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CA20101 - Plastics monitoring detection remediation recovery

SUMMARY

The "Plastics monitoRIng detectiOn RemedIaTion recoverY - PRIORITY" Action aims to develop a research network focused on developing, implementing, and consolidating strategies to tackle the global challenge of micro- and nano-plastics environmental pollution. The Action will create a broad and skilled transdisciplinary network to establish a 360-degree view combining the partners' expertise in chemistry, physics, life science, engineering, standards, economy, and law. This network will maximize the European competitiveness in creating a robust infrastructure for scientific communication, exchange, and collaboration to foster new research activities and citizen science.
PRIORITY aims to enhance the technical standards for sampling and analysis of micro and nanoplastics in the environment, to develop a more reliable assessment of exposure and biological effects, and to advance activities in terms of remediation and recovery of the environment. The scientific community, economy and all the European citizens will benefit from the outcomes of the activities.
One of the targets is the harmonization of the European regulation associated with microplastics related issues. The Action will then support European Commission regulations organisms in critical aspects of environmental and ecosystems protection, food safety, and life science.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Environmental engineering: Water pollution	• microplastics • nanoplastics • monitoring • detection • remediation

COST Countries

Main Proposer: IT
Network of Proposers: AL, AT, BG, CH, CZ, DK, ES, FI, FR, HR, IE, IT, ME, MK, MT, NO, PL, PT, RS, SE, TR
Main and secondary proposers: 14% ECI / 46% Women / 52% ITC

International Cooperation

International Partner Country: India, Mexico, Nigeria

Industrial Dimension

Large companies: Italy, Norway

CA20102 - Marine Animal Forest of the world

SUMMARY

Major marine biodiversity hotspots occur within and around extended three-dimensional communities known as Marine Animal Forests (MAFs). MAFs are biotic assemblages mainly composed of suspension-feeding organisms like sponges, gorgonians, hard corals, bryozoans, bivalves, etc., that form erect canopies like the trees or shrubs on land, thus creating underwater forests. As Aichi targets have been impossible to achieve by 2020, we need networks that allow working together for the same objective, with special attention to marine ecosystems as the MAFs. These submersed forests provide ecosystem services which are essential for hundreds of million people worldwide. In this UN decade of the oceans we aim to provide the scientific basis for understanding and preserving the ecosystem services of the MAFs throughout the world. These ecosystem services are under increasing anthropogenic pressure and need a clear unifying picture to be shared with stakeholders and public. Developing a common protocol and gathering a consensus on the most appropriate tools to study and understand the animal forests' role will ultimately inform management, restoration and conservation initiatives. The network aims to develop an integrative vision that will fuel research and steer future policies on crosscutting sustainability-driven issues related to the fragmented governance of these benthic ecosystems in coastal and open ocean waters, creating cross-sectoral platform for partners across academia, policymaking and civil society, offering inclusive spaces for a transdisciplinary dialogue. We will also unify the protocols for restoration of the MAFs of the World, with nature-based solutions, to face climate change, natural disasters, and food supply.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Biological sciences: Environmental and marine biology • Biological sciences: Ecology • Biological sciences: Conservation biology, ecology, genetics • Biological sciences: Population biology, population dynamics, population genetics, plant-animal interactions • Earth and related Environmental sciences: Biological oceanography	• Marine Conservation • Marine biology and ecology • Marine restoration • Global change • Blue growth

COST Countries

Main Proposer: IT
Network of Proposers: AL, CY, DE, DK, EE, ES, FR, HR, IE, IL, IS, IT, ME, MT, NO, PL, PT, RO, SI, TR, UK
Main and secondary proposers: 15% ECI / 41% Women / 52% ITC

International Cooperation

International Partner Country: Australia, Brazil, Canada, Cape Verde, Chile, China, Colombia, Cuba, Japan, Mauritius, Mexico, South Africa, Taiwan, Thailand, United States

Industrial Dimension

SMEs: Spain

CA20103 - Biosecurity enhanced through training, evaluation and raising awareness

SUMMARY

Biosecurity is of paramount importance to prevent the introduction and spread of pathogens and, consequently, to preserve the health of farmed animals. Healthier animals result in better animal welfare, better sustainability of animal production systems and less antimicrobial use. Despite these benefits, biosecurity is limited by different factors: i) lack of knowledge on ways for improvement, especially in extensive systems or settings with low resources; ii) shortage of adequate ways to enhance communication; iii) diversity of methodologies to assess and measure the implementation of biosecurity measures and their cost-effectiveness and iv) low number of trained professionals. To approach these challenges, the Action will evaluate how biosecurity is currently used and will use participative approaches to understand motivators and barriers for biosecurity implementation. Knowledge generated through them will act as the baseline upon which to develop adequate communication and training on biosecurity. The Action will also perform a comparison of existing methods used to evaluate biosecurity. Exploiting these tools will promote the development of tailored options in farms based on the evaluation of their risks, on the feasibility of selected biosecurity measures and on their economic benefits. Moreover, the Action will identify training needs through the evaluation of existing training materials and will develop new courses, increasing therefore the number of trained professionals. Finally, the Action will recommend priority research areas for future biosecurity improvement in animal production systems. The Action objectives will be achieved through a transdisciplinary group where Early Career Investigators will play a key role in their attainment.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Animal and dairy science: Prevention and treatment of infection by pathogens (e.g. vaccination, antibiotics, fungicide) • Veterinary science: Veterinary medicine (miscellaneous) • Health Sciences: Epidemiology	• Biosecurity • Animal Health • Diseases • Animal Production Systems •

COST Countries

Main Proposer: ES
Network of Proposers: AL, AT, BA, BE, CH, DE, DK, EE, ES, FI, FR, HR, HU, IE, IT, ME, MK, NL, PL, PT, RO, RS, SE, SI, TR, UK
Main and secondary proposers: 20% ECI / 39% Women / 50% ITC

International Cooperation

International Partner Country: Argentina, Australia, Chile, Ecuador
European RTD Organisation: France

Industrial Dimension

SMEs: Portugal, Spain, Switzerland

CA20104 - Network on evidence-based physical activity in old age

SUMMARY

Sedentary lifestyle in old age is associated with increased risk of chronic and disabling diseases, premature mortality, and substantial economic burden for society. Increase in physical activity (PA), on the other hand, may compensate the negative effect of ageing and reduce the inactivity costs. However, not all exercise regimens are universally effective, and Inter-individual differences in responses to exercise training exist.
Therefore, there is an urgent need for creating "tailored" exercise programs that will fit the specific needs of the various and diverse ageing populations. A critical step towards this goal is embracing an evidence-based medicine (EBM) approach where conceptual challenges and pitfalls in basic research and clinical research on ageing and physical activity could be identified and addressed. Unmet needs and gaps in research and practice that currently hinder successful implementation of EBM for training of older adults are:
(1) Lack of consolidated research information needed for designing optimal, feasible and effective exercise programs for various target groups; (2) exclusion of disabled, low income and isolated older adults both research trials and exercise interventions; (3) Lack of real-world conditions studies over long periods and (4) Limited use of technological innovations for assessing, applying and enhancing exercise programs in old populations. The main aim of the COST Action PhysAgeNet is to establish a network that will foster evidence-based research and practice of physical activity in old age and will enhance integration of innovative technological solutions in order to promote health and reduce the burden of inactivity in ageing populations globally.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Health Sciences: Sport and fitness sciences • Clinical medicine: Geriatrics and gerontology	• standardisation • physical activity • old age • evidence-based medicine • exercise intervention

COST Countries

Main Proposer: DE
Network of Proposers: BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, HR, IL, IT, LT, LU, LV, MD, NL, PL, PT, RO, RS, SE, SI, UK
Main and secondary proposers: 23% ECI / 33% Women / 54% ITC

International Cooperation

International Partner Country: Australia, Brazil, Japan

CA20105 - Slow Memory: Transformative Practices for Times of Uneven and Accelerating Change

SUMMARY

We are living in times of deep contradictions. While our world accelerates and grows smaller through superfast digital networks, it is also marked by widening socio-economic disparities. We face viral pandemics, rapid species extinction, increased automation of work, quick fixes for mental health, political upheavals and displacements of old certainties. Adaptation and resilience to these challenges must draw on past experiences and cultural resources - this can only happen if we *slow down and take time to remember well.* This Action addresses the need for increased interdisciplinarity in our understanding of how societies confront their past to contend with environmental, economic and social changes brought on by sudden events and by slow and creeping transformations. The future of peace, prosperity, politics, work and climate will depend upon how we remember socio-cultural and political changes. Transformative practices of remembrance - as objects of study and as critical interventions - will be shared collaboratively across Arts and Sciences in order to reveal the ways in which humans confront large-scale processes of change. This Action will uniquely focus the attention of scholars, policymakers and cultural professionals on alternative paths to build resilience in the face of contemporary rapid-response culture. Through transnational and interdisciplinary discussions, we will address urgency, emergency, crisis and acceleration by drawing together the 'multi-sited', 'eventless' and slow-moving phenomena that can best be studied by 'slowing down' our research methods, to afford capacity building, knowledge generation and impact activities. Inspired by 'slow science' (Stengers 2018), we seek an alternative kind of social remembering.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Other humanities: Cultural heritage, cultural memory • History and Archeology: History of collective identities and memories, history of gender • Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty • Political Science: Violence, conflict and conflict resolution • Media and communications: Museums and exhibitions	• memory and heritage studies • oral history • inequality • political culture • democratic governance

COST Countries

Main Proposer: UK
Network of Proposers: AT, BA, BE, BG, CZ, DE, DK, EE, ES, FR, HR, HU, IL, IT, LU, NO, PL, RO, RS, TR, UK
Main and secondary proposers: 25% ECI / 46% Women / 52% ITC

International Cooperation

International Partner Country: South Africa

CA20106 - Tomorrow's 'wheat of the sea': Ulva, a model for an innovative mariculture

SUMMARY

A growing interest in the development of oceanic coastal shores has arisen over the past decade, seeking alternative sustainable food sources and other valuable products. Our initiative aims at exploiting the potential of marine seaweeds in Europe. Building on the successes of previous EU and pan-European projects on seaweeds, and due the unique characteristics of the genus *Ulva* (Linnaeus, 1753), we have identified these green algae as the most suitable candidate and model organism for a novel kind of European mariculture. Much of the knowledge on *Ulva,* generated in diverse scientific disciplines and different communities, is not easily comparable nor is it shared among scientists, stakeholders, end users and the public. This COST Action proposes an innovative conceptual pathway to address these issues, significantly improving knowledge in the biology of the most promising *Ulva* spp., capitalising on their economic potential, and exploring commercial applications in the human food, animal feed, pharmaceutical industries and ecosystem service. The COST Action combines interdisciplinary approaches to the sustainable use of marine resources, encompassing all the facets of *Ulva* biology, ecology, aquaculture, engineering, economic and social sciences. This Action will lead to the development of advanced science, create business and job opportunities in the maritime and coastal economies, and have a significant impact on societal welfare. This COST Action fulfils the current 'Societal Challenges Priorities' of European Horizon 2020 strategy for food security, and its application will contribute to the UN Sustainable Development Goals 14 (UNSDG) to conserve and sustainably exploit natural resources.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Agriculture, Forestry, and Fisheries: Aquaculture, fisheries • Agriculture, Forestry, and Fisheries: Sustainable production • Biological sciences: Environmental and marine biology	• seaweed • mariculture • production • ecosystem service • food security

COST Countries

Main Proposer: IL
Network of Proposers: AL, BE, CY, CZ, DE, DK, EE, EL, ES, IE, IL, IT, ME, NL, NO, PT, RO, RS, SI, SK, TR, UK
Main and secondary proposers: 13% ECI / 39% Women / 50% ITC

International Cooperation

International Partner Country: Brazil, China, India, Mexico, South Africa, South Korea

Industrial Dimension

SMEs: Brazil, Denmark, Greece, Ireland, Israel, Italy, Netherlands, Portugal, Turkey, United Kingdom
Large companies: Israel, Turkey

CA20107 - Connecting Theory and Practical Issues of Migration and Religious Diversity

SUMMARY

"Connecting Theory and Practical Issues of Migration and Religious Diversity" (COREnet) is an interdisciplinary network that aims at knowledge production, knowledge exchange and capacity building across Europe in the intersection of migration and religious diversity with a particular emphasis on bottom-up research. The background of the network is the pressing social situation that is characterised by the fact that migrants and Syrian war refugees coming to Europe, have become one of the major political issues and social challenges during the past years. Research, capacity building and exchange are important tools to analyse what lies behind these challenges and possible solutions. The network aims thus to contribute to overcoming divisions within and across European countries with the help of innovative approach that would add to existing social scientific knowledge on migration and religious diversity the study of religions and theological insights explaining the narratives of migrants and refugees. Drawing in researchers from all stages of their careers, and across different European countries, training a new generation of interdisciplinary action researchers capable of connecting study of religions and theology and the social sciences, and working that into action through processes of co-production. This network brings the bridging of knowledge with stakeholders – governmental, non-governmental and media organizations working in the field of diversity management on the local and national levels.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Sociology: Migration, interethnic relations • Philosophy, Ethics and Religion: Theology and religious studies • Political Science: Social policies, welfare state • Psychology: Social psychology • History and Archeology: Modern and contemporary history	• Migration • Religious Diversity • Social cohesion • Refugee crisis • Diversity management and practice

COST Countries

Main Proposer: LT
Network of Proposers: AT, BE, CZ, DE, EL, HR, HU, IT, LT, MK, MT, NO, PL, PT, RS, SE, SK, TR, UK
Main and secondary proposers: 16% ECI / 54% Women / 58% ITC

International Cooperation

International Partner Country: South Africa, United States

CA20108 - FAIR Network of micrometeorological measurements

SUMMARY

The current state of weather-induced agricultural losses, water use for irrigation, the appearance of new invasive species and disease vectors (strongly depending on micrometeorological conditions), new environmental zoning of plant diseases and pests, deforestation, increased urbanization, rural-to-urban migration and increased urban energy consumption for cooling/heating impose scientific and societal request to provide micrometeorological knowledge share platform (Micromet_KSP) in order to communicate: a) compiled an inventory of available and quality proven micrometeorological in situ data sets on the European level and beyond, b) measurement and data management recommendations designed in order to meet FAIR principles and avoid temporal and spatial gaps, c) examples of rural and urban FAIR data sets and d) Q&A exchanged between Action members, stakeholders, specialized user groups and the general public.
The FAIRNESS action intends to improve standardization and integration between databases/sets of micrometeorological measurements that are part of research projects or local/regional observational networks established for special purposes (agrometeorology, urban microclimate monitoring).
Addressing identified challenges requires an effective transboundary network of researchers, stakeholders (extension services and environmental agencies, local authorities and ministries, SME) and civil society (specialized and general public) from Europe and beyond to identify and fill knowledge gaps, standardize, optimize and promote new environmental-tailored measurement and control procedures, enhance research effectiveness and improve dissemination.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Earth and related Environmental sciences: Meteorology, atmospheric physics and dynamics • Earth and related Environmental sciences: Climatology and climate change	• rural micrometeorology • urban micrometeorology • climate change • measurement network • knowledge share platform

COST Countries

Main Proposer: RS
Network of Proposers: AT, BA, BE, BG, CH, CZ, DE, ES, FI, FR, HR, HU, IL, IT, LV, ME, NL, RO, RS, SI, SK, TR, UK
Main and secondary proposers: 20% ECI / 26% Women / 52% ITC

International Cooperation

International Partner Country: Australia, Canada, China, Hong Kong SAR, United States

Industrial Dimension

SMEs: Belgium, Netherlands, Serbia

CA20109 - Modular energy islands for sustainability and resilience

SUMMARY

The MODENERLANDS Action aims to merge and systematise the efforts of the European Research and Development (R&D) groups working on Sustainable Energy and the related technologies, in particular wind and wave energy sources, by proposing pathways for incorporation and by promoting the relevant synergies in Research, Education and Training in order to enhance Sustainability in the built environment. MODENERLANDS revisits safe, smart, modular, cost-effective and socially valuable high performance sustainable Energy Islands for consideration in the plans, design and development of the future sustainable energy infrastructure. Looking forward to future development, MODENERLANDS will work with Modularised Construction of Offshore Floating Platforms aiming at easily extending their size and capacity according to future energy needs. The concept of Modular Energy Island will act as a platform to maximise collection and conversion of the renewable energy sources and efficiently transfer them to the network, exploring cutting-edge Green Hydrogen related technologies for efficient energy storage and transportation. MODENERLANDS will promote synergies that will offer breakthrough scientific developments leading to new concepts and R&D outcome and thereby contributing to the strengthening of the European research and innovation capacities on Sustainable Energy Applications along the European Green Deal lines. The proposed European Network will develop a European-based scientific and technological network with strong scientific multi-/inter-disciplinary features that will work on the exploitation of the research outcomes related to Modular Sustainable Energy Islands by integrating all related stakeholders, thereby intensifying the links among scientific and research groups and Sustainable Energy industry.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Civil engineering: Sustainable engineering, adaptation to long-term environmental changes	• Renewable energy • Floating offshore platforms • Modular Construction • Green hydrogen • Energy storage

COST Countries

Main Proposer: PT
Network of Proposers: BA, BE, CH, CY, DE, DK, EL, HR, IT, LT, LU, MK, MT, NL, NO, PL, PT, RO, UK
Main and secondary proposers: 15% ECI / 29% Women / 53% ITC

International Cooperation

International Partner Country: Brazil, Canada, China

Industrial Dimension

SMEs: Brazil, Portugal
Large companies: Bosnia and Herzegovina, Netherlands

CA20110 - RNA communication across kingdoms: new mechanisms and strategies in pathogen control

SUMMARY

A new frontier in RNA biology has emerged in the last decade with findings that RNA is found outside of cells and can transmit information between cells, organisms and species as a form of communication. Pathogens can also exploit extracellular RNA (exRNAs) to enable their infections and exRNAs are associated with numerous infectious diseases in both animals and plants. However there are large gaps in knowledge on exRNA mechanisms, such as how exRNAs are selected for export, how they traffic outside the cell, how they integrate into a functional pathway in a recipient and how pathogens exploit these mechanisms. While there are coordinated efforts to advance exRNAs as biomarkers in the USA, the focus is primarily on exRNA detection in body fluids. Advancing the budding field of exRNA and harnessing its potential in understanding and treating disease urgently requires mechanistic understanding. exRNA-PATH will promote European leadership in this field by integrating a network of investigators examining exRNA communication mechanisms across diverse biological systems, with a specific focus on host-pathogen interactions. exRNA-PATH will facilitate an integrated approach to advancing the exRNA field and aligning applications with sustainable development goals in infectious disease and pest control based on coordinated objectives: i) define an agenda for exRNA research that is rooted in mechanistic understanding, ii) align investigators across diverse biological systems (animals, plants, microbes, fungi) and iii) bridge communication between different stakeholders in the exRNA field to create new synergies and innovative solutions to medical, societal and environmental challenges.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Biological sciences: Biochemistry • Biological sciences: RNA synthesis, processing, modification and degradation • Biological sciences: Molecular biology and interactions • Biological sciences: Microbiology • Biological sciences: Bioinformatics	• extracellular RNA • Cross-species communication • RNA interference • host-pathogen • extracellular vesicle

COST Countries

Main Proposer: UK
Network of Proposers: CY, CZ, DE, EL, ES, FR, IL, IT, LU, NL, PL, PT, RO, RS, SI, TR, UK
Main and secondary proposers: 34% ECI / 50% Women / 53% ITC

International Cooperation

International Partner Country: Argentina, Australia, Hong Kong SAR, United States

Industrial Dimension

SMEs: Italy, Netherlands, Portugal

CA20111 - European Research Network on Formal Proofs

SUMMARY

If testing can reveal errors in computer programs, only formal verification can guarantee their absence. The highest Evaluation Assurance Levels of the Common Criteria for Information Technology Security Evaluation require automatically checked mathematical proofs of correctness. Proofs are also the basis of mathematics and many sciences, and thus are very important in education and research.
In many computer technologies, developers and users rely on standard languages and protocols for exchanging data and enabling tool interoperability: TCP/IP for network communication, HTML for web pages, etc. This is however not the case for formal proofs, which is a major bottleneck for their adoption by the industry. The main reason is that, currently, proof systems use mutually incompatible logical foundations. Fortunately, only small parts of the proofs developed in a system use features that are incompatible with other systems.
Europe is a leading actor in the area of formal proofs: about 65% of the proof systems of the world are developed in Europe, including the two most used proof assistants, Coq and Isabelle. This action aims at boosting the interoperability and usability of proof systems and making formal proofs enter a new era. For the first time, it gathers all the developers and users of proof systems in Europe. To make the proofs exchangeable, they will express, in a common logical framework, the logical foundations of their systems and develop tools for inter-translation of the proofs developed in individual systems to and from this common logical framework.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Computer and Information Sciences: Theoretical computer science and formal methods • Mathematics: Logic and foundations • Computer and Information Sciences: Artificial intelligence, intelligent systems, multi agent systems	• logic, type theory and formal proofs • automated and interactive theorem proving • software, hardware and cyber-physical system verification • artificial intelligence and machine leaning for proofs • interoperability and proof engineering

COST Countries

Main Proposer: FR
Network of Proposers: AT, BE, BG, CZ, DE, DK, EE, ES, FR, HR, HU, IS, IT, LU, MK, NL, NO, PL, PT, RO, RS, SE, SI, UK
Main and secondary proposers: 42% ECI / 33% Women / 50% ITC

CA20112 - Platform of policy evaluation community for improved EU policies and better acknowledgement

SUMMARY

The Action PROFEEDBACK aims to foster the networking of the policy evaluation community at EU-level, raise awareness on the importance of evaluation policy research and improve its impact on policy-making. The Platform, following a bottom-up and open approach, will gather researchers and professionals from various scientific fields and sectors to present and evaluate theories, topics, tools and methods of policy evaluation. Results of the Europe-wide assessment of good practices will provide direct and high-quality inputs for national and EU bodies responsible for policy evaluation.
Policy evaluation is a key tool in understanding, developing and modernising EU policies, thus there is a growing demand for EU-wide and high quality evaluation services. The main challenge is that currently there is no bottom-up platform for European researchers and professionals working in policy evaluation. They have limited possibilities to discuss common problems, assess country specific practices and share their knowledge in a mutually beneficial and effective way.
PROFEEDBACK aims to tackle this challenge with an innovative, complex, cross-sectoral and multidisciplinary approach by: analysing the theoretical and methodological questions of evaluation policy research putting special focus on Cohesion Policy, enriching scientific research of policy evaluation and addressing new challenges, harmonizing fragmented approaches to set the research agenda and to get a common understanding, contributing to the capacity building of the policy evaluation community, involving national and EU policy-makers and the civil society to contribute to evidence-based policy-making, framing a Code of Conduct for the policy evaluation community.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Other social sciences: Qualitative methods for the social sciences • Other social sciences: Quantitative methods for the social sciences • Other social sciences: Databases, data mining, data curation, computational modelling	• policy evaluation • evaluation research • evaluation community

COST Countries

Main Proposer: HU
Network of Proposers: AT, BE, BG, CH, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, RO, RS, SE, SI, SK
Main and secondary proposers: 8% ECI / 17% Women / 50% ITC

Industrial Dimension

SMEs: Austria, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Netherlands, Portugal, Romania, Serbia, Slovakia

CA20113 - A sound proteome for a sound body: targeting proteolysis for proteome remodeling

SUMMARY

The ProteoCure COST Action aims at fostering research and innovation in the field of proteolysis with the goal of manipulating the proteolysis machinery for the development of novel, specific and efficient therapies.
Proteins are essential molecular actors in every cellular process. From their synthesis to their degradation, they are subject to continuous and precise quality control mechanisms to ensure that they properly and timely take on their functions to fulfil cellular needs.
Proteolysis (i.e. degradation of proteins) is a key biological process that directly controls individual protein levels. It also ensures the degradation of abnormal proteins. Malfunctions of the proteolysis machinery leading to accumulation of deleterious proteins or in the opposite to excessive degradation of beneficial ones are implicated in multiple human diseases such as cancers, neurodegeneration, developmental and aging disorders, as well as in infectious diseases. Therefore, manipulating the proteolytic machinery to control abundance of specific proteins is a strategy of enormous potential for therapeutic intervention.
ProteoCure will gather European researchers from the academic, clinical, and industry sectors, interested to develop a knowledge-based network fostering research on this issue. By organizing community-building activities, fostering synergies among European scientists and reinforcing the training of the next generation of European researchers, the Action will allow creation of a large and creative exchange hub focusing on normal and pathologic proteolysis, and on the development of innovative tools modulating the level of specific protein(s). The final aim is to facilitate the translation of novel discoveries into products of clinical and/or economical value.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Biological sciences: Protein synthesis, modification and turnover	• Proteases • Therapeutic targeting • Ub/UbL-dependent pathways • PROTACS

COST Countries

Main Proposer: ES
Network of Proposers: AT, BE, CH, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IL, IT, LT, LU, NL, PL, PT, RO, RS, SI, TR, UK
Main and secondary proposers: 8% ECI / 50% Women / 50% ITC

Industrial Dimension

SMEs: France, Netherlands
Large companies: Belgium, Denmark, United Kingdom

CA20114 - Therapeutical applications of Cold Plasmas

SUMMARY

Despite scientific and technological progress in the medical field, the treatments available today are still not completely effective concerning the fight against cancer, tissue regeneration and repair or drug-resistant pathogens, including newly emerging infections. Besides, some of the currently associated therapies associate high economic and/or societal costs. In this sense, Cold Atmospheric Plasmas have emerged as a powerful technique involving a vast number of reactive species (molecules, atoms, ions, electrons, photons, UV & visible radiation) which have demonstrated to affect cells through complex biochemical procedures, opening a great window of opportunity in the novel area known as Plasma Medicine.
This has led to an exponential increase in the research in different areas of plasma medicine, including cancer, tissue regeneration and repair and antimicrobial action which are the focus of this MedPlasma COST Action. However, many challenges still threaten this promising field to move forward, such as clarification of the mechanisms involved in the therapeutical action of plasmas and plasma-conditioned liquids, insufficient standardization, or an urgent need for enhanced dialogue and interaction between scientists (plasma experts, biologists), medical doctors or industry among others. In these circumstances, this MedPlasma COST Action aims at establishing a synergistic network that articulates researchers, the medical community, industry or patient associations, among others, and coordinate the European activity in this domain to foster the leadership of Europe in this emerging field.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Medical engineering: Medical engineering and technology	• Cold Plasmas • Cancer • Decontamination • Wound Healing • Tissue regeneration

COST Countries

Main Proposer: ES
Network of Proposers: BE, BG, CY, CZ, DE, EE, ES, FR, HR, HU, IE, IT, LU, MT, PL, PT, RO, RS, SI, SK, UK
Main and secondary proposers: 17% ECI / 38% Women / 67% ITC

International Cooperation

International Partner Country: Canada, Japan, United States

Industrial Dimension

SMEs: Slovenia, Spain

CA20115 - European network on international student mobility: connecting research and practice

SUMMARY

Over the past decades, international student mobility in higher education has expanded rapidly. This growth has sparked a considerable interest in international student mobility (ISM) within different disciplines, research communities, and circles of practitioners and policy makers. However, there is surprisingly little connection and exchange among ISM researchers across these spheres. In addition, ISM scholarship remains strongly restricted to scientific circles, despite the relevance that scientific knowledge on ISM has for the formulation of policy recommendations and for transferring best practices to stakeholders' daily work. This Action responds to the pressing need for systematic interdisciplinary and international exchange of knowledge on theoretical frameworks, research methodologies, findings, and best practice examples in the field of ISM, and for translating scientific findings into recommendations for ISM practice. It is organised around four major thematic areas, namely:
(1) Global ISM flows and trends at the macro-level;
(2) Social inequalities in access to and during ISM;
(3) The social and cultural integration of international students in their host countries;
(4) The impact of ISM on graduates' careers.
The Action brings together established, early-career investigators (ECIs) and PhD students from different scientific disciplines, countries, and research communities as well as stakeholders from international offices, international student and study abroad organizations, and different policy levels. The Action will offer comparative and practical insights into ISM dynamics by bringing fragmented knowledge together, with the main aim of generating new interdisciplinary and innovative empirical perspectives on the phenomenon and translating these into tangible recommendations for stakeholders.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Sociology: Migration, interethnic relations • Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty • Sociology: Anthropology, ethnology, cultural studies • Other social sciences: Databases, data mining, data curation, computational modelling	• international student mobility • study abroad • international student migration

COST Countries

Main Proposer: NL
Network of Proposers: BE, DE, EE, ES, FI, HR, LU, MK, NL, NO, PL, PT, RO, SE, SI, SK, TR, UK
Main and secondary proposers: 55% ECI / 50% Women / 56% ITC

International Cooperation

International Partner Country: New Zealand, Singapore, United States

CA20116 - European Network for Innovative and Advanced Epitaxy

SUMMARY

The world is now facing challenges affecting our daily-life that include, among the most acute, health care, energy, telecommunications, sustainable industry, smart cities and climate action. The successful response to these challenges lies on our ability to solve technological roadblocks related to the development of advanced devices. Material science is at the heart of technological developments. Especially, epitaxy has always been the most powerful technique to fabricate/manufacture materials while controlling their properties at nanoscale, enabling the development of advanced devices. Today, material development becomes more vital than ever. To break down the barriers limiting the development of more efficient devices, continuous innovation is essential. To build the foundation of new epitaxial and material science solutions, a European-level structure in epitaxy is today crucial to enhance knowledge sharing at wide scale thanks to cross-community discussions and exchanges. The COST Action “European Network for Innovative and Advanced Epitaxy”, named OPERA, will build a new and innovative European Network composed of expert communities in epitaxial growth focusing on different materials classes: conventional semiconductors, oxides and 2D materials. It aims to bridge the gap between traditionally separated scientific communities, both academic and industrial, having the common goal to combine complementary knowledge, push further the material maturation, and exploit epitaxial combinations of the different material classes in order to unveil new properties and produce new functionalities. Based on this organization, the OPERA COST Action will foster interdisciplinary collaborative research activities allowing maintaining European epitaxy at the topmost worldwide level of research and innovation.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Physical Sciences: Semiconductors, material growth, physical properties (theory) • Materials engineering: New materials: oxides, alloys, composite, organic-inorganic hybrid • Materials engineering: Semiconductors, material growth, physical properties for materials engineering applications	• Epitaxy • Material science • Hybrid material systems • Multi-functionalities

COST Countries

Main Proposer: FR
Network of Proposers: AT, BE, BG, CH, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MD, NL, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 27% ECI / 34% Women / 53% ITC

International Cooperation

International Partner Country: Canada, New Zealand
European RTD Organisation: Greece, Luxembourg

Industrial Dimension

SMEs: Finland, France, Lithuania, Netherlands, Norway, Sweden
Large companies: Germany, Poland, Turkey

CA20117 - Converting molecular profiles of myeloid cells into biomarkers for inflammation and cancer

SUMMARY

Myeloid immune cells are important mediators in the pathology of many diseases, especially in diseases associated with chronic inflammation (DACI). Recent advancements in molecular profiling technologies have led to the generation of large data sets, many of those not fully explored yet, but accessible to the entire scientific community via public data repositories. It is the aim of this COST Action to repurpose those data sets, retrieve and curate myeloid cell-specific information, and apply this information to develop novel biomarkers for DACI. To this end, Mye-InfoBank will utilise COST networking tools to enable the interaction of molecular biologists, bioinformaticians, immunobiologists, biobank coordinators and clinicians. The concerted activity of these experts on myeloid cell biology (either basic or clinical research) MYE, bioinformatics INFO, and bio-banking BANK, will transform complex molecular information into standardised and applicable biomarkers, which have the potential to improve clinical decision making in a number of socio-economically important diseases.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Basic medicine: Biological basis of immunity related disorders	• Myeloid cells • Molecular profiling • Biobanking • Diseases associated with chronic inflammation • Biomarkers

COST Countries

Main Proposer: DE
Network of Proposers: AT, BE, CY, CZ, DE, EL, FR, HU, IL, IT, LT, LU, NL, NO, PL, PT, RO, RS, SK, TR
Main and secondary proposers: 13% ECI / 40% Women / 55% ITC

Industrial Dimension

SMEs: Italy, Luxembourg

CA20118 - Three-dimensional forest ecosystem monitoring and better understanding by terrestrial-based technologies

SUMMARY

Forest ecosystems across the world are facing high pressures due to climate changes. In many areas, they are in a transition to adopt the changes. However, many are damaged in this process. It is crucial to make forest ecosystems more resistant to face these challenges, through resilience strengthening and close-to-nature forestry. Implementing such approaches and monitoring their progress requires accurate knowledge about forest ecosystems that rely on a forest *in situ* data at high spatial and temporal resolution. Novel terrestrial-based technologies will play an important part to face these challenges. Such technologies have experienced a fast development in recent years. The forests can now be observed and monitored in a very high spatial and temporal resolution that was not possible even a few years ago. Researchers and practitioners are facing a unique opportunity to deepen the understanding of forest ecosystems and to change the forestry to adopt the climate, environment and industrial changes. Various research groups across EU and beyond are testing such technologies or developing processing algorithms for precision forestry and forest ecology. But further cooperation is strongly required. 3DForEcoTech project aims to establish a strong network of scientists and stakeholders (i.e. practitioners) and sensor manufacturers to synchronise the knowledge, to develop general protocols and algorithms for forest ecosystem state survey and forest functioning, and to make these novel technologies available to a broad audience. Specifically, 3DForEcoTech will develop protocols for data acquisition, processing, fusion for forest inventory and ecological applications, and will establish open-data and open-source algorithm databases.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Agriculture, Forestry, and Fisheries: Sustainable forest management • Agriculture, Forestry, and Fisheries: Forestry: fauna and flora • Environmental engineering: Remote sensing • Earth and related Environmental sciences: Terrestrial ecology, land cover change	• Laser scanning • Photogrammetry • Forest • Forest Ecology • Remote Sensing

COST Countries

Main Proposer: CZ
Network of Proposers: AL, AT, BA, BE, BG, CH, CZ, DE, DK, EE, ES, FI, FR, HR, HU, IE, IS, IT, LV, ME, MK, NL, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 29% ECI / 37% Women / 53% ITC

International Cooperation

International Partner Country: Brazil, Canada, United States

Industrial Dimension

SMEs: Ireland
Large companies: Latvia

CA20119 - European andrology network– research coordination, education and public awareness

SUMMARY

ANDRONET aims to boost research collaboration, education and public awareness in andrology, a field of science that deals with male health. Currently there are no European- or world-wide networks through which researchers and clinicians in andrology can interact. The need for such a network is urgent due to the increasing incidence of infertility and testicular cancer, worrying reports of an association of poor reproductive function with poor health, and male predisposition to serious diseases, including Covid-19, leading to shorter life expectancy in men. Male infertility is common, but the patients are currently treated through assisted reproduction technology with primary burden on women. The aetiology of male reproductive problems is heterogeneous and comprises complex interactions between multiple genes and epigenetic factors, with largely unknown impact of environmental factors including infections. This COST Action proposes to increase multidisciplinary research collaboration and data exchange among andrology centres, and transfer of knowledge to European countries with less developed research. The initial consortium includes centres comprising complementary clinical and research expertise at a very high level, but ANDRONET will expand to reach a critical mass necessary for obtaining new knowledge and its possible commercial exploitation across Europe. ANDRONET aims to improve professional education in andrology which is fragmented among several medical branches and will contribute to the recognition of andrology as a medical subspecialty at European level. ANDRONET will strive to properly inform the public with evidence-based knowledge and thereby increase awareness of increasing male health problems and contribute to development of preventive measures.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Health Sciences: Health services, health care research	• infertility • male health • spermatogenesis • omics • diagnosis

COST Countries

Main Proposer: ES
Network of Proposers: BE, BG, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IT, LT, LV, MD, ME, MK, NL, NO, PL, PT, RO, SE, UK
Main and secondary proposers: 5% ECI / 37% Women / 52% ITC

International Cooperation

International Partner Country: Australia

Industrial Dimension

SMEs: Montenegro, Romania

CA20120 - Intelligence-Enabling Radio Communications for Seamless Inclusive Interactions

SUMMARY

INTERACT vision is to go beyond the capabilities of the 5G vision and to make the radio network itself intelligent. This is required in order to enhance the human experience of both human-to-human and human to-machine communications, and make it seamless, with the perception of no intermediary. Machine learning is an important tool in implementing this vision, since along with advanced network architectures and distributed content provision, it provides a means of implementing many aspects of this network intelligence. However, its use must be informed by theoretical and experimental research on radio channel models, network architectures and signal processing algorithms.
Hence, the main scientific objectives of INTERACT are:
1. To perform fundamental research in the fields of antennas and propagation, signal processing and localisation, and network architectures and protocols, to design intelligent-enabling radio communications.
2. To make the wireless network intelligent, meaning aware, adaptive, and parsimonious. Similarly to cities and buildings, future wireless networks should become intelligent by taking advantage of cutting-edge technologies to cope with the increasing demand for connectivity and traffic density and to bring the user experience to a new level.
3. To contribute to the creation of intelligent environments. Not only will mobile radio networks become intelligent, but they will constitute the nervous system to foster intelligence in other systems and verticals, such as ehealth, transportation, industry, buildings and cities.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Electrical engineering, electronic engineering, Information engineering: Communications engineering and systems (select for additional explanation)	• Radio Channel Modeling • Radio Access Networks • Internet of Things • Vertical Applications • Machine Learning

COST Countries

Main Proposer: IT
Network of Proposers: AT, BA, BE, CH, CY, CZ, DE, EE, ES, FI, FR, HR, HU, IE, IT, LT, LU, ME, MK, NL, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 16% ECI / 21% Women / 57% ITC

International Cooperation

International Partner Country: China, Colombia, Japan, United States

Industrial Dimension

SMEs: Austria, France, United Kingdom, United States
Large companies: Finland, France, Germany, Norway, Sweden

CA20121 - Bench to bedside transition for pharmacological regulation of NRF2 in noncommunicable diseases

SUMMARY

Non-communicable diseases (NCDs) such as cancer, diabetes, cardiovascular, neurodegenerative, respiratory or immune diseases, account for 77% of all deaths in the EU and remain the most prevalent and without effective therapy. Networking among multidisciplinary teams that face disease from a perspective of causative pathomechanisms rather than clinical symptoms is the most appropriate approach to overcome this problem. Such pathomechanisms imply the loss of homeostatic functions leading to the pathologic formation of reactive oxygen species, chronic inflammation, metabolic unbalance and proteinopathy. The transcription factor NRF2 is a master regulator of multiple cytoprotective responses and a key molecular link among many NCDs. It provides a unique strategy for drug development and repurposing that is now starting to be translated to the pharmacological and clinical arena. This Action will build a network of excellence for integrating and spreading the existing knowledge and providing innovative services, drugs and tools related to NRF2-pharmacology, with the final goal of boosting the translation to the European industry sector. To achieve this, the Action has already gathered a wide set of professionals from different disciplines (medical chemistry, pharmacology, clinical research, molecular biology, bioinformatics, etc.) and sectors (universities, research centres, hospitals, biobanks, biotech SMEs and pharma companies, etc.). At present the action
accounts 24 COST countries (66,7% ITC) plus 2 IPCs and 2 NNC. Among 73 proponents, 7 are SMEs, 18 are ECIs and 53.4% are women. Thanks to COST tools the Action will boost the career of young researchers, wide participation (especially from ITC countries), and spread excellence.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Basic medicine: Pharmacology, pharmacogenomics, drug discovery and design, drug therapy • Basic medicine: Systems biology • Clinical medicine: Non-communicable diseases	• Nrf2 • Homeostasis • Noncommunicable diseases • Pharmacology • Chronic Diseases

COST Countries

Main Proposer: ES
Network of Proposers: AL, AT, BG, CY, CZ, DE, EE, ES, FI, HU, IE, IT, LU, LV, MK, PL, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 25% ECI / 53% Women / 67% ITC

International Cooperation

International Partner Country: Japan, United States

Industrial Dimension

SMEs: Egypt, Romania, Spain, United Kingdom, United States
Large companies: North Macedonia

CA20122 - Harmonizing clinical care and research on adrenal tumours in European countries

SUMMARY

Adrenal tumours affect more than 3% of the population aged > 50 years, and their absolute prevalence is increasing due to population aging. Most of these tumours are benign and hormonally inactive. However, 2-10% of them are at risk of malignancy, and 20-40% present hormone over-secretion, leading to significant morbidity.
Management of adrenal tumours is quite heterogeneous, and this leads to substantial inequality in patient care throughout Europe. In this context, the goal of HARMONISATION is to constitute a multidisciplinary network to harmonise clinical care and research on adrenal tumours throughout Europe. Our focus will be on COST Inclusiveness Target Countries (ITCs). In addition, this collaborative network will establish a modern framework to develop a new generation of real-time and real-life randomized clinical trials, which will be federated and registry-based. For this purpose, HARMONISATION will be organized in five Working Groups: 1. Harmonizing clinical practice for adrenal tumours; 2. Harmonizing adrenal tumour research and -omics practice; 3. Harmonizing Information Technology/Artificial Intelligence (AI) tools towards a standardized registry; 4. Harmonizing the ethical and legal framework required for federated European trials; and 5. Communication, dissemination, and inclusiveness.
The successful execution of HARMONISATION's goals is guaranteed by the collaboration of clinicians, researchers, and experts from other relevant fields, including artificial intelligence, data science data protection, legal and ethical issues, and patients' representatives.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Clinical medicine: Endocrinology and metabolism (including diabetes, hormones) • Clinical medicine: Databases, data mining, data curation, computational modelling • Clinical medicine: Ethics of clinical medicine • Health Sciences: Health services, health care research • Computer and Information Sciences: Artificial intelligence, intelligent systems, multi agent systems Artificial intelligence, intelligent systems, multi agent systems	• Adrenal tumours • Adrenal clinical care and research harmonization • Legal and ethical trial framework • Federating information technologies • Patients' reported outcomes

COST Countries

Main Proposer: HR
Network of Proposers: BG, CH, DE, EL, ES, FR, HR, HU, IT, LT, ME, NL, PL, PT, RS, SE, SI, TR, UK
Main and secondary proposers: 29% ECI / 53% Women / 53% ITC

International Cooperation

International Partner Country: Canada

Industrial Dimension

SMEs: France

CA20123 - Intergovernmental Coordination from Local to European Governance (IGCOORD)

SUMMARY

Achieving coordination between executive actors of territorial units is one of the major challenges of today's politics. External effects and thus the interdependence of political actions beyond borders of sovereign authority have increased dramatically, necessitating better coordination of decision-making and actions across territorial units as well as across levels of government in an increasingly complex environment. The effectiveness and legitimacy of democratic governance in modern States depends crucially on their coordination ability. There is still a serious lack of knowledge among scholars and practitioners on how to organize and process intergovernmental coordination in those various instances. Moreover, there is still no systematic connection between the various research communities dealing with the issues from their separate perspectives, such as federalism, European governance or local and regional governance scholars. IGCOORD aims at connecting those different strands of research to provide systematic and comparable insights in the institutions, mechanisms and processes of intergovernmental coordination in the horizontal and in the vertical direction, across levels of government, policy sectors and territorial units. More specifically, it aims at 1) collecting comparative evidence, 2) distilling basic mechanisms and causal explanations from analytic comparison, 3) developing new collaborative research questions and d) disseminating those insights and results to inform real-world policy-making.
IGCOORD is particularly well suited to tackle those challenges because it links expertise that remained unrelated to date from different countries, (sub-)disciplines and problem situations. Fundamentally, only a broad and diverse network of scholars can generate innovative insights and produce knowledge relevant to the political practice.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Law: Legal theory, legal systems, constitutions, comparative law • Political Science: Public administration, public policy • Economics and business: Public economics, political economics	• intergovernmental relations • Multilevel systems • governance • Coordination • Fiscal Relations

COST Countries

Main Proposer: SI
Network of Proposers: AT, BA, CH, CY, CZ, DE, ES, HR, HU, IT, LT, LU, LV, ME, MK, NO, PL, PT, RO, RS, SI, SK, TR, UK
Main and secondary proposers: 27% ECI / 59% Women / 71% ITC

International Cooperation

International Partner Country: Canada, United States

Industrial Dimension

Large companies: Portugal

CA20124 - Maximising impact of multidisciplinary research in early diagnosis of neonatal brain injury

SUMMARY

Five in every 1000 babies born each year have a condition linked to brain injury. For newborn term infants, lack of oxygen is a common cause of injury; for premature infants, an immature cardiovascular system can lead to brain injury. These injuries can result in death, cerebral palsy, or neurodevelopmental delay. Early diagnosis is essential for risk stratification and targeted neuro-protective strategies. Central to an early diagnosis is continuous brain monitoring.
The AI4NICU Action will create a pan-European multidisciplinary network with the clinical and technical expertise required to bring artificial intelligence (AI)-enabled decision-support tools to the neonatal intensive care unit (NICU). These AI tools build on existing cot-side technologies, such as the electroencephalogram, by including machine-learning algorithms to detect biomarkers of brain injury.
Neuro-physiological data sets are limited in size and scope and not freely available; AI4NICU will develop the tools necessary to acquire, pool, share, and manage data. These data are often complex and noisy, and standards for developing and appraising machine-learning algorithms are lacking; AI4NICU will create a framework to develop, test, and compare these algorithms. A lack of coordinated effort, sometimes exacerbated by a disconnect between clinicians and scientists/engineers, impedes progress; AI4NICU will expand the research community, consolidate existing fragmented efforts, and create and enhance productive synergies.
Working with all stakeholders, AI4NICU will identify roadblocks to clinical implementation and propose designs for clinically useful prototypes. This Action will address the urgent, unmet need to reduce the potentially catastrophic life-long consequences of neonatal brain injury.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Medical engineering: Databases, data mining, data curation, computational modelling • Computer and Information Sciences: Machine learning algorithms • Electrical engineering, electronic engineering, Information engineering: Statistical data processing and applications using signal processing (eg. speech, image, video) • Clinical medicine: Paediatrics • Clinical medicine: Clinical neurology	• neonatal brain • machine learning • decision support • brain injury • diagnositics

COST Countries

Main Proposer: IE
Network of Proposers: BE, CZ, ES, FI, HR, HU, IE, IT, NL, PL, PT, RO, RS, UK
Main and secondary proposers: 25% ECI / 50% Women / 50% ITC

Industrial Dimension

SMEs: Serbia
Large companies: Spain

CA20125 - Applications for zoosporic parasites in aquatic systems

SUMMARY

Zoosporic parasites (i.e. fungal and fungal-like aquatic microorganisms) constitute important drivers of natural populations, causing severe mortality of host. Economic impacts of parasitic diseases are notable in microalgae biotech industry, affecting production of food ingredients and supplements, bioactive medicinal and biofuels. While scientific research on this topic is gaining traction by increasing studies elucidating the functional role of zoosporic parasites in natural ecosystems, we are currently lacking integrated and interdisciplinary efforts for effectively detecting and controlling parasites in the microalgae industry. To fill this gap we propose to establish an innovative, dynamic European network connecting scientists, industries and stakeholders to optimize information exchange, equalize access to resources and to develop a joint research agenda. ParAqua aims at compiling and making available all information on the occurrence of zoosporic parasites and their relationship with hosts, elucidate drivers and evaluate impacts of parasitism in natural and man-made aquatic environments. We aim to implement new tools for monitoring and prevention of infections, and to create protocols and a Decision Support Tool for detecting and controlling parasites in the microalgae biotech production. Applied knowledge on zoosporic parasites can feed-back from industry to ecology, and we therefore will explore whether the developed tools can be applied for monitoring lakes and reservoirs. Short-Term Scientific Missions and Training Schools will be organised specifically for early-stage scientists and managers – with a specific focus on ITC – with the aim to share and integrate both scientific and applied expertise and increase exchange between basic and applied researchers and stakeholders.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Biological sciences: Population biology, population dynamics, population genetics, plant-animal interactions • Agriculture, Forestry, and Fisheries: Aquaculture, fisheries	• Host-parasite interaction • Microalgal biotech • Ecosystem monitoring

COST Countries

Main Proposer: FR
Network of Proposers: AL, AT, BA, BG, CH, CY, CZ, DE, EE, ES, FR, HU, IL, IS, IT, LV, ME, MK, NL, PL, PT, RO, RS, SI, TR, UK
Main and secondary proposers: 27% ECI / 50% Women / 62% ITC

International Cooperation

International Partner Country: Japan, New Zealand, United States

Industrial Dimension

SMEs: Cyprus, Iceland, Israel, Italy, Netherlands, Portugal, Slovenia, Spain, United Kingdom

CA20126 - Network for research, innovation and product development on porous semiconductors and oxides

SUMMARY

The NETPORE COST Action will create an international network of world-class researchers and stakeholders to promote joint ideas and initiatives aiming to bridge the gap between fundamental developments and practical applications of technologies based on porous semiconductors and oxides. Recent fundamental advances in porous semiconductors and oxides have demonstrated promising performances of these platform technologies for a broad range of energy and health applications. But the bench-to-bedside translation of these advances remains challenging. Current factors preventing these technologies from reaching the market are: product reliability, cost-effectiveness of production, uncertain long-term performance and benchmark reference, and added value of final product. NETPORE COST Action network will foster cutting-edge research and innovation in this technological field by providing opportunities for joint projects through Working Groups, bringing together a wide pool of expertise across academia and industry. NETPORE COST Action network will: i) develop of a joint research roadmap to boost the transfer of knowledge by coordinating strategies among different actors with the objective of addressing big societal challenges in energy, health and the environment, harnessing advanced technologies using porous semiconductors and oxides; ii) act as a platform to further advance potentially marketable technologies by identifying strengths and weaknesses, needs and requirements of markets; iii) create venues to disseminate these technological advances and provide technical formation activities for young emerging researchers; and iv) promote networking activities in order to attract talent, build more and better joint research projects with clearly defined objectives to exploit technological advances and open exciting new business opportunities.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Materials engineering: New materials: oxides, alloys, composite, organic-inorganic hybrid • Nano-technology: Nano-materials and nano-structures • Materials engineering: Semiconductors, material growth, physical properties for materials engineering applications • Materials engineering: Structural properties of materials • Materials engineering: Biomaterials, metals, ceramics, polymers, composites	• Porous Semiconductors • Nanopores, Mesopores, Macropores • Smart Functional Surfaces

COST Countries

Main Proposer: ES
Network of Proposers: AT, BG, CZ, DE, ES, FI, FR, HR, HU, IL, IT, NO, PL, PT, RO, RS, SI, TR, UK
Main and secondary proposers: 15% ECI / 36% Women / 53% ITC

International Cooperation

International Partner Country: Argentina, Australia, China, Colombia, United States

Industrial Dimension

SMEs: Austria, Norway, Spain, Turkey, United Kingdom

CA20127 - Waste biorefinery technologies for accelerating sustainable energy processes

SUMMARY

By 2030, the bio-based economy is expected to have grown significantly in Europe. One of the pillars of this bioeconomy is the concept of BIOREFINERY, the sustainable processing of several kinds of waste and biomass into a spectrum of marketable products and energy. While in the past many research efforts have been conducted towards understanding, modelling and designing conversion processes that can sustain a true circular economy, this KNOWLEDGE IS QUITE FRAGMENTED and UNEVENLY DISTRIBUTED across Europe. Several countries lack proper policies and public engagement to endeavour the challenges ahead. HARMONIZATION must start on ROBUST KNOWLEDGE, and the ability to cover the WHOLE VALUE-CHAIN, from source materials up to the markeatable products… and that's WIRE mission.
The WIRE COST Action broadly organizes into 4 KEY WORKING GROUPS (WG) that bring together experts from ACADEMIA, INDUSTRY and TECHNOLOGY TRANSFER organisations and range (1) Raw Materials, (2) Biorefinery Conversion Technologies, (3) Biorefinery Applications and (4) Communication and Dissemination. These WG will proactively contribute to (i) Promote circular economy, (ii) Promote bioenergy and bioeconomy, (iii) Promote Research & Innovation in the field (iv) Promote applied research towards biorefineries implementation (v) Promote EU-wide harmonisation of the scientific and technical approaches, thus facilitating ENGAGEMENT WITH POLICY-MAKERS and industry (vi) Pave the ground for a more effective link with the relevant INDUSTRY sectors and gathering their interest.
A series of meetings and events are planned to deliver the main aim of influencing positively the future landscape in Science and Technology in this important field of BIOREFINERIES.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Chemical engineering: Green chemistry • Environmental engineering: Energy and fuels • Environmental engineering: Waste treatment (environmental engineering)	• Biorefinary • Waste valorisation technologies • Bioenergy • Biomaterials • Biofuels

COST Countries

Main Proposer: PT
Network of Proposers: BG, CY, CZ, DE, ES, IT, LT, NO, PL, PT, RS, SE, TR
Main and secondary proposers: 50% ECI / 46% Women / 62% ITC

International Cooperation

International Partner Country: Brazil, Canada
European RTD Organisation: Greece

Industrial Dimension

SMEs: Portugal
Large companies: Portugal

CA20128 - Promoting Innovation of fermented foods

SUMMARY

Present in all European diets, fermented foods (FF) hold a strategic place due to the benefits they offer in terms of nutrition, sustainability, innovation, cultural heritage and consumer interest. The potential of FF for improving human health but also driving food innovation and local production in the next decades has become highly relevant. The challenge is therefore to federate the scientific community and other key stakeholders working on FF. We want to collectively advance scientific evidence of their health benefits, building a benefits/risk approach in order to promote multi-modal innovation and respond to the expectations of different European communities.
The long-term goal of PIMENTO is to place Europe at the spearhead of innovation on microbial foods, promoting health, regional diversity, local production at different scales, contributing to economical and societal development as well as food sovereignty. To respond to this challenge, the scientific and non-scientific community need to join forces and co-construct a multi-stakeholder vision and dynamic in the field of FF. A COST Action is the best means of building this network and enabling this long-term vision to become reality.
The wide variety of stakeholders engaged will enable PIMENTO: i) to tightly connect and clarify scientific knowledge on health aspects of FF ii) to tackle technical, societal and legislative bottlenecks behind FF-based innovations iii) to contribute to the establishment of long-term scientific workplaces iv) to disseminate widely define scientific knowledge on FF and define strategic roadmap for future joint research.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Agricultural biotechnology: Fermentation • Health Sciences: Nutrition and dietetics • Industrial biotechnology: Food microbiology	• Fermented food • Human Health • Dietary guidelines • European web platform (Hub) • Industrial cluster

COST Countries

Main Proposer: FR
Network of Proposers: BG, CH, CY, EE, EL, ES, FI, FR, HR, IE, IT, MT, NL, PL, RO, SI, SK, TR
Main and secondary proposers: 20% ECI / 45% Women / 56% ITC

International Cooperation

International Partner Country: Argentina, Burkina Faso, Chile, Ethiopia, India, South Korea, United States

Industrial Dimension

SMEs: Finland, France, Greece, Ireland, Italy, Slovakia, Spain, Switzerland, Turkey
Large companies: France

CA20129 - Multiscale irradiation and chemistry driven processes and related technologies

SUMMARY

Radiation is an inevitable element of the world. It may affect life and likely was involved in its origin. The fundamental understanding of radiation was often at the heart of the most important scientific and technological breakthroughs (Maxwell theory, Einstein photo-effect, relic radiation, synchrotron, FEL, etc.) and it remains so. One of the big current challenges concerns the quantitative understanding of the complex processes in various systems, including the living ones, induced by their irradiation by photons, charged particles, or neutrons. These processes may lead, for instance, to the therapeutic effects of radiation, new pathways for the controlled fabrication of nanosystems with desired properties, energy conversion and storage, catalytic activity or be in the heart of technologies for the construction of novel light sources. In spite of a large variety of possible applications, the fundamental principles of irradiation-driven processes in different systems are similar. One of such features is the multiscale spatio-temporal nature of the processes extending the direct outcomes of irradiation over large time-&-space dimensions and linking them to a variety of relevant phenomena. The advances in this interdisciplinary area became possible only recently due to development of powerful computers and modern experimental techniques.
The Action MultIChem aims to establish a broad international interdisciplinary intersectoral cooperation aiming to advance our fundamental understanding of the multiscale irradiation-driven processes and related technologies paving the path towards major scientific and technological breakthroughs, and socio-economic impacts. These goals require a pan-European approach and COST is the most appropriate instrument for their realization.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Physical Sciences: Atomic, molecular and chemical physics • Chemical sciences: Physical chemistry • Medical biotechnology: Databases, data mining, data curation, computational modelling	• Irradiation-driven nanoprocesses • Multiscale modelling • Nanofabrication technologies • Functionalised nanosystems • Radiotherapies

COST Countries

Main Proposer: DE
Network of Proposers: AT, BG, CZ, DE, DK, EE, ES, FR, HU, IT, LT, LU, LV, ME, MK, NL, PL, PT, RS, SI, SK, UK
Main and secondary proposers: 13% ECI / 25% Women / 64% ITC

Industrial Dimension

SMEs: Germany, United Kingdom
Large companies: Germany, United Kingdom

CA20130 - European MIC Network – New paths for science, sustainability and standards

SUMMARY

Microbiologically Influenced Corrosion (MIC) is a phenomenon that is increasingly becoming a problem for our society. MIC describes the negative effects a material can experience due to the presence of microorganisms. In Europe, several research groups and other industrial stakeholders are already dealing with MIC. Unfortunately, the discussions are fragmented and the exchange of information is limited. A true transdisciplinary approach of the MIC topic is hardly ever experienced, although this would be logical for this material/biology related challenge. USA, Canada and Australia have strong networks, and develop methods, prevention measures and standards, which we are forced to use, since we do not have a network and combined knowledge to design them according to European standards. This makes us extremely dependent and in some cases, we cannot use these measures or standards because the suggested solutions are prohibited by European laws (e.g. the use of some biocides). Therefore, it is important to initiate a new European MIC network. We need to combine our efforts as experts in different fields and develop our own prevention measures, in close cooperation with industry and plant operators and owners of critical infrastructure. This COST Action will provide the necessary interaction and communication, knowledge sharing, training of personnel and of researchers of different disciplines. We will take a leading role in this process, bringing our own ideas on an equal level with other nations, taking into account our values and attitudes (e.g. environmental protection) and representing greater protection for people, property and the environment.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Biological sciences: Microbiology • Chemical sciences: Corrosion • Materials engineering: Biophysics for materials engineering applications • Environmental engineering: Risk assessment, prevention and mitigation • Environmental biotechnology: Environmental biotechnology, e.g. bioremediation, biodegradation	• Microbiologically Influenced Corrosion • Corrosion Management • Critical Infrastructure • Materials • Standards

COST Countries

Main Proposer: DE
Network of Proposers: AL, BE, BG, CH, CY, CZ, DE, DK, EL, ES, FI, FR, HR, IT, NL, NO, PL, PT, RO, RS, SI, SK, TR, UK
Main and secondary proposers: 14% ECI / 54% Women / 50% ITC

International Cooperation

International Partner Country: Australia, Brazil, Canada, India, Japan, Singapore, United States

Industrial Dimension

SMEs: Denmark, Netherlands, Turkey, United States
Large companies: Belgium, Canada, Denmark, Italy, Norway, Portugal, Switzerland, United Kingdom, United States

CA20131 - Efficient Justice for All: Improving Court Efficiency through EU Benchmarking

SUMMARY

Legal systems all over Europe increasingly suffer from congestion. As the number of court cases increases, the ability of legal systems to produce high-quality, timely court decisions appears to be under pressure. Societal costs of this inefficiency in our legal systems are enormous, as EU citizens, firms and (local) governments face uncertainty, incur legal expenses and are forced to postpone decisions that are often key to furthering investment, wellbeing and growth.
This COST proposal is built on the idea that the only way we can face his challenge head on, is by exploiting the differences in institutional, legal and economic circumstances in EU countries to identify best practices. This idea in itself is not new, and has for example been successfully applied to the benchmarking of electricity networks in EU countries. Likewise, a comparison of legal systems does not have to start from scratch, as a lot of the codification that is required has already been done.
With this proposal, we want to take the crucial next step: by bringing together a strong team of experts in benchmarking with a strong focus on how to handle the heterogeneity that is present in Europe

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Economics and business: Public economics, political economics • Law: Legal theory, legal systems, constitutions, comparative law • Economics and business: Econometrics, statistical methods applied to economics • Law: Databases, data mining, data curation, computational modelling	• Legal systems • Efficiency • Courts • Benchmarking

COST Countries

Main Proposer: NL
Network of Proposers: BE, CZ, DK, EL, ES, FR, IT, LT, LU, NL, PL, PT, RO, TR
Main and secondary proposers: 13% ECI / 38% Women / 50% ITC

International Cooperation

International Partner Country: Australia

CA20132 - Urban Tree Guard - Safeguarding European urban trees and forests through improved biosecurity

SUMMARY

Green infrastructure, including urban forests, has been proposed by European Commission as a strategy to support climate adaptation capacity and sustainable development in the urban areas where over 70% of the EU's population live. Alarmingly, the green infrastructure and especially its characteristic elements, trees, are increasingly threatened by alien pests (insects and pathogens) that are introduced via trade and transports. In a new environment, these pests may become invasive, causing devastating environmental and economic losses, and threatening also unique cultural values such as those linked to veteran trees. The current biosecurity system fails to capture alien pests that often also benefit from the altered climate. New tools and better integration of different knowledge pools are urgently needed to support better biosecurity in urban settings. The Action will bring together a pan-European and international network of scientists and stakeholders to meet this challenge. The network will 1) Collect, share and harmonize scientific and stakeholder knowledge, 2) Accelerate development of innovative technological tools and solutions for biosecurity purposes, 3) Inform policy and support implementation of the EU plant health regime while providing science-based recommendations for decision makers, especially at operational levels, 4) Foster an inclusive and open research environment, with explicit support to young professionals, and 5) Increase European competitiveness in the field of biosecurity, improving also the quality of everyday life for people, especially urban dwellers, in Europe and beyond. A co-created Wiki database, teaching tools for education in urban forest health, and a decision support tool will ensure the long-term impacts of the Action.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Environmental engineering: Risk assessment, prevention and mitigation • Agriculture, Forestry, and Fisheries: Forestry: fauna and flora • Biological sciences: Conservation biology, ecology, genetics • Biological sciences: Biodiversity, comparative biology • Other engineering and technologies: Biohazards, biological containment, biosafety, biosecurity	• urban trees and forests • green infrastructures • biological invasions • alien invasive species • tree and forest health

COST Countries

Main Proposer: SE
Network of Proposers: BG, CH, CZ, DE, EE, ES, FI, FR, HR, HU, IT, LT, MK, PL, PT, RS, SE, SK, TR, UK
Main and secondary proposers: 38% ECI / 65% Women / 60% ITC

International Cooperation

International Partner Country: Canada, South Africa, United States

Industrial Dimension

SMEs: Sweden
Large companies: United States

CA20133 - Cross-border transfer and development of sustainable resource recovery strategies towards zero waste

SUMMARY

Waste is being generated as a result of population growth, industrialization, and improvement of human standard of living. In the absence of efficient waste management systems, waste ends in landfills and in the environment (through informal discharges) leading to pollution and to a linear economy. Due to increasing awareness of the deleterious effects on the environment and human health, policies are being gradually implemented to motivate a mindset shift from linear to circular (bio)economies and decouple economic growth from use of resources. Full waste recycling and valorisation will play a crucial role in the establishment of sustainable circular (bio)economies. Although waste recycling and valorisation strategies have started to be implemented across borders within Europe, their implementation level is not homogenous and harmonization is needed. FULLRECO4US is an answer to this need and will function as a discussion platform centred on holistic approaches to waste recycling and valorisation, and on the development of new cross-border interdisciplinary and intersectoral networks. These networks, in turn, will cooperate in the development of feasible and environmentally-friendly resource recovery approaches that can be translated into, *e.g.*, competitive research funding applications and contribute to building research and innovation capacity within Europe and beyond. FULLRECO4US will include a set of networking activities such as Short-Term Scientific Missions, Workshops, Conference and Symposium attendance, supported by Working Groups focused on genesis of holistic approaches for waste recycling and valorisation, engagement of stakeholders, and on dissemination and communication of Action's results to enhance impact, consensus, and harmonization of newly built strategies.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Environmental engineering: Waste treatment (environmental engineering) • Environmental engineering: Sustainable engineering	• waste management • resource recovery • circular economy

COST Countries

Main Proposer: SE
Network of Proposers: CH, CY, EE, EL, FR, LV, NO, PL, PT, RO, SE, TR
Main and secondary proposers: 25% ECI / 60% Women / 58% ITC

CA20134 - Traces as Research Agenda for Climate Change, Technology Studies, and Social Justice

SUMMARY

TRACTS brings scholars from disciplines of the social sciences and humanities, together with visual and sound artists, curators, decolonial activists, memorialization experts and legal professionals to bridge current cultural, political and geographical gaps in European research on traces. In response to the recent waves of populism, actors as diverse as environmentalists, human rights activists, and museum professionals have been confronting and creatively deploying the legacies of the long 20th century in Europe. This shows no sign of abating in a Europe marked by rapid technological, environmental and socio-economic changes. As such, mapping the challenges in the realms of social justice, climate change, and technological influence on society requires reflecting on and producing new understandings regarding trace. An inclusive, pan-European network which focuses on traces in the context of pressing challenges of social justice, climate change and technology can inform transformative research agendas and create new paradigms in social sciences and humanities. This Action gathers a critical mass of scholars and practitioners to create such a network at a crucial juncture of the European project. Focusing on the conceptual methodological and ethical challenge of traces, TRACTS develops a comprehensive research coordination and training program, including experimental knowledge production and training for future research leaders. TRACTS will host symposia, workshops, and research meetings to provide a platform for collaboration and exchange in order to advance the state of the art. These will lead to deliverables including joint publications, conceptual, ethical and methodological advancement, Traces Atlas, podcasts, exhibitions, mentoring, and a research database.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Sociology: Anthropology, ethnology, cultural studies • History and Archeology: Archaeology, archaeometry, landscape archaeology • Arts: Visual arts • Other humanities: Cultural heritage, cultural memory • Social and economic geography: Social, cultural and economic geography, international trade	• Traces • Social Justice • Digital Anthropology • Environmental Humanities • Critical Heritage

COST Countries

Main Proposer: UK
Network of Proposers: CH, CZ, DE, HR, PL, PT, SI, TR, UK
Main and secondary proposers: 75% ECI / 67% Women / 67% ITC

CA20135 - Improving biomedical research by automated behaviour monitoring in the animal home-cage

SUMMARY

Animal use for scientific purposes is guided by the principles of 3Rs (Reduction, Refinement and Replacement). Developing refined experimental conditions can substantially improve animal welfare and importantly, enhance the translational value and data reproducibility.
Novel and emerging technologies allow 24/7 collection of behavioural data in undisturbed mice, the most widely used species in biomedical research. These recently developed technologies minimize the impact of stressors, such as human interaction and testing in novel arenas, which are known to influence data collection and animal welfare. It is now possible to assess a more naturalistic behavioural profile in familiar environment, such as the animals' home-cage. In addition to promoting welfare, it can improve research in a wide spectrum of research fields ranging from psychology and neuroscience to translational psychiatry and neurology, and may further provide valuable insights into other types of pathologies and genetic alterations. However, addressing the complex problem of monitoring the full 24-hour behavioural repertoire of a rodent still presents many challenges, with each technology having its strengths and limitations.
The aim of this Action is to bring together European organizations developing and using automated home-cage monitoring technologies, combining experts in mouse behaviour, laboratory animal science and data science, to critically and transparently assess the potential of these technologies, to develop user guidelines and standard operating procedures and to identify needs for further technological development, including analysis of big data.
The Action will also contribute to building capacities for adoption of these technologies by holding workshops, laboratory rotations and disseminating knowledge.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Basic medicine: Behavioral neuroscience (e.g. sleep, consciousness, handedness) • Biological sciences: Zoology, including animal behaviour • Biological sciences: Bioinformatics • Biological sciences: Genomics, comparative genomics, functional genomics	• Laboratory mouse behaviour • Innovative automated phenotyping • Home-cage monitoring • Data reproducibility • 3Rs

COST Countries

Main Proposer: UK
Network of Proposers: AT, CH, CZ, DE, DK, EE, FI, FR, HR, HU, IL, IT, LT, LU, LV, NL, PL, PT, SE, SI, SK, TR, UK
Main and secondary proposers: 21% ECI / 51% Women / 52% ITC

Industrial Dimension

SMEs: Netherlands
Large companies: Switzerland, United Kingdom

CA20136 - Opportunistic precipitation sensing network

SUMMARY

Despite advances in remote sensing, precipitation observations remain one of the weakest links in the description of Earth's water cycle. This is especially critical in the face of climate change, human-induced hydrologic changes e.g. due to rapid urbanisation, and consequent increase in frequency and magnitude of extreme events. Opportunistic sensing can greatly improve spatial and temporal resolution of standard precipitation monitoring networks on continental scale by complementing them with measurements from personal weather stations or devices primarily not intended for precipitation monitoring such as commercial microwave links or broadband satellite terminals. The number of opportunistic sensors has already now exceeded traditional in-situ observations by an order of magnitude, and it is increasing exponentially. Nevertheless, it is still unclear how to make this data operationally accessible, achieve robust quality control of these observations, and integrate them into standard observation systems.
OPENSENSE brings together scientists investigating different opportunistic sensors, experts from national weather services, owners of sensor networks, and end-users of rainfall products to build a worldwide reference opportunistic sensing community. It will i) overcome key barriers preventing data exchange and acceptance as hydrometeorological observations ii) define standards to allow for large-scale benchmarking of OS precipitation products developing new methods for precipitation retrieval iii) coordinate integration of the opportunistic observations into traditional monitoring networks, and iv) identify potential new sources of precipitation observations.
These coordinated activities will boost uptake of OS as precipitation observation methods and enable generation of high-quality precipitation products with unprecedented spatial and temporal resolution.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Earth and related Environmental sciences: Hydrology, water resources • Electrical engineering, electronic engineering, Information engineering: Signal processing, 1-D and multidimensional signal processing, compression, signal acquisition • Environmental engineering: Databases, data mining, data curation, computational modelling	• climate change • hydrometeorological observations • rainfall retrieval • interoperable sensor data • data mining and value creation

COST Countries

Main Proposer: CZ
Network of Proposers: BG, CH, CZ, DE, FR, HU, IL, IT, LU, LV, NL, PL, PT, SE, SK, UK
Main and secondary proposers: 22% ECI / 38% Women / 50% ITC

Industrial Dimension

SMEs: Luxembourg

CA20137 - Making Early Career Researchers' Voices Heard for Gender Equality

SUMMARY

Over the last decades, European higher education and research systems have been characterized by deep changes, due to globalization and marketization, that have dramatically transformed research careers. While doctoral and postdoctoral researchers constitute a fast-growing workforce, their working conditions have become increasingly precarious and their career prospects uncertain. Those processes tend to exacerbate and create new forms of gendered inequalities for Early Career Researchers (ECRs), first and foremost women – that have been magnified by the COVID-19 crisis (Gewin, 2020). Those inequalities are also reinforced by disparities within academia linked to other social determinants, such as origin, socioeconomic status, sexuality or ability.
However, current institutional Research & Innovation (R&I) policies, including gender equality policies, rarely consider ECRs' specific challenges. Moreover, implementing efficient and impactful policies that promote sustainable gender equality remains a great challenge throughout R&I institutions.
The main goal of this Action is thus to increase visibility of inequalities faced by ECRs from a gender perspective and to promote a sustainable dialogue between ECRs and stakeholders in the research ecosystem at the systemic level (European & national policy-makers) and at the institutional level (senior researchers, academic managers) by creating a community of gender equality practitioners composed of various stakeholders (ECRs, independent researchers, academic managers, organizations) across Europe. The Action has among its outcomes: training schools for ECRs, scientific publications by ECRs, recommendations & guidelines for academics and policy-makers.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Sociology: Gender and sexuality studies • Political Science: Public administration, public policy • Sociology: Work and professions	• Early Career Researchers • Gender Inequalities • Gender Equality Policies • Policy Implementation

COST Countries

Main Proposer: FR
Network of Proposers: BE, CZ, DE, ES, FR, IT, LT, PL, RO, RS, SE, SI, SK
Main and secondary proposers: 18% ECI / 91% Women / 54% ITC

CA20138 - Network on water-energy-food nexus for a low-carbon economy in Europe and beyond

SUMMARY

An international network of researchers is working with policymakers and the business sector to better understand how the water-energy-food Nexus fosters policy coherence in the domains of water, energy and food, supporting the transition towards a circular and low-carbon economy in Europe. Focus is on job creation, enhancing wellbeing and care for the environment. The Nexus concept is tested at different scales (i.e. local, regional, national, European), while the international dimension is explored through the involvement of international proposers. More Nexus-compliant practices are foreseen through a knowledge sharing hub at European level and beyond. Public-private initiatives pave the path for nexus compliant practices, building on network members' advice. NEXUSNET will deliver examples of nexus compliant decision making, and recommendations to best achieve them, to come-up with an overview of Good Nexus Practices in Europe (policy coherence, nexus-compliant practices and more coherent nexus evaluations). Transdisciplinary approaches are adopted to test Nexus compliant practices with the involvement of relevant stakeholders, while interaction and engagement with current and finished Nexus-related projects will be pursued. Academic nexus knowledge will be translated into practical and applicable knowledge for the private sector or policy makers. A series of intense knowledge transfer and dissemination actions are planned to ensure that the network will have a significant impact in Europe and beyond.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Environmental engineering: Sustainable engineering • Civil engineering: Sustainable engineering, adaptation to long-term environmental changes • Economics and business: Sustainability • Earth and related Environmental sciences: Climatology and climate change • Agriculture, Forestry, and Fisheries: Sustainable production	• Water-energy-food nexus • sustainability • low-carbon economy • resource efficiency

COST Countries

Main Proposer: EL
Network of Proposers: AL, AT, BE, BG, CY, DE, EE, EL, ES, FR, IT, LV, MK, MT, NL, NO, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 29% ECI / 54% Women / 54% ITC

International Cooperation

International Partner Country: Australia, China, India, Japan, United States
European RTD Organisation: Finland

Industrial Dimension

SMEs: Albania, France, Germany, Malta, Netherlands, Romania, Slovakia, Spain

CA20139 - Holistic design of taller timber buildings

SUMMARY

With the worldwide construction sector being responsible for one third of carbon dioxide emissions, as well as forty percent of the world's energy use and waste production, a shift to sustainable and renewable construction techniques is crucial. Engineered timber, champion of the sustainable construction materials, has evolved to a stage that enables the construction of not only family housing but also taller buildings commonly built from concrete or steel. Unfortunately, designing taller buildings made from timber is more demanding than their concrete and steel counterparts. Whereas different designers (architects, structural, fire, acoustic engineers etc.) of concrete buildings can work almost independently, the design of taller timber buildings should be performed with intensive collaboration among the design team members. I.e. the acoustic insulation principles currently used in timber buildings are completely contrary to the design demands originating from wind or earthquake loading. This is just one case, unfortunately the list of design collisions is very long. It is therefore crucial to address taller multi-storey timber buildings from a collaborative and interdisciplinary perspective, considering static, dynamic, fire, acoustic, human health and other aspects in parallel and not in isolation. Only through interdisciplinary analysis and interaction can a set of holistic design guidelines be developed that will enable safe construction of taller timber buildings, as well as respect human wellbeing demands. This action proposal aims to achieve that through intense interdisciplinary work and interaction between different design backgrounds, as well as between academic and design professionals.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Civil engineering: Civil engineering • Civil engineering: Architecture engineering • Civil engineering: Construction engineering • Civil engineering: Sustainable engineering, adaptation to long-term environmental changes • Materials engineering: Wood Technology	• Tall buildings • Mid-rise buildings • Timber • Building design • Human wellbeing

COST Countries

Main Proposer: SI
Network of Proposers: AT, BA, BE, BG, CH, CY, CZ, DE, EE, EL, ES, FI, FR, HR, HU, IT, LV, ME, MK, NL, NO, PT, RO, RS, SE, SI, TR, UK
Main and secondary proposers: 27% ECI / 25% Women / 54% ITC

International Cooperation

International Partner Country: Australia, Canada, China, United States

Industrial Dimension

SMEs: China, Cyprus, Germany, Hungary, Sweden, United Kingdom
Large companies: France

CA20140 - CorEuStem: The European Network for Stem Cell Core Facilities

SUMMARY

Biomedical research has significantly advanced in the recent years thanks, in part, to the discovery of human induced pluripotent stem cells (hiPSCs), the development of CRISPR/Cas9 gene editing and the possibility of generating specific differentiation systems and more complex in vitro organ-like structures called organoids. These technologies have become key players in investigating disease modelling, embryology and for novel regenerative therapeutic approaches that currently enter first clinical trials. Core facilities in European research centers and universities providing services in these fields are becoming a reference hub for know-how for these technologies. Furthermore, they establish initial quality control standards and homogenize procedures to enhance reproducibility in biomedical research. However, one of the major challenges for core facilities is to keep track of all advancements in cutting-edge technologies. New protocols, reagents and tools continuously develop and need to be tested. Isolated technical platforms cannot follow the fast-moving technology pace. Therefore, there is an urgent need to join forces and link these core facilities to harmonize methodologies used to increase the overall reproducibility of the results produced in different labs, from different institutions within Europe and to increase their impact. CorEuStem is composed of experts in stem cell, differentiation, organoids and gene editing technologies with the aim of joining forces and establishing the first European network for harmonizing procedures and protocols, to organise joint training schools for implementing new cutting-edge technologies emerging in the field and to become a reference point in stem cells, differentiation, organoids and gene editing in Europe and beyond.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
• Biological sciences: Stem cell biology • Biological sciences: Cell differentiation, physiology and dynamics • Biological sciences: Development, developmental genetics, pattern formation and embryology in animals • Biological sciences: Cell genetics	• Stem Cells • CRISPR/Cas9 • Differentiation & Organoids • Training • Quality control and procedures harmonization

COST Countries

Main Proposer: ES
Network of Proposers: CZ, DE, ES, FR, LU, NL, PL, PT, TR, UK
Main and secondary proposers: 0% ECI / 74% Women / 50% ITC

International Cooperation

International Partner Country: United States