrology, water resources 5. Agriculture, Forestry, and Fisheries: Sustainable forest management	1. Climate Impacts 2. Climate Impact Transmission 3. Adaptation 4. Systemic Risk 5. Modellling

COST Members
Main Proposer: Germany
Network of Proposers:
Full Member: Belgium, Croatia, Czech Republic, Estonia, Finland, Germany, Greece, Italy, Latvia, Lithuania, Moldova, Netherlands, Poland, Romania, Slovakia, Sweden, Switzerland, United Kingdom

Main and secondary proposers: 39,28% YRI / 50,00% Women / 55,56% ITC

Specific Organisations
European RTD Organisation: Institut de Recherche pour le Développement

CA24164
Sensing Europe's Court Spaces at the Crossroads of Past, Present and Future

(OC-2024-1-28097)

SUMMARY

SENSES brings together researchers and professionals to combine knowledge and find novel ways of presenting the European court residence, seen as the locus of multiple sensorial experiences. At the crossroads of court studies, sensory history and digital humanities, SENSES focuses on the "court residence" of late mediaeval and early modern Europe. This means the material and spatial environment of the courts in Europe from 1300 to 1800 within their social context, at all spatial scales from the single building (or part) to the landscape created around it and the supra-territorial residence network it belongs to. We will explore the full gamut of sensory experiences linked with the court residence and its life throughout history until today: from essential human activities, such as preparing food and crafting things, to the grandest and most complex, such as perceiving performances of music and dance in dedicated spaces and dining rituals.

Our goal is to build a better understanding of this complex cultural phenomenon and thus to support its survival as European heritage. To achieve this, SENSES will be multi- disciplinary and trans-sectoral, building bridges between academic disciplines on the one hand, and between academia and the cultural heritage sector on the other. We want to offer a sound research-based platform for developing novel, sensory-based interactions between the public (consumer), and the heritage (art, architecture, music) of the past. By exploring new ways of making and keeping this artistic heritage relevant for audiences of the future, we will contribute actively to European identity-building.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Arts: History of art and history of architecture	1. court residence 2. sensory history 3. court studies 4. digital humanities

COST Members

Main Proposer: Netherlands

Network of Proposers:

Full Member: Belgium, Croatia, Czech Republic, Denmark, France, Germany, Latvia, Lithuania, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden

Main and secondary proposers: 15,15% YRI / 48,50% Women / 53.33% ITC

Industrial Dimension

Large companies: Portugal

CA24165
Network for Cardiovascular Pharmacogenomics and Precision Medicine
(OC-2024-1-28119)

SUMMARY
CardioPharmaGENET aims to advance personalized medicine in cardiovascular care by leveraging pharmacogenomics (PGx) to optimize drug therapies. In cardiovascular medicine, this approach is especially critical, given the significant patient variability in drug responses to therapies. The main goal is to establish a pan-European network that addresses several key challenges that hinder the widespread adoption of PGx in cardiovascular care. These challenges include the lack of a centralized knowledge hub for clinicians and policymakers, insufficient integration of pharmacogenomics into clinical practice, and inconsistent policy frameworks across Europe. The project also seeks to utilize AI and machine learning to streamline the analysis of large-scale genomic data and enhance clinical decision-making.
The initiative will form five working groups to tackle these issues: WG1 will evaluate the current landscape of cardiovascular PGx, identifying key gaps in research, clinical integration, and available resources; WG2 will develop optimized guidelines for applying PGx in cardiovascular therapies, focusing on patient stratification based on genetic and demographic profiles; WG3 will focus on advancing digital and AI tools to improve PGx data analysis and implementation in clinical settings; WG4 will analyze regulatory frameworks across Europe, proposing policy changes to facilitate seamless integration of PGx into healthcare systems; WG5 will handle communication, dissemination, and stakeholder engagement, ensuring that findings and guidelines are accessible to all stakeholders, including clinicians, researchers, and policymakers. By addressing these challenges, the project will help bridge the gap between PGx research and clinical practice, improving cardiovascular patient outcomes and promoting equitable healthcare access across Europe.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Clinical medicine: Cardiac and Cardiovascular systems 2. Health Sciences: Health services, health care research 3. Medical biotechnology: Genomics, comparative genomics, functional genomics 4. Biological sciences: Molecular biology and interactions 5. Biological sciences: Ethics of biological sciences	1. pharmacogenomics 2. cardiovascular diseases 3. personalized medicine 4. clinical practice

COST Members
Main Proposer: Bosnia and Herzegovina

Network of Proposers:

Full Member: Bosnia and Herzegovina, Croatia, Denmark, France, Germany, Greece, Iceland, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Serbia, Spain, Sweden, Switzerland, Türkiye, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 28,57% YRI / 44,90% Women / 52,38% ITC

Industrial Dimension
Large companies: Croatia, Israel

CA24166
Pan-European Network for Inflammaging: A Multi-omics Integration Approach
(OC-2024-1-28127)

SUMMARY
The prevalence of noncommunicable diseases (NCDs) rises with age, placing a significant burden on public health. As the population ages, an increase in co- and multimorbidity is anticipated, making prevention a key scientific priority at the European level. In recent years, considerable attention was given on inflammaging, a chronic, low-grade inflammation associated with aging, which contributes to the development of various NCDs, including cardiovascular diseases, neurodegenerative disorders, and metabolic conditions. The primary aim of INFLAMomx is to consolidate resources on NCDs through a Pan-European collaborative network and to investigate them as consequences of inflammaging using cutting-edge multi-omics approaches. This network will unite diverse European expertise across scientific fields (molecular biology, bioinformatics, and healthcare), while fostering collaboration across all career stages. Building upon European research initiatives, INFLAMomx will maximize the use of existing resources, strengthening computational biology and inflammaging research across Europe. The outcomes will enhance understanding of the molecular mechanisms driving inflammaging and its role in the development of NCDs. Furthermore, it will lay the foundation for innovations and translation into clinical practice. A key focus of INFLAMomx is the establishment of standardized guidelines for multi-omics integration methods and the training of the next generation of scientists with an integrative mindset, bridging knowledge gaps between wet lab researchers and computational scientists. Moreover, through targeted dissemination activities aimed at various stakeholders – general public, patient organizations, media, and policymakers, the project will raise awareness about the importance of maintaining health and pave the way for the development of preventive healthcare strategies.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Biological sciences: Systems biology 2. Biological sciences: Bioinformatics 3. Basic medicine: Quantitative genetics 4. Basic medicine: Databases, data mining, data curation, computational modelling 5. Clinical medicine: Non-communicable diseases	1. Inflammaging 2. Systems biology 3. Multi-omics biomarkers 4. Noncommunicable diseases 5. Personalized medicine

COST Members
Main Proposer: Croatia

Network of Proposers:

Full Member: Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Netherlands, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Switzerland, United Kingdom

Main and secondary proposers: 47,36% YRI / 50,00% Women / 52,00% ITC

Industrial Dimension
SMEs: Croatia, Netherlands, Poland

CA24167
Disruptive Innovation and Exponential HRM: Crafting Next-Gen Employee Experience, Workplace, Job Market
(OC-2024-1-28170)

SUMMARY
An array of unprecedented socio-technical transformations is generating a **major shift in the governance of human capital within organizations**. In particular, exponential digital technologies and complex societal challenges require to c**raft a new approach to the design and governance of the employee experience and the workplace, as well as to address structural changes arising in the global job market**. In such endeavor, HUMAN-IT has the ambition to advance cross-disciplinary scholarly and practitioner knowledge in the field of Human Resource Management (HRM), with the vision to contribute to the EU polices on employment, inclusions and societal progress (UN SDGs 8 and 9). The Action will leverage a **large network of experts gathered into 3 distinguished Working Groups (WGs)**: 1) WG1, exploring and systematizing the disruptive advancements related to the adoption of digital technologies into the management of HR, with a specific focus on AI and advanced analytics; 2) WG2, studying the major transformations within organizational forms triggered by the technological singularity, and with the vision to investigate the paradigms shift into the concept and process of employee experience and organizational well-being; 3) WG3, investigating the societal and macro implications of the transforming HRM scenario, with the proposition of policy guidelines for decision makers engaged to redesign the job market. HUMAN-IT has the ambition to generate a **stronger EU and cross-national human capital valorization capability**, and outcomes include dissemination of scientific knowledge and practitioner tools, career support for young scientists, and an increased societal and managerial capacity to address the future of the workplace and HRM.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Economics and business: Human resource management 2. Economics and business: Management of Technology and Innovation 3. Political Science: Social policies, welfare state 4. Other engineering and technologies: Databases, data mining, data curation, computational modelling for other engineering and technologies 5. Sociology: Work and professions	1. Digital Innovation 2. Employee Experience 3. Human Resource Management 4. Job Market 5. Workplace Transformation

COST Members
Main Proposer: Albania
Network of Proposers:
Full Member: Albania, Bulgaria, Croatia, Greece, Hungary, Italy, Netherlands, North Macedonia, Poland, Portugal, Romania, Serbia, Slovenia, Spain, United Kingdom
Cooperating Member: Israel

Main and secondary proposers: 30,43% YRI / 60,90% Women / 68,75% ITC

International Cooperation
Near Neighbour Country: Kosovo*, Morocco

Industrial Dimension
SMEs: Italy, Portugal

CA24168
European Initiative to Enhance the Current SABV Policy in Preclinical Biomedical Research
(OC-2024-1-28173)

SUMMARY
The **EU-SABV COST Action** is designed **to equip researchers with both theoretical and practical knowledge to enhance the current Sex as a Biological Variable (SABV) initiative and integrate it into ongoing and future research.** The action is structured around four primary objectives: **1) Enhancing scientific rigor:** Improving the current SABV framework to boost scientific rigor, reproducibility, and the translational relevance of research findings across various fields in basic and preclinical biomedical research, encompassing both i*n vitro* and *in viv*o studies.
2) Addressing training and education gaps: Identifying shortcomings in training and providing evidence-based best practice guidance, along with educational resources, to support researchers in integrating SABV into their work. **3) Building multidisciplinary networks:** Creating the first pan-European network of SABV-dedicated researchers to facilitate collaboration across disciplines, including statisticians, animal welfare scientists, veterinarians, and bioinformaticians, fostering the exchange of resources, knowledge, and methods. **4) Developing guidelines and raising awareness:** Establishing evidence- based guidelines to improve the current SABV initiative, while engaging stakeholders through effective communication and advocating for changes in funding and publishing practices. Ultimately, the EU-SABV COST Action will lead to increased robustness and replicability of research findings in both basic and preclinical biomedical research, focusing on understanding why sex differences exist and how they are mediated. This will enrich our understanding of health, disease, and treatment responses. By fostering collaboration across various fields, the EU-SABV COST Action will ensure that these principles are embedded into the broader biomedical research landscape, contributing to more equitable and effective healthcare solutions.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Biological sciences: Zoology, including animal behaviour	1. sex as biological variable 2. study design 3. guidelines 4. translational relevance 5. replicability

COST Members
Main Proposer: Switzerland
Network of Proposers:
Full Member: Austria, Bosnia and Herzegovina, Croatia, Czech Republic, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Montenegro, Netherlands, Norway,
Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Sweden, Switzerland, Türkiye, United Kingdom

Main and secondary proposers: 51,56% YRI / 75,00% Women / 54,17% ITC

Industrial Dimension
Large companies: United Kingdom

CA24169
Science in Diplomacy Network: implementing multilateral policymaking in intersectoral, cross-disciplinary & strategic domains
(OC-2024-1-28231)

SUMMARY
The proposal addresses the need for advancing science diplomacy, a multidisciplinary field at the intersection of science, technology, and diplomacy, to tackle pressing global issues and other pre-eminent geopolitical challenges. The main goal of SiDnet is to create a network that fosters interdisciplinary, cross-sectoral and trans-European collaboration among diverse stakeholders, including researchers, policymakers, and industry leaders.

The work is organized into four interconnected Working Groups, each focusing on a different aspect of science diplomacy. WG1, "Diplomacy for Science within technological sovereignty and governance," seeks to facilitate international scientific collaboration while addressing concerns related to technological sovereignty, data governance, and security. WG2, "Science in Diplomacy for global challenges and sustainability," aims to integrate scientific advice into foreign policy, especially in relation to global challenges like climate change. WG3, "Science for Diplomacy via international scientific cooperation in difficult geopolitical contexts," focuses on using scientific collaboration to improve relations between nations, especially in regions of geopolitical tension. WG4, "Communication, Dissemination, Training, and Networking," ensures the widespread impact of the Action through public outreach, training, and effective dissemination of results.

The proposal emphasizes the role of SD as a tool for enhancing multilateral cooperation and addressing global challenges, while also promoting ethical standards, inclusivity, and responsible governance in emerging technologies. It aims to create a framework for sustainable international cooperation that balances national interests with global responsibilities and to stand out from other SD current initiatives thanks to the wide range of geografical, sectorial and disciplinary diversity that it can leverage within the network.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Political Science: International studies, strategic studies, human rights, global and transnational governance 2. Law: Legal theory, legal systems, constitutions, comparative law 3. Law: Legal aspects of environmental regulations and climate negotiations 4. Economics and business: Management of Technology and Innovation 5. Other engineering and technologies: Sustainability for other engineering and technologies	1. science diplomacy 2. policymaking 3. global challenges 4. multilateralism 5. technological sovereignty

COST Members
Main Proposer: Italy

Network of Proposers:

Full Member: Austria, Belgium, Croatia, Czech Republic, France, Germany, Greece, Hungary, Ireland, Italy, Moldova, Netherlands, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Switzerland, Türkiye, Ukraine, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 19,04% YRI / 40,50% Women / 50,00% ITC

International Cooperation
Near Neighbour Country: Kosovo*

Specific Organisations
European RTD Organisation: CERN

EU Institutions, Bodies, Offices and Agencies (EC/EU): university of Padova

Industrial Dimension
Large companies: France, Hungary

CA24170
Building resilient rural communities through synergy of traditional knowledge and technological innovation
(OC-2024-1-28239)

SUMMARY
Rural communities across Europe face unprecedented challenges in the 21st century, including depopulation, economic stagnation, climate change impacts, and digital divide. These challenges threaten the resilience and sustainability of rural areas, which are crucial for Europe's cultural heritage, food security, and ecological balance. The SMART-RURAL Action addresses these critical issues by proposing an innovative approach that integrates traditional knowledge with cutting-edge technologies to enhance rural resilience and promote sustainable development.
This Action aims to create a pan-European network of researchers, practitioners, policymakers, and rural community representatives to develop and implement strategies for building resilient rural communities through the synergy of traditional wisdom and technological innovation. SMART-RURAL will focus on four key areas: sustainable agriculture and food systems, renewable energy and resource management, digital connectivity and smart villages, and cultural heritage preservation and rural tourism. By bridging the gap between time-honored practices and innovative solutions, the project seeks to create sustainable development pathways for rural areas.
The Action will analyze best practices, identify knowledge gaps, develop a comprehensive framework for assessing rural community resilience, create and test innovative strategies for integrating traditional practices with modern technologies, evaluate the impact of these integrated approaches, build capacity in rural communities, and establish a multidisciplinary network to facilitate knowledge exchange between researchers, rural stakeholders, and policymakers. SMART-RURAL will contribute significantly to COST's mission of strengthening Europe's capacity to address scientific, technological, and societal challenges.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Other engineering and technologies: Sustainability in food science and technology 2. Agricultural biotechnology: Sustainable production 3. Social and economic geography: Socio-economic aspects of agriculture, agriculture and environment, urban agriculture, gardens, agricultural economy 4. Other social sciences: Qualitative methods for the social sciences 5. Other agricultural sciences: Databases, data mining, data curation, computational modelling for other agricultural sciences	1. Rural resilience 2. Traditional knowledge 3. Sustainable development 4. Digital innovation 5. Community empowerment

COST Members
Main Proposer: Moldova
Network of Proposers:
Full Member: Armenia, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Germany, Greece, Moldova, Netherlands, Romania, Serbia, Slovakia, Sweden, Türkiye

Main and secondary proposers: 27,77% YRI / 61,10% Women / 78,57% ITC