

# **COST Actions approved by the Committee of Senior Officials on 12 May 2023**

## **Open Call - collection date 20 October 2022 (OC-2022-1)**

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## CA22101 - Cultural Expertise Junior Network

### SUMMARY

K-Peritia proposes an unprecedented network of junior experts who have preliminary experience as experts in court, members of the legal professions who are interested in cultural expertise, senior scholars with experience of expert witnessing and representatives of key international organisations, NGOs and capacity building institutions. The challenges of K-Peritia are 1) developing an international network for bridging the gap between the supply and the demand for professional cultural expertise which overcomes elitist and expensive features; 2) enabling the professional engagement of junior experts; and 3) digitalisation of the knowledge on cultural expertise. These three challenges will articulate on a newly designed transdisciplinary platform: a multilingual, open access, and cross-jurisdictional socio-legal database. The Action will foster transdisciplinary collaboration among the various disciplines of the social sciences; will establish cultural expertise more firmly as a research category in all the countries of this network, foster a better collaboration among experts and the legal professions and encourage the professional engagement of junior experts, and create the instruments for the adoption of cultural expertise which are respectful of the ethics and the deontologies of the involved professions. The deliverables of K-Peritia will be the launch of Cultural Expertise Digital Network including a training manual of use-cases for an extended use of the socio-legal database; a system of experts' accreditation; training and capacity building module; a volume on cultural expertise and conflict resolution; and country specific policy-making guidelines on the adoption of cultural expertise also including a guide for non- discriminatory language in litigation.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Other social sciences: Databases, data mining, data curation, computational modelling	1. cultural expertise 2. law and culture 3. digital network

### COST Members

Main Proposer: France

Network of Proposers:

Full Member: Bulgaria, Cyprus, Czech Republic, France, Greece, Hungary, Ireland, Italy, Lithuania, Poland, Portugal, Slovakia, Switzerland, Turkey, United Kingdom

Main and secondary proposers: 58% ECI / 79% Women / 66% ITC

### International Cooperation

**Near Neighbour Country:** Lebanon, Tunisia

**International Partner:** India, Kuwait, Pakistan

### Specific Organisations

**EU Institutions, Bodies, Offices and Agencies (EC/EU):** N/A

**International Organisation:** European University Institute; UNDP in Lao PDR

### Industrial Dimension

**SMEs:** Switzerland

## CA22102

### European Network In CHEmical Ecology: translating the language of life into sustainability

#### SUMMARY

E-NICHE will help unify the different branches of chemical ecology (CE) by bringing together researchers who study natural compounds that can act as semiochemicals (i.e., communication signals). At present, collaborations among these researchers are limited because CE is an extremely fragmented field. E-NICHE will foster partnerships between

(a) scientists studying aquatic and terrestrial ecosystems; (b) natural products chemists, biochemists, and ecologists; (c) vertebrate biologists and entomologists; (d) plant and animal biologists; (e) zoologists and molecular biologists; and (f) neurobiologists and microbiologists. Their interactions will generate original ideas and perspectives while simultaneously meeting societal needs, a challenge that involves the creation of new chemical formulations, novel molecules, and innovative applications for natural compounds. This work will be nourished by a deeper understanding of the living world through the lens of chemical mediation, the main system of biological communication. It will also aim to prevent the loss of the chemical biodiversity found in nature, under threat because of global changes. Consequently, E-NICHE's overarching objective is to establish a strong, extended European CE network that catalyses international, interdisciplinary, and cross-sectoral exchanges with a view to building knowledge and intergenerational sustainable development solutions. Via the new network created by E-NICHE, researchers will broaden their breadth of knowledge, define new research directions, and transform their discoveries into pioneering solutions.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Biological sciences: Ecology	1. Chemical ecology
2. Biological sciences: Metabolomics	2. Natural products
3. Biological sciences: Biodiversity, comparative biology	3. Chemical communication and mediation
4. Chemical sciences: Organic chemistry	4. Innovative science and applications
5. Environmental biotechnology: Environmental biotechnology, e.g. bioremediation, biodegradation	5. Cross-disciplinary interactions

#### COST Members

Main Proposer: France

Network of Proposers:

Full Member: Albania, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 13% ECI / 49% Women / 53% ITC

#### International Cooperation

**Near Neighbour Country:** Tunisia

**International Partner:** Brazil, United States

#### Specific Organisations

**EU Institutions, Bodies, Offices and Agencies (EC/EU):** Plant Protection Institute

#### Industrial Dimension

**SMEs:** France, Ireland

## CA22103 A COMPREHENSIVE NETWORK AGAINST BRAIN CANCER

### SUMMARY

It is estimated that 3.24 million new cancer cases and 1.66 million cancer deaths will be registered across Europe in 2024 and 40,800 of these deaths are from brain and central nervous system (CNS) cancers. Despite extensive efforts in molecular biology research, advances in biomedical engineering, artificial intelligence (AI) and big data science, brain tumours remain among the deadliest forms of cancer, resisting almost all conventional and novel treatments. To date, we do not fully understand the behaviour of this devastating disease, let alone the cause. To cure brain cancer, there are significant challenges in the early diagnosis, prognosis and patient stratification, drug development and drug resistance, and big data techniques. Addressing these challenges requires long-term continuous efforts and multidisciplinary collaboration.

This COST Action aims to significantly facilitate the translation of fundamental scientific discoveries into better clinical treatment and management of patients suffering from brain cancer. This aim will be pursued through the following main objectives: 1) to build a unique pan-European and multidisciplinary network focusing on brain cancer by combining state-of-the-art knowledge and innovative techniques; 2) to promote education and training in the areas of advanced neuroscience, neuroimaging, genetics and molecular biology, big data and computational techniques for the accurate early diagnosis, prognosis, patient stratification and treatment of patients with different types of brain cancer; and 3) to build an integrated pan-European brain cancer database and biobank platform for the benefit of the research and clinical community.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Medical engineering: Diagnostic tools (e.g. genetic, imaging)</li> <li>2. Clinical medicine: Oncology</li> <li>3. Health Sciences: Databases, data mining, data curation, computational modelling</li> </ol>	<ol style="list-style-type: none"> <li>1. Brain Cancer</li> <li>2. Biomarker</li> <li>3. AI</li> <li>4. Pre-clinical model</li> <li>5. Treatment</li> </ol>

### COST Members

Main Proposer: United Kingdom

Network of Proposers:

Full Member: Belgium, Bosnia and Herzegovina, Czech Republic, Estonia, France, Germany, Italy, Latvia, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 27% ECI / 49% Women / 50% ITC

### International Cooperation

**International Partner:** China, United States

### Specific Organisations Industrial Dimension

**SMEs:** Romania, United Kingdom

**Large companies:** Germany, United Kingdom

## CA22104 Behavioral Next Generation in Wireless Networks for Cyber Security

### SUMMARY

The always-connected world we are living in, gives us an unprecedented plethora of new advanced services and automated applications requiring, more and more, less human intervention due to the increased integration of Machine Learning (ML), Artificial Intelligence (AI) approaches and sophisticated emerging wireless technologies.

On the other side, this connected world opens new breaches and creates new potential vulnerabilities for smart advanced cyber-attacks, namely attacks and offender relying on ML/AI and advanced wireless technology integration, to make their attack more effective and less detectable. If an increasing awareness by the users, could help to contrast the security issues, it is not sufficient against the new generation of cyber-attacks. In this context, a drastic paradigm shift, putting human-being in the loop for the conception of novel and more effective cyber-security solutions, must be considered.

On the other hands, human-beings have a double role in the cyber-connected world: as potential offender and potential victim. In BEING-WISE, we aim to focus on how these different human-being features can be combined with the advanced technological characteristics, in order to conceive non-conventional, responsible by design, cyber- security solutions accounting for both these factors. In this complex connected system, another fundamental aspect that need to be accounted to, is the legal aspect, related to the conception of solutions that can be effectively employed in the real world. Also the legal aspects should be considered at the design stage. This project relies on cross- domains expertise, ranging from cyber security, wireless communication technology, data science, sociology, psychology and lawyers.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Computer and Information Sciences: Cryptology, security, privacy</li> <li>2. Computer and Information Sciences: Ethics of computer and information sciences</li> <li>3. Law: Criminal law</li> <li>4. Media and communications: Media and communications, social aspects of information science and surveillance, socio-cultural communication</li> </ol>	<ol style="list-style-type: none"> <li>1. Cybersecurity</li> <li>2. Human factor</li> <li>3. Wireless technologies</li> <li>4. Legal factors in Cyber-security</li> </ol>

### COST Members

Main Proposer: France Network of Proposers:

Full Member: Austria, Belgium, Croatia, Cyprus, Estonia, France, Germany, Greece, Hungary, Italy, Montenegro, Netherlands, Portugal, Romania, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Main and secondary proposers: 25% ECI / 28% Women / 50% ITC

### Specific Organisations Industrial Dimension

**SMEs:** Cyprus

**Large companies:** Austria

## CA22105

# BEEkeeping products valorization and biomonitoring for the SAFETY of BEEs and HONEY

## SUMMARY

Since ancient times, honey has been a popular functional food due to its healthy properties based its bioactive compounds composition with antioxidant, antimicrobial, anti- inflammatory, and anticancer properties. Furthermore, the European honeybee, *Apis mellifera*, is the most important pollinator, crucial for food and plant production in general. However, bees are in decline, being threatened to extinction in Europe due to anthropogenic activities, including agriculture intensification and pesticide application. This have led to reduction of honey production with 40% of EU consumption being imported.

Traying help and ameliorate honeybee colonies, the present groundbreaking network will deliver cooperation between international wide range beekeeping stakeholders and the innovative results will be related to the following topics:

Honey and by-products nutritional and medicinal properties.

Abiotic stressors and anthropogenic contaminants in the environment using hive products as indicators.

Prevalent diseases and biotic stressors threatening honeybee colonies.

Honeybees as pollinators in agriculture and consequences of lost colonies in agrarian ecosystems.

Policy research and market analysis related with beekeeping activities. **BeSafeBeehoney**, with a multi-actor approach, will bring together distinct expertise – chemistry, biology, ecology, veterinary, beekeeping, agrarian engineering, nutrition, economy, and policy to deliver breakthrough scientific developments. The importance of beekeeping is in line with SDG2, 12 and 15, aiming the promotion of sustainable agriculture, quality production, and sustainable use of terrestrial ecosystems. The SDG5 seeking to achieve gender equality while still a constant challenge, in this team more than half of the members are women, young researchers and belonging to inclusiveness target countries.

## SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Agriculture, Forestry, and Fisheries: Sustainable Agriculture	1. Beekeeping
2. Agriculture, Forestry, and Fisheries: Agro-forestry	2. Biomonitoring
3. Biological sciences: Conservation biology, ecology, genetics	3. Biotic and Abiotic Stressors
	4. Colonies monitoring
	5. agricultural ecosystems

## COST Members

Main Proposer: Portugal Network of Proposers:

Full Member: Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Latvia, Lithuania, Malta, Netherlands, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Turkey, Ukraine, United Kingdom

Partner Member: South Africa

Main and secondary proposers: 41% ECI / 58% Women / 60% ITC

## International Cooperation

**Near Neighbour Country:** Egypt

**International Partner:** Argentina

## Specific Organisations

**EU Institutions, Bodies, Offices and Agencies (EC/EU):** Christoforos Papachrysostomou; State General laboratory

## Industrial Dimension

**SMEs:** Austria, Czech Republic, Greece, Malta, Netherlands



## CA22106 Migrant Disaster Victim Identification

### SUMMARY

Illegal immigration is currently a global problem and economic migration is a critical issue for many European countries. Many thousands of migrants reach the end of their lives attempting to cross bodies of water and inhospitable land masses between continents/countries. The European Commissioner for Human Rights (2007) argued that it was imperative to begin a process to identify and account for the thousands of ‘missing’ undocumented migrants whose identities are unknown. However, despite the frequency and magnitude of these tragedies over the last ten years, European governments have been slow to recognise that families have a right to know the fate of missing migrant relatives. It is, therefore, an international moral necessity to try to identify each person for family/legal matters, and this is especially challenging where the country of origin is poor or war-torn, where identification details are absent and migration is undocumented and unmonitored. This is a global humanitarian crisis.

Current MDVI processes have been inadequate and under-funded - only 22% of deceased migrants are ever identified. This is partly caused by a lack of communication between countries of origin and arrival and relevant stakeholders – policy makers, forensic practitioners, humanitarian groups, and government bodies - whereby advances in identification technologies have not delivered their full potential in this field. In the proposed Action, interdisciplinary research and coordinated initiatives (meetings, training schools, short term scientific missions and online resources) will drive the development and validation of international processes and resources, including the utilisation of innovative craniofacial, drone and social media methods.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Other medical sciences: Forensic science	1. Migrant 2. Disaster 3. Victim 4. Identification

### COST Members

Main Proposer: United Kingdom Network of Proposers:

Full Member: Croatia, Cyprus, Greece, Italy, Portugal, Spain, United Kingdom

Partner Member: South Africa

Main and secondary proposers: 22% ECI / 54% Women / 57% ITC

### International Cooperation

**International Partner:** Senegal

### Industrial Dimension

**SMEs:** Cyprus, Spain

## CA22107

# Bringing Experiment and Simulation Together in Crystal Structure Prediction

### SUMMARY

The physical and chemical stability of organic molecules is important for the rational design and development of fine chemicals (e.g., pharmaceuticals and agrochemicals). Crystal structure prediction, the computational generation of crystal structures and energy rankings, has become an important tool in finding crystalline forms and determining their relative stability; however, despite the large quantity of thermodynamic data in the literature, no well-defined benchmark of equilibrium data of crystalline polymorphs of pharmaceutical and other technically important molecules exists against which computational results can be validated. Through this Action, a set of benchmark compounds will be established through tight collaboration between experimental and computational scientists. The Action will result in a standard against which computational methods can be tested and validated in the future. Moreover, the Action will organise a blind test similar to the computational crystal structure prediction test organised by the Cambridge Crystallographic Data Centre, but with a focus on thermodynamics and the prediction of physical properties. The close-knit collaboration will be fostered by educating PhD students in both computational and experimental disciplines to secure an optimal synergy between them, will advance the general understanding of crystalline polymorphism, and will facilitate formulation processes dealing with polymorph stability in industry.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Chemical sciences: Physical chemistry	1. computational crystal structure prediction
2. Chemical sciences: Theoretical and computational chemistry	2. thermodynamic stability
3. Physical Sciences: Phase transitions, phase equilibria	3. active pharmaceutical
	4. agrochemical
	5. experimental polymorph analysis

### COST Members

Main Proposer: France Network of Proposers:

Full Member: Austria, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Latvia, Lithuania, Malta, Netherlands, Poland, Portugal, Romania, Spain, Sweden, United Kingdom

Main and secondary proposers: 20% ECI / 37% Women / 53% ITC

### International Cooperation

**International Partner:** Japan

### Specific Organisations Industrial Dimension

**SMEs:** Germany, Romania

**Large companies:** Germany

## CA22108 Wildlife Malaria Network

### SUMMARY

Vector-borne diseases, and emerging infectious diseases of wildlife, are major contributors to the global disease burden and of increasing concern globally. Haemosporidian parasites are ubiquitous in nature, hugely diverse, and associated with morbidity and mortality across taxa, including humans, livestock and wildlife. Many research groups globally focus on these parasites as model systems for addressing a broad range of ecological and evolutionary questions with economic and health implications. This Action will bring together individuals and research groups to focus on coordinating research objectives to which multiple groups can contribute existing datasets, meaning that questions can be addressed at a global, rather than a local or regional, scale. Ornithologists, mammalogists and herpetologists have a long history of investigating haemosporidian parasites in natural populations; these studies have provided insights into host-parasite associations, parasite geographic distributions, host-switching and the context-dependence of host-parasite relationships, alongside pathogenic impacts and conservation implications of haemosporidian infections. Increasingly, research groups are investigating the vectors of these parasites, and utilising novel genetic techniques to understand parasite gene expression, among many other examples. Coordinating and sharing research efforts between groups offers huge potential for large-scale collaborative research initiatives. This Action will promote the development of a common research agenda by providing opportunities for training, collaboration and knowledge exchange, targeting diverse researchers across disciplines to foster an interdisciplinary approach, whilst also recruiting and supporting a diversity of new researchers. The Action will target stakeholders, policymakers and the general public to endorse knowledge transfer and maximise the reach of the network.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Biological sciences: Parasitology</li> <li>2. Biological sciences: Biodiversity, comparative biology</li> <li>3. Biological sciences: Ecology</li> <li>4. Biological sciences: Biogeography</li> <li>5. Biological sciences: Conservation biology, ecology, genetics</li> </ol>	<ol style="list-style-type: none"> <li>1. disease ecology</li> <li>2. parasites</li> <li>3. vector borne parasitic diseases</li> </ol>

### COST Members

Main Proposer: United Kingdom

Network of Proposers:

Full Member: Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Germany, Hungary, Latvia, Lithuania, Netherlands, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Turkey, United Kingdom

Main and secondary proposers: 49% ECI / 49% Women / 67% ITC

### International Cooperation

**International Partner:** United States

### Specific Organisations

**EU Institutions, Bodies, Offices and Agencies (EC/EU):** Estación Biológica de Doñana- Consejo Superior de Investigaciones Científicas

**International Organisation:** IBER - BAS

## CA22109

# Medicinal plants for animal health care: Translating tradition into modern veterinary medicine

## SUMMARY

The use of medicinal plants for the treatment of diseased animals has been historically an indispensable part of domestication. Worldwide, they are still important to control animal diseases. However, only few registered herbal veterinary medicinal products (HVMP) currently exist on the European market.

Nevertheless, the demand for natural products supporting animal health and welfare is increasing in the post-antibiotic era. This is in line with the goals of national and international action plans on antimicrobial resistance and of the One Health paradigm and address not only farm animals, but also companion animals living in proximity and contact with their owners. Herbal products are instrumental in achieving these goals.

The European Green Deal, with its ambition to significantly increase organic farming, further underlines the need for veterinary herbal medicine, as phytogetic products are first line treatments of animal diseases on organic farms.

Despite these clear demands for the availability of herbal products, current EU legislation (EU-Regulation 2019/6) is incomplete in regulating the market authorization of HVMP. This might inter alia be due to absence of concise, easily accessible, and critical reflected information about herbal remedies and their traditional and current use for animals.

MedPlants4Vet wants to close this gap.

Along with scientific work and networking, the COST Action will involve and train Young Researchers and Innovators extensively, who will enjoy the support of a multidisciplinary group. Regular meetings, supported by an interactive web-based platform, will help transfer historical knowledge into modern medicinal plant-based health care programs for all animal species.

## SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Veterinary science: Veterinary medicine (miscellaneous)	1. herbal veterinary medicinal products
2. Basic medicine: Pharmacology, pharmacogenomics, drug discovery and design, drug therapy	2. pharmaceutical biology
	3. legal framework
	4. ethnoveterinary research
	5. veterinary phytotherapy

## COST Members

Main Proposer: Switzerland Network of Proposers:

Full Member: Austria, Belgium, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Switzerland, United Kingdom

Main and secondary proposers: 34% ECI / 59% Women / 53% ITC

## Specific Organisations

**European RTD Organisation:** ELLINIKOS GEORGIKOS ORGANISMOS - DIMITRA

## Industrial Dimension

**SMEs:** Germany, Italy, Switzerland, United Kingdom

**Large companies:** Germany

## CA22110

### Cooperation, development and cross-border transfer of Industrial Symbiosis among industry and stakeholders

#### SUMMARY

With the industrial sectors being one of the most responsible for carbon dioxide emissions, energy use and waste production, the implementation of **Circular Economy strategy is critical to combating climate change** by steering away from the linear economy and its sustainable production and consumption and at the same time, balancing three dimensions: society, environment and economy.

On a practical level, **Industrial Symbiosis (IS)**, understood as the process by which wastes, or by-products of an industry or industrial process become the raw materials for another, has been identified as a **promising enabling solution for improving environmental sustainability while simultaneously achieving economic benefits**.

However, despite its potential, a **lack of awareness is still observed** in companies and industrial actors. In addition, **IS development is still hampered** by environmental, economic, technical, regulatory, organisational, social and cultural barriers.

Thus, **LIAISE COST Action** aims to **ensure an inclusive and holistic IS approach** by generating **relevant synergies** among different actors from the q-helix stakeholders model and **by setting the ground for increased and robust development of knowledge**, apart from promoting **future results-oriented R&D**.

**LIAISE** will therefore establish a link between theory and practice, develop a participatory and practice-oriented approach to support cross-sector and cross-cycle collaborations and establish Key Performance Indicators (KPIs) for assessing the implementation of IS business model in industry. To this end, the excellence of this network will be developed and implemented by **three cross-cutting thematic interdisciplinary Working Groups (WGs)**, further aggregated and exploited through a **reference framework in a fourth one**.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Economics and business: Sustainability	<ol style="list-style-type: none"> <li>1. Industrial Symbiosis</li> <li>2. Waste-as-resource</li> <li>3. Cross-sector and cross-cycle collaborations</li> <li>4. Circular Economy</li> <li>5. Sustainability</li> </ol>

#### COST Members

Main Proposer: Spain

Network of Proposers:

Full Member: Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Italy, Luxembourg, Moldova, Montenegro, Netherlands, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain

Cooperating Member: Israel

Partner Member: South Africa

Main and secondary proposers: 36% ECI / 55% Women / 58% ITC

#### International Cooperation

**Near Neighbour Country:** Egypt, Tunisia

**International Partner:** Colombia, Malaysia

#### Specific Organisations

**International Organisation:** UNITAR

#### Industrial Dimension

**SMEs:** Bulgaria, Colombia, Czech Republic, Ireland, Italy, Luxembourg, Montenegro, Netherlands, Spain

**Large companies:** Austria

## CA22111

# A European consortium to determine how complex, real-world environments influence brain development

## SUMMARY

The early years of brain development are critically influential for life-long outcomes. During early childhood, neurodevelopmental conditions emerge and vulnerabilities for longer-term problems are sown. Homes, schools and neighbourhoods shape children’s life chances, interacting with individual differences in cognition and behaviour to determine access to resources and quality of life. However, because almost all current research measures behaviour and brain function by taking children away from these natural environments into controlled lab settings, our knowledge of how early life settings shape development is surprisingly limited. We understand very little about the mechanisms through which specific environmental features impact development (e.g. the effects of variation in noise, clutter, social interaction etc); how these vary across European nations; and how they interact with neurodiverse learning styles. This limits us from designing personalised practical interventions to tailor early environments for different individuals. Under this COST Action we shall create the infrastructure and networks to allow for transformative new approaches to quantifying variability in the early life physical and social environments experienced by children across the EU. We will bring together currently siloed areas of expertise across Europe in new methods for studying children in their natural habitats; new perspectives on cultural and neurodiversity; and new ethical and legal frameworks to support large-scale collaborative developmental science. Our network will be a partnership across European nations and with neurodiverse communities to enable our work to be underpinned by co-creation, ensuring we are harnessing state-of-the-art research efforts to generate meaningful and impactful real- world outcomes.

## SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Psychology: Clinical Psychology</li> <li>2. Psychology: Developmental psychology</li> <li>3. Clinical medicine: Psychiatric disorders</li> </ol>	<ol style="list-style-type: none"> <li>1. mental health</li> <li>2. developmental neuroscience</li> <li>3. naturalistic</li> <li>4. real-world</li> <li>5. environment</li> </ol>

## COST Members

Main Proposer: United Kingdom

Network of Proposers:

Full Member: Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Italy, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Sweden, Turkey, Ukraine, United Kingdom

Main and secondary proposers: 27% ECI / 37% Women / 50% ITC

## International Cooperation

**International Partner:** United States

## CA22112 European Network on Livestock Phenomics

### SUMMARY

As animal breeding relies on the availability of accurate and specific phenotype data to reach its goals, phenotyping is increasingly being recognised as a limiting factor in all applications of livestock genetics and genomics. The acquisition of relevant phenotypes is also fundamental to routine and daily management of livestock populations in order to optimise reproduction strategies, disease control and welfare of the animals.

Consequently, this knowledge gap needs to be filled to facilitate long-term improvement and a sustainable landscape for livestock production. Phenomics is emerging as a major new technical discipline in biology. Phenomics is focused on one major aim: to systematically describe the phenome, referred to as the physical and molecular traits of an organism. This discipline can be defined as the ensemble of methodologies and technologies for the acquisition, analysis and exploitation of high-dimensional phenotypic data on an organism-wide scale. EU-LI-PHE will create a Europe-centred multidisciplinary, interconnected and inclusive community of experts that will enhance scientific collaboration, catalyse developments, and transfer livestock phenomics concepts and applications to improve the sustainability and competitiveness of the European livestock production sector. The Action will provide i) an overview of phenotyping technologies and infrastructures for applications in livestock phenomics, ii) approaches and methods for genome to phenome integration in livestock species, iii) computational resources and data analysis methods needed for this big data discipline, iv) a regulatory framework and a societal vision on livestock phenomics and v) a training environment for the benefit of the next generation of researchers in this field.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Animal and dairy science: Agriculture related to animal husbandry, dairying, livestock raising, animal welfare</li> <li>2. Animal and dairy science: Databases, data mining, data curation, computational modelling</li> <li>3. Veterinary science: Databases, data mining, data curation, computational modelling</li> <li>4. Biological sciences: Biological systems analysis, modelling and simulation</li> <li>5. Electrical engineering, electronic engineering, Information engineering: Statistical data processing and applications using signal processing (eg. speech, image, video)</li> </ol>	<ol style="list-style-type: none"> <li>1. Livestock</li> <li>2. Genomics</li> <li>3. Phenotype</li> <li>4. Breeding</li> <li>5. Big Data</li> </ol>

### COST Members

Main Proposer: Italy

Network of Proposers:

Full Member: Albania, Austria, Belgium, Bosnia and Herzegovina, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 37% ECI / 47% Women / 58% ITC

### International Cooperation

**International Partner:** Brazil, Canada, Kenya, United States

### Specific Organisations

**European RTD Organisation:** Animal & Grassland Research & Innovation Centre

**International Organisation:** EMBL-European Bioinformatics Institute

### Industrial Dimension

**SMEs:** Hungary, Portugal, Turkey

## CA22113

### Fundamental challenges in theoretical physics

#### SUMMARY

Physicists are able to model the world with remarkable accuracy: from the largest cosmological structures to human-scale condensed-matter systems, all the way down to subatomic particles. However, in many cases the mathematical description underlying such systems is so involved that it is only possible to make predictions in an approximation where the interactions are weak. That is, one starts from a free theory and then switches interactions on, order by order in a small parameter. Not only does this strategy fail when applied to strongly-interacting systems, but it also prevents us from answering fundamental questions in theoretical physics.

This Action aims at developing a comprehensive approach for studying strongly-interacting systems in classical and quantum physics by exploiting symmetries, dualities, and the internal consistency of the underlying theories. This calls for the cooperation of researchers from different fields, across Europe and beyond. The Action will bring together theoretical and mathematical physicists with expertise in quantum field theory, string theory, gravity, geometry and information theory, establishing the first network of this kind centred around Europe. Such a critical mass will also boost the visibility and impact of European research in theoretical physics.

In parallel, this Action will strive to bring cutting-edge research in theoretical physics to the general public and to high-school students in particular. Working with teachers and local public bodies, it will combat long-standing prejudices on physics and research that turn away bright young students, and that in the long run may fuel indifference if not distrust towards science.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Fundamental interactions and fields (theory)	1. Theoretical physics 2. Quantum field theory 3. Non-perturbative physics 4. Quantum gravity 5. Public engagement

#### COST Members

Main Proposer: Italy

Network of Proposers:

Full Member: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Partner Member: South Africa

Main and secondary proposers: 20% ECI / 22% Women / 52% ITC

#### International Cooperation

**Near Neighbour Country:** Russian Federation<sup>1</sup>

**International Partner:** Australia, Brazil, China, India, South Korea, Thailand, United States

<sup>1</sup> As of 6 May 2022 until further notice, measures are taken to suspend cooperation with Russia for the execution of the COST Actions and COST activities. Participation and eligibility of COST Actions participants affiliated to a legal entity established in Russia are suspended for all COST Actions and COST activities.



CA22114

**Maternal Perinatal Stress and Adverse Outcomes in the Offspring: Maximising infants' development**

**SUMMARY**

High levels of maternal perinatal stress are associated with negative effects in the offspring. The adverse impact maternal stress can have in the infants' health is 1) in the short term (prematurity, low infant birthweight); 2) the long-term (neuroinflammation, autism);

3) the very long-term (transgenerational effects). Previous studies have reported maternal stress can have transgenerational consequences. During pregnancy, high levels of maternal stress can cross the placenta and reach the fetus. Mediators responsible for the impact of maternal stress in the developing fetus include cytokines, tryptophan, cortisol, catecholamines, reactive oxygen species, oxidative stress and microbiota. These mediators, along with epigenetic mechanisms, are involved on the adverse consequences high levels of maternal stress can have in the offspring.

In order to improve fetal development and boost infant's health throughout their lifespan, the TREASURE project aims to consolidate a multidisciplinary and international network of scientists, clinicians, students, stakeholders, Non-Governmental Organisations

(NGOs) and Enterprises to achieve impact through a three-fold main objective : 1) discovering, reviewing and disseminating scientific evidence on minimize, reduce and prevent the impact of maternal perinatal stress on fetal development, and to improve psychological, medical and neural development in the offspring during their life-span; 2) bridging knowledge, evidence and experience between scientific disciplines, and bringing international research groups together to increase knowledge exchange between countries. 3) forming international coalitions to efficiently translate scientific knowledge into clinical guidelines and best practices across Europe to improve the health of children, and reducing economic cost appearing from high levels of maternal perinatal stress.

**SCIENTIFIC SCOPE**

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Health Sciences: Social biomedical sciences (including family planning, sexual health, psycho-oncology, political and social effects of biomedical research)</li> <li>2. Health Sciences: Environment and health risks including radiation</li> </ol>	<ol style="list-style-type: none"> <li>1. Fetal</li> <li>2. Programming</li> <li>3. Pregnancy</li> <li>4. Women</li> <li>5. Health</li> </ol>

**COST Members**

Main Proposer: Spain

Network of Proposers:

Full Member: Albania, Bosnia and Herzegovina, Croatia, Cyprus, Estonia, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom

Cooperating Member: Israel

Partner Member: South Africa

Main and secondary proposers: 22% ECI / 73% Women / 52% ITC

**International Cooperation**

**Near Neighbour Country:** Jordan

**International Partner:** Australia, Canada, United States

## Industrial Dimension

**Large companies:** Bosnia and Herzegovina

CA22115

## A Multilingual Repository of Phraseme Constructions in Central and Eastern European Languages

### SUMMARY

To communicate, language users must not only respect the grammatical rules of a given language; they must also have knowledge about which words typically belong together. This means that they must know how to combine words and grammatical forms to create specific meanings in specific contexts. When learning a new language, the focus is usually on the teaching of grammatical rules and vocabulary. Verbal routines and other kinds of patterned speech, such as idioms or proverbs, have also become a natural part of modern foreign language teaching. The PhraConRep Action targets a class of idiomatic word combinations that have been much less of a focus not only in teaching, but also in research. The patterns in question will be referred to as Phraseme Constructions (PhraCons) and are defined as patterns of idiomatic word combinations consisting of fixed lexical elements ("anchors") and empty slots for fillers. Both lexical anchors and lexical fillers must meet certain criteria specific to the given PhraCon.

PhraConRep coordinates contrastive empirical research on PhraCons and establishes a platform for conducting joint research on the classification, description, storage, translation and teaching of PhraCons of Middle and Eastern European languages. Its main objective is to provide a multilingual repository of PhraCons. On the basis of two pivot languages, German and Russian, equivalents of PhraCons are established in at least nine Slavic languages and Hungarian. The repository will be a unique tool for language learners, teachers, and other stakeholders, such as professional translators, involved in the study of these languages.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Languages and literature: Use of language: form, pragmatics, sociolinguistics, discourse analysis, lexicography, terminology</li> <li>2. Languages and literature: Second language teaching and learning</li> <li>3. Languages and literature: Linguistics: typological, historical and comparative linguistics</li> <li>4. Languages and literature: Translation and interpretation</li> <li>5. Languages and literature: Databases, data mining, data curation, computational modelling</li> </ol>	<ol style="list-style-type: none"> <li>1. phraseme constructions</li> <li>2. syntactic idioms</li> <li>3. translation</li> <li>4. foreign language teaching and learning</li> <li>5. intercomprehension</li> </ol>

### COST Members

Main Proposer: Germany

Network of Proposers:

Full Member: Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Poland, Serbia, Slovakia, Slovenia, Ukraine

Main and secondary proposers: 37% ECI / 86% Women / 83% ITC

## CA22116

### The Great Leap. Multidisciplinary approaches to health inequalities, 1800-2022

#### SUMMARY

To this day and age, deep-rooted, structural inequalities in health have been one of the most consistent and pressing challenges society has faced. Recent events, such as the COVID19 pandemic highlight the urgent need for new research, insights and action to tackle this challenge for future generations. Embracing the COST Mission, the Great Leap takes a unique, multidisciplinary approach from a historical perspective to gain a greater understanding of the roots and drivers of health inequalities across regions and countries in Europe and beyond. To achieve this mission, the Great Leap creates an international, multidisciplinary network that will bundle expertise, techniques, insights and data to create (1) the first international comparable dataset of individual-level historical cause of death data, (2) innovative analytical tools to analyse it, and (3) insights into how this information can be used in current public health policy and practice.

The network of proposers includes a wide range of academic expertise in history, social sciences, life sciences and epidemiology and involves university-, research-, government- and (international) health institutes and organizations, including statistical offices and national archives. The network has deliberately chosen for a balanced gender (52.5% male, 45.5% female, 2% non-binary), ITC (52%) and YRI (51%) representation, and aims to maintain this while expanding its network internationally. By fostering the strengths of this unique, multidisciplinary and diverse network, the Great Leap aims to generate ground-breaking insights into the historical roots and drivers of health inequalities across regions and countries in Europe and beyond.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. History and Archeology: Social and economic history	History of mortality decline Health inequalities Individual level causes of death

#### COST Members

Main Proposer: Netherlands

Network of Proposers:

Full Member: Albania, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Partner Member: South Africa

Main and secondary proposers: 51% ECI / 46% Women / 52% ITC

#### Specific Organisations

**International Organisation:** World Health Organization Regional Office for Europe



## CA22117

### A European flyway research network for the effective conservation of migrant landbirds

#### SUMMARY

One third of European breeding bird species are migrant birds that occur across the continent and winter in Africa, and most of these species are landbirds. Many species are in serious decline from multiple causes in multiple areas of the flyway.

A COST Action scientific network is needed to understand these migrant landbird population dynamics because research must take place over the scale of the birds' flyway. We will therefore create a scientific network at the appropriately large scale through flyway level cooperation and coordination of existing local research throughout Europe, and training and sharing of expertise to peripheral countries. The network will also facilitate new research to determine the time and place of population limitations in the annual cycle of each migrant landbird species. The research is interdisciplinary, including ecology, remote sensing, geographical models and development of statistical techniques to allow effective prediction of how climate and habitat change affects migrant populations. Effective management actions to address migrant bird declines can then be identified and implemented through species action plans, operating efficiently across Europe because they arise from a network already cooperating at that scale. The scientific breakthrough will be to carry out fundamental migrant landbird research at the appropriate scale: examples of the effectiveness of this approach are just emerging and we aim to make this standard across Europe and peripheral countries. This will lead to improvements in our ability to effectively conserve migrant landbird populations that contribute ecosystem services such as biodiversity and quality of life.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Biological sciences: Conservation biology, ecology, genetics	1. Landbird 2. Migration 3. Flyway 4. Europe 5. Africa

#### COST Members

Main Proposer: Austria

Network of Proposers:

Full Member: Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Latvia, Malta, Poland, Portugal, Romania, Serbia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 41% ECI / 54% Women / 62% ITC

#### International Cooperation

**Near Neighbour Country:** Algeria, Armenia, Egypt, Jordan, Morocco, Tunisia

## CA22118 Radionuclide theragnostics for personalised medicine

### SUMMARY

Image guided treatments with radiotherapeutics have so far been restricted to qualitative evaluation of PET imaging to assess the suitability of patients for a course of treatment. A 'next generation' approach to theragnostics will enable personalised dosimetry-based treatment planning based on the image data acquired ('molecular radiotherapy'). This will entail multimodality imaging, including quantitative PET/CT and SPECT/CT along with MRI for pre-therapy treatment planning and for staging and monitoring response, the standardisation of data acquisition and processing to facilitate multi-centre data collation, and bio-kinetic modelling to extract the maximum information from data and to inform further treatments.

Realisation of the potential offered by a theragnostic approach to treatment requires multi-centre and multi-national collaboration, as a full range of expertise is seldom available in any one centre.

The limited number of patients treated, in comparison with conventional chemotherapy and external beam radiotherapy, also warrants support for the development of multi-disciplinary networks that would promote fast-tracking novel theragnostic procedures into clinical practice.

This COST action will promote the full potential of a theragnostic approach to the treatment of cancer with radiotherapeutics by:

- fostering collaborative research and training between experts and clinical centres to facilitate knowledge transfer.
- supporting the optimisation and standardisation of data acquisition to allow data pooling.
- bridging gaps between stakeholders and supporting communication between cross-speciality experts
- promoting multi-disciplinary theragnostic approaches to the development of personalised treatments.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Clinical medicine: Radiology, nuclear medicine and medical imaging</li> <li>2. Basic medicine: Pharmacology, pharmacogenomics, drug discovery and design, drug therapy</li> </ol>	<ol style="list-style-type: none"> <li>1. theragnostics</li> <li>2. radionuclide therapy</li> <li>3. nuclear medicine</li> <li>4. medical imaging</li> <li>5. medical physics</li> </ol>

### COST Members

Main Proposer: Austria

Network of Proposers:

Full Member: Austria, Belgium, Bosnia and Herzegovina, Estonia, France, Germany, Hungary, Italy, Latvia, Lithuania, Netherlands, North Macedonia, Poland, Romania, Slovenia, Sweden, United Kingdom

Partner Member: South Africa

Main and secondary proposers: 32% ECI / 48% Women / 53% ITC

### International Cooperation

**Near Neighbour Country:** Egypt, Palestine\*\*

**International Partner:** Australia, Brazil, Indonesia, United States

### Specific Organisations

**European RTD Organisation:** National Physical Laboratory

## Industrial Dimension

**Large companies:** Estonia, Germany, Hungary, United States

## CA22119

### Haemoglobinopathies in European Liaison of Medicine and Science

#### SUMMARY

Haemoglobinopathies, including sickle cell disease and thalassaemia syndromes, are the commonest monogenic diseases, with millions of patients and carriers worldwide. Their global spread has increased due to growing population movements, posing a major healthcare and research challenge. In many EU countries, figures on the prevalence of haemoglobinopathies are largely underestimated owing to the lack of national registries, poor patient access to diagnosis and treatment and the absence of EU-wide synergies.

To fill this gap, this Action will build a network of excellence for integrating, harmonising, and spreading the existing knowledge and for developing innovative services and tools, thus improving knowledge accessibility and healthcare equally across the EU. HELIOS comprises five working groups that will coordinate existing and emerging haemoglobinopathy-related activities in the EU, ranging from clinical and molecular research to data analysis and bioinformatics, aiming to advance health care systems, contribute to informed policymaking and improve survival and quality of life for existing and future patients. To achieve this, the Action has brought together a diverse group of professionals from different disciplines (e.g., clinical research, laboratory genetics and molecular diagnosis, computational biology, bioethics, data management) and sectors (e.g., universities, research centres, healthcare centres, biobanks, private sector). The Action will expand among COST countries, International Partner Countries and Near Neighbour Countries, while respecting gender balance and promoting the active participation of young researchers and innovators.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Clinical medicine: Hematology</li> <li>2. Health Sciences: Health services, health care research</li> <li>3. Biological sciences: Computational biology</li> <li>4. Other medical sciences: Databases, data mining, data curation, computational modelling for other medical sciences</li> <li>5. Biological sciences: Molecular biology and interactions</li> </ol>	<ol style="list-style-type: none"> <li>1. haemoglobinopathies</li> <li>2. thalassaemia</li> <li>3. sickle cell disease</li> <li>4. harmonisation</li> </ol>

#### COST Members

Main Proposer: Cyprus

Network of Proposers:

Full Member: Albania, Belgium, Cyprus, Denmark, France, Germany, Greece, Italy, Malta, Netherlands, Portugal, Serbia, Slovakia, Slovenia, Spain, Turkey, United Kingdom

Main and secondary proposers: 42% ECI / 62% Women / 53% ITC

#### International Cooperation

**Near Neighbour Country:** Azerbaijan, Egypt, Lebanon, Morocco

**International Partner:** Brazil, Canada, China, Congo, The Democratic Republic of the , Malaysia, Nigeria, Tanzania, United States

#### Industrial Dimension

**Large companies:** Belgium, China

## CA22120

### A European Network to Leverage the Multi-Age Workforce

#### SUMMARY

Europe faces one of the greatest challenges of the 21st century – an aging, age-diverse workforce. In response, 15 EU COST Action networks have been formed, with 3 networks focused on work and aging. Yet, all past Actions have focused on health sciences and sociology – no Action networks have tackled the essential psychological and managerial aspect of work and aging. LeverAge will thus bring together the largest network worldwide of work and aging scientists and practitioners focused on Work, Organizational, and Personnel psychology and Human Resource Management (WOP/HRM), totaling 24 COST Member countries and 8 International Partner countries. In concert with many prominent work and aging scientists in Europe and beyond, the Action will expand science and practice on work and organizational practices for an age-diverse workforce, successful aging at work for workers of different demographics, knowledge transfer between generations, the integration of age-diverse workers at work, aging and technology at work, and late-careers and retirement.

**The LeverAge COST Action will build a pan-European and global network of scientists and practitioners focused on WOP/HRM that will advance, share, and promote knowledge and implementation of evidence-based practices to fully leverage the multi-age workforce and enhance the well-being, productivity and prosperity of individuals, organizations, and societies facing profound demographic and technological change.**

The Action will establish five Working Groups focusing on key topics:

- Work and organizational practices for an age-diverse workforce
- Successful aging at work
- Integration of age-diverse workers and knowledge transfer
- Aging and technology at work
- Career development in later life and retirement

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Psychology: Social psychology	1. Age diversity at work
2. Economics and business: Human resource management	2. Organizational practices for the multi- age workforce
3. Psychology: Developmental psychology	3. Successful aging at work
	4. Late-career and retirement

#### COST Members

Main Proposer: Turkey

Network of Proposers:

Full Member: Albania, Belgium, Croatia, Cyprus, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Slovenia, Spain, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 34% ECI / 66% Women / 50% ITC

#### International Cooperation

**International Partner:** Australia, Chile, China, Hong Kong SAR, Malaysia, Mexico, New Zealand, United States

#### Industrial Dimension

## CA22121

### Rising nationalisms, shifting geopolitics and the future of European higher education/research openness

#### SUMMARY

In the last decade, an upsurge of new nationalisms and geopolitical shifts have amplified Eurosceptic opposition and challenged the values of integration at the root of the European integration project. These transformations in the political world in which universities operate exert a growing pressure on the openness of higher education and research and are affecting academic freedom, open science, institutional autonomy, and international engagement, including mobility opportunities. The University finds itself entangled in contrasting visions of Europe: between one of deeper political integration and openness and visions where European nation-states (re) gain power as the locust of political sovereignty or where protectionism, regionalism, and security politics challenge open exchange with communities outside the EU.

The action brings together an inter-disciplinary group of researchers to explore the shifting dynamics between the University, the nation-state and the European integration project. Through knowledge-exchange and collaboration, the network will converge diverse pan-European and interdisciplinary perspectives on the neonationalism-higher education relationship and accompanying geopolitical pressures. The network will strengthen and showcase European scholarship, and liaise with stakeholders in the domain of higher education and research to generate ideas for addressing and alleviating the growing threats to the University's openness and global cooperation capabilities. In doing so, the network will develop sustainable and transferable analytical and conceptual frameworks for future studies and collaborations, including mentorship programs for early career scholars.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Educational sciences: History and philosophy of education</li> <li>2. Political Science: European studies</li> </ol>	<ol style="list-style-type: none"> <li>1. European Union</li> <li>2. Neo-nationalism</li> <li>3. Geopolitics</li> <li>4. Higher education</li> <li>5. Research</li> </ol>

#### COST Members

Main Proposer: Denmark

Network of Proposers:

Full Member: Albania, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 36% ECI / 81% Women / 60% ITC

#### International Cooperation

**Near Neighbour Country:** Kosovo\*

#### Specific Organisations

**International Organisation:** UNESCO International Institute for Higher Education in Latin America & the Caribbean





## CA22122

### Rethinking the Blue Economy: Socio-Ecological Impacts and Opportunities

#### SUMMARY

The COST Action "Rethinking the Blue Economy: Socio-ecological impacts and opportunities" (RethinkBlue) centres around the Blue Economy and related policies affecting European societies. After the term was introduced at the UN Rio+20 conference, the paradigm was adopted by various actors across Europe and beyond. In the EU, the Blue Economy paradigm involves regional and national political-economic priorities, new legislative and governance frameworks, and EU and national financial support for sectors of the marine economy. However, the impact of these policies on coastal populations are not yet well-understood. Accelerating globalisation, technological developments and the impact of climate change pose additional challenges.

The purpose of this Action is to rethink the Blue Economy, in two ways. First, by assessing its impact on coastal societies, and second, by exploring opportunities deriving from innovations and potential synergies between established and emergent marine activities. The guiding research questions are:

What are the impacts, positive or negative, of Blue Economy developments on human well-being, social equity and the economic and environmental sustainability of coastal societies?  
What are potential opportunities for innovations and synergies between sectors?

Scientific interactions focus on five themes: (1) maritime occupations, (2) food security & sustainable blue consumption, (3) port cities & coastal communities, (4) fisheries governance & emergent activities, (5) climate change & natural hazards. Knowledge exchange and capacity building among researchers and stakeholders of the Blue Economy will be facilitated through meetings, research workshops, an online seminar series, training schools, and conferences.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty</li> <li>2. Political Science: Political systems and institutions, governance</li> <li>3. Social and economic geography: Socio-economic aspects of environmental sciences</li> <li>4. Agriculture, Forestry, and Fisheries: Aquaculture, fisheries</li> <li>5. Sociology: Anthropology, ethnology, cultural studies</li> </ol>	<ol style="list-style-type: none"> <li>1. Blue Economy</li> <li>2. Maritime governance and policy</li> <li>3. Socio-economic transformations</li> <li>4. Social, economic and environmental sustainability</li> <li>5. Coastal societies</li> </ol>

#### COST Members

Main Proposer: Croatia

Network of Proposers:

Full Member: Bosnia and Herzegovina, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Turkey, United Kingdom

Main and secondary proposers: 23% ECI / 50% Women / 52% ITC

#### Specific Organisations

## CA22123 European Materias Acceleration Center for Energy

### SUMMARY

Materials have played a decisive role in nearly all rupture technologies in the industrial history of our society. Faced with the current climate, geopolitical and humanitarian crisis, many international and regional entities (political, industrial and scientific alike) recognize the importance of a strong materials innovation ecosystem for driving the clean energy transition. In response, self-driving laboratories (SDL) (a.k.a. MAPs - materials acceleration platforms) are created at institutional, regional and international levels. SDLs integrate combinatorial synthesis, high-throughput characterization, automated analysis and machine learning for fast-track discovery and optimization of advanced materials.

While these platforms are proving their effectiveness in producing advanced materials with targeted functionalities and physical properties, a large margin of improvement still exists. Streamlining materials integration into components and to safe and sustainable products is one example challenge in order to enable rupture technology. Another challenge is that of geographical concentration of MAPs that practically excludes a substantial fraction of research labs and tech-companies in Europe from contributing and benefiting from such platforms. Finally, next generation material science researchers need to develop new skills to be able to integrate such systemic and automated approach into their future R&D framework. To this end, EU-MACE will become an ecosystem for accelerated materials development at the user end, gathering researchers and stakeholders with state-of-the-art digital and material competences combined with the market/social pull. Our inclusive & systemic approach will lay the foundation for a future centre of excellence for advanced functional materials to assist transition toward a united and stronger EU.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Materials engineering: New materials: oxides, alloys, composite, organic-inorganic hybrid</li> <li>2. Materials engineering: Sustainable engineering</li> <li>3. Environmental engineering: Sustainable engineering</li> <li>4. Materials engineering: Characterization methods of materials for material engineering applications</li> </ol>	<ol style="list-style-type: none"> <li>1. advanced energy materials</li> <li>2. materials acceleration platform</li> <li>3. safe and sustainable by design</li> <li>4. clean energy transition</li> </ol>

### COST Members

Main Proposer: France

Network of Proposers:

Full Member: Austria, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Turkey, Ukraine

Main and secondary proposers: 24% ECI / 41% Women / 56% ITC

### Specific Organisations

European RTD Organisation: Centro de Investigaciones Energéticas Medioambientales y Tecnológicas

### Industrial Dimension

SMEs: Germany, Italy

## CA22124

### EU Circular Economy Network for All: Consumer Protection through reducing, reusing, repairing

#### SUMMARY

The common scope of all states is to make a tangible contribution to the achieving of the objectives of sustainable development for 2030 with the contribution of sustainable consumption. Considering the significant regional disparities in EU and abroad, the lack of a strategic policy framework on regional development, there is an increasing need for all to work towards regional and cross-border cooperation development.

The main aim of the ECO4ALL Action is to contribute to the information, reflection and dissemination activities for youth at large, academics, young researchers, staff of the public administration, business environment and for civil society as a whole regarding the circular economy that works for consumers and, thus, promoting the understanding of sustainable consumption, the conservation of resources and the prevention of waste, as well as the responsibility of manufacturers in the design and marketing phases, as one of the most important prerequisites towards consumer protection through reducing, reusing, repairing.

Innovative aspects of the project consist of the improvement of the green circular economy as a behaviour, by driving the actions and decisions of governments, companies, workers, citizens and consumers to realise their economic, environmental and social impacts in a responsible manner. In the ECO4ALL 's view, the EU institutions focus on the environmental and productive aspects of the circular economy, with barely a mention of the social and consumer-related aspects. Under a comprehensive approach, the proactive role of consumers will overcome mere asymmetrical participation, and must empower them to participate in the full circularity of the process.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Law: Legal theory, legal systems, constitutions, comparative law</li> <li>2. Economics and business: Public economics, political economics</li> </ol>	<ol style="list-style-type: none"> <li>1. circular economy</li> <li>2. consumer protection</li> <li>3. sustainable development</li> <li>4. sustainable consumption of goods</li> <li>5. environmental impact</li> </ol>

#### COST Members

Main Proposer: Moldova

Network of Proposers:

Full Member: Albania, Bosnia and Herzegovina, Croatia, Cyprus, France, Latvia, Lithuania, Moldova, Portugal, Romania, Slovenia

Main and secondary proposers: 29% ECI / 67% Women / 91% ITC

#### Industrial Dimension

**SMEs:** Albania

## CA22125

### Precision medicine in biliary tract cancer

#### SUMMARY

Biliary tract cancers (BTC) include a heterogeneous group of aggressive tumours with an increasing incidence in Europe. Limited knowledge of risk factors and the lack of biomarkers for diagnosis are responsible for frequent late detection. These tumours are characterised by high refractoriness to conventional chemotherapy, and an unmet need for development of novel therapeutic strategies. Targeted therapies have proven to be a good option for only subgroups of patients, but their access is unevenly distributed across Europe, requiring urgent implementation plans for patients' benefit.

**Precision-BTC-Network** aims to create a unique cooperative and interdisciplinary network of European multi-stakeholders, including basic researchers, clinical investigators, SMEs, European Commission and EU agencies, international scientific organizations, patient representatives, and industrial partners, to address the diversified, but interrelated challenges, in the implementation of precision medicine in the management of BTC.

The Action will be organized in four working groups involved in the development of a personalized management of patients with BTC: **Identification of epidemiological heterogeneity in Europe to apply precision prevention, Personalised early detection of BTC, Personalisation of treatment for patients with BTC, Patient-centric support management**, and three horizontal WGs will provide cross-sectional activities relevant to WG1-4 goals: **Artificial intelligence, Drug development using preclinical models, and Governance**.

The expected impact includes speeding up the development of diagnostic and prognostic biomarkers for BTC patients and bringing beneficial therapies and optimal management of these patients across Europe. In addition, the training of young researchers and innovators in precision medicine in BTC will ensure further progress in the future.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Clinical medicine: Oncology</li> <li>2. Basic medicine: Pharmacology, pharmacogenomics, drug discovery and design, drug therapy</li> <li>3. Clinical medicine: Databases, data mining, data curation, computational modelling</li> </ol>	<ol style="list-style-type: none"> <li>1. biliary cancer</li> <li>2. prevention</li> <li>3. early detection</li> <li>4. personalised treatment</li> <li>5. artificial intelligence</li> </ol>

#### COST Members

Main Proposer: Spain

Network of Proposers:

Full Member: Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom

Cooperating Member: Israel

Partner Member: South Africa

Main and secondary proposers: 40% ECI / 49% Women / 58% ITC

#### International Cooperation

**Near Neighbour Country:** Egypt

**International Partner:** Brazil, Canada, India, Japan, Pakistan, Singapore, United States

#### Specific Organisations

**European RTD Organisation:** Slovak Academy of Sciences

**EU Institutions, Bodies, Offices and Agencies (EC/EU):** MEPs Against Cancer

**International Organisation:** Instituto Nacional de Ciencias Medicas y Nutricion Salvador Zubiran

## CA22126

### European Network On Lexical Innovation

#### SUMMARY

Neology is the study of lexical innovation in natural languages, in multiple contexts and over time. Lexical innovation is a massive, permanent and universal phenomenon. From a strictly linguistic point of view, the study of neology “contributes to a better understanding of the lexical system of a given language and its evolution” (Sablayrolles 2019: 7), while from an extralinguistic point of view, “the inventory of neologisms also gives much information about language communities in their material lives and social representations” (ibid.). The key challenges addressed by the network may be summarised thus: 1) Define the core terminology of neology conceived as a discipline through the creation of a born- digital specialised multilingual glossary (none exist currently) in order to facilitate research on an international scale; 2) Adapt digital methodologies and tools to identify and account for lexical innovation; thanks to the involvement of institutions, experts and the general public (crowdsourcing), increase the awareness of lexical creations and their societal implications, foster creativity in mother tongues, clarity in institutional communication and in science; 3) Carry out comparative studies on lexical innovation in European languages, with a particular focus on borrowings and their equivalents; 4) Provide specific training in neology for translators, editors, journalists, technical writers and teachers through a specific protocol that could be replicated for any European language. Conferences, training schools and short-term scientific missions are also planned in order to achieve the aforementioned goals.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Languages and literature: Use of language: form, pragmatics, sociolinguistics, discourse analysis, lexicography, terminology</li> <li>2. Languages and literature: Linguistics: formal, cognitive, functional and computational linguistics</li> <li>3. Languages and literature: Translation and interpretation</li> <li>4. Languages and literature: Databases, data mining, data curation, computational modelling</li> </ol>	<ol style="list-style-type: none"> <li>1. Lexical innovation</li> <li>2. Lexicography</li> <li>3. Terminology</li> <li>4. Digital Corpora</li> <li>5. Translation</li> </ol>

#### COST Members

Main Proposer: Italy

Network of Proposers:

Full Member: Croatia, Czech Republic, Denmark, Estonia, France, Hungary, Italy, Lithuania, Poland, Portugal, Slovakia

Main and secondary proposers: 23% ECI / 50% Women / 73% ITC

#### International Cooperation

**International Partner:** Canada

## CA22127

# COLlaboratively DEveloped culturallY Appropriate and inclusive Assessment tool for Palliative Care EDUcation

## SUMMARY

All health systems across the WHO European Region should prepare to respond to the age-related increase in deaths from chronic diseases, by focusing on integration and boosting of palliative care education. The CODE-YAA@PC-EDU COST Action will set quality indicators to establish a gold standard for high-quality education and training in palliative care. CODE-YAA@PC-EDU aims to measure, explore, and promote access to palliative care education and training in the WHO Euro-region, focusing mainly on primary health care, which is considered the most sustainable and cost-effective model for palliative care delivery. CODE-YAA@PC-EDU will develop and provide a new culturally and ethically appropriate inclusive evidence-based self-assessment tool, CODE-YAA, to inform leadership priorities and evidence-based decision-making related to palliative care education and training. CODE-YAA@PC-EDU is composed of three Pan-European; interdisciplinary; geographical, age and gender balanced; open and inclusive; and excellence-driven working groups: FIRE, TORCH, and THUNDER. CODE-YAA@PC-EDU will provide networking opportunities and activities for researchers and innovators to strengthen Europe's capacity to the scientific, technological, and societal challenge of ensuring access to palliative care education and training. CODE-YAA@PC-EDU will capitalise on other EU-funded projects on ethics, research ethics, and palliative care. The CODE-YAA indicators will have a long-lasting impact in Europe and beyond. CODE-YAA@PC-EDU will coordinate joint efforts to seek ways to improve palliative care education and accelerate knowledge transfer into ethically sound practices that can be shared across Europe to reduce the societal and economic burden and harmful experiences caused by people experiencing unnecessary health-related suffering.

## SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Health Sciences: Health services, health care research</li> <li>2. Philosophy, Ethics and Religion: Ethics and morality, social ethics</li> <li>3. Educational sciences: Education: training, pedagogy, didactics</li> <li>4. Sociology: Population dynamics, demography</li> </ol>	<ol style="list-style-type: none"> <li>1. education and training</li> <li>2. quality assessment indicators</li> <li>3. capacity building</li> </ol>

## COST Members

Main Proposer: Austria

Network of Proposers:

Full Member: Albania, Austria, Belgium, Croatia, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Poland, Portugal, Romania, Slovenia, Spain, Switzerland, Ukraine, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 20% ECI / 55% Women / 50% ITC

## International Cooperation

**Near Neighbour Country:** Armenia

CA22128

## Establishing Networks to Implement the Principles on Effective Interviewing for Investigations

### SUMMARY

Interviews conducted across the world by police and other law enforcement agencies with suspects, victims and witnesses are crucially important in determining criminal justice outcomes. The Action Team knows from their combined expertise that there are two distinct approaches worldwide.

Firstly, several Member countries have developed (or are developing) an ethical approach termed ‘investigative interviewing’, that aims to obtain detailed and reliable information, while respecting human rights. This approach is consistent with the 2021 United Nations Declaration of the ‘Principles of Effective Interviewing’, known as the ‘Mendez Principles’ after the UN Special Rapporteur; Professor Juan Mendez. Over a three-year period, he led a committee of experts including those in law, forensic psychology and criminology alongside representation from civil society, culminating in the formal declaration of the principles that are grounded in science, law and ethics (see, <https://interviewingprinciples.com/>).

Secondly, however, it is well chronicled both from the literature and actual cases that law enforcement agencies in most countries remain unaware of the investigative interviewing approach, undertaking unethical practices, characterised by guilt presumption and confession-orientation that often rely on psychological manipulation, intimidation or physical torture, and can lead to miscarriages of justice and failed investigations.

This Action involves a timely and much-needed strategy of convening regional and in- country networks of researchers, practitioners and policy makers working with each other and with the Action Team to build on our early work to enable wider implementation of the ‘Mendez Principles’, ending cruel and inhumane practices that have adversely affected so many lives through unethical interrogations.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Psychology: Social psychology</li> <li>2. Law: Criminal law</li> <li>3. Languages and literature: Use of language: form, pragmatics, sociolinguistics, discourse analysis, lexicography, terminology</li> <li>4. Political Science: Public administration, public policy</li> <li>5. Law: International law</li> </ol>	<ol style="list-style-type: none"> <li>1. Investigative Interviewing</li> <li>2. Interrogation</li> <li>3. Torture</li> <li>4. Suspects of Crime</li> <li>5. Victims and Witnesses of Crime</li> </ol>

### COST Members

Main Proposer: United Kingdom

Network of Proposers:

Full Member: Belgium, Bosnia and Herzegovina, Czech Republic, Estonia, Finland, Ireland, Lithuania, Netherlands, Norway, Poland, Portugal, Serbia, Slovenia, Spain, Switzerland, United Kingdom

Main and secondary proposers: 25% ECI / 50% Women / 50% ITC

### International Cooperation

**International Partner:** Australia, Indonesia, Malaysia, United States

CA22129

## InsectAI - Using Image-based AI for Insect Monitoring & Conservation

### SUMMARY

The **InsectAI COST action** will support insect monitoring and conservation at the national and continental scale in order to understand and counteract widespread insect declines.

The Action will bring together a critical mass of researchers and stakeholders in image-based insect AI technologies to direct and drive the research agenda, build research capacity across Europe, and support innovation and application.

There is mounting evidence that populations of insects around the world are in sharp decline. Understanding trends in species and their drivers are key to knowing the size of the challenge, its causes, and how to address it. To identify solutions that lead to sustainable biodiversity alongside economic prosperity, insect monitoring should be efficient and provide standardised and frequently updated status indicators to guide conservation actions.

The EU Biodiversity Strategy 2030 identifies the critical challenge of delivering standardised information about the state of nature, and image-based insect AI can contribute to this. Specifically, the EU Nature Restoration Law will likely set binding targets for the high resolution data that cameras can provide. Thus, outputs of the Action will contribute directly to EU policies implementation, where biodiversity monitoring is considered a key component.

The **InsectAI COST Action** will organise workshops, conferences, short-term scientific missions, hackathons, design-sprints and much more, across four Working Groups. These groups will address how image-based insect AI technologies can best address **Societal Needs**, support innovation in **Image Collection** hardware, create standardised approaches for **Image Processing**, and develop novel **Data Analysis and Integration** methods for turning data into actionable insights.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Biological sciences: Ecology	<ol style="list-style-type: none"> <li>1. camera</li> <li>2. computer vision</li> <li>3. statistics</li> <li>4. autonomous</li> <li>5. standards</li> </ol>

### COST Members

Main Proposer: United Kingdom

Network of Proposers:

Full Member: Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Germany, Greece, Lithuania, Malta, Netherlands, Norway, Portugal, Romania, Sweden, Switzerland, United Kingdom

Main and secondary proposers: 54% ECI / 39% Women / 53% ITC

### International Cooperation

**International Partner:** Canada, United States

### Industrial Dimension

**SMEs:** Lithuania, Malta



## CA22130 Comprehensive Multiboson Experiment-Theory Action

### SUMMARY

The first decade of operations of the Large Hadron Collider (LHC) has consolidated the success of the Standard Model (SM) of particle physics. In particular, the discovery of the Higgs boson confirmed the “Higgs mechanism” as an appropriate description of electroweak symmetry breaking (EWSB). Yet, the dynamics underlying the EWSB, and therefore the nature of the Higgs boson itself, is still unknown. This represents one of the most pressing open questions in contemporary particle physics.

Shedding light onto the nature of the EWSB requires studying the dynamics of the scalar sector of the SM as a whole, examining the Higgs, W and Z bosons in a coherent way. Concretely, it is crucial to measure several multi-boson production processes and to combine them into comprehensive global analyses. The identification of inconsistencies with the SM in such measurements would represent a major achievement in the field, that would be decisive in defining its research targets for the next decades.

These measurements are very challenging, because of the overwhelming backgrounds, the required precision of theory predictions and the large number of processes of interest. Only a coordinated effort will allow us to create a consistent high-precision picture of EWSB dynamics.

COMETA will create a tightly interconnected scientific community that will bring substantial improvements to this quest, by fostering communication between diverse research groups and enabling the development of dedicated advanced technology. The network will involve world-leading experts from theory and experimental HEP groups, as well as artificial intelligence practitioners within and outside academia.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Physical Sciences: Fundamental interactions and fields (theory)	<ol style="list-style-type: none"> <li>1. particle physics</li> <li>2. hadron colliders</li> <li>3. electroweak symmetry breaking</li> <li>4. beyond standard model</li> <li>5. machine learning techniques</li> </ol>

### COST Members

Main Proposer: Switzerland

Network of Proposers:

Full Member: Austria, Croatia, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Poland, Portugal, Serbia, Slovenia, Spain, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 53% ECI / 27% Women / 57% ITC

### International Cooperation

**Near Neighbour Country:** Morocco

**International Partner:** Brazil, China, United States

CA22131

## Supramolecular LUminescent Chemosensors for Environmental Security

### SUMMARY

The main goal of LUCES is the creation of a multidisciplinary network, comprised of researchers with complementary expertise from academia, technological centers and industry, working towards the development of luminescent sensors to be used to help resolve environmental security problems. The luminescent signaling unit will confer a high sensitivity to the sensor and be activated following the molecular recognition event. The Action will gather the leading research groups in the field of supramolecular chemistry, chemical sensors, (nano)materials, electronics, theoretical calculations as well as experts in different analytical techniques, researchers from industry and interested stakeholders, in order to be able to fulfil all the requirements to arrive to bridge the gap between fundamental research and the market. This multidisciplinary group will be strongly committed to promote a competitive European network in which the participation of Young Career Innovators and Inclusiveness Target Country will be highly valued. In this way, LUCES is expected to become an international reference network that can be contacted by any researcher and/or company looking for specific solutions in this topic. Transfer of knowledge will be also carried out through conferences, annual meetings, workshops, training schools and STSMs. Mobility of young researchers between different centers (academic and industry) will reinforce the existing contacts and ease the success of the Action. Dissemination of results will raise awareness about what science, in particular supramolecular luminescent chemosensors, can do for society, promoting the active collaboration between academic and non-academic researchers.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Chemical sciences: Supramolecular chemistry	<ol style="list-style-type: none"> <li>1. chemosensors</li> <li>2. supramolecular chemistry</li> <li>3. detection of contaminants</li> <li>4. luminescence</li> <li>5. prototypes and devices</li> </ol>

### COST Members

Main Proposer: Spain

Network of Proposers:

Full Member: Belgium, Bulgaria, Cyprus, Czech Republic, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Netherlands, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Sweden, Turkey

Main and secondary proposers: 32% ECI / 51% Women / 55% ITC

### International Cooperation

**International Partner:** Australia

### Industrial Dimension

**SMEs:** Belgium, Greece, Italy, Spain

**Large companies:** Belgium, Italy

## CA22132 Open Network on DEM Simulations

### SUMMARY

Particle-based simulations model diverse materials including sand, food grains, pharmaceutical products, ceramic powders and bulk materials, amongst others. Discrete Element Method (DEM) simulations are used across multiple disciplines; as a result, the techniques have developed in different ways across these disciplines, and many DEM software packages exist. Even for experienced researchers the choice of a DEM code is challenging and involves a steep learning curve. However, open-source programs are free, well adapted to research, and promote knowledge sharing, reproducibility, and versatility. They also prevent the “black box” problems encountered with proprietary/commercial platforms.

This Action aims to unify knowledge and people across wide/diverse DEM communities.

The Action will assess and extend what can be achieved with DEM by disseminating new developments, promoting best practice, providing simulation examples, validation experiments, common tools for data analysis, as well as training of early career investigators and involving other interested parties.

The COST Action has five themes: (i) tackling real (large) industrial and engineering problems; (ii) using physics to account for complex phenomena more realistically; (iii) big data and visualization tools for better and quicker DEM analysis of results (iv) normalisation and best practice (v) enhancing commercial utilisation of DEM codes. Each of these themes is aligned to a different Working Group, each addresses major current challenges related to DEM simulation. A sixth Working Group specifically dedicated to the dissemination and publication of activities and will ensure that this network provides substantive benefits to the various DEM communities whilst also engaging with various interested stakeholders.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Civil engineering: Databases, data mining, data curation, computational modelling (e.g. traffic modelling)</li> <li>2. Mechanical engineering: Databases, data mining, data curation, computational modelling</li> <li>3. Physical Sciences: Databases, data mining, data curation, computational modelling</li> <li>4. Environmental engineering Geotechnics:</li> <li>5. Geotechnics</li> </ol>	<ol style="list-style-type: none"> <li>1. Granular materials</li> <li>2. Particle methods</li> <li>3. Open-source</li> <li>4. Micro-mechanics</li> <li>5. Computational mechanics</li> </ol>

### COST Members

Main Proposer: United Kingdom

Network of Proposers:

Full Member: Austria, Belgium, Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Italy, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Serbia, Spain, Turkey, United Kingdom

Partner Member: South Africa

Main and secondary proposers: 48% ECI / 31% Women / 53% ITC

### International Cooperation

**International Partner:** Australia, Colombia, Iran, United States

### Specific Organisations

**European RTD Organisation:** CERN

## Industrial Dimension

**SMEs:** Belgium, France, Netherlands

**Large companies:** Germany, Netherlands

## CA22133

### The birth of solar systems

#### SUMMARY

Solar systems emerge from the dust, gas, and ice present in discs encircling newly-born stars. State-of-the-art images from current telescopes have revealed complex substructure (rings and gaps) in dust and gas that may be caused by forming planets.

However, these observations have raised many questions regarding when and how planets form; for example, we see rings in discs too young to birth planets, and we measure disc masses too low to form a Solar System analogue. Further, the demographics provided by observations of extra-solar planetary systems have revealed huge diversity and hint that our Solar System may be unique. It is clear that our picture of the birth of Solar Systems remains incomplete despite these great advances in observations.

This Action will create a multi-disciplinary network covering three cornerstones: experiments, models, and observations. Experimental data is needed to accurately prescribe physics in models of disc evolution and planet formation, and to correctly interpret observations of dust and gas emission. Models are a “virtual laboratory” within which the impact of physics can be explored, and from which observational diagnostics can be created. Finally, observations provide us with the benchmarks needed to confirm or refute our picture of Solar System birth.

To build a holistic picture of how Solar Systems form can only be achieved with an interdisciplinary and pan-European network. This Action will provide the structure and funding needed to develop the research framework, provide training to the next generation, and to disseminate the findings to key stakeholders.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Physical Sciences: Astrophysics, astronomy, space sciences</li> <li>2. Physical Sciences: Formation of stars and planets</li> <li>3. Physical Sciences: Planetary systems sciences</li> </ol>	<ol style="list-style-type: none"> <li>1. Planet formation</li> <li>2. Protoplanetary disc</li> <li>3. Solar System</li> <li>4. Exoplanets</li> <li>5. Habitability</li> </ol>

#### COST Members

Main Proposer: United Kingdom

Network of Proposers:

Full Member: Czech Republic, Denmark, Germany, Hungary, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Slovakia, Sweden, Switzerland, United Kingdom

Main and secondary proposers: 47% ECI / 47% Women / 50% ITC

#### International Cooperation

**International Partner:** Chile, United States

#### Specific Organisations

**International Organisation:** Max-Planck Institute for Astronomy

## CA22134

### Sustainable Network for agrofood loss and waste prevention, management, quantification and valorisation

#### SUMMARY

Food loss and waste (FLW) is a global challenge recognised by international governments and organisations. Reducing FLW is key to sustainably ensure nutritional food security for an increasing world population. It is a target of the Sustainable Development Goals of the United Nations, and the Farm to Fork Strategy of the European Green Deal. The FoodWaStop COST project addresses these challenges and aims to: (i) build an interdisciplinary and multi-actor European Network that will also connect with non-EU Mediterranean countries, to promote knowledge on FLW beyond the state of the art; (ii) determine incidence of FLW in the critical points of the fruit and vegetable value chain; (iii) foster technological innovations and sustainable management strategies to reduce and prevent FLW; and (iv) valorise agrofood waste to promote a circular bio-economy. The experience of the Coordinators and Participants gained from other related projects (e.g., PRIMA, H2020), the background from diverse EU and extra-EU countries, and the involvement of stakeholders and industry partners will contribute to increase awareness of this problem, to determine its incidence, to seek strategies for its management through exploitation of the potential of innovative technologies, and to define good practices to prevent FLW. The FoodWaStop Network will provide benefits to various stakeholders and end-users, including all actors in the agrofood value chain, from farmers (Farm) to consumers (Fork). Moreover, FoodWaStop will create a knowledge platform that will promote innovation, deliver guidelines, and favour dialogue with policymakers, to focus their attention on the social and economic implications of FLW.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Agriculture, Forestry, and Fisheries: Sustainable Agriculture	<ol style="list-style-type: none"> <li>1. Agrofood waste</li> <li>2. Euro-Mediterranean knowledge hub</li> <li>3. Sustainable food management</li> <li>4. Circular bio-economy</li> <li>5. Socio economic empowerment of smallholders</li> </ol>

#### COST Members

Main Proposer: Italy

Network of Proposers:

Full Member: Albania, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Malta, Moldova, Montenegro, North Macedonia, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Turkey, United Kingdom

Cooperating Member: Israel

Partner Member: South Africa

Main and secondary proposers: 29% ECI / 52% Women / 71% ITC

#### International Cooperation

**Near Neighbour Country:** Egypt, Tunisia

**International Partner:** United States

#### Specific Organisations

**International Organisation:** Food and Agriculture Organisation of the United Nations; Beltsville Agricultural Research Center (Food Quality)

## Industrial Dimension

**SMEs:** Egypt, Italy, Malta

**Large companies:** Belgium, Spain

## CA22135

### Data Matters: Sociotechnical Challenges of European Migration and Border Control

#### SUMMARY

Issues pertaining to the control of migration and borders are of paramount importance for contemporary societies. The way the relevant technology is designed and used is central to these issues. The configuration of migration and border control increasingly relies on artificial intelligence and associated digital technologies, which are based on algorithms that feed on big data. DATAMIG is focused on the need for a caring approach to big data and for the socio-technical challenges it entails. More specifically, it aims at supporting interdisciplinary research into the ways that the technological materialities inherent to the datafication of migration and border control may, on account of their black-boxed design, reproduce patterns of inclusion and exclusion that have already severely affected society. DATAMIG will foster the formation of an inclusive, self-expanding network that integrates the various disciplines contributing to the field of Science and Technology Studies (STS, with sociology of science and technology at its core) into the study of migration and borders. This will allow the latter to benefit from a unique interdisciplinary collaboration with other pivotal scientific/technical fields, including but not limited to critical Data Studies. DATAMIG will usher in building an interdisciplinary vocabulary to make data a public matter of concern and care, through research that benefits from bringing together previously disconnected arenas of contestation and public interventions concerning data matters in European migration and border control.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Sociology: Sociology of science</li> <li>2. Sociology: Migration, interethnic relations</li> <li>3. Computer and Information Sciences: Ethics of computer and information sciences</li> </ol>	<ol style="list-style-type: none"> <li>1. Migration</li> <li>2. Borders</li> <li>3. Data</li> <li>4. Socio-technical matters</li> </ol>

#### COST Members

Main Proposer: Greece

Network of Proposers:

Full Member: Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Italy, Luxembourg, Netherlands, Poland, Portugal, Romania, Serbia, Slovenia, Sweden, Switzerland, Turkey, United Kingdom

Main and secondary proposers: 28% ECI / 48% Women / 50% ITC

## CA22136

# Pan-European Network of Green Deal Agriculture and Forestry Earth Observation Science

### SUMMARY

The sustainability of Europe's green resources are threatened by climate change associated environmental changes. Agricultural systems and forests are among the ecosystems mostly interlinked with human health and wellbeing due to the socio-economic services they provide. Whether heat, drought, extreme weather, or biotic stressors, conventional agriculture and forestry today is unprepared for future climate scenarios, rising populations, changing consumption habits, and traditional management practices need re-thinking. The objectives set by PANGEOS are developed in the wake of the European Green Deal strategic goals. For agriculture, these include ensuring food security in the face of climate change, strengthening the EU food system's resilience and reducing the environmental and climate footprint of the EU agricultural sector towards a competitive and sustainable use and management of resources. For forestry, these span the protection, restoration and enlargement of the EU's forests to combat climate change, reversing biodiversity loss and ensuring resilient and multifunctional forest ecosystems. To support these goals, PANGEOS aims to leverage state-of-the-art remote sensing (RS) technologies to advance field phenotyping workflows, precision agriculture/forestry practices and larger-scale operational assessments for a more sustainable management of Europe's natural resources. We propose to bridge the gap between state-of-the-art technologies and applied sciences, to directly serve and inform academics, Young Researchers and Innovators, Inclusiveness Target Countries and Near Neighbor Countries, end-users (e.g., farmers, foresters), and stakeholders in industry and policy-makers by bringing together RS experts and applications in (1) Field Phenotyping, (2) Precision and Regenerative Agriculture, (3) Sustainable Land Management of Complex European landscapes, and (4) Uncertainty Analysis and Standardization.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Earth and related Environmental sciences: Terrestrial ecology, land cover change</li> <li>2. Agriculture, Forestry, and Fisheries: Sustainable Agriculture</li> <li>3. Environmental engineering: Remote sensing</li> <li>4. Physical Sciences: Metrology and measurement (theory)</li> </ol>	<ol style="list-style-type: none"> <li>1. Phenotyping</li> <li>2. Precision Agriculture</li> <li>3. Sustainability</li> <li>4. Remote Sensing</li> <li>5. Uncertainty Analysis</li> </ol>

### COST Members

Main Proposer: Spain

Network of Proposers:

Full Member: Austria, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Montenegro, Netherlands, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom

Cooperating Member: Israel

Partner Member: South Africa

Main and secondary proposers: 45% ECI / 44% Women / 55% ITC

### International Cooperation

**Near Neighbour Country:** Egypt, Morocco, Tunisia

**International Partner:** Chile, Colombia

### Specific Organisations

**European RTD Organisation:** Joint Research Centre

## CA22137

### Randomised Optimisation Algorithms Research Network

#### SUMMARY

The multiple requirements placed on modern real-world processes and systems are ever more demanding. Meeting such requirements can only be achieved through systematic methods capable of identifying the best course(s) of action among the possible alternatives, which are generally known as optimisation algorithms. Optimisation algorithms find application in virtually all areas of knowledge and human activity, but require suitable models of the problems of interest in order to operate. Producing such models is often a challenging task which involves understanding both the problem at hand and the type of optimisation algorithm to be used, and may entail significant effort.

Compared to their deterministic counterparts, randomised optimisation algorithms tend to be simpler to design and implement while offering improved performance, particularly on large problems whose internal structure is not sufficiently well known or even available.

However, randomised optimisation algorithms are still far from reaching the level of widespread and systematic adoption enjoyed by more traditional optimisation solvers in the real world.

This COST Action aims at making randomised optimisation algorithms widely competitive in practice by identifying and reducing obstacles to their adoption at the scientific, technical, economic, and human levels. It focuses on meeting the needs of practitioners, from whose activities the economical value of optimisation solvers stems. These needs are taken as the driving force for new theoretical, methodological, and technical advances leading to the sustainable development of widely available software tools, training materials and programmes, and ultimately to more extensive acceptance and deployment of these methods.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Computer and Information Sciences: Artificial intelligence, intelligent systems, multi agent systems</li> <li>2. Electrical engineering, electronic engineering, Information engineering: Development of scientific computing, data processing, simulation and modelling tools</li> <li>3. Mathematics: Control theory and optimization</li> <li>4. Computer and Information Sciences: Machine learning algorithms</li> <li>5. Computer and Information Sciences: Algorithms, distributed, parallel and network algorithms</li> </ol>	<ol style="list-style-type: none"> <li>1. Optimisation</li> <li>2. Problem modelling</li> <li>3. Randomised algorithms</li> <li>4. Solver software</li> <li>5. Real-world applications</li> </ol>

#### COST Members

Main Proposer: Portugal

Network of Proposers:

Full Member: Albania, Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, North Macedonia, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Partner Member: South Africa

Main and secondary proposers: 27% ECI / 37% Women / 50% ITC

#### International Cooperation

**International Partner:** Australia, Brazil, Mexico, United States



## CA22138

### Recovery of Mining District Network

#### SUMMARY

The extraction of minerals and metals from the earth crust is as old as human mankind. The management of mine closure and post-closure is getting more and more attention because in Europe as well as worldwide many regions are affected by environmental residues such as tailings, waste dumps, subsidences, contaminated water which is the result of unsatisfactory environmental performance of the mining industry in the past.

All European countries are facing these problems and many of these countries are lacking funds and capacity in managing these old mine sites. This network of proposers with 74 scientists and practitioners from more than 60 organisations from 28 EU countries focus on legislation, governance and management of these legacies, financing as well as rehabilitation and monitoring techniques to improve implementation to minimize post-closure mining legacies. It will establish an European mining legacy database,

compare present legal framework, governance structures and management approaches, provide input to mine authorities, regulators and financial institutions on a social balanced and environmental friendly management of mine legacies, harmonise best practices, standards and lessons learnt for a comprehensive and sustainable management of raw materials' extraction legacies and disseminate the results to the public through an open access visualization platform. The network pools experts from currently separated fields (e.g. geologists, economists, engineers, environmental and social scientists, metallurgists, legal representatives, etc.) to consolidate knowledge and foster mutual exchange of knowledge between researchers.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Environmental engineering: Mining and mineral processing	<ol style="list-style-type: none"> <li>1. Postmining</li> <li>2. Abandoned mine</li> <li>3. Environment</li> <li>4. Sustainable management of closed mines</li> <li>5. Raw materials</li> </ol>

#### COST Members

Main Proposer: Czech Republic

Network of Proposers:

Full Member: Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Turkey, Ukraine, United Kingdom

Main and secondary proposers: 28% ECI / 43% Women / 63% ITC

#### International Cooperation

**Near Neighbour Country:** Kosovo\*

#### Industrial Dimension

CA22139

Justice to youth language needs: human rights undermined by an invisible disadvantage

**SUMMARY**

This Action addresses the lack of consistent policies to establish the language abilities that children and adolescents need to possess in order to participate in justice proceedings effectively. The journey through criminal justice is based on highly verbal processes that require a level of verbal ability that is unlikely among young offenders for several reasons: firstly, research in the English-speaking countries (severely limited in other European countries) shows that the prevalence of language impairment is up to six times higher in the population of youth offenders; if undiagnosed and untreated, it increases the risk of re-offending. Furthermore, linguistics research demonstrates that some syntactic abilities are still under development during (pre)puberty, and that the abilities to connect language to context may be underdeveloped even after the age of 18. In addition, comprehension of structurally complex language is low when academic attainment is low, which is the general case for young offenders. However, there are no procedures to establish language ability across populations to date and lack of awareness pervades the justice systems. Even where screening for language difficulties exists, it is not sufficiently nuanced to capture issues with the most common structures found in justice interchanges and no attention is paid to the needs of children from different education backgrounds, with disabilities, who are multilingual, or who are deaf or hearing impaired. To ensure protection of human rights of this vulnerable population, an Action to assess the situation at European transnational level and propose specific measures to identify language needs is urgent.

**SCIENTIFIC SCOPE**

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Health Sciences: Health services, health care research</li> <li>2. Languages and literature: Linguistics: formal, cognitive, functional and computational linguistics</li> <li>3. Law: Criminal law</li> <li>4. Clinical medicine: Paediatrics</li> <li>5. Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty</li> </ol>	<ol style="list-style-type: none"> <li>1. language development</li> <li>2. young offenders</li> <li>3. human rights</li> </ol>

**COST Members**

Main Proposer: United Kingdom

Network of Proposers:

Full Member: Croatia, France, Italy, Montenegro, Netherlands, Portugal, Serbia, Spain, Turkey, Ukraine, United Kingdom

Main and secondary proposers: 30% ECI / 78% Women / 55% ITC

**International Cooperation**

## CA22140

### Improved Knowledge Transfer for Sustainable Insect Breeding

#### SUMMARY

The global population is expected to increase to 10 billion by 2050, bringing with it an increased demand for food and specifically protein. Insect farming can play a major role in ensuring global food security, reducing the environmental footprint of food production, and increasing sustainability of modern farming systems. However, it is currently relying on insect populations whose genetics are poorly understood and who are not necessarily bred- or even fit-for-purpose. Understanding the genetics of large livestock species has made a big difference to the advancement of farming systems, but little effort and research has been put into developing structured breeding programs that would ensure genetic improvement of insect species. With the increased importance of honey bees as pollinators and the continuous scale-up of other insect farming systems, there is a rising need to coordinate research efforts in the field of insect breeding and genetics. The Insect- IMP Action aims to connect researchers from various fields of genetics, entomology and veterinary sciences, both with each other and with other stakeholders across the entire farmed insects sector. The Action will focus on knowledge transfer between various insect species, as well as from other animal breeding and genetics sectors to allow for economic and research gains in insect farming and beekeeping. The collaboration within the Action will enable a more sustainable growth in the insect farming sector, progress European research capacity by laying the foundation for long-term collaboration within both research and industry across borders, and support educated decisions on insect breeding regulations.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Biological sciences: Quantitative genetics</li> <li>2. Animal and dairy science: Sustainable production</li> <li>3. Biological sciences: Zoology, including animal behaviour</li> <li>4. Biological sciences: Genomics, comparative genomics, functional genomics</li> <li>5. Agricultural biotechnology: Other bioproducts (products manufactured using biological material as feedstock)</li> </ol>	<ol style="list-style-type: none"> <li>1. Insect breeding</li> <li>2. Genetic Improvement</li> <li>3. Knowledge Transfer</li> <li>4. Sustainability</li> <li>5. Entomofarming</li> </ol>

#### COST Members

Main Proposer: Slovenia

Network of Proposers:

Full Member: Belgium, Bulgaria, Croatia, Denmark, France, Greece, Italy, Lithuania, Netherlands, North Macedonia, Poland, Portugal, Slovenia, Switzerland, Turkey, Ukraine, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 51% ECI / 40% Women / 56% ITC

#### International Cooperation

**International Partner:** Canada, New Zealand

### Industrial Dimension

**SMEs:** Bulgaria, Denmark, France, Israel, Lithuania, Portugal, Ukraine, United Kingdom

## CA22141

### Integrated DSS for delivery of ecosystem services based on EU forest policies

#### SUMMARY

Forests are significant part of surrounding landscape and every management decision in forest affects the landscape as well, and vice versa, management decision in surrounding landscape affects the forests. There is thus a need for an integrated DSS framework that addresses all objectives of sustainable forest management in the landscape appropriately by linking all mutual relations between forests and surrounding landscape. Such integrated DSS framework will require the consideration of information and approaches from different rural and landusing activities and sectors. In this context, juxtaposition and integration of the knowledge from DSS (developed for farming, animal husbandry, forestry, ecosystem management, etc.) will be an excellent starting point for advancing toward an integrated system for sustainable assessing the provision of ecosystem service (ES) at landscape scale, including provision of resources for bio-based economic activities, protection and regulation, or cultural services. The main aim of this Action is to establish a research network for facilitating the conceptualisation and development of new methodological approaches in decision support systems including important relations between forest and landscape. The emphasis is on screening, evaluating and proposing existing and future tools to support holistic planning approaches to increase sustainable forest management, considering various ecosystem services and products addressing the associated risks and uncertainties.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Agriculture, Forestry, and Fisheries: Sustainable forest management	1. Forest Management 2. Sustainability 3. Multicriteriaity

#### COST Members

Main Proposer: Czech Republic

Network of Proposers:

Full Member: Austria, Bulgaria, Czech Republic, Finland, France, Germany, Lithuania, Poland, Portugal, Romania, Slovenia, Sweden, Switzerland, Turkey

Main and secondary proposers: 6% ECI / 31% Women / 57% ITC

#### International Cooperation

**Near Neighbour Country:** Morocco



## CA22142

### Beneficial root-associated microorganisms for Sustainable agriculture

#### SUMMARY

Beneficial root-associated microorganisms, including arbuscular mycorrhizal fungi, nodule-inducing nitrogen-fixing rhizobia, and plant growth-promoting bacteria/fungi, are key players for crop productivity in low-input systems. Identification of environmental and genetic determinants controlling their interactions with crops is paramount for the development of a more sustainable agriculture, and this requires multidisciplinary research approaches. However, the research field remains fragmented and beneficial microorganism interactions with plant roots are often overlooked in agricultural management practices or in breeding programs. BOOST aims to bring together, specialists of these different types of beneficial interactions working at different levels of study, together with socio-economic actors to create a network able to: i) sum up and disseminate the current knowledge on agronomic, environmental and economic criteria characterizing the services provided by beneficial root-associated microorganisms, ii) perform meta-analyses with existing datasets, iii) identify gaps in the current knowledge and define future research priorities, iv) propose methodologies and strategies for implementing or improving crop interactions with beneficial root-associated microorganisms in agriculture, v) coordinate research efforts and build consortia able to propose projects in future European/transnational funding calls, vi) propose recommendations on microbial applications to inoculant producers, policy-makers and end-user farmers. Overall, BOOST will strengthen the European research capacity and leadership on beneficial root-associated microorganisms, and facilitate knowledge transfer to socio-economic actors and inclusiveness towards European and Mediterranean countries.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Biological sciences: Symbiosis</li> <li>2. Agriculture, Forestry, and Fisheries: Agriculture related to crop production, soil biology and cultivation, applied plant biology, crop protection</li> <li>3. Agriculture, Forestry, and Fisheries: Sustainable Agriculture</li> </ol>	<ol style="list-style-type: none"> <li>1. beneficial root microorganisms</li> <li>2. plant-microbe symbioses</li> <li>3. ecosystem services</li> <li>4. agriculture</li> </ol>

#### COST Members

Main Proposer: France

Network of Proposers:

Full Member: Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Luxembourg, Netherlands, Poland, Portugal, Serbia, Spain, Turkey, United Kingdom

Main and secondary proposers: 19% ECI / 55% Women / 50% ITC

#### Industrial Dimension

**SMEs:** France, Germany, Hungary, Netherlands, Serbia

**Large companies:** Czech Republic, Spain

## CA22143 European Materials Informatics Network

### SUMMARY

The **development, engineering and improvement of materials** is one of the key factors for socio-economic advancements in Europe and worldwide. In this context, recent developments in **materials informatics, artificial intelligence (AI) and data-centric technologies** are revolutionizing the whole field. Despite significant progress in this direction, however, the efforts of the European research landscape are still not fully coordinated, thus hampering the potential impact of innovations on materials in society, industry and economy.

The EuMINe COST Action aims at promoting an **international, interdisciplinary and intersectoral community** focused on the **application of materials informatics to the development and engineering of advanced materials**. Overcoming current fragmentations, EuMINe targets the harmonization of approaches and resources, contributing to the creation of a shared European knowledge on the application of data-centric technologies to materials science and engineering.

Meeting this challenge requires coordination and cooperation across a broad range of interdisciplinary competences. EuMINe brings together a **network of scientific excellence**, gathering institutions with expertise in physics, chemistry, computer science, materials science, engineering, modelling and simulation, industrial research and knowledge transfer. To maximize the impact of the action, links with a **broad range of stakeholders** will be established, including public and private institutions, communities involved in modelling, design and characterization of materials, large-scale computing infrastructures and data-centers oriented to materials. The use of **COST networking tools** will be crucial for fostering collaborations and initiatives within the network, increasing the impact of European research in the field, engaging stakeholders actively and developing and promoting training opportunities.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Chemical sciences: Theoretical and computational chemistry</li> <li>2. Chemical sciences: Databases, data mining, data curation, computational modelling</li> <li>3. Materials engineering: Databases, data mining, data curation, computational modelling</li> <li>4. Chemical engineering: Intelligent materials, self assembled materials</li> <li>5. Physical Sciences: Atomic, molecular and chemical physics</li> </ol>	<ol style="list-style-type: none"> <li>1. Materials Informatics</li> <li>2. Materials Science and Engineering</li> <li>3. Artificial Intelligence</li> <li>4. Machine Learning</li> <li>5. Materials Modelling</li> </ol>

### COST Members

Main Proposer: Italy

Network of Proposers:

Full Member: Bosnia and Herzegovina, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Turkey

Main and secondary proposers: 17% ECI / 41% Women / 74% ITC

### Industrial Dimension

## CA22144

### Sustainable use of salt-affected lands

#### SUMMARY

Salinisation, the accumulation of water-soluble salts in the soil, is one of the major causes of soil degradation affecting 833 million hectares of land and 1.5 billion inhabitants worldwide. However, these lands can be used by applying saline agriculture, involving soil, water and salt-tolerant crop management methods. Cultivation of salt-affected lands aids in addressing food and water security in the times of progressing climate change and population growth. As a result, there is an urgent need to create a network of research and practice and foster the sustainable use of salt-affected lands.

This COST Action aims to build a global transdisciplinary network of scientific experts and engaged stakeholders in the field of salinity research in the context of food security, sustainability and the intensifying climate crisis. Our activities will focus on: (i) understanding responses to heterogeneous soil salinity and other combined stresses in the soil-rhizosphere-plant continuum; (ii) building a knowledge-base to improve water and soil management, and crop production on salt-affected lands; (iii) showcasing the total value of salt-affected lands and saline landscapes; (iv) connecting various stakeholders involved in saline agriculture; and (v) developing targeted policy frameworks for the proper salinisation management, bringing saline agriculture as a complementary component in the European food security agenda for coastal and inland salt-affected lands. Mutual knowledge exchange and sharing best practices will contribute to more sustainable use of salt-affected lands and enhance the resilience of the landscape as a whole.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Agriculture, Forestry, and Fisheries: Sustainable Agriculture</li> <li>2. Biological sciences: Plant biology, Botany</li> <li>3. Political Science: Environmental regulations and climate negotiations (policy and political aspects)</li> <li>4. Social and economic geography: Socio-economic aspects of agriculture, agriculture and environment, urban agriculture, gardens, agricultural economy</li> </ol>	<ol style="list-style-type: none"> <li>1. salinisation</li> <li>2. saline agriculture</li> <li>3. salt-affected soils</li> <li>4. sustainable development</li> </ol>

#### COST Members

Main Proposer: Netherlands

Network of Proposers:

Full Member: Cyprus, Germany, Greece, Hungary, Italy, Netherlands, Poland, Portugal, Romania, Serbia, Spain, Sweden, United Kingdom

Main and secondary proposers: 32% ECI / 49% Women / 54% ITC

#### International Cooperation

**Near Neighbour Country:** Morocco, Tunisia

**International Partner:** Australia, Bangladesh, China, Pakistan, United Arab Emirates

#### Industrial Dimension

## CA22145 Computational Techniques for Tabletop Games Heritage

### SUMMARY

Games have been a research topic across many disciplines that have long been disconnected from one another. In computer science and mathematics, games have been used as testbeds for the development of state-of-the-art methods in economics, engineering, and Artificial Intelligence. Archaeologists, historians, and anthropologists, have examined the motivations behind human play and its social implications on the individual and societal levels. Games have also long been the subject of pedagogical development, and are increasingly becoming recognized as part of the intangible cultural heritage of humanity. Nevertheless, much of the heritage of games around the world has been lost due to colonialism, imperialism, and commercialisation.

The GameTable Action aims to create an international and interdisciplinary network of scholars and stakeholders from all career stages across academia, industry, and heritage institutions to inspire methodologies and applications on how to use game AI to study, reconstruct, and preserve the intangible cultural heritage of games. More holistic methodologies will be achieved by developing more human-like AI techniques, using them to analyse mathematical properties of games, and combining them with game-theoretic models, and guiding them with knowledge of games of the past and a cross-cultural understanding of human gameplay. These collaborations will include conferences, workshops, and other cross-disciplinary interactions that will produce publications and digital tools to advance the theoretical and practical applications of research on games.

From this, we will develop sophisticated methods for the preservation of games as a form of ancient and modern cultural heritage and game-centric educational programs.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Computer and Information Sciences: Artificial intelligence, intelligent systems, multi agent systems</li> <li>2. History and Archeology: Archaeology, archaeometry, landscape archaeology</li> <li>3. History and Archeology: History of ideas, intellectual history, history of science and technology</li> </ol>	<ol style="list-style-type: none"> <li>1. Game Artificial Intelligence</li> <li>2. Cultural Heritage</li> <li>3. Tabletop games</li> <li>4. Procedural Content Generation</li> <li>5. Mathematics in Games</li> </ol>

### COST Members

Main Proposer: Netherlands

Network of Proposers:

Full Member: Czech Republic, Denmark, Finland, France, Hungary, Iceland, Italy, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Switzerland, Turkey, Ukraine, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 46% ECI / 24% Women /50% ITC



## CA22146

# Harnessing the potential of underutilized crops to promote sustainable food production

## SUMMARY

With population growing rapidly and within the context of agro-climatic changes, there is an increased demand to sustainably produce nutritious food. In Europe, many nutrient- dense foods are not widely grown and consumed, despite their suitability to European climates and environments, and viability for sustainable production with lower inputs.

Underutilised crops that are stress resilient such as rye and legumes, have the potential to supply key nutrients and improve diets and risk of diet-related diseases. Such crops have a long history of cultivation across the continent and are part of the national historic food identity of different European countries yet are underutilised due to several complex reasons. DIVERSICROP addresses these challenges using an innovative, cross-sectoral and multidisciplinary approach by analysing the deep history of underutilised crops in Europe, understanding the genetic diversity and adaptation to climate change of crop germplasm, analysing current regional trends in the consumption of food products and by involving national and EU policymakers and key stakeholders to revive diverse crop production and maximise the impact of Europe’s agricultural sustainability. DIVERSICROP aims to harmonise fragmented data and develop strategies for the sustainable cultivation of target crops, striking a balance between agricultural sustainability and human nutritional value. DIVERSICROP brings together a skilled and interdisciplinary network to identify climate-resilient crop lines, and potential nutritional and health benefits of their consumption to rethink our food systems. DIVERSICROP will strengthen the Farm to Fork and the Biodiversity strategies under the European Green Deal to contribute to achieving the UN Sustainable Development Goals.

## SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Other agricultural sciences: Sustainable production</li> <li>2. Health Sciences: Nutrition and dietetics</li> <li>3. History and Archeology: Archaeology, archaeometry, landscape archaeology</li> <li>4. Other agricultural sciences: Databases, data mining, data curation, computational modelling for other agricultural sciences</li> </ol>	<ol style="list-style-type: none"> <li>1. Crop Sciences</li> <li>2. Nutrition</li> <li>3. Ancient History</li> <li>4. Policy Analysis</li> <li>5. Genetic Resources</li> </ol>

## COST Members

Main Proposer: Ireland

Network of Proposers:

Full Member: Albania, Austria, Bulgaria, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Ireland, Latvia, North Macedonia, Poland, Portugal, Serbia, Spain, Switzerland

Main and secondary proposers: 16% ECI / 53% Women / 59% ITC

## International Cooperation

**Near Neighbour Country:** Morocco, Tunisia

## Specific Organisations

**European RTD Organisation:** Wendy Waalen

**EU Institutions, Bodies, Offices and Agencies (EC/EU):** German Archaeological Institute

## Industrial Dimension

**SMEs:** Poland

**Large companies:** Estonia, Germany

## CA22147

### European metal-organic framework network: combining research and development to promote technological solutions

#### SUMMARY

The constantly growing world population and current European energetic crisis demand innovative scientific and technological solutions. The crystalline hybrid material class of Metal-Organic Frameworks (MOFs) holds potential to help address societal challenges like health, water and sustainable energy due to their unprecedented high degree of porosity, chemical and structural versatility, and functional tunability. However, the translation of groundbreaking basic research into development of potential MOF-based technologies is still hampered by the lack of precise control over their structure, properties and performance from the molecular-level framework to the nano-, meso- and macro-scale dimension material for each application. This COST Action (EU4MOFs) aims at increasing control and customization over the interplay between (re)activity, selectivity, efficiency and processability of MOF materials to ensure optimal functional properties at these three length scales. EU4MOFs will focus on paving the way towards the development of nano-, meso- and macro-scale high-performing MOF materials for three high-need applications: (cancer) nanomedicine, wastewater treatment and energy storage. To achieve this, manufacturing technologies based on bottom-up synthesis and top-down engineering strategies will be consolidated, and high-throughput computational screening and machine learning methods will be integrated to improve structure-property predictions and the resulting materials performance. By uniting interdisciplinary researches from the fields of (bio)chemistry, materials engineering, physics, nanomedicine, pharmacy, and computational science, together with industrial partners, EU4MOFs will contribute to substantially advance the current frontiers of MOF materials from the laboratory bench towards industrial-scale, in order to ultimately generate societal impact.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Chemical sciences: Coordination chemistry</li> <li>2. Materials engineering: Structural properties of materials</li> <li>3. Materials engineering: Solid state materials</li> </ol>	<ol style="list-style-type: none"> <li>1. Metal-organic frameworks</li> <li>2. Material Chemistry</li> <li>3. Porous Materials</li> <li>4. Nanotechnology</li> </ol>

#### COST Members

Main Proposer: Spain

Network of Proposers:

Full Member: Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Denmark, France, Germany, Greece, Netherlands, Poland, Portugal, Romania, Serbia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom

Main and secondary proposers: 44% ECI / 47% Women / 50% ITC

#### International Cooperation

**International Partner:** Canada, United States

#### Industrial Dimension

**SMEs:** Bosnia and Herzegovina, Canada, Portugal, Switzerland, United Kingdom

## CA22148

### An international network for Non-linear Extreme Ultraviolet to hard X-ray techniques

#### SUMMARY

Extreme UltraViolet (EUV) High-Harmonic Generation (HHG) table-top sources and soft to hard X-ray Free Electron lasers (XFELs) have opened a new era in science, providing ultrashort, coherent and tunable pulses that are currently used to perform cutting edge experiments in Atomic and Molecular physics, condensed matter physics, biology and chemistry. Most of the reported studies rely on linear light-matter interactions, which are fundamentally limited in the dynamical information they can provide. Non-linear radiation- matter interactions have proven to be a powerful tool to unravel hitherto inaccessible properties. The advent of the above sources now enable non-linear techniques in the EUV/X-ray range, akin to what occurred with IR-visible-UV non-linear optics, by accessing the properties of materials at the nanoscale level, with femtosecond time resolution, chemical selectivity, high momentum, and polarization control. The NEXT COST Action will capitalize on pioneering promising results, reported over the last decade, to create the first concerted experimental and theoretical effort aimed at implementing EUV/X-ray non-linear spectroscopy at table-top HHG and XFEL sources. Europe has a strategic leadership role, with its large number of research groups managing world-class table-top sources and hosting 4-out-of-7 XFELs available worldwide. We expect this Action to have a strong impact on technology supporting the development of novel materials, nanodevices, quantum computing and chemistry, as well as on the training of young scientists as the next generation of researchers that will fully exploit these novel methodologies and tools. NEXT will also act as a key research and innovation bridge between academe and industrial partners.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Physical Sciences: Optics, non-linear optics (theory)</li> <li>2. Physical Sciences: Lasers, ultra-short lasers and laser physics</li> <li>3. Physical Sciences: Atomic, molecular and chemical physics</li> <li>4. Physical Sciences: Electronic properties of materials and transport (theory)</li> <li>5. Chemical sciences: Theoretical and computational chemistry</li> </ol>	<ol style="list-style-type: none"> <li>1. EUV/X-ray science</li> <li>2. Non-linear optics</li> <li>3. High Harmonic Generation and Free Electron Laser sources</li> <li>4. Methods and instrumentation development</li> </ol>

#### COST Members

Main Proposer: Spain

Network of Proposers:

Full Member: Croatia, Cyprus, Czech Republic, France, Germany, Hungary, Italy, Netherlands, Poland, Romania, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Main and secondary proposers: 20% ECI / 24% Women / 50% ITC

#### International Cooperation

**Near Neighbour Country:** Lebanon, Syrian Arab Republic

**International Partner:** Japan, United States

#### Specific Organisations

**European RTD Organisation:** European XFEL

**Industrial Dimension**

**SMEs:** Germany, Switzerland

**Large companies:** France

**CA22149**

**Research Network for Interdisciplinary Studies of Transhistorical Deliberative Democracy**

**SUMMARY**

This Action's main aim is to systematize, conceptualize and epistemically upgrade theoretical and empirical knowledge of the influence of past practices of deliberation on contemporary decision-making. With this emphasis, the Action is placed at the centre of the topical debates about the potential role of deliberative democracy in stabilizing social and political spheres and coping with contemporary challenges and risks. It will push human abilities to prevent conflicts through deliberation and to decide on development issues through dialogue to the forefront of our research.

The Action will explore relationships between the past, present and future forms of deliberation by taking into account: 1) historical deliberative practices (diachronic aspects); 2) culture, cognition and narratives of legitimacy (synchronic aspects); and 3) goals of deliberative democracy, set as guiding principles aimed to ensure general well-being and the positive development of society (integrative level). In this respect the Action aims to design a research framework to test its original concept and main research method – transhistorical deliberative democracy.

The Action will establish innovative collaborations with various types of stakeholders and create an interdisciplinary, fully open and flexible international platform to discuss existing research approaches to decision-making, initiate new synergies, and devise a set of toolkits and guidelines, which will enable decision-makers and other stakeholders to design and implement policies by considering the impacts of embedded patterns of deliberation on local, national and transnational levels. The Action is designed with a focus on the inclusion of young researchers from ICTs in interdisciplinary and international research environments.

**SCIENTIFIC SCOPE**

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Sociology: History and philosophy of sociology</li> <li>2. Media and communications: Media and communications, social aspects of information science and surveillance, socio-cultural communication</li> <li>3. Political Science: Democratization, social movements</li> <li>4. History and Archeology: Modern and contemporary history</li> <li>5. Law: Legal theory, legal systems, constitutions, comparative law</li> </ol>	<ol style="list-style-type: none"> <li>1. transhistorical deliberative democracy</li> <li>2. culture, cognition and narratives of legitimacy</li> <li>3. societal transformation, decision-making</li> <li>4. historical and contemporary deliberative practices</li> <li>5. social antagonisms and power imbalances</li> </ol>

**COST Members**

Main Proposer: Slovenia

Network of Proposers:

Full Member: Albania, Bosnia and Herzegovina, Croatia, Ireland, Italy, Montenegro, Netherlands, Romania, Serbia, Slovakia, Slovenia, Spain, United Kingdom

Main and secondary proposers: 33% ECI / 42% Women / 62% ITC



## CA22150

### Comparative Research on the Executive Triangle in Europe

#### SUMMARY

CoREx creates a unique pan-European network of researchers studying the relationships of executive politicians, top civil servants, and ministerial advisers ('the executive triangle') from an internationally comparative perspective. These three actors and their mutual relationships significantly shape policymaking. Their capacity to solve problems and to make legitimate decisions are at the core of democratic governance. While pressing contemporary policy problems require professional top civil service competence, executive politicians demand political advice from personally trusted individuals to navigate their increasingly polarized and mediatised environments. CoREx addresses this tension between professional competence and political craft by taking a system-perspective on the executive triangle. Through pan-European networking and knowledge sharing across all regions in Europe, it develops a common conceptual and methodological framework revolving around different dimensions of politicization to collect comparative data from across Europe. Thereby, CoREx bridges currently disconnected research on the top civil service and ministerial advisers, as well as disparities in geographical coverage and research capacities. CoREx will generate comparative datasets and analyses on the institutional set-up, career backgrounds, roles and interactions in policymaking, and accountability and transparency of the executive triangle across regions and over time. In an innovative way, CoREx will provide systematic comparative knowledge about trends, causes, and consequences of different configurations of the executive triangle. CoREx contributes to a better understanding of democratic governance in times of increasing political polarization and populist politics. The unprecedented results will be relevant for the scientific community, stakeholders, and the public at large.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Political Science: Public administration, public policy</li> <li>2. Political Science: Political systems and institutions, governance</li> </ol>	<ol style="list-style-type: none"> <li>1. top civil servants</li> <li>2. ministerial advisers</li> <li>3. politicization</li> <li>4. comparative public administration</li> <li>5. policymaking</li> </ol>

#### COST Members

Main Proposer: Germany

Network of Proposers:

Full Member: Albania, Belgium, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Ireland, Italy, Latvia, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Turkey, United Kingdom

Main and secondary proposers: 18% ECI / 51% Women / 55% ITC

#### International Cooperation

Near Neighbour Country: Kosovo\*

International Partner: Australia, Canada, New Zealand

#### Specific Organisations

International Organisation: Organization for Security and Co-operation in Europe, Presence in

## Industrial Dimension

**SMEs:** Kosovo\*

### CA22151

## Cyber-Physical systems and digital twins for the decarbonisation of energy-intensive industries

### SUMMARY

Industrial production is responsible for roughly 30% of global energy use, with Energy Intensive Industries (EII) representing the largest share (54% of OECD's total industrial energy consumption). The current energy crisis, originated by Russia's war with Ukraine, Western sanctions against Moscow, and Russia's cut-off of pipeline gas, has made the cost of natural gas soar and ignited a cascade resulting in the increased prices of other energy sources. As a learning for the future, it is crucial to strengthen the EU's capacity to produce energy while reaching net-zero emissions by 2050. The solution lies in producing Renewable Synthetic Fuels (RSFs), including renewable hydrogen, from excess wind and solar power to decarbonise EII. Also, at the 26th UN Climate Change Conference of the Parties (COP26), it was unanimous that hydrogen can play a vital role in the way we bring fully decarbonised energy to our lives. However, a complete understanding of the impact of RSFs on EII systems remains unaddressed mainly due to a lack of comprehensive methods and specialised and multidisciplinary knowledge in RSFs' combustion, which can be advanced through approaches bringing together data-driven methods and physics-based modelling for accurate simulation of combustion technologies through enhanced modelling, sensing and digital twins. The main aim of CYPHER is to propel the collaborations between European researchers and industrial stakeholders to foster the use of cyber-physical systems (self-updating digital twins) and ultimately promote a safe and sustainable adoption of RSFs as a critical path for EII decarbonisation.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Chemical engineering: Fluid flow and transfer processes	1. Data-driven modelling
2. Chemical sciences: Chemical reactions: mechanisms, dynamics, kinetics and catalytic reactions	2. Sustainable combustion technologies
3. Mechanical engineering: Databases, data mining, data curation, computational modelling	3. Renewable synthetic fuels
4. Mechanical engineering: Applied mechanics, thermodynamics	4. Soft-sensing
5. Chemical engineering: Databases, data mining, data curation, computational modelling	5. Turbulent reacting flows

### COST Members

Main Proposer: Belgium

Network of Proposers:

Full Member: Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Netherlands, North Macedonia, Norway, Poland, Portugal, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 48% ECI / 40% Women / 53% ITC

### International Cooperation

**International Partner:** United States

## Specific Organisations

### Industrial Dimension

**SMEs:** Austria, Belgium, Germany, Italy, Turkey, United Kingdom

**Large companies:** Belgium, Bosnia and Herzegovina, France, Italy

## CA22152

### Supporting emerging care economy, empowering caregivers to provide safe care at home

#### SUMMARY

The Care Economy is a groundbreaking field due to population aging and the increase of non-communicable diseases. Ensuring the provision of safety care at home and helping people to stay in their places as much as possible are current challenges. Caregiving at home has increased in the complexity of care and intensity which augmented the risk of making errors impacting on both, recipients' health, and caregivers' wellbeing. In most cases, home care is provided by family members, usually women, which enlarges the gender gap. This Action joints efforts to ensure an error-free care environment at the homes. It introduces an open dialogue and discussion among all stakeholders about the consequences of caregivers' errors based on a cross-national collaboration that integrates citizens, end users, different disciplines, and perspectives. It will be built on existing work and will provide opportunities to re-think national, and international deinstitutionalize policies, assuring the same care safety at home as the one received in residential facilities. To assess available resources to meet the qualification threshold and modify the support net available for the management of risk of caregiving and dispensing medications at home. Citizens Science principles will be adopted to open debates and analyses about educational standards, develop of a guideline and case study based on caregivers' stories, and other materials. Also, to organize and conduct a Training School and Short-Term- Scientific-Mission involving caregivers as ended users and professionals. Health, psychological, social, legal, ethical, and economic issues will be considered and the usability of disruptive technologies as well.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Health Sciences: Health services, health care research	1. home-based care 2. citizen science 3. caregivers 4. qualification standards 5. medical errors

#### COST Members

Main Proposer: Spain

Network of Proposers:

Full Member: Belgium, Croatia, Estonia, Finland, France, Germany, Malta, Poland, Portugal, Romania, Slovakia, Spain, Turkey, Ukraine

Cooperating Member: Israel

Main and secondary proposers: 16% ECI / 53% Women / 60% ITC

#### Industrial Dimension

**Large companies:** Croatia



## CA22153 European Curvature and Biology Network

### SUMMARY

Cells and tissues interact with their physical environment, and can sense via mechanical signalling the presence and geometry of external boundaries. A key descriptor of boundary shape is the surface curvature and it has been indeed shown that surface curvature influences cell and tissue behaviour. The processes of growth and remodelling allow these boundaries to be moved and shaped by cells, thus creating a fundamental feedback between the development of form, biological response and the physics of the surrounding environment. Although these ideas go back to the classic work “On Growth and Form” from D’Arcy Thompson, only now do we have tools to investigate these topics in a quantitative and predictive manner. This COST action will establish an interdisciplinary network of researchers from biology, mathematics, physics and materials science involved in researching the interplay between curvature and biology. The main objective is to bridge the inherent gap between these disciplines by helping researchers develop a common language to exchange ideas and by training them in the use of state-of-the-art tools from cell-biology, time-resolved 3D imaging, discrete geometry, additive manufacturing and computational biophysics. This COST action will stimulate new research and inspire technical innovation having applications in understanding the progression of disease, tissue even in broader field of the efficient use and application of biological materials in sustainable applications.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Biological sciences: Biophysics</li> <li>2. Mathematics: Geometry</li> <li>3. Materials engineering: Biophysics for materials engineering applications</li> </ol>	<ol style="list-style-type: none"> <li>1. Biophysics</li> <li>2. Geometry</li> <li>3. Growth</li> <li>4. Mechanics</li> <li>5. Materials</li> </ol>

### COST Members

Main Proposer: Austria

Network of Proposers:

Full Member: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, France, Germany, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Serbia, Slovenia, Spain, United Kingdom

Main and secondary proposers: 38% ECI / 57% Women / 53% ITC





## CA22154

# Data-driven Applications towards the Engineering of functional Materials: an Open Network

### SUMMARY

Current environmental, geo-political, and socio-economic challenges in the EU stem from a dependence of key technologies on critical and non-renewable materials. Discovery and commercialisation of innovative functional materials is needed to e.g. address energy production, storage and resilience, de-carbonise our economy to preserve ecosystems and climate, and switch current technologies to ethical and sustainable materials choices.

Data science and machine learning (ML) have recently boosted materials research in these areas, but we must urgently expedite development. In the DAEMON COST action, we will grow a cross-disciplinary and pan-European network, which builds capacity and promotes education and research coordination, with the goal of accelerating materials discovery in Europe by means of cutting-edge computational techniques and data-driven methods.

The objective of this action is to develop, harmonise, and promote the exploitation of ML methods for functional materials design. For targeted advancement, we build working groups around innovative ML approaches that hold the most potential for new discoveries, and integrate them with network members focused on immediate applications. The action will leverage the synergic expertise of theorists and experimentalists in material science, physical chemistry, condensed matter physics, and computer science. In the process, we will train a new generation of young European researchers in a multi-disciplinary and transferable array of data science methods, and unite our non-ITC and ITC teams in cutting edge developments. Dissemination events will promote immediate technology transfer to our industrial stakeholders, maximising impact and societal benefit.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Computer and Information Sciences: Machine learning algorithms</li> <li>2. Nano-technology: Nano-materials and nano-structures</li> <li>3. Chemical sciences: Theoretical and computational chemistry</li> <li>4. Physical Sciences: Electronic properties of materials and transport (theory)</li> <li>5. Materials engineering: Databases, data mining, data curation, computational modelling</li> </ol>	<ol style="list-style-type: none"> <li>1. Data-driven methods</li> <li>2. Functional materials</li> <li>3. Atomistic simulations</li> <li>4. Structure-property relationships</li> <li>5. Materials stability</li> </ol>

### COST Members

Main Proposer: Finland

Network of Proposers:

Full Member: Croatia, Finland, Georgia, Germany, Greece, Italy, Lithuania, Malta, Netherlands, North Macedonia, Poland, Serbia, Slovenia, Spain, Sweden, Switzerland, United Kingdom

Main and secondary proposers: 48% ECI / 28% Women / 53% ITC

## CA22155

### EU-PoTaRCh – a network for forest by-products charcoal, resin, tar, potash

#### SUMMARY

EU-PoTaRCh-establishes a network for the past, present and future of use of major non- timber forest raw materials and products in Europe. Whilst it will focus on forest by- products mainly Potash Tar Resin Charcoal (PoTaRCh)—as representatives of traditional forest exploitation heritage, it will touch upon other forest by-products (tannins, pitches). The scholarly vision is to enlighten the relevance of these products in history, especially their role in industrialization. The goal is to identify and assess production changes and their social and environmental impacts on sustainable development, and based on their heritage, to draw lessons for the future. Action will support stakeholders who know these products and are interested in them, as they use them in the production, education, and promotion of heritage. Due to the participation of stakeholders with significantly different activity profiles, and hence the needs (museums, state forests, associations, etc.), deliverables planned in the network are flexible and adapted to cooperate with stakeholders. They will receive deliverables that will accurately close the project and make it possible to measure its performance in relation to the assumed expectations. Emphasis will be placed on ITCs, which have a rich history of producing PoTaRCh. Men and gender balance mainly represent area of Action is upset. Therefore, special attention will be paid to mobilization of women who will act as leaders of WP, STMS and workshop organizers. Action will help to find ways to sustainable forest use and transfer knowledge to better methods and products in the bioeconomy.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. History and Archeology: Archaeology, archaeometry, landscape archaeology</li> <li>2. History and Archeology: Preservation of cultural heritage</li> <li>3. Agriculture, Forestry, and Fisheries: History and philosophy of agriculture</li> <li>4. Other engineering and technologies: Sustainability for other engineering and technologies</li> <li>5. Earth and related Environmental sciences: Environment chemistry</li> </ol>	<ol style="list-style-type: none"> <li>1. (bio)cultural heritage</li> <li>2. history and archaeology</li> <li>3. forest by-products</li> <li>4. bio-economy</li> <li>5. analytics</li> </ol>

#### COST Members

Main Proposer: Poland

Network of Proposers:

Full Member: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Luxembourg, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom

Main and secondary proposers: 31% ECI / 54% Women / 52% ITC

#### International Cooperation

**Near Neighbour Country:** Morocco

**International Partner:** Mexico, United States



## CA22156

# Transformations international Experience and Research network for Sustainable futures

### SUMMARY

The overarching aim of Transformers is to inform research, policy and practice for transformations that deliver justice in a changing global context by bringing together and positioning research relevant to societal transformation. Such societal transformations are cited as highly necessary to avoid catastrophic climate change and biodiversity loss, and are called for in the IPCC and IPBES frameworks, as well as the European Green Deal.

However, current research into transformations is highly fragmented. Pieces of relevant knowledge are held by policy-makers, practitioners, and researchers, from within across a range of contexts, disciplines, projects and perspectives, both within and outside of the sustainability research community. There is a need to put these separate pieces together to 1) identify what transformation-relevant knowledge is held and by whom 2) understand how the different pieces fit together; 3) understand what the big picture is – what we know about transformations collectively; and 4) identify the missing pieces – understand what we still need to create knowledge on.

Transformers creates a networking infrastructure to meet these 4 needs with objectives to 1) inform transformation policy; 2) shape transformations research and practice; 3) train transformations researchers from across broad disciplines and topics.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Other social sciences: Qualitative methods for the social sciences</li> <li>2. Philosophy, Ethics and Religion: Epistemology, logic, philosophy of science and technology</li> <li>3. Political Science: Environmental regulations and climate negotiations (policy and political aspects)</li> <li>4. Sociology: Social movements</li> <li>5. Social and economic geography: Socio-economic aspects of environmental sciences</li> </ol>	<ol style="list-style-type: none"> <li>1. Sustainability</li> <li>2. Climate Change</li> <li>3. Biodiversity loss</li> <li>4. Equity</li> <li>5. Transitions</li> </ol>

### COST Members

Main Proposer: Czech Republic

Network of Proposers:

Full Member: Austria, Belgium, Czech Republic, Finland, Germany, Hungary, Ireland, Italy, Latvia, Malta, Montenegro, Netherlands, North Macedonia, Poland, Portugal, Slovakia, Spain, Switzerland, Turkey, Ukraine, United Kingdom

Main and secondary proposers: 32% ECI / 68% Women / 52% ITC

### Specific Organisations

**International Organisation:** International Centre for Integrated Mountain Development

## CA22157

### Reproductive Enhancement of CROP resilience to extreme climate

#### SUMMARY

Climate change is a threat for food security as extreme weather phenomena will reduce the yield of all major crops. Grain and fruit crops which consist the core of human diet are particularly vulnerable due to the sensitivity of sexual reproduction process to abiotic stresses. Consequently, there is an urgent need to generate elite varieties with enhanced reproductive stress resilience. RECROP (Reproductive Enhancement of CROP resilience to extreme climate) is a team of agronomists, physiologists, geneticists, biologists, bioinformaticians and researchers from the field of Machine Learning from public organizations and private sector which will use holistic approaches to understand the grounds of crop sensitivity and design solutions for yield stimulation in the era of climate change. RECROP aims to: (1) Identify the genetic, molecular, and physiological makeup of the sensitivity of crop reproduction, (2) Create a roadmap for the generation of resilient crops, and (3) Provide guidelines of exogenous treatments to increase resilience in a sustainable manner and push the limits of the genetically inherited stress tolerance. The aims will be fulfilled by four Working Groups (WGs) which in addition to research discussions will organize training schools, workshops, conferences, and dissemination activities. RECROP will actively support Early Stage Career researchers through training and networking and support interactions with Near Neighbouring and partner COST countries. RECROP members will be actively involved in building communication channels with Policy Makers to provide scientific advice and support them in scientific-based context of future policies on biotechnology, technology and agriculture sectors.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Agriculture, Forestry, and Fisheries: Agriculture related to crop production, soil biology and cultivation, applied plant biology, crop protection</li> <li>2. Agricultural biotechnology: Genetic engineering, transgenic organisms, recombinant proteins, biosensors for agricultural biotechnology, animal biotechnology</li> <li>3. Agricultural biotechnology: Databases, data mining, data curation, computational modelling</li> <li>4. Biological sciences: Genomics, comparative genomics, functional genomics</li> <li>5. Biological sciences: Plant biology, Botany</li> </ol>	<ol style="list-style-type: none"> <li>1. Crop improvement</li> <li>2. abiotic stress</li> <li>3. reproduction</li> <li>4. yield</li> <li>5. tolerance</li> </ol>

#### COST Members

Main Proposer: Germany

Network of Proposers:

Full Member: Albania, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Montenegro, Netherlands, Poland, Portugal, Slovenia, Spain, Ukraine, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 29% ECI / 45% Women / 59% ITC

#### International Cooperation

**Near Neighbour Country:** Egypt, Syrian Arab Republic

**International Partner:** Saudi Arabia

**Industrial Dimension**

**SMEs:** France, Germany, Netherlands

**Large companies:** Germany, Netherlands

**CA22158**

**Exploiting Plant-Microbiomes Networks and Synthetic Communities to improve Crops Fitness**

**SUMMARY**

Europe faces an increased frequency of drought and heat waves and the appearance of new diseases. It's urgent to develop alternatives to current agricultural systems that highly depend on agrochemicals and water. CropBiomes grounds on the urgent need for transition to Sustainable Agriculture ensuring food Security and Safety, aligned with both GreenDeal and "Farm-to-Fork" strategy. CropBiomes gathers European experts to coordinate and develop knowledge on crop microbiomes (and holobiomes) for application in precision sustainable agriculture. It will exploit technological advances (eg, engineered microbiomes) to selectively improve the holobiomes' resistance to specific environments like drought and diseases. The knowledge of the crop as a "Holobiont" responsible for its fitness, as well as the technologies to explore "hub" taxa to potentiate community-scale networks, and the holobiome fitness, remain yet underexplored in agriculture. CropBiome established six research objectives and 6 Capacity-building-objectives. The networking is transdisciplinary and balanced (e.g., gender, researchers-career, countries) and intersectoral, structured to generate long-lasting impact. The four Working Groups will go beyond the current state of the art in crop microbiomes. It will define new concepts on topics like plant-microbiomes' diversity, distribution, eco-evolution, crosstalks, and the microbiomes/holobiomes dynamics and crosstalks under specific environments like soilless systems and environmental stressors (drought/heat, pathogens). Finally, we'll explore the plant microbiome as a source of beneficial associations of microorganisms, and exploit technologies for engineering the microbiomes (through Synthetic Communities). The CropBiomes will gather senior and early researchers, and different stakeholders and contribute to the competitiveness of Europe in this field

**SCIENTIFIC SCOPE**

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Agriculture, Forestry, and Fisheries: Agriculture related to crop production, soil biology and cultivation, applied plant biology, crop protection</li> <li>2. Agriculture, Forestry, and Fisheries: Microbiology</li> <li>3. Biological sciences: Plant biology, Botany</li> <li>4. Agriculture, Forestry, and Fisheries: Sustainable Agriculture</li> </ol>	<ol style="list-style-type: none"> <li>1. Crop Holobiont</li> <li>2. Crop Microbiome</li> <li>3. Environmental Stress</li> <li>4. Pathogens and Plant Disease Control</li> <li>5. Precision Sustainable Agriculture</li> </ol>

**COST Members**

Main Proposer: Portugal

Network of Proposers:

Full Member: Austria, Bosnia and Herzegovina, Bulgaria, Czech Republic, Finland, France, Germany, Hungary, Italy, Lithuania, Poland, Portugal, Serbia, Slovakia, Spain, Turkey, United Kingdom

Main and secondary proposers: 38% ECI / 68% Women / 59% ITC

**Industrial Dimension**

**SMEs:** Hungary, Poland, Serbia

**Large companies:** Italy

CA22159

National, International and Transnational Histories of Healthcare, 1850-2000

**SUMMARY**

The current state of the art in the history of healthcare suggests a significant divide in terms of themes, approaches, methods and even sources between historians working in different parts of Europe. This reflects separate research cultures and networks shaped by long term approaches to the history of medicine including, the role of medic-historians, the social sciences, social and cultural history and even politics. Central to the Action will be scientific exchange around four research themes - Healthcare Provision, Healthcare Providers, Patients, and Finance - that will feed into the capacity building objectives.

These thematic working groups will integrate and finesse diverse methods and approaches and extend knowledge and understanding of experience and sources currently in use across Europe. Through training events, skills exchange and publications the project will create critical mass in the history of European healthcare, providing support and an academic environment for scholars at all stages of their career. It will establish a platform for their work that addresses the dominance of Anglophone publication and presentation opportunities; create core groups across the continent to exchange ideas and produce collective outputs; enhance opportunities for research students and early career researchers to experience diverse academic cultures and approaches; and institute collegiate mentoring structures that will reduce hierarchies dominated by seniority and promote fair and equal opportunities irrespective of race, gender, age or class. The core methodological approach we will use will be comparative history.

**SCIENTIFIC SCOPE**

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. History and Archeology: History of ideas, intellectual history, history of science and technology</li> <li>2. History and Archeology: Modern and contemporary history</li> <li>3. History and Archeology: Social and economic history</li> </ol>	<ol style="list-style-type: none"> <li>1. Healthcare</li> <li>2. Health Provision</li> <li>3. Hospitals</li> <li>4. Europe</li> <li>5. Twentieth Century</li> </ol>

**COST Members**

Main Proposer: United Kingdom

Network of Proposers:

Full Member: Belgium, Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Spain, Sweden, United Kingdom

Main and secondary proposers: 26% ECI / 58% Women / 53% ITC

## CA22160

# Enhancing knowledge of BIOmolecular solutions for the well- being of European AQUAculture sector

### SUMMARY

A growing interest in the development of new technologies to foster the sustainability of aquaculture sector has arisen over the past decade, seeking alternative scientific and technical tools for fish-farm production. In order to assess the current status, our action aims at exploring the potential of biomolecular solutions for the well-being of European aquaculture sector, proposing an innovative conceptual pathway for veterinary applications, tracking systems, diagnosis or biosafety. For that purpose, the Action proposes to establish an innovative and dynamic European network connecting scientist, aquaculture industry and stakeholders to optimize information exchange, to develop a joint research agenda, to explore new advance research lines and to enhance the co- production among researchers and other industry and societal actors. Among the different activities and outcomes, the action will promote the visit to different aquaculture facilities and the development of an interactive website for knowledge exchange. Overall, the action will contribute to improve fish welfare and reduce costs related to critical circumstances (blooms, diseases, overuse of antimicrobials...).

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Industrial biotechnology: Sustainability</li> <li>2. Agriculture, Forestry, and Fisheries: Aquaculture, fisheries</li> <li>3. Economics and business: Management of Technology and Innovation</li> </ol>	<ol style="list-style-type: none"> <li>1. biomolecular solutions</li> <li>2. sustainable aquaculture</li> <li>3. high-performance experimental workshops and training schools</li> <li>4. community building in a new R&amp;I area</li> </ol>

### COST Members

Main Proposer: Spain

Network of Proposers:

Full Member: Croatia, Czech Republic, Greece, Ireland, Italy, Norway, Poland, Slovenia, Spain, Turkey, Ukraine, United Kingdom

Main and secondary proposers: 30% ECI / 55% Women / 58% ITC

### Specific Organisations

**EU Institutions, Bodies, Offices and Agencies (EC/EU):** Croatian Veterinary Institute

### Industrial Dimension

**SMEs:** Spain, United Kingdom

## CA22161

### Future of plant-based food: Bridging the gap of new proteins and FLAVOURsome

#### SUMMARY

Modulation of food nutrients towards consumer preferences, and food system sustainability is one of the frontiers of Food Science. Plant-based foods are a major opportunity in pairing the naturally present health-promoting phytonutrients with providing alternative protein sources, allowing to reduce meat and dairy intake while reducing the emissions of carbon dioxide. However, it is well-known that plant-based food and proteins have undesirable flavour, namely bitter, astringency and green odour. So, while **plant-based food and proteins** are an opportunity of innovation for the food industry, they present a grand challenge to tackle: to maintain desirable flavour profiles aligned with minimum food processing.

**FLAVOURsome** Action is based on the creation of shared knowledge on flavour research to boost the innovation in the plant-based food industry. This Action will employ a concerted approach to encapsulate the knowledge from diverse expertise, to merge the correlation between research and sensory analysis, and to realign future research while fostering exchanges between academia and industry to fuel the development of innovative applications to be applied in the food industry. This Action will promote high level and multidisciplinary training, along with scientific and society dissemination to engage citizens at the centre of food systems change.

**FLAVOURsome** consortium joins world-leading experts covering the main disciplines involved in food flavour research. This results in an integrative, cohesive and multidisciplinary group of experts, stakeholders and companies. The envisaged knowledge transfer within and beyond Europe will ensure that Europe can stay at the forefront of flavour research and its applications.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Other engineering and technologies: Food science and technology</li> <li>2. Other engineering and technologies: Sustainability in food science and technology</li> <li>3. Chemical sciences: Green chemistry research</li> <li>4. Biological sciences: Biochemistry</li> </ol>	<ol style="list-style-type: none"> <li>1. alternative proteins</li> <li>2. taste</li> <li>3. bitterness</li> <li>4. aroma</li> <li>5. astringency</li> </ol>

#### COST Members

Main Proposer: Portugal

Network of Proposers:

Full Member: Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Italy, Lithuania, Netherlands, North Macedonia, Poland, Portugal, Romania, Spain, Sweden, Turkey, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 19% ECI / 52% Women / 50% ITC

#### International Cooperation

**International Partner:** Australia, Mexico, United States

#### Industrial Dimension

**Large companies:** Germany, Netherlands, Portugal, United States



■  
**CA22162**

**FUTUREforMED: A TRANSDISCIPLINARY NETWORK TO BRIDGE CLIMATE SCIENCE AND IMPACTS ON SOCIETY**

**SUMMARY**

The Mediterranean is a climate change hotspot suffering severe consequences of global warming. Several types of risks are currently affecting the region, from frequent extreme weather events to coastal erosion from rising sea levels or increased pollution. In addition, climate change impacts also propagate as “cascades” across socio-economic sectors. In urban areas, such sequential or concurrent compounding hazards are more disastrous than single events. The impacts affect ecosystems, economic activities, and human health.

Despite the ubiquity of these connections, scientists and decision makers are typically working addressing isolated risks, advancing in parallel and missing added value from cooperative efforts. It is thus necessary to move beyond siloed approaches towards integrated efforts that promote effective science-based and agent-based decision-making. It is necessary to establish unprecedented networks of transdisciplinary partnerships, including scientific, human health, social approaches, to governance, and risk management. Such networks facilitate stakeholders and researchers to reach more accurate recommendations, strategies and policies addressing climate change impacts and risk management.

FUTUREforMed will foster new climate change-related science and synergies serving as a transdisciplinary and integrative platform effectively connecting scientific knowledge on high-impact weather (HIW) events and climate change impacts with stakeholders from priority socio-economic sectors such as energy supply and demand, agriculture, health and migration. For the first time, an Action coordinates a platform where scientific communities, key stakeholders and citizens can interact for the ends of promoting climate change impacts awareness, establishing future research priorities, and building capacities based on knowledge exchange in a living lab.

**SCIENTIFIC SCOPE**

Areas of Expertise	Keywords
1. Earth and related Environmental sciences: Climatology and climate change	1. Mediterranean Climate Change 2. High-Impact Weather 3. Impacts 4. Stakeholders 5. Social learning

**COST Members**

Main Proposer: Spain

Network of Proposers:

Full Member: Albania, Austria, Croatia, Cyprus, Czech Republic, France, Germany, Greece, Ireland, Italy, Lithuania, Portugal, Romania, Slovakia, Spain

Cooperating Member: Israel

Main and secondary proposers: 18% ECI / 44% Women / 56% ITC

**International Cooperation**

**Near Neighbour Country:** Jordan, Morocco

**Specific Organisations**

**International Organisation:** International Iberian Nanotechnology Laboratory



## CA22163

### Solving bottlenecks in eel reproduction to support sustainable aquaculture

#### SUMMARY

World-wide, eel populations have decreased strongly in numbers since the 1970s. The eel farms still depend on catches of wild juvenile eels, or ‘glass eels’, which are then raised to market size. Only a restricted number of glass eels is available for aquaculture and societal concern exists about the unsustainable level of their harvesting. Successful propagation in captivity could supply aquaculture with glass eels and close the production cycle. Eel aquaculture can become sustainable then and, by releasing the natural population from fishing pressure, also contribute to sustainable management of the natural population.

With our international consortium of partners that has tremendous experience in eel research, we aim to share our knowledge and collaborate to force breakthroughs in the propagation of eel in captivity. This is an absolute necessity as the partners currently depend on national funding and lack an international networking umbrella. The COST Action EEL SUPPORT will use the available networking tools to jointly share the state-of-the-art, to identify knowledge gaps, to develop collaborative strategies to fill these gaps, and to synthesize and review this knowledge in order to: i) design optimal protocols for broodstock conditioning from glass eel to an eel in early puberty, or ‘silver eel’; ii) design optimal protocols to artificially mature and propagate the eel to produce larvae, and iii) design hatchery technology for rearing larvae to the glass eel stage. This way, EEL SUPPORT will contribute to closing the production cycle and supporting sustainable aquaculture and management of natural populations.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Agriculture, Forestry, and Fisheries: Aquaculture, fisheries	1. Aquaculture 2. Fish breeding 3. European eel <i>Anguilla anguilla</i> 4. Fish reproductive physiology 5. Hatchery technology

#### COST Members

Main Proposer: Netherlands

Network of Proposers:

Full Member: Belgium, Bosnia and Herzegovina, Croatia, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, North Macedonia, Norway, Poland, Portugal, Serbia, Spain, Turkey

Main and secondary proposers: 4% ECI / 29% Women / 58% ITC

#### International Cooperation

**International Partner:** Japan, New Zealand, United States

#### Industrial Dimension

**SMEs:** Finland, Netherlands, Poland

**Large companies:** New Zealand

## CA22164 european Network on Extreme fiRe behaviOr

### SUMMARY

While rare and large wildfires have occurred in the past, recent catastrophic events point to the emergence of novel fire regimes characterized by extreme wildfires. Researchers argue that these regimes are the new normal since they are associated with increasing size, intensity, and severity. Extreme fire behavior (very rapid fire spread, massive spotting, crowning, deep flaming, pyroconvection) characterizes this new wildfire context. Although there have been significant advances over recent decades in understanding extreme fire behavior, the deep knowledge gained falls short in predicting the intensity and size of recent extreme events. There is still much work needed to advance our capability to identify those situations where extreme fire behavior may occur. This is a challenging endeavor that calls for re-evaluating current knowledge and introducing new paradigms.

NERO will address this challenge by bringing together wildfire researchers and practitioners to advance the current state of the science, thus making a crucial step in improving fire management, firefighter training and safety, and public safety

planning. NERO will establish and promote a new European culture that supports the effective transnational exchange of expert knowledge, including data and tools. More importantly, NERO will contribute to narrowing the gap between science and practice, thereby promoting efficient science-based wildfire management. To this end, it will exploit COST networking tools to train a new generation of highly qualified researchers and practitioners, specialised in addressing the challenges of the dawning era of extreme wildfires.

### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Earth and related Environmental sciences: Meteorology, atmospheric physics and dynamics</li> <li>2. Earth and related Environmental sciences: Databases, data mining, data curation, computational modelling</li> <li>3. Agriculture, Forestry, and Fisheries: Forestry: fauna and flora</li> <li>4. Agriculture, Forestry, and Fisheries: Databases, data mining, data curation, computational modelling</li> </ol>	<ol style="list-style-type: none"> <li>1. wildfires</li> <li>2. extreme fire behaviour</li> <li>3. fire environment</li> </ol>

### COST Members

Main Proposer: Greece

Network of Proposers:

Full Member: Albania, Bulgaria, Croatia, Cyprus, Denmark, France, Germany, Greece, Hungary, Italy, Latvia, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Turkey

Main and secondary proposers: 35% ECI / 33% Women / 68% ITC

### International Cooperation

**International Partner:** Canada, United States

### Specific Organisations

**European RTD Organisation:** European Forest Institute EFI; European Forest Institute

**Industrial Dimension**

**SMEs:** Canada, France, Germany, Italy

## CA22165

### Redressing Radical Polarisation: Strengthening European Civil Spheres facing Illiberal Digital Media

**SUMMARY**

Polarisation is an increasingly prevalent feature of liberal democratic societies. Ordinary liberal politics uses binary discourse that “otherises.” However, the extreme “otherisation” manifest in intolerance, hostility, deep partisan animosity, and hate speech is becoming a threat to the civil virtues of tolerance, hospitality, openness, and to civil discourse. In the context of this political and civil divisiveness, there is now a widespread belief that digital media both contributes and exacerbates radical polarisation.

This Action aims to create an interdisciplinary network that will advance common understanding of radical polarisation and identify successful interventions to de-escalate uncivil and undemocratic partisanship. It will engage with civil and media organisations in order to ensure de-escalation, depolarisation, and pluralism, through a multifaceted approach to strengthening democratic values in Europe.

By applying the lenses of cultural sociology and civil sphere theory, the Action adds an eminently normative and interpretive character to existing literature on the topic. This theoretical scaffolding will contribute to understanding online polarisation. While there is no conclusive research on the impact of digital media on polarisation, if radical polarisation can be confined, on the grounds of commonality and plurality, to an issue-by-issue basis, it might be able to harness the agonistic energy of radical polarisation, while disarming its antagonistic potential.

The Action will provide a toolkit that brings together civil-communicative depolarisation skills, guidelines on how to avoid engaging unintentionally in increasing polarisation through inadequate messaging and reporting, as well as examples of best practice to reduce radical polarisation successfully where it already exists.

**SCIENTIFIC SCOPE**

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Media and communications: Media and communications, social aspects of information science and surveillance, socio-cultural communication</li> <li>2. Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty</li> <li>3. Political Science: Political sociology</li> <li>4. Philosophy, Ethics and Religion: Ethics and morality, social ethics</li> </ol>	<ol style="list-style-type: none"> <li>1. Radical polarisation</li> <li>2. Digital media</li> <li>3. European civil sphere</li> <li>4. Depolarisation</li> <li>5. Communicative interventions</li> </ol>

**COST Members**

Main Proposer: Spain

Network of Proposers:

Full Member: Austria, Croatia, Cyprus, Czech Republic, Germany, Norway, Poland, Slovakia, Spain, Turkey, United Kingdom

Main and secondary proposers: 48% ECI / 65% Women / 55% ITC

## CA22166

### Safety in the Game Meat Chain

#### SUMMARY

With 7 million hunters in the EU alone, hunting is a commonly performed activity in most European countries. However, scientific knowledge on the food safety of game meat and the game meat production chain in Europe is limited. Although the game meat market is small compared to that of livestock meat, almost monthly a notification in the European Rapid Alert System for Food and Feed arises.

Applying a transnational and multidisciplinary One-Health approach, the COST Action “Safety in the Game Meat Chain” will enable the exchange of experiences and concepts through networking, thereby promoting the strengthening and harmonization of food safety standards in a growing European game meat market. The network will consist of all relevant stakeholders along the game meat chain and aims to determine differences and similarities between European countries in hunting practice and education, game meat processing and inspection, trading, legislation, and game meat consumption investigating all stages of the supply chain: from the wild animal to the consumer, “from forest to fork”. A particular focus is on the identification and assessment of known and emerging chemical and biological risks that are of regional, national or global importance and pose a hazard to human health associated with the consumption of game meat.

Overall, the network aims to support informed decisions in regional, national and international risk assessment, management and communication on game meat safety by creating a comprehensive knowledge base and providing concrete recommendations for action, which will contribute to strengthening food safety and consumer protection across Europe.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Veterinary science: Veterinary medicine (miscellaneous)</li> <li>2. Agriculture, Forestry, and Fisheries: Non wood forest products - environmental services</li> <li>3. Animal and dairy science: Microbiology</li> <li>4. Animal and dairy science: Food chemistry</li> <li>5. Other engineering and technologies: Food science and technology</li> </ol>	<ol style="list-style-type: none"> <li>1. hunting</li> <li>2. zoonoses</li> <li>3. hygiene</li> <li>4. contaminants and residues</li> <li>5. wildlife</li> </ol>

#### COST Members

Main Proposer: Germany

Network of Proposers:

Full Member: Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, North Macedonia, Poland, Portugal, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom

Main and secondary proposers: 23% ECI / 47% Women / 50% ITC

#### International Cooperation

International Partner: Australia, New Zealand, United States

#### Specific Organisations

International Organisation: Food Systems and Food Safety Division

## Industrial Dimension

**SMEs:** Austria, France, Switzerland

**Large companies:** Austria, Serbia

## CA22167

### Participatory Approaches with Older Adults

#### SUMMARY

There is a significant international commitment to give non-academics a greater role in science to help deliver impactful research and realise the European vision of science for the people, by the people. To support this commitment, the PAAR-net COST Action focuses on knowledge co-production, labelled here as participatory approaches, in research, policymaking and practice. It focuses on research, policy and practice intervention designs by experts-by-training (usually academics) and experts-by-experience (usually non-academics). We focus on a specific group of experts-by-experience who are often not included in research (James & Buffel, 2022), namely older adults (aged 65 and older, including those at risk of social exclusion). This COST Action aims to further develop participatory approaches with older adults as a means of driving inclusive social innovation across research, policy, and practice, for heterogenous and fair ageing societies. PAAR-net aims to gather, exchange and advance knowledge on participatory approaches with older adults (including those at risk of social exclusion) by asking the following questions:

How can we meaningfully involve diverse groups of older adults to contribute their perspectives and experience (including those at risk of social exclusion) in participatory approaches to research, policy and practice development?

How do participatory approaches with diverse older adults (including those at risk of social exclusion) impact research process and the quality of data gathered?

How do participatory approaches impact those (academics and non-academics) involved in research (e.g., wellbeing, reciprocal learning, emancipation)?

Through this PAAR-net shifts the focus from an exclusionary framework to a participatory framework in thinking of older age.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Sociology: Ageing</li> <li>2. Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty</li> </ol>	<ol style="list-style-type: none"> <li>1. participatory approaches</li> <li>2. older adults</li> <li>3. social exclusion</li> </ol>

#### COST Members

Main Proposer: Poland

Network of Proposers:

Full Member: Belgium, Bulgaria, Czech Republic, Denmark, Estonia, France, Germany, Ireland, Lithuania, Malta, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Switzerland, Turkey, United Kingdom

Partner Member: South Africa

Main and secondary proposers: 24% ECI / 66% Women / 58% ITC

#### International Cooperation

**International Partner:** New Zealand

## CA22168

### Physical layer security for trustworthy and resilient 6G systems

#### SUMMARY

Other than simply inheriting vulnerabilities from the previous generations, 6G will face new threat vectors, including in the radio and massive Internet of things (IoT) domains. The COST action PARADIGM will thus focus on creating a European network of academia and industry experts that helps the development of trustworthy and resilient 6G that can instill trust, secure communications and privacy by proposing novel physical layer security (PLS) solutions.

The premise of PARADIGM is that in 6G, intelligent and adaptive security controls are needed at all layers, with adaptation enabled by the distillation of semantics and context. The focus of this Action is on exploiting the characteristics of physical phenomena to provide security functionalities; PLS can complement upper-layer security schemes to strengthen the overall system security and enhance trust. The Action will study the characteristics of different physical environments and hardware properties to develop efficient methods to authenticate users and devices and to provide key-based or keyless confidentiality schemes. This Action will also investigate the interplay between PLS and advances in artificial intelligence, joint communication and sensing, semantic communications and context awareness.

To enhance the trustworthiness of 6G, starting from the physical and hardware layers, PARADIGM forms a large network of internationally renowned experts in wireless communications and security, from both academia and industry. The Action has also involved researchers across the whole of Europe and has included distinguished international partners with established expertise. The Action promotes inclusiveness by welcoming the participation of young researchers and female researchers in particular

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Electrical engineering, electronic engineering, Information engineering: Signal processing, 1-D and multidimensional signal processing, compression, signal acquisition</li> <li>2. Electrical engineering, electronic engineering, Information engineering: Communications engineering and systems (select for additional explanation)</li> <li>3. Computer and Information Sciences: Cryptology, security, privacy</li> </ol>	<ol style="list-style-type: none"> <li>1. Trustworthiness</li> <li>2. 6G</li> <li>3. Physical Layer Security</li> <li>4. Resilience</li> </ol>

#### COST Members

Main Proposer: Germany

Network of Proposers:

Full Member: Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Italy, Montenegro, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Turkey, United Kingdom

Cooperating Member: Israel

Main and secondary proposers: 29% ECI / 28% Women / 55% ITC

#### International Cooperation

**International Partner:** Canada, India, United States

## Industrial Dimension

**SMEs:** France, Germany, Greece

**Large companies:** Germany, Greece, Italy, Spain, Turkey

## CA22169

### EUropean network to tackle METAbolic alterations in HEART failure

#### SUMMARY

The COST Action “EUropean network to tackle METAbolic alterations in HEART failure” (EU-METAHEART) will bring together excellent researchers from Europe to contribute a broad spectrum of scientific expertise, cutting-edge technologies, scientific exchange and education to foster breakthrough science that moves the field forward towards improving the treatment of patients with heart failure. By sharing diverse expertise that cover not only conventional analyses of metabolism and mitochondrial function, but also omics-based approaches towards genetics, epigenetics and metabolism and in particular, integrated assessment of excitation-contraction coupling with mitochondrial redox control and energetics, as well as advanced in vivo imaging technologies, the novelty of this COST Action is that it will allow to develop a comprehensive and cutting-edge approach towards deeper understanding of metabolic dysfunction in HF. We have identified four scientific key areas to which metabolic or mitochondrial dysfunction are central, which will be addressed by four working groups (WGs):

- 1) Impact of metabolic disorders on substrate and intermediary metabolism in cardiac myocytes
- 2) Metabolic aspects of vascular dysfunction
- 3) Immunometabolism: how metabolic alterations control inflammation and vice versa
- 4) Mechano-energetic uncoupling and mitochondrial redox alterations

These research areas are tightly intertwined and can hardly be investigated in isolation (from each other). Therefore, EU-METAHEART will employ an integrative approach to bring all these research fields under one umbrella. The working groups focus on their respective four topics, but benefit from the expertise in the respective other WGs to overcome scientific and methodological boundaries and rapidly move the field forward towards drug development.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
1. Basic medicine: Metabolism, biological basis of metabolism related disorders	<ol style="list-style-type: none"> <li>1. Heart failure</li> <li>2. metabolism</li> <li>3. mitochondria</li> <li>4. excitation-contraction coupling</li> <li>5. vascular function</li> </ol>

#### COST Members

Main Proposer: Germany

Network of Proposers:

Full Member: Austria, Belgium, Bosnia and Herzegovina, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom

Cooperating Member: Israel

Partner Member: South Africa

Main and secondary proposers: 37% ECI / 56% Women / 53% ITC

#### International Cooperation

**Near Neighbour Country:** Armenia, Lebanon

**International Partner:** Canada, United States

#### Specific Organisations

**EU Institutions, Bodies, Offices and Agencies (EC/EU):** Integrated Biobank of Luxembourg



## Industrial Dimension

**SMEs:** Austria, Netherlands

**Large companies:** Czech Republic, Denmark

## CA22170

### Tendon Regeneration NETWORK

#### SUMMARY

Musculoskeletal disorders/diseases are among the main causes of disability worldwide and are exacerbated by an increasingly sedentary lifestyle and ageing population. Among these, tendinopathies, account for 30-50% of musculoskeletal-related primary care visits worldwide. These diseases produce pain, swelling and restricted ranges of motion, and affect individuals across ages in their work and leisure time. The estimated costs to European Union healthcare systems are in excess of 800 M€ annually. Despite the impressive progress achieved on the development and translation of regenerative therapies for specific applications, major progress in designing and translating clinically- relevant advanced regenerative therapies for tendon is still missing. The lack of coordination and scattering of research and knowledge in the field of tendon mainly justifies the disappointing results attained so far.

The main aim of TENET Action is to create the Tendon regeneration NETWORK, a scientific network of excellence mainly based in Europe integrating academics, research laboratories, clinicians, biotechnological companies, and regulatory bodies to foster the scientific and industrial capacity to develop, test and translate advanced regenerative therapies to promote tendon tissue regeneration and restoration of tendon function. This Action will bring together sufficient expertise and critical mass to produce an integrated, coordinated and multidisciplinary response to the challenges in the field. This will allow the full deployment of advanced regenerative therapies for tendon, not only to respond to open scientific questions, but more importantly to boost the clinical translation of these therapies in order to improve patient treatments and outcomes.

#### SCIENTIFIC SCOPE

Areas of Expertise	Keywords
<ol style="list-style-type: none"> <li>1. Medical biotechnology: Gene therapy, stem cell therapy, regenerative medicine for medical biotechnology</li> <li>2. Materials engineering: Biomaterials, metals, ceramics, polymers, composites</li> </ol>	<ol style="list-style-type: none"> <li>1. tendon</li> <li>2. tissue engineering</li> <li>3. regenerative medicine</li> <li>4. clinical translation</li> </ol>

#### COST Members

Main Proposer: Portugal

Network of Proposers:

Full Member: Austria, Bulgaria, Czech Republic, Germany, Greece, Ireland, Poland, Portugal, Romania, Spain, Switzerland, Turkey

Main and secondary proposers: 26% ECI / 48% Women / 58% ITC

#### Industrial Dimension

**SMEs:** Portugal, Switzerland