EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY

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# LIST OF ACTIONS

# CA18201 - An integrated approach to conservation of threatened plants for the 21st Century

## SUMMARY

Even though plants represent an essential part of our lives offering exploitational, supporting and cultural services, we know very little about the biology of the rarest and most threatened plant species, and even less about their conservation status. Rapid changes in the environment and climate, today more pronounced than ever, affect their fitness and distribution causing rapid species declines, sometimes even before they had been discovered. Despite the high goals set by conservationists to protect native plants from further degradation and extinction, the initiatives for the conservation of threatened species in Europe are scattered and have not yielded the desired results. The main aim of this Action is to improve plant conservation in Europe through the establishment of a network of scientists and other stakeholders who deal with different aspects of plant conservation, from plant taxonomy, ecology, conservation genetics, conservation physiology and reproductive biology to protected area's managers, not forgetting social scientists, who are crucial when dealing with the general public.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Biological sciences: Conservation biology, ecology, genetics<br>● Biological sciences: Population biology, population dynamics, population genetics, plant-animal interactions<br>● Biological sciences: Plant biology, Botany<br>● Social and economic geography: Socio-economic aspects of environmental sciences | ● in situ plant conservation<br>● ex situ plant conservation<br>● conservation genetics<br>● red lists of threatened plant species<br>● citizen science |

## COST Countries

Main Proposer: SI
Network of Proposers: AL, AT, BA, BE, BG, CH, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IL, IT, LU, ME, MT, NL, PL, PT, RS, SI, SK, UK
Main and secondary proposers: 38% ECI / 52% Women / 55% ITC

## International Cooperation

**Near Neighbour Country:** Armenia, Lebanon, Ukraine

# CA18202 - Network for Equilibria and Chemical Thermodynamics Advanced Research

## SUMMARY

The thermodynamic study of chemical equilibria represents the core of many important branches of chemistry. Coordination and supramolecular chemistry, chemical speciation, molecular modelling, drug design are just few examples. The importance of chemical equilibria, and chemical thermodynamics in general, results from the simple assertion that many properties of elements and compounds depend mainly on their interactions in a given system: the biological activity of an element or molecule, or their environmental impact can be explained by a detailed study of these interactions, whose nature and strength can be evaluated by chemical equilibrium and other thermodynamic studies. For example, speciation modelling based on chemical equilibrium data is commonly used in to improve commercial products performances, investigate the mobility of pollutants and toxicants in the environment, optimize industrial processes, explain the mechanisms of action of biologically active substances. Furthermore, advanced thermodynamic studies yield deeper insights into the mechanisms of these interactions.
NECTAR will combine the expertise of the large community of specialists working in this field, creating a network based on the stimulating collaboration between them, promoting knowledge exchange, and achieving high technological progress. All this will be accomplished through a fruitful collaboration between young researchers and experienced scientists, taking into consideration gender balance and maximal geographical distribution. Innovative and integrated theoretical and experimental approaches will be established and optimized. Overall, the outstanding quality of obtained results will serve as benchmark for next decades, allowing their application in the above-mentioned fields and substantially impacting on life quality of next generations.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Chemical sciences: Analytical chemistry<br>● Chemical sciences: Coordination chemistry<br>● Chemical sciences: Supramolecular chemistry<br>● Chemical sciences: Method development in chemistry<br>● Chemical sciences: Chemical instrumentation | ● Chemical Thermodynamics<br>● Chemical Equilibria<br>● Coordination Chemistry<br>● Complexes |

## COST Countries

Main Proposer: IT
Network of Proposers: BE, CH, CZ, DE, ES, FR, HU, IE, IT, LT, MT, PL, PT, SI, TR
Main and secondary proposers: 29% ECI / 62% Women / 53% ITC

## International Cooperation

**Near Neighbour Country:** Ukraine
**International Partner Country (IPC):** Australia, United States

## Industrial Dimension

**SMEs:** Germany, Ukraine
**Large companies:** Belgium

# CA18203 - Optimising Design for Inspection

## SUMMARY

Ultrasound based NDE techniques, energy harvesting and wireless sensor networks are being increasingly demonstrated to be effective in monitoring damage in aerospace components at a laboratory setting (TRL 3). These components include critical elements such as airframe, engines, landing gears and control surfaces. However, there is an urgent need to integrate these approaches and techniques at the inception of an aircraft. This COST Action will bring together the top European experts across these areas to support the development of an integrated framework for optimised self-sensing structures capable of diagnosis and prognosis, together with demonstrators and educational activities, including training programs, which will ultimately lead to cleaner and safer skies. This Action will maximise the full benefit of in service, continuous monitoring of critical aerospace structures by integrating ultrasonic wave based non-destructive evaluation (NDE), energy harvesting and wireless sensor technologies at the design conception phase. Optimisation (sensor/structure), computational modelling, advanced signal processing and advanced design approaches will be integrated to produce a novel framework, design tools and guidelines for the delivery of the first generation of self-sensing aircraft capable of delivering accurate structural prognosis. This will improve maintenance strategies, increase asset availability, bridge the gap between research and industry, enable increased the use of advanced materials, reduce operating costs and ultimately deliver safer and greener air transport solutions.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Mechanical engineering: Aerospace engineering | ● Design<br>● Structures<br>● Inspection<br>● Optimisation<br>● Aerospace |

## COST Countries

Main Proposer: UK
Network of Proposers: BE, BG, CY, CZ, DE, EL, ES, IL, IS, IT, LT, LU, NL, PL, PT, RO, RS, SI, TR, UK
Main and secondary proposers: 32% ECI / 19% Women / 55% ITC

## International Cooperation

**International Partner Country (IPC):** Canada, China, United States

## Industrial Dimension

**Large companies:** Greece, United Kingdom

# CA18204 - Dynamics of placemaking and digitization in Europe´s cities

## SUMMARY

This Action will investigate how placemaking activities, like public art, civil urban design, local knowledge production re-shape and reinvent public space, and improve citizens' involvement in urban planning and urban design. Placemaking implies the multiplication and fragmentation of agents shaping the public realm. The Action aims to empower citizens to contribute with citizen`s knowledge, digitization and placemaking to diverse ways of interpreting local identities in European cities. The added value of digitization - understood here basically as the ongoing process of converting any kind of data from an analog into a digital format – (Jannidis/Kohle/Rehbein (2018:179) will be analyzed in the ways in which it impacts urban placemaking processes of local communities. Studying urban placemaking and digital practices of various local communities throughout Europe´s cities, this Action will understand and analyze,

The impact of digitization on the common placemaking practices of urban local communities,
The changing processes of citizen´s local knowledge production of placemaking,
The influence of digitization on the governmentality of the local neighborhoods and co-creation of public space by various societal actors.

Drawing on recent theoretical insights that point to the importance of placemaking, widening citizen´s knowledge and wider application of digitization and digital communication, the Action seeks to develop new methods for studying and comparing effects of disseminating local urban knowledge beyond cultural and societal borders. By doing so, it develops European urban research both theoretically and methodologically finding ways of channelling the results into the wider urban planning and governance processes.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Other humanities: Cultural heritage, cultural memory<br>● Sociology: Anthropology, ethnology, cultural studies<br>● History and Archeology: Preservation of cultural heritage | ● citizens knowledge<br>● agency<br>● placemaking<br>● digitization<br>● knowledge transfer |

## COST Countries

Main Proposer: DE
Network of Proposers: BA, CH, DE, EE, FI, HU, NL, PT, SE, SK, TR, UK
Main and secondary proposers: 44% ECI / 72% Women / 50% ITC

## International Cooperation

**Near Neighbour Country:** Russian Federation
**International Partner Country (IPC):** United States

# CA18205 - Worlds of Related Coercions in Work

## SUMMARY

The COST Action "Worlds of Related Coercions in worK" (WORCK) represents a radical change of perspective on labour history by contending that the coexistence, entanglement and overlapping of diverse work relations has been the rule throughout history. It seeks to overcome the classic divides of labour history discourse (productive/unproductive, free/unfree, capitalist

re-capitalist) by linking the stories of work and production with those of violence, expropriation and marginalisation. Neither the male-breadwinner model nor the free wage labourer or the capitalist mode of production can form a blueprint for our endeavour; instead we address the persistence and transformation of coercion and bondage across gender orders, world empires and historical eras.
WORCK will establish the following four working groups: “Morphologies of Dependence”; “Sites and Fields of Coercion”; “(Im)Mobilisations of the Workforce”; and “Intersecting Marginalities”. This conceptual approach will create an academic space that cuts across standard research fields and enables exchanges between scholars working on topics as various as: construction work in ancient civilisations; indentured work and sharecropping in rural societies; chattel slavery and coolie work; debt bondage, convict labour and military impressment; and coercive mechanisms in household work and wage labour.
WORCK bridges the gaps between specialised but hitherto separate subfields. Moreover, it develops an analytical framework that helps to overcome the dominance of the conceptual matrix of the modern West in the humanities and to conceptualise a new history of work. Its activities will result in a collaborative database and a wide range of dissemination activities for a broader public.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● History and Archeology: Social and economic history<br>● Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty<br>● Law: History and philosophy of law<br>● Sociology: Anthropology, ethnology, cultural studies<br>● History and Archeology: Colonial and post-colonial history, global and transnational history | ● Labour History<br>● Coercion<br>● Work<br>● Bondage<br>● Precariousness |

## COST Countries

Main Proposer: AT
Network of Proposers: AT, BG, CZ, DE, DK, FR, HR, HU, IS, IT, NL, PL, PT, RS, SE, SI, TR, UK
Main and secondary proposers: 56% ECI / 46% Women / 50% ITC

## International Cooperation

**International Partner Country (IPC):** Brazil, Canada, China, India, Japan, Senegal, South Africa, United States

# CA18206 - Glioma MR Imaging 2.0

## SUMMARY

In Europe, 50,000 new cases of primary glioma occur each year, and this number is expected to rise with the aging population. Well-established international consortia are putting tremendous research efforts into a better understanding of glioma pathology and improved treatment strategies. Magnetic resonance imaging (MRI) only has a minor role in these research efforts, despite being a widely available medical imaging modality and whilst advanced MRI techniques are emerging with great potential for improved characterisation of glioma. To exploit advanced MRI to the fullest, two issues need to be solved: (1) The scattered research landscape in which advanced MRI is being developed for glioma imaging. (2) The limited presence of advanced MRI research in established consortia for clinical work and research in glioma.
This Action aims to build a pan-European and multidisciplinary network of international experts in glioma research, patient organisations, data scientists, and MR imaging scientists by uniting the glioma imaging community within Europe and progressing the development and application of advanced MR imaging for improved decision making in diagnosis, patient monitoring, and assessment of treatment response in clinical trials and clinical practice.
This Action will bring Europe to the global forefront on glioma imaging research, by providing recommendations and open-access software tools that will accelerate the bench-to-bedside translation of advanced MRI techniques. These scientific developments will further the understanding of glioma pathophysiology facilitating scientific breakthroughs in novel therapies and improve personalised patient management ultimately increasing the quality of life of glioma patients.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Medical engineering: Diagnostic tools (e.g. genetic, imaging)<br>● Medical engineering: Databases, data mining, data curation, computational modelling | ● Glioma<br>● Magnetic resonance imaging<br>● Biomarkers<br>● Multi-site data integration<br>● Neuro-oncology |

## COST Countries

Main Proposer: NL
Network of Proposers: BE, BG, CY, CZ, DE, DK, ES, FR, HR, IT, MT, NL, NO, PL, PT, RO, RS, SI, SK, TR, UK
Main and secondary proposers: 46% ECI / 43% Women / 57% ITC

## International Cooperation

**Near Neighbour Country:** Morocco
**International Partner Country (IPC):** Canada, United States

# CA18207 - Biodiversity Of Temperate forest Taxa Orienting Management Sustainability by Unifying Perspectives

## SUMMARY

Forests serve economic, social, cultural and environmental purposes, offer habitats for most terrestrial organisms and play a major role in mitigating climate change.
Virtually all European forests are impacted by management, with substantial effects on biodiversity and ecosystem functions.
Current European indicators of sustainable forest management mostly derive from information traditionally collected for timber production assessment, and include scarce direct information on biodiversity.
Time is ripe to change this perspective by valuing existing information able to link forest multi-taxon biodiversity and management through observational and experimental approaches.
The Action challenge is to increase the degree of sustainability of European temperate forest management for biodiversity. It will adopt a bottom-up approach by: i) creating a synergy of local research efforts; ii) using information on several taxa to inform sustainable management.
The Action network will make available existing information on multi-taxon biodiversity, structure and management for more than 2100 sampling units across all temperate and hemiboreal forest types, and will involve managers of up to 200 million hectares of forests, as well as a large number of protected areas' managers.
Action objectives are to deliver:

a standardized platform of multi-taxon data for European forests;
a network of forest sites with baseline information for future monitoring;
shared protocols for multi-taxon sampling;
an analysis of the relationships between multi-taxon biodiversity, structure and management;
a coordinated network of forest manipulation experiments;
indicators and thresholds of sustainable forest management directly tested on biodiversity;
management guidelines to be applied foremost in forest certification and within protected areas.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Biological sciences: Conservation biology, ecology, genetics<br>● Agriculture, Forestry, and Fisheries: Sustainable forest management | ● Multi-taxon<br>● Temperate forests<br>● Biodiversity conservation<br>● Sustainable Forest Management<br>● Forest Certification |

## COST Countries

Main Proposer: IT
Network of Proposers: CH, CZ, DE, DK, EE, FR, HU, IT, SI, SK
Main and secondary proposers: 50% ECI / 50% Women / 50% ITC

## International Cooperation

**International Partner Country (IPC):** Australia, United States

# CA18208 - Novel tools for test evaluation and disease prevalence estimation

## SUMMARY

Epidemiological studies assessing disease prevalence are critically important to both the identification and control of pathogens in humans and animals (including zoonosis and food borne outbreaks). However, countries typically collect data in a way that is best suited for their specific needs, and non-standardized sampling strategies and diagnostic methods produce prevalence estimates that cannot be directly compared. Hence, the need for harmonization, which has been often highlighted in reports of relevant EU institutions, like the ECDC and EFSA. Despite the availability of appropriate statistical methods – Bayesian Latent Class Models (BLCMs) – that adjust for the imperfect accuracy of the diagnostic process and produce comparable prevalence estimates, the number of research studies and scientific reports that use them is small compared to the number of instances that use of such methods would have been optimal. The objective of this proposal is to coordinate and promote the implementation of BLCMs through networking and knowledge transfer between BLCM experts and researchers working in statistics, epidemiology, diagnostics and population health. Specifically, we will (a) increase the visibility and collaboration of BLCM researchers, (b) promote stakeholder engagement, (c) provide training and networking opportunities for ECRs and ITC researchers, (d) create separate training opportunities for policy makers and stakeholders, (e) establish a free online BLCMs repository, (f) set up an International society for BLCMs and (g) organize the first international conference of this society. The strongest asset of this proposal is its strong interdisciplinary nature and broad network of proposers.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Health Sciences: Epidemiology<br>● Clinical medicine: Applied mathematics, statistics, non-computational modeling<br>● Veterinary science: Databases, data mining, data curation, computational modelling<br>● Basic medicine: Applied mathematics, statistics, non-computational modeling | ● Bayesian Analysis<br>● Diagnostic Accuracy<br>● True prevalence<br>● Latent Class Models<br>● Disease freedom |

## COST Countries

Main Proposer: EL
Network of Proposers: AL, BA, CY, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LU, LV, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 54% ECI / 38% Women / 63% ITC

## International Cooperation

**Near Neighbour Country:** Kosovo (under UNSCR 1244/99)
**International Partner Country (IPC):** Australia, Canada, India, New Zealand, Qatar, United States

## Industrial Dimension

**Large companies:** Netherlands, United Kingdom

# CA18209 - European network for Web-centred linguistic data science

## SUMMARY

The main aim of this Action will be to promote synergies across Europe between linguists, computer scientists, terminologists, and other stakeholders in industry and society, in order to investigate and extend the area of linguistic data science. We understand linguistic data science as a subfield of the emerging “data science”, which focuses on the systematic analysis and study of the structure and properties of data at a large scale, along with methods and techniques to extract new knowledge and insights from it. Linguistic data science is a specific case, which is concerned with providing a formal basis to the analysis, representation, integration and exploitation of language data (syntax, morphology, lexicon, etc.). In fact, the specificities of linguistic data are an aspect largely unexplored so far in a big data context.

In order to support the study of linguistic data science in the most efficient and productive way, the construction of a mature holistic ecosystem of multilingual and semantically interoperable linguistic data will be required at Web scale. Such an ecosystem, unavailable today, is needed to foster the systematic cross-lingual discovery, exploration, exploitation, extension, curation and quality control of linguistic data. We argue that linked data (LD) technologies, in combination with natural language processing (NLP) techniques and multilingual language resources (LRs) (bilingual dictionaries, multilingual corpora, terminologies, etc.), have the potential to enable such an ecosystem that will allow for transparent information flow across linguistic data sources in multiple languages, by addressing the semantic interoperability problem.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Languages and literature: Databases, data mining, data curation, computational modelling<br>● Other engineering and technologies: Databases, data mining, data curation, computational modelling for other engineering and technologies | ● linguistic data science<br>● multilingualism<br>● linguistic linked data<br>● language resources |

## COST Countries

Main Proposer: ES
Network of Proposers: AT, BE, BG, CH, CZ, DE, EE, EL, ES, FI, FR, HR, HU, IE, IL, IT, LT, LU, LV, MK, MT, NL, PL, PT, RO, RS, SI, SK, UK
Main and secondary proposers: 55% ECI / 47% Women / 55% ITC

## International Cooperation

**Near Neighbour Country:** Belarus, Georgia
**International Partner Country (IPC):** United States

## Industrial Dimension

**SMEs:** Bulgaria, Hungary, Israel, Latvia, United Kingdom
**Large companies:** Belgium, Germany

# CA18210 - Oxygen sensing a novel mean for biology and technology of fruit quality

## SUMMARY

It is widely accepted that consumption of fruit and vegetable is beneficial to human health due to their content of essential nutrients such as vitamins and antioxidants. Any strategy aimed at increasing fruit consumption must necessarily improve the organoleptic qualities of these commodities since fruit quality is judged by the consumer not at the time of harvest but after a post-harvest period that can be long due to the complexity of the distribution channels. Fruits continue to evolve during their post-harvest shelf life which results in substantial deterioration. Postharvest losses are 30% of total fruit and vegetables production in Europe. Therefore, the control of the ripening process is instrumental to maintaining high nutritional and sensory values and to reducing post-harvest losses. Post-harvest management of fruits relies on controlled or modified atmosphere and on packaging. The recent discovery that factors involved in sensing low oxygen and oxidative stress are involved in ripening opens new research avenues for controlling fruit quality via innovative breeding strategies and new dedicated technologies. By bringing together researchers from different disciplines, the action is anticipated to bring major breakthroughs in the understanding of fruit physiology, thus providing new targets to control fruit quality and post-harvest shelf life. The research will implement advanced methodologies and concepts and will significantly enhance European competitiveness through promoting training of early stage researchers in cutting-edge technologies. By combining studies on different models this Action will lead to advances that will translate into novel practices and technologies to improve fruit sensory and nutritional qualities.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Agriculture, Forestry, and Fisheries: Agriculture related to crop production, soil biology and cultivation, applied plant biology, crop protection<br>● Biological sciences: Plant biology, Botany | ● Tomato<br>● oxygen<br>● ethylene<br>● ripening<br>● Post-harvest |

## COST Countries

Main Proposer: FR
Network of Proposers: BA, BE, BG, CY, CZ, EE, EL, ES, FR, IT, ME, MK, NL, PL, PT, RS, SI, TR, UK
Main and secondary proposers: 29% ECI / 52% Women / 63% ITC

# CA18211 - Perinatal Mental Health and Birth-Related Trauma: Maximising best practice and optimal outcomes

## SUMMARY

Unlike other sources of trauma, perinatal or birth-related trauma is relatively unrecognised. Evidence suggests up to 30% of women describe their birth experience as traumatic and experience some symptoms of intrusion, avoidance or hyper-arousal. Meta-analyses show post-traumatic stress disorder (PTSD) affects 4% of women after birth and up to 18% of women in high risk groups. Rectification of this situation is essential. In 2016, 5.11 million babies were born in Europe, indicating that up to 1.5 million women may have had sub-optimal birth experiences and over 200,000 may have developed PTSD as a result. Developmental research has firmly established that the quality of infant-parent relationships is a critical factor in early and later childhood development, consequently, a family-centred approach to any investigation of birth-related trauma is critical, as trauma can be transmitted within the family system. Given the enormous economic burden it places on women, health systems, and particularly children, relatively small improvements in services to prevent, detect and treat this problem can benefit society significantly. The main aim of this Action is two-fold. The Action will establish an international multidisciplinary network of researchers, clinicians, NGOs and SMEs to 1) consolidate and disseminate current evidence and coordinate a joint effort to seek ways to prevent, minimise and resolve birth-related trauma, and to optimise emotional and psychological outcomes for parents and families and 2) accelerate the translation of that knowledge into best practices that can be shared across Europe to reduce the societal and economic burden arising from birth-related negative/traumatic experiences.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Health Sciences: Health services, health care research<br>● Other social sciences: Qualitative methods for the social sciences<br>● Health Sciences: Nursing<br>● Health Sciences: Social biomedical sciences (including family planning, sexual health, psycho-oncology, political and social effects of biomedical research) | ● perinatal mental health<br>● birth-related trauma<br>● family systems<br>● health economics<br>● PTSD |

## COST Countries

Main Proposer: IE
Network of Proposers: BA, BE, CH, CY, CZ, DE, EE, EL, ES, HR, IE, IL, IS, LU, MT, NL, NO, PL, PT, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 54% ECI / 85% Women / 52% ITC

## International Cooperation

**International Partner Country (IPC):** Australia

## Industrial Dimension

**SMEs:** United Kingdom
**Large companies:** Norway

# CA18212 - Molecular Dynamics in the GAS phase

## SUMMARY

Emerging highly advanced ion-beam traps and storage rings combined with synchrotrons, X-ray facilities, and high-performance computers offer completely new ways to study Molecular Dynamics in the GAS phase (MD-GAS). Cryogenic traps and rings will allow studies of decay and reaction processes involving molecular ions in well-defined conformations and in single or narrow ranges of quantum states. The MD-GAS Action aims to further develop and fully exploit the exceptional potential of the above range of tools to unravel the connection between the initial energy transfer in interactions between isolated molecules or clusters and photons, electrons, or heavy particles (ions, atoms, molecules) and the related molecular dynamics in unexplored time domains ranging from sub-femtoseconds to minutes and hours. Furthermore, the Action aims to identify reaction mechanisms and routes that lead to the growth of new molecular species, clusters and aerosols. The new knowledge will be important for fundamental atomic and molecular physics, chemical physics, and for applications in radiation therapy and -damage on the nanoscale, astrochemistry, astrobiology, atmospheric science, and climate research.
The MD-GAS Action is organized in three Working groups: 1) New high-performance instrumentation and experimental methods to study gas phase molecular dynamics at ion-beam storage rings and traps, at synchrotrons and X-ray facilities; 2) Survival and destruction of molecules following their processing by heavy particles, electrons, or photons; 3) Charge-, energy flow, and molecular growth processes in intermolecular and intracluster reactions.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Chemical sciences: Physical chemistry<br>● Physical Sciences: Atomic, molecular and chemical physics<br>● Physical Sciences: Interstellar medium | ● Gas phase molecular dynamics<br>● Electrostatic ion beam storage<br>● Isomer and quantum state selection<br>● Charge and energy flow processes<br>● Ionisation, fragmentation, and molecular growth |

## COST Countries

Main Proposer: SE
Network of Proposers: AT, BA, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, HR, HU, IE, IL, IT, LT, LV, NL, NO, PL, PT, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 34% ECI / 46% Women / 52% ITC

## Industrial Dimension

**SMEs:** Lithuania

# CA18213 - Rural NEET Youth Network: Modelling the risks underlying rural NEETs social exclusion

## SUMMARY

This proposal encompasses the creation of a European-led multidisciplinary network from countries showing higher NEET youth rates in rural areas. Rural NEETs' Youth Network (RNYN) aims at developing a model of comprehension for rural NEETs' social exclusion risk and protective factors based on the bioecological model. It focuses on three specific goals: (1) upholding future research capability, with an emphasis on Early Stage Researchers (ESR) and Inclusiveness Target Countries (ITC); (2) creating a rural NEETs' online observatory; and (3) fostering knowledge use by policy makers and practitioners. The RNYN work plan will be produced by 4 working groups; it will contribute to define a coherent model for future research, based on an intensive survey of national and cross-national trends regarding rural NEETs' profile and support systems, as well as methodological and intervention best-practices in the field. RNYN added value stems from an eclectic theoretical, disciplinary, institutional and international approach and in upskilling ESR in ITC that are more affected by high rural NEET rates. In the long run, RNYN's scientific impact will lead to the creation of a rural NEETs' observatory, integrating ESR in a broad multidisciplinary community and strengthening the COST Inclusiveness Policy. Long-term socio-economic impact is expected to be translated into (inter)national legislation to tackle rural NEETs' needs and promote sectoral innovations. RNYN is a timely proposal by creating networks platforms to organize findings, connect critical mass dealing with rural NEETs and build up research capacity. It is also socially relevant, by aiming at informing policies and on-the-ground practices.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Psychology: Social psychology<br>● Other agricultural sciences: Sustainable production<br>● Economics and business: Labour economics<br>● Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty<br>● Political Science: Political systems and institutions, governance | ● Rural NEETs<br>● social exclusion<br>● model development<br>● build-up research capacity<br>● dissemination of methods and intervention best-practices |

## COST Countries

Main Proposer: PT
Network of Proposers: BG, CY, CZ, DE, EL, ES, HU, IT, MD, PL, PT, RO, SI, SK, TR
Main and secondary proposers: 79% ECI / 51% Women / 73% ITC

## Industrial Dimension

**SMEs:** Cyprus, Romania

# CA18214 - The geography of New Working Spaces and the impact on the periphery

## SUMMARY

The aim of the present COST proposal is threefold. First, it aims to share the first outcomes of some funded international research projects on new working spaces as Coworking (CS) and Maker Spaces (MS), which: (i) identify new working spaces typologies (tassonomy); (ii) reveal their spatial distribution and explain the location patterns. Secondly, through the comparison and dissemination of the first results of these international research activities, the Action aims at identifying, measuring and evaluating the (direct and indirect) effects of these new working spaces (Atlas) in order to understand whether and how they have promoted – with or without the help of public subsidies and planning measures –: (a) regional competitiveness, economic performance and resilience; (b) entrepreneurial milieu; (c) knowledge creation within regional innovation system, retaining knowledge workers and the creative class; (d) social inclusion and spatial regeneration of peripheral areas The third aim is to collect, discuss and develop guidelines for tailored policy and planning measures (Tool Box) to foster the positive effects of new working spaces through the promotion of agreements and cooperation with local, regional and/or national public administrations/stakeholders, as well as try to reduce their negative effects on the neighbourhoods (i.e. gentrification). On the basis of these results, the Action aspires to be followed by a wider research project, which will be prepared for competitive international calls, and will develop empirical analyses about the implementation of the proposed measures in local, regional or national specific context.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Social and economic geography: Social, cultural and economic geography, international trade | ● coworking space<br>● maker space<br>● peripheral areas<br>● policy tool<br>● social inclusion |

## COST Countries

Main Proposer: IT
Network of Proposers: BE, BG, CZ, DE, ES, FR, HU, IL, IT, MK, NL, NO, PL, PT, RO, SK, TR, UK
Main and secondary proposers: 63% ECI / 53% Women / 50% ITC

## Industrial Dimension

**SMEs:** Bulgaria, Italy

# CA18215 - China in Europe Research Network

## SUMMARY

Nowhere has the recent increase in foreign direct investment from rising China been more rapid than in Europe. It ranges from manufacturing, energy, utilities and transport, to financial services, real estate and sports and has been expanding from acquisitions of European firms to greenfield and portfolio investment. The perceived challenges posed by these investments has led to increasing political and media attention, including calls for EU vetting and regulation of acquisitions.
Academic research on the phenomenon is however lagging behind these developments. Existing studies moreover tend to have a mono-disciplinary, national or sectoral focus. Over-arching conceptions of the interconnections between investments in multiple sectors and the often cross-European nature and intent of Chinese investments, as well as their political and geopolitical implications, is almost entirely absent. This lack of knowledge does not augur well for the formulation of appropriate policy responses direly needed to engage constructively with rising China.
In the light of these scientific gaps and policy needs and by bringing together the leading and pioneering researchers from across Europe and beyond (e.g. China, USA), the aim of this Action is to:(a) pool current and stimulate further research on China's deepening economic engagements with Europe (b) develop an interdisciplinary, holistic, cross-sectoral and pan-European understanding of the variegated impacts and strategies associated with these engagements; (c) comprehend the likely political and geo-political consequences of these; and (d) generate input on the policy implications of these issues involving relevant agencies from the EU, member countries, business, trade unions and other interested parties.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Other social sciences: Qualitative methods for the social sciences | ● China<br>● (Foreign Direct) Investment<br>● European Development<br>● Socio-Economic and Political Impact<br>● Sustainable European Policy |

## COST Countries

Main Proposer: NL
Network of Proposers: BE, CZ, DE, DK, FR, HU, IE, LV, NL, PL, PT, RS, SI, UK
Main and secondary proposers: 50% ECI / 45% Women / 50% ITC

## International Cooperation

**International Partner Country (IPC):** China, United States

# CA18216 - Network for Research in Vascular Ageing

## SUMMARY

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality worldwide, regardless of gender, ethnicity or income. The concept that vascular age, as opposed to chronological age, is better related to the prognosis of CVD is rapidly evolving. Arterial stiffness is an important component of vascular ageing and a potent CVD risk predictor, and as such is emerging as an appealing therapeutic target. Despite recent technological advances for the measurement of vascular ageing in clinical practice, unmet needs remain including: complexity of use and heterogeneity of approaches, insufficient validation in clinical settings, fragmentation of expertise, and lack of research driven studies regarding treatment and head-to-head comparisons between different techniques.
Therefore, the aim of the COST action is:
To establish a network which will work to refine, harmonise and promote the use of vascular ageing measures, in order to improve clinical practice and to reduce the burden of CVD globally.
This will be achieved by: Refining the development of novel, easy-to-use technologies for the diagnosis, prevention, treatment and monitoring of vascular aging by cross-talk between industry and scientists using a translational approach and establishing protocols for validation of new technologies.
Harmonising knowledge by initiating a registry to complete clinical validation of the most established surrogate endpoints, including comparisons of techniques, and by initiating peer network driven intervention studies to utilize the multiplicative effect of the network.
Promoting a vascular ageing culture and to propagate the use of technologies and preventative strategies, fostering solutions feasible in low income countries.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Clinical medicine: Cardiovascular diseases<br>● Medical engineering: Medical engineering and technology | ● Vascular ageing<br>● Arterial stiffness<br>● Cardiovascular diseases<br>● Medical device |

## COST Countries

Main Proposer: AT
Network of Proposers: AT, BA, BE, CH, CY, CZ, DE, DK, EL, ES, FR, HR, HU, IT, LT, LV, NL, PT, RO, RS, SI, SK, UK
Main and secondary proposers: 49% ECI / 40% Women / 52% ITC

## International Cooperation

**International Partner Country (IPC):** Australia, United States

## Industrial Dimension

**SMEs:** Australia, France, Germany, Italy
**Large companies:** Netherlands

# CA18217 - European Network for Optimization of Veterinary Antimicrobial Treatment

## SUMMARY

The global antimicrobial resistance crisis has been the driver of several international strategies on antimicrobial stewardship. Despite their good intentions, such broad strategies are only slowly being implemented into “real life”. This is particularly unfortunate for veterinary medicine, which is challenged by (i) a shortage of experts in key disciplines related to antimicrobial stewardship, (ii) few antimicrobial treatment guidelines, and (iii) inferior diagnostic tests compared to human microbiology. The aim of this Action, which is composed of 48 proposers from 29 countries, is to optimize veterinary antimicrobial use with special emphasis on the development of antimicrobial treatment guidelines and refinement of microbiological diagnostic procedures. For this purpose, the Action will first survey the state-of-the-art in terms of microbiological diagnostic practices and veterinary treatment guidelines across Europe. Secondly, tools in the form of an extensive European strain database and a standard for making antimicrobial treatment guidelines will be created. Third, Action Participants will exploit these tools for the development and refinement of microbiological methods and European treatment guidelines. Finally, the surveys, tools, diagnostic methods, and treatment guidelines will be disseminated to national and international stakeholders. Furthermore, the Action will recommend priority research areas for future optimization of antimicrobial treatment in animals, and develop a roadmap outlining how European countries can advance to a common high level of veterinary antimicrobial stewardship. The planned investigations and the educational activities will raise the critical mass of expertise in veterinary antimicrobial stewardship in Europe, especially in less resourceful countries and among Early Career Investigators.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Veterinary science: Veterinary medicine (miscellaneous) | ● Veterinary antimicrobial stewardship<br>● Veterinary microbiology<br>● Diagnostic microbiology<br>● Antimicrobial guidelines<br>● Antimicrobial susceptibility testing |

## COST Countries

Main Proposer: DK
Network of Proposers: BE, BG, CH, CZ, DE, DK, EE, EL, ES, FR, HR, IT, LT, LV, MK, NL, NO, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 31% ECI / 52% Women / 52% ITC

## International Cooperation

**Near Neighbour Country:** Lebanon, Morocco
**International Partner Country (IPC):** Australia, Canada

## Industrial Dimension

**SMEs:** Germany, Netherlands
**Large companies:** France

# CA18218 - European Burden of Disease Network

## SUMMARY

What are the most relevant diseases in a country? Which risk factors are the strongest contributors to disease and death? How is the impact of different diseases evolving over time, and how does it compare between countries and within subnational units? As the need for prioritising the use of available resources constantly increases, a timely, sound and comprehensive answer to these fundamental questions is more than ever needed to inform public health decision making. Driven by the impact of the Global Burden of Disease study, several researchers and national and international health institutes have adopted the burden of disease approach to address these questions.
The complexity of the burden of disease approach however resulted in major disparities in research capacity across Europe. The burden-eu COST Action will address current challenges by 1) stimulating interaction between existing efforts, 2) supporting technical capacity building at country level, 3) providing a platform to support methodological advances, and 4) addressing the need for an actionable understanding of the process underlying knowledge translation.
The Action will have an interwoven structure of 3 vertical and 2 horizontal pillars. The vertical pillars focus on specific burden of disease applications – i.e., non-communicable diseases and injuries (WG1), communicable diseases (WG2), and risk factors (WG3). The horizontal pillars focus on cross-cutting and holistic activities – i.e., burden of disease methodology (WG4) and knowledge translation (WG5). While the vertical pillars reflect the current fragmented nature of the burden of disease universe, the horizontal pillars provide the much-needed bridge between these different worlds.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Health Sciences: Public and environmental health<br>● Health Sciences: Epidemiology<br>● Health Sciences: Infectious diseases<br>● Health Sciences: Environment and health risks including radiation<br>● Clinical medicine: Non-communicable diseases | ● Burden of disease<br>● Public health<br>● Knowledge translation<br>● Population health monitoring<br>● Prioritisation |

## COST Countries

Main Proposer: BE
Network of Proposers: AL, BA, BE, CH, CY, CZ, DE, DK, EE, ES, HR, HU, IE, IT, LT, LU, LV, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 59% ECI / 57% Women / 65% ITC

## International Cooperation

**International Organisations (IO):** United Kingdom

## Industrial Dimension

**SMEs:** Cyprus, Estonia

# CA18219 - Research network for including Geothermal technologies into Decarbonized Heating and Cooling grids

## SUMMARY

The Action addresses the inclusion of geothermal technologies into district heating and cooling systems in Europe to foster the de-carbonization of the heating & cooling market. With regard to technological solution the Action follows a strong bottom – up approach. Shallow-, intermediate as well as deep geothermal methods are considered in monovalent or multivalent grids. Geothermal may act as a heating source, sink or storage and may be combined with other technologies like Carbon Capture and Utilization. The Action covers networking, knowledge exchange & transfer, training and stakeholder interaction activities based on case studies to investigate and promote solutions and roadmaps for raising the RES share in public heating and cooling grids to at least 30% in 2030 and at least 50% in 2050.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Earth and related Environmental sciences: Hydrology, water resources<br>● Environmental engineering: Renewable and alternative energy sources (theoretical aspects)<br>● Environmental engineering: Exploration and exploitation of crustal resources (water, oil, natural gas)<br>● Earth and related Environmental sciences: Thermodynamics, geophysics | ● Geothermal Energy<br>● Heating and cooling grids<br>● Decarbonization<br>● Seasonal heat storage<br>● Ground source heat-pump |

## COST Countries

Main Proposer: AT
Network of Proposers: AT, BA, BE, CY, CZ, DE, EE, EL, ES, HR, HU, IS, IT, PL, PT, RO, RS, SI, TR, UK
Main and secondary proposers: 64% ECI / 31% Women / 60% ITC

## International Cooperation

**International Partner Country (IPC):** Canada

# CA18220 - European network of FURan based chemicals and materials FOR a Sustainable development

## SUMMARY

Modern society relies on a huge quantity of polymeric materials. However, today, these materials are still almost exclusively based on fossil-resources and evolution to a more sustainable model of development is required. In this perspective, biomass and, in particular carbohydrates from, for example, low value biomass wastes, are outstanding starting feedstocks for the production of added-value chemicals and products. One of such is 2,5-furandicarboxylic acid (FDCA). Nevertheless, efforts on FDCA-based products development have been scattered in individual scientific activities, and moreover joint efforts between Academy and Industry have also been rare, hampering their successful industrialisation and market introduction. Precisely, this Action will master the scattered pan-European individual efforts to design innovative routes to FDCA-based chemicals and polymeric materials towards lab-to-industry-to-market, by gathering, for the first time, a real critical mass along the complete value-chain, including several experts in FDCA synthesis, polymer science and general materials developing and chemical-physics; together with producer, manufacture and recycling industrial stakeholders; LCA and techno-economic viability experts. The Action will accomplish these targets by pursuing two-parallel strategies. Firstly, supporting an 'holistic vision' in which FDCA synthetic routes, polymers & polymeric materials development, characterisation, as well as key technical, economic, environmental and social factors are considered together, aiming at supporting and identifying solutions to successful market introduction. Secondly, using intersectorial knowledge, supported by dissemination and networking tools to provide an open platform for collaboration and a common vision addressing research, human resources qualification and industrial implementation.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Chemical sciences: Green chemistry research<br>● Chemical engineering: Chemical engineering: processes and products (others)<br>● Materials engineering: Structural properties of materials<br>● Agriculture, Forestry, and Fisheries: Biomass production from forestry | ● 2,5-furandicarboxylic acid whole-value chain<br>● chemicals, polymers and materials<br>● lab-to-industry-to-market<br>● Network on furans<br>● Sustainable development |

## COST Countries

Main Proposer: PT
Network of Proposers: AT, BE, BG, CH, CY, CZ, DE, DK, EL, FI, FR, HU, IT, LU, NL, PL, PT, RO, RS, SI, SK
Main and secondary proposers: 33% ECI / 48% Women / 52% ITC

## International Cooperation

**Near Neighbour Country:** Tunisia
**International Partner Country (IPC):** China

## Industrial Dimension

**SMEs:** Belgium
**Large companies:** Germany, Greece, Italy, Netherlands, Portugal, Slovenia, Switzerland

# CA18221 - PEsticide RIsk AssessMent for Amphibians and Reptiles

## SUMMARY

Amphibians and reptiles have been until recently the only two vertebrate classes not directly considered in the environmental risk assessment (ERA) of pesticides. The risks posed by these products on amphibians and reptiles have been assumed to be covered by assessments conducted on other vertebrates. The European Union published in 2013 the two first regulations incorporating specifically amphibians and reptiles into pesticide ERA. Following this legal requirement, the competent EU agency, the European Food Safety Authority, published in February 2018 a scientific opinion reviewing the state of the science relative to pesticide ERA for amphibians and reptiles. The scientific opinion constitutes the basis for the future development of a guidance document that will detail the procedures to be followed for possible pesticide authorization. The scientific opinion highlighted the scarcity of knowledge and identified those aspects that should be addressed before the elaboration of the guidance document to guarantee a protective ERA for amphibians and reptiles while keeping vertebrate testing to a minimum. The action PERIAMAR will establish a multidisciplinary network of scientists from research institutions, regulatory agencies, chemical industry, environment-focused NGOs, and research private business that will analyse the available information and design an ERA protocol for possible implementation in the future guidance document. In addition, networking, training and dissemination activities will contribute to create a critical mass capable to address those knowledge gaps requiring further research on the long term, in order to maintain an ERA scheme safe enough to protect amphibians and reptiles from pesticide impacts

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Biological sciences: Zoology, including animal behaviour<br>● Earth and related Environmental sciences: Environment chemistry<br>● Political Science: Environmental regulations and climate negotiations (policy and political aspects)<br>● Biological sciences: Conservation biology, ecology, genetics<br>● Agriculture, Forestry, and Fisheries: Agriculture related to crop production, soil biology and cultivation, applied plant biology, crop protection | ● environmental policy<br>● pesticide regulation<br>● plant protection products<br>● biodiversity<br>● herpetofauna |

## COST Countries

Main Proposer: ES
Network of Proposers: AL, BG, CH, CY, CZ, DE, DK, ES, FR, HU, IT, NL, PL, PT, RO, RS, SE, SI, SK, UK
Main and secondary proposers: 50% ECI / 53% Women / 55% ITC

## International Cooperation

**Near Neighbour Country:** Ukraine

## Industrial Dimension

**SMEs:** France, Germany
**Large companies:** Germany, Switzerland

# CA18222 - Attosecond Chemistry

## SUMMARY

Recent developments of ultrashort intense light sources operating in the XUV and X-ray spectral regions promise to revolutionize chemistry, as they will give access to dynamical processes occurring in the attosecond time scale (1 asec = 10-18 s), the natural time scale for electronic motion in atoms and molecules. Thus, such light sources will allow one to address new fundamental questions about the role and possible control of electron dynamics in chemical reactivity, to investigate photoinduced charge migration in relevant molecular systems, and to image, with asec resolution, fast structural changes in molecules during proton transfer, isomerization, or motion through conical intersections. Large-scale facilities are currently being developed all over Europe for this purpose (ELI-ALPS, EuXFEL, FERMI, SwissFEL, etc), accompanied by an increasing demand of accurate theoretical support for an optimal use of these resources.
The AttoChem network will coordinate experimental and theoretical efforts to exploit the large potential of attosecond techniques in chemistry, with the aim of designing new strategies for the control of charge migration in molecules by directly acting on the attosecond time scale. This ability will be used to selectively break and form chemical bonds, thus opening new avenues for the control of chemical reactions. The results of the Action are expected to have a significant impact in several areas of chemistry, such as photovoltaics, radiation damage, catalysis, photochemistry, or structural determination. AttoChem will also act as a liaison with the relevant stakeholders to bridge the gap to industrial applications.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Chemical sciences: Physical chemistry<br>● Physical Sciences: Atomic, molecular and chemical physics<br>● Physical Sciences: Lasers, ultra-short lasers and laser physics<br>● Chemical sciences: Theoretical and computational chemistry<br>● Chemical sciences: Spectroscopic and spectrometric techniques | ● Ultrafast imaging<br>● Attosecond light sources and ultrafast spectroscopies<br>● Time-dependent theoretical modelling<br>● Control of electron dynamics in chemical reactivity<br>● Charge migration in biomolecules |

## COST Countries

Main Proposer: ES
Network of Proposers: AT, BE, CH, CZ, DE, EE, ES, FR, HR, HU, IL, IT, NL, PL, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 24% ECI / 51% Women / 50% ITC

## International Cooperation

**International Partner Country (IPC):** Japan, United States

## Industrial Dimension

**SMEs:** Netherlands, Spain, United Kingdom
**Large companies:** Germany, Switzerland

# CA18223 - Future communications with higher-symmetric engineered artificial materials

## SUMMARY

The HiMat Action has the ambition to promote an international research community proposing innovative solutions to the demand of omnipresent connections in today's society. Higher data rates and shared platforms stimulate a revolution in terms of device technologies in different contexts. These global new trends can only be satisfied if a new class of communicating devices becomes available at millimeter waves.

HiMat will investigate the electromagnetic properties of new classes of artificially engineered materials. They are made of periodic cells whose inner structures have higher symmetries, such as glide or twist symmetries. As an example, while a periodic structure is invariant after a translation, a glide-symmetric structure is invariant after a translation and a mirroring. These symmetries lead to marvellous uncommon properties: ultra large bandwidth of operation, reduced losses, scanning capabilities, and enhanced stopband for Electromagnetic Bandgap materials. They have the potential to meet the expectation of new communication devices.

The novelty of the subject motivates the need for a diverse network, since it is still difficult to select subactivities independent from each other. Different scientific backgrounds – physics, engineering, numerical modelling, and companies - will definitely contribute to the definition of meaningful research lines. Several young researchers and female investigators are indicators of values promoted by the Action, which will drive the discussions with end-users and policymakers. HiMat will contribute to the impact of European research on public scientific awareness, societal change and economic development, by granting the know-how of an emerging technology and enabling transfer of results for exploitation.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Electrical engineering, electronic engineering, Information engineering: Communications engineering and systems (select for additional explanation)<br>● Electrical engineering, electronic engineering, Information engineering: Computational modelling and simulation | ● Antennas and propagation<br>● Communications<br>● Artificial materials<br>● Electromagnetic modelling |

## COST Countries

Main Proposer: FR
Network of Proposers: CY, CZ, DE, ES, FI, FR, HR, IT, MT, PT, RS, SE, TR, UK
Main and secondary proposers: 41% ECI / 36% Women / 50% ITC

## Industrial Dimension

**SMEs:** Germany, Italy
**Large companies:** France, Sweden, United Kingdom

# CA18224 - Green Chemical Engineering Network towards upscaling sustainable processes

## SUMMARY

The objective of this COST action is to promote and boost the industrial application of green chemistry and sustainable technologies, developing the tools for the scale-up and implementation of emerging processes into industry. This can only be successfully achieved through the connection of working groups in emergent areas such as: best use of raw materials; use of clean solvents; efficient use of energy and production of minimal amount of waste. The development of novel processes and high added value products from the integration of highly innovative technologies has been pursued and it is the objective of different programs and projects. Within these settings, GREENERING arises to provide tools and knowledge to the participants enabling them to be highly competitive in new breakthrough developments. To achieve this, the GREENERING consortium will gather experts from academia, industry and technology transfer institutions with the aim to: i) create a network with common interests; ii) create working groups to influence decision makers and stakeholders in adopting sustainable processes; iii) create competitive consortiums able to apply to H2020 competitive calls and iv) increase the entrepreneurial mindset of researchers and particularly young students who with their youth and wilful energy will be able to transpose technology into products. Additionally, this Action will aim to provide long-term collaborations between academic institutions and companies which will ultimately result in the implementation of green processes at industrial scale and transfer of specialized technology into the market, being fully aligned with Europe's interest in creating highly competitive sustainable companies.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Chemical sciences: Green chemistry research | ● Green Chemistry<br>● Sustainable development<br>● Supercritical Fluids<br>● Industrial Applications<br>● Circular economy |

## COST Countries

Main Proposer: PT
Network of Proposers: AT, CZ, DE, ES, FR, HU, PT, RS, SI, UK
Main and secondary proposers: 19% ECI / 48% Women / 50% ITC

## Industrial Dimension

**SMEs:** France, Portugal

# CA18225 - Taste and Odor in early diagnosis of source and drinking Water Problems

## SUMMARY

Unpleasant taste and odor (T&O) of water can indicate quality problems or possible risks for human health and can make water unacceptable by consumers. A plethora of water T&O of natural or anthropogenic origin can enter water at the source, during water treatment or in distribution networks. Resolution of water T&O problems requires integration of a) sensory analysis to describe the problem, b) chemical analysis to determine the identity and concentration of T&O c) assessment of associated risks and d) suitable water treatment to control T&O. Expertise in Europe across those dimensions are yet scattered and fragmented. The main aim of the proposed Action (TOPWATER) is to increase capabilities and capacities in Europe for solving water T&O, by creating the first European network of multi-disciplinary experts, end-users and stakeholders in the field. An “innovation by integration” approach is adopted, incorporating novel cross-sector knowledge transfer from the food sector, new international collaborations, vertical “source to tap” risk assessment strategies and horizontal integration with overlapping sectors, i.e. aquaculture, manufacturers of materials in contact with water, sensors and analytical technologies. TOPWATER will have strong impact in improving protection of public health and water resources, quality of life, use of tap water, consumer’s awareness and involvement in water quality issues and professional development of young researchers in the field. It will largely contribute to the implementation of the new (recast) EU Drinking Water Directive and to the development of European leadership in the science and technology of water quality.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Earth and related Environmental sciences: Environment chemistry<br>● Chemical sciences: Analytical chemistry<br>● Environmental engineering: Water management and technology | ● Water Quality<br>● Sensory Analysis<br>● Chemical Analysis<br>● Water Treatment<br>● Water Safety |

## COST Countries

Main Proposer: EL
Network of Proposers: BG, CY, CZ, DE, DK, EE, EL, FI, FR, IT, PL, PT, RS, SE, TR, UK
Main and secondary proposers: 37% ECI / 52% Women / 50% ITC

## International Cooperation

**International Partner Country (IPC):** Australia, Canada, United States

## Industrial Dimension

**SMEs:** Finland, Greece
**Large companies:** France, Greece

# CA18226 - New approaches in detection of pathogens and aeroallergens

## SUMMARY

Bioaerosols are among the most complex components in the atmosphere. Bioaerosols are relevant as important pathogens in crops and on trees, as aeroallergens in relation to human health and as catalysts for physical processes in relation to climate such as cloud formation processes. For decades the backbone in the European monitoring network of bioaerosols in relation to crop and human health has been simple impactors that trap the bioaerosols on a sticky surface followed by optical identification using microscopes. This approach is both time consuming, expensive and limiting with respect to the progress of science. The last five to ten years a range of new techniques have become available. The techniques can enable a number of scientific breakthroughs in the general understanding of bioaerosols and how they interact with the environment. This COST action will establish an interdisciplinary network of experts currently involved in the detection of bioaerosols using both existing methods as well as upcoming technologies such as real or near real-time technologies from atmospheric chemistry& physics or eDNA methods used in molecular biology. A main objective is to critically address the barriers that limits the penetration of new methods in detection of bioaerosols. The cost action will stimulate both research and technological development, e.g. by developing approaches for integration of multiple methods for detecting bioaerosols and how to handle data using numerical approaches in a big data environment by using fungal spores and pollen as examples.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Environmental engineering: Air pollution<br>● Biological sciences: Molecular biology and interactions<br>● Environmental biotechnology: Diagnostic biotechnologies (DNA chips and biosensing devices) in environmental management<br>● Earth and related Environmental sciences: Meteorology, atmospheric physics and dynamics | ● Aeroallergens<br>● pathogens<br>● molecular biology<br>● automatic devices<br>● low cost sensors |

## COST Countries

Main Proposer: UK
Network of Proposers: CH, CZ, DE, DK, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, NL, PL, PT, RO, RS, SE, SI, SK, TR, UK
Main and secondary proposers: 42% ECI / 55% Women / 52% ITC

## International Cooperation

**Near Neighbour Country:** Russian Federation, Ukraine

## Industrial Dimension

**SMEs:** Switzerland

# CA18227 - The Core Outcome Measures for Food Allergy

## SUMMARY

Food allergy is a major societal challenge in Europe. The disease affects 6%-8% of children under the age of 3 years, and 2-3% of adults and has a quality of life impact similar to other major chronic conditions. Food allergy is a major financial burden, with significant impact on healthcare, education, food and catering industries. New treatments for food allergy are in development. There is however no agreed set of Core Outcomes for evaluating these new treatments. This may prevent the development of effective treatments with marketing approvals from regulatory authorities, for food allergic Europeans.
Core Outcome sets ensure that trial outcomes are relevant to patients, clinicians, healthcare providers and regulators; and they allow trial outcomes to be combined in meta-analysis, so that new findings are capitalized on as soon as possible. The Core Outcome Measures for Food Allergy (COMFA) project is a multidisciplinary network involving all relevant stakeholders aiming to advance food allergy research and innovation by (a) defining the scope and applicability of food allergy Core Outcome sets; (b) developing Core Outcome sets and measurement tools for food allergy; (c) reaching a consensus on terminology and definitions of measurement properties for food allergy Core Outcomes.
This project addresses the Societal Challenges in Health by improving our understanding of health and our ability to reliably monitor health outcomes and demonstrates new options for healthcare delivery. The outcomes will help improve the quality of clinical trials, and the Action will advance the career of young researchers, strengthening Europe's leading position in pharmaceutical sciences.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Clinical medicine: Clinical trials<br>● Clinical medicine: Allergy | ● food allergy<br>● allergic diseases<br>● clinical trials<br>● core outcome sets |

## COST Countries

Main Proposer: UK
Network of Proposers: CH, CY, DE, EE, EL, ES, HR, IE, IT, MT, NL, PL, RO, SI, TR, UK
Main and secondary proposers: 50% ECI / 56% Women / 50% ITC

## International Cooperation

**Near Neighbour Country:** Belarus, Russian Federation, Ukraine
**International Partner Country (IPC):** Australia, United States

# CA18228 - Global Atrocity Justice Constellations

## SUMMARY

Most research on atrocity crimes has been focused the international criminal courts and tribunals (ICTs). These institutions were created from the mid1990s to adjudicate criminal responsibility for genocide, crimes against humanity and war crimes. The ICT-centred perspective (that also pervades popular and political discourse) is problematic because it overlooks the larger space in which these courts exist. Global Atrocity Crimes Constellations (JUSTICE360) reverses the ICT-centred paradigm to focus instead on how ICTs are received in domestic contexts and how this reception shapes the space in which they work. Through this change of perspective, the Action constructs an unprecedented panoramic view on the global and cross-systemic impacts of international criminal justice. Under this new paradigm, ICTs are seen as institutions working in larger global atrocity justice constellations. Such constellations are comprised especially of states, state institutions, civil society, and population at large. By conducting case studies in almost 40 countries representative of the larger global relations between states and ICTs, JUSTICE360 will build unique data on how such states perceive and handle international crimes, perpetrators and victims. This data will be built as a collective endeavour by an interdisciplinary research group representative of the countries selected for case studies. Through this unprecedented study of global atrocity justice constellations, JUSTICE360 will contribute highly original knowledge not only on how domestic systems have responded to international crimes, victims and perpetrators; but also how these responses have shaped and reshaped the space in which ICTs work and thus their effectiveness and potential for success.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Law: Criminal law<br>● Sociology: Social movements<br>● Political Science: International studies, strategic studies, human rights, global and transnational governance | ● International Criminal Justice<br>● Comparative Criminal Justice<br>● International Criminal Courts<br>● Atrocity Crimes<br>● Transnational Criminal Justice |

## COST Countries

Main Proposer: DK
Network of Proposers: BA, BE, BG, DE, DK, EE, FI, HR, IL, LT, NL, NO, PL, PT, RO, RS, SE, SI, TR, UK
Main and secondary proposers: 64% ECI / 47% Women / 55% ITC

## International Cooperation

**Near Neighbour Country:** Georgia, Kosovo (under UNSCR 1244/99)
**International Partner Country (IPC):** Australia, Brazil, Canada, Colombia, Ethiopia, Kenya, Republic of Rwanda, Uganda, United States

## Industrial Dimension

**SMEs:** United Kingdom

# CA18229 - Non-Conventional Yeasts for the Production of Bioproducts

## SUMMARY

Economically viable conversion of low-cost renewable feedstock into biofuels and biochemicals is of outmost importance to the establishment of a robust bioeconomy. In this context, the use of microorganisms for the generation of bioproducts from renewable resources offers many advantages. More specifically, yeasts have great potential to generate industrially relevant compounds from natural sources and wastes in a cost-effective and environmentally friendly manner.
Non-conventional yeasts are attracting more and more attention owing to their potential to metabolize complex carbon sources, their alternative metabolic routes and their ability to cope with wide range of process conditions. In this context, this Action calls for a strong investment in capacity building through molecular biology, genetic and physiology studies of the non-conventional yeast-derived bioproducts synthesis, which at the moment is relatively scarce. Improving the knowledge on how non-conventional yeasts strains metabolize unusual substrates (carboxylic acids and biomass-derived sugars) or accumulate unusual products (food additives, enzymes, lipids), are fundamental issues to boost the transition to a more sustainable industry based on renewable raw materials.
This Action brings together an innovative group of researchers with the combination of skills and experience to unravel how non-conventional yeast can be successfully implemented in a biotechnology industry. Besides, the Action will gather European top scientists in the field and thus become an important pillar worldwide. Participants will be given the opportunity to network and collaborate which otherwise will be limited. Furthermore, with the help of the Action, European scientists will set the future standards for research on non-conventional yeasts.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Industrial biotechnology: Bioenergy and biochemicals<br>● Biological sciences: Microbiology | ● non-conventional yeasts<br>● organic residues<br>● biochemicals<br>● biofuels<br>● fermentation |

## COST Countries

Main Proposer: ES
Network of Proposers: BE, CZ, DK, EE, EL, ES, FI, FR, HU, IE, LU, LV, PL, PT, SE, SI, TR, UK
Main and secondary proposers: 38% ECI / 47% Women / 50% ITC

## International Cooperation

**Near Neighbour Country:** Ukraine

## Industrial Dimension

**SMEs:** Belgium
**Large companies:** Finland, Sweden

# CA18230 - Interactive Narrative Design for Complexity Representations

## SUMMARY

The aim of this COST action is to build a network for the interdisciplinary study of the potential interactive digital narrative has as a means to addressing complexity as a societal challenge by representing, experiencing and comprehending complex phenomena and thus also address the issue of "fake news". The challenge therefore is to change IDNs current status from ‘singular achievement’ of a small group of ‘initiated’ practitioners to ‘general practice’ of many media companies. The INDCOR project (Interactive Narrative Design for COmplexity Representations) addresses this challenge by means of a coordinated effort in analysing and generalising design and production methods of stand-out IDN works with a particular focus on the representation of complex issues.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Media and communications: Media and communications, social aspects of information science and surveillance, socio-cultural communication | ● complexity representation<br>● next generation content<br>● interactive narrative design<br>● Fake news |

## COST Countries

Main Proposer: NL
Network of Proposers: AT, CZ, DE, FR, HU, IE, IL, MT, NL, NO, PL, PT, RO, RS, SE, TR
Main and secondary proposers: 73% ECI / 41% Women / 50% ITC

## International Cooperation

**International Partner Country (IPC):** United States

## Industrial Dimension

**SMEs:** Germany, Ireland
**Large companies:** Germany

# CA18231 - Multi3Generation: Multi-task, Multilingual, Multi-modal Language Generation

## SUMMARY

Language generation (LG) is a crucial technology if machines are to communicate with humans seamlessly using human natural language. A great number of different tasks within Natural Language Processing (NLP) are language generation tasks, and being able to effectively perform these tasks implies (1) that machines are equipped with world knowledge that can require multi-modal processing and reasoning (e.g. textual, visual and auditory inputs, or sensory data streams), and (2) the study of strong, novel Machine Learning (ML) methods (e.g. structured prediction, generative models), since virtually all state-of-the-art NLP models are learned from data. Moreover, human languages can differ wildly in their surface realisation (i.e. scripts) as well as their internal structure (i.e. grammar), which suggests that multilinguality is a central goal if machines are to perform seamless language generation. Language generation technologies would greatly benefit both public and private services offered to EU citizens in a multilingual Europe and have strong economic and societal impacts.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Computer and Information Sciences: Machine learning algorithms<br>● Languages and literature: Linguistics: formal, cognitive, functional and computational linguistics<br>● Computer and Information Sciences: Artificial intelligence, intelligent systems, multi agent systems | ● multi-task<br>● multilingual<br>● multi-modal<br>● natural language processing<br>● machine learning |

## COST Countries

Main Proposer: DK
Network of Proposers: BE, BG, CZ, DK, EE, ES, IE, IL, IT, LV, MT, NL, PT, RO, SI, TR, UK
Main and secondary proposers: 52% ECI / 52% Women / 53% ITC

## International Cooperation

**International Partner Country (IPC):** China, South Korea

## Industrial Dimension

**SMEs:** Ireland, Portugal
**Large companies:** Bulgaria, China, South Korea

# CA18232 - Mathematical models for interacting dynamics on networks

## SUMMARY

Many physical, biological, chemical, financial or even social phenomena can be described by dynamical systems. It is quite common that the dynamics arises as a compound effect of the interaction between sub-systems in which case we speak about coupled systems. In this action we shall study such interactions in particular cases from three points of view: the abstract approach to the theory behind these systems, applications of the abstract theory to coupled structures like networks, neighbouring domains divided by permeable membranes, possibly non-homogeneous simplicial complexes, etc., modelling real-life situations within this framework.

The purpose of this Action is to bring together leading groups in Europe working on a range of issues connected with modelling and analyzing mathematical models for dynamical systems on networks. We aim to develop a semigroup approach to various (non-)linear dynamical systems on networks as well as numerical methods based on modern variational methods and applying them to road traffic, biological systems, and further real-life models. We also explore the possibility of estimating solutions and long time behaviour of these systems by collecting basic combinatorial information about underlying networks.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Mathematics: Theoretical aspects of partial differential equations<br>● Mathematics: Numerical analysis<br>● Mathematics: Operator algebras and functional analysis | ● dynamical systems on networks<br>● linear and nonlinear operator semigroups<br>● coupled systems of evolution equations<br>● sprectrum of quantum graphs<br>● numerical analysis of coupled PDEs |

## COST Countries

Main Proposer: SI
Network of Proposers: AT, CH, CZ, DE, FR, HR, HU, IT, NO, PL, PT, RS, SE, SI, TR
Main and secondary proposers: 42% ECI / 42% Women / 53% ITC

## International Cooperation

**Near Neighbour Country:** Morocco

## Industrial Dimension

**SMEs:** Hungary, Serbia
**Large companies:** Germany, Norway, Slovenia

# CA18233 - European Network for Innovative Diagnosis and Treatment of Chronic Neutropenias

## SUMMARY

Chronic neutropenias (CNP) represent a wide spectrum of disorders ranging from mild to life-threatening, acquired or congenital diseases. The pathophysiological mechanisms underlying CNPs are diverse and vary from haemopoietic stem cell and bone marrow microenvironment defects resulting in impaired neutrophil production, to immune disturbances leading to accelerated apoptosis of neutrophil progenitors and/or the circulating mature neutrophils. The prognosis of patients with CNP is related to the underlying pathogenesis, the degree of neutropenia and the propensity for leukaemic transformation. Accurate diagnosis is mandatory for risk stratification and treatment choice.
The principal challenge of the Action is to establish a wide network of researchers with special interest in CNPs and facilitate interactions and collaborations among top-level European experts and young investigators from different scientific areas i.e. Clinical and Laboratory Haematology, Immunology, Genetics, Molecular Biology and Regenerative Medicine. The main aims of the Action are: (a) to promote science, training and education on advanced biochemical, immunological, genetic and molecular biology techniques for the accurate diagnosis and treatment of patients with different types of CNP, early recognition of Myelodysplastic Syndromes/Acute Myeloid Leukaemia evolution and appropriate intervention, (b) to link and further expand existing neutropenia networks for a more multidisciplinary approach of CNP that will result in a better characterization of the underlying diseases and development of individualized and precision medicine therapeutic approaches for selected patients, (c) to organize and expand CNP patient Registries and Biobanks using homogenized protocols in line with the ethical standards of the European Legal Framework and the relevant national regulations.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Clinical medicine: Hematology | ● Chronic Neutropenia<br>● Congenital Neutropenia<br>● Acquired Neutropenia<br>● Leukemic Transformation |

## COST Countries

Main Proposer: EL
Network of Proposers: AL, BE, BG, CY, CZ, DE, DK, EE, EL, FR, IE, IT, MK, NL, PL, PT, RO, RS, SE, SK, TR, UK
Main and secondary proposers: 36% ECI / 55% Women / 55% ITC

## International Cooperation

**Near Neighbour Country:** Ukraine
**International Partner Country (IPC):** United States

## Industrial Dimension

**SMEs:** Greece, United Kingdom

# CA18234 - Computational materials sciences for efficient water splitting with nanocrystals from abundant elements

## SUMMARY

Modern society in Europe needs a source of energy that is generated without harming the environment. The efficiency of renewable energy converting devices such as water splitting with electrochemical cells based on nano-scaled oxides relies on a sensible choice of material components. However, larger scale material and device properties such as interface segregation, grain boundary movement, ionic diffusion through porous materials, and mechanical loading also strongly impact performance, making the theoretical simulation of realistic devices a challenging multi-scale problem. Although our scientific community has developed expertise in the individual modelling fields, much less effort has been devoted to integrating and combining the scales toward a multi-scale approach. The ultimate central challenge will be to generate a multiscale modelling platform that will be used world-wide for conducting state-of-the-art multi-scale property prediction of materials. This Action intends to focus on bridging the knowledge gaps between different theoretical methods and computer codes in order to facilitate the discovery of novel materials for energy conversion. The objectives of this challenge include building an organized network of European scientists working on achieving greater scientific understanding of water splitting and developing approaches for reliable and realistic multi-scale modelling of nano-oxides material architectures. This Action will also develop initiatives to train young scientists, as well as inform computational users throughout the development and production. The longer-term outcome will be the faster achievement of more environmentally friendly energy technologies which has an immeasurably large impact and benefit for society.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Chemical sciences: Theoretical and computational chemistry | ● Density Functional Theory<br>● Water splitting<br>● Computational materials science<br>● Energy conversion |

## COST Countries

Main Proposer: IL
Network of Proposers: AT, BE, BG, CZ, DE, ES, FR, HU, IL, IT, LV, NL, PL, PT, RO, RS, TR, UK
Main and secondary proposers: 10% ECI / 24% Women / 50% ITC

# CA18235 - PROfiling the atmospheric Boundary layer at European scale

## SUMMARY

The atmospheric boundary layer (ABL) is the layer closest to the Earth's surface within which most human activities take place. The vertical profile of atmospheric thermodynamic parameters in the ABL impact weather, air quality, and climate. Surface sensor networks and satellite observations do not provide sufficient information on the high temporal variability and strong vertical gradients experienced in the ABL. Thus, despite its importance, ABL remains the single most important under-sampled part of the atmosphere. This observational gap currently hampers our ability to improve weather forecasts, air quality prediction, and climate model parameterization. However, this gap is mainly due to the lack of S&T networking and coordination. In fact, state-of-the-art ground-based remote sensing instruments able to provide ABL profiles (such as temperature, humidity, wind, aerosol, cloud) are currently deployed at numerous sites in Europe, but the harmonization of data and procedures is missing, limiting the effective use and societal benefits of the existing ABL profiling data. This Action aims to fill this gap, bridging user needs and the S&T expertise residing in industry and academia. This will be achieved through:

- Capacity building of instrument operators to improve the use of state-of-the-art ABL profiling instruments;
- Fostering coordination between operational agencies and academia to tailor measurement networks for well identified applications;
- Enhancing pan-European research coordination to develop new products and tools for data assimilation and long-time series reanalysis;
- Identifying knowledge brokers enabling rapid exchange between academia, operational agencies, industry and end-users to ensure full exploitation for societal benefit.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Earth and related Environmental sciences: Meteorology, atmospheric physics and dynamics<br>● Environmental engineering: Remote sensing | ● boundary layer<br>● thermodynamic and wind profiling<br>● aerosol and cloud profiling |

## COST Countries

Main Proposer: IT
Network of Proposers: AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, HR, HU, IE, IL, IS, IT, PL, PT, RO, RS, SI, SK, UK
Main and secondary proposers: 30% ECI / 39% Women / 50% ITC

## International Cooperation

**Near Neighbour Country:** Armenia, Russian Federation
**International Partner Country (IPC):** China, Japan, South Korea, United Arab Emirates, United States

## Industrial Dimension

**SMEs:** France, Germany
**Large companies:** Germany

# CA18236 - Multi-disciplinary innovation for social change

## SUMMARY

In an increasingly complex and rapidly changing world, traditional disciplinary approaches to the framing and resolution of social and economic problems deliver ever diminishing returns. Discussions abound, therefore, about how best to educate and prepare graduates for the fresh challenges of the 21st century.
Knowledge Alliances between Higher Education Institutions (HEIs) and enterprises which aim to foster innovation, entrepreneurship, creativity, employability, knowledge exchange and/or multidisciplinary teaching and learning are therefore becoming increasingly necessary and relevant. The challenge is to determine what we should teach in the future and how it should be taught. The changing nature of contemporary society highlights that social issues are often highly complex and multifaceted.
The aim of this Action is to demonstrate, through the adoption of Multi-Disciplinary Innovation (MDI) methods, how we can respond to social problems with a design-led approach which has a problem-oriented ethos, supporting positive social change and the development of international public policy discourse. It will be achieved through the establishment of a Pan-European Public Sector Innovation (ePSI) lab. It will prepare students for roles in employment by integrating education programmes into the lab's operations and it will support agencies that have a role in responding to and developing public policy.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Other social sciences: Qualitative methods for the social sciences<br>● Economics and business: Management of Technology and Innovation<br>● Economics and business: Strategy and management<br>● Political Science: Social policies, welfare state<br>● Political Science: Political systems and institutions, governance | ● multi-disciplinary innovation<br>● higher education<br>● social entrepreneurship<br>● co-creation<br>● public policy |

## COST Countries

Main Proposer: EE
Network of Proposers: EE, ES, FI, HR, HU, IT, NL, PT, RO, RS, UK
Main and secondary proposers: 76% ECI / 64% Women / 55% ITC

# CA18237 - European Soil-Biology Data Warehouse for Soil Protection

## SUMMARY

European authorities and stakeholders urgently need reliable tools for monitoring and evaluating the environmental condition of soils within policy assessment in context of numerous EU directives. The focus of the EUdaphobase Action is on creating the structures and procedures necessary for developing an open Europe-wide soil biodiversity data infrastructure. The ultimate goal of EUdaphobase is to establish a pan-European soil-biological data and knowledge warehouse, which can be used for understanding, protecting and sustainably managing soils, their biodiversity and functions. A focal approach is to combine available soil bioita's distributional & trait data with indispensable environmental metadata to gain insight into functional relationships in soils and to predict the state of ecosystem services (ESS). The activities follow an information flow from data providers to users of assessment tools. The data warehouse will host and allow open sharing of data. Intermediate in the project is developing standardized terminologies, data quality-control protocols and ecological traits used as proxies for soil ESS. The Action will curate, harmonize, quality check and standardize existing data according to protocols agreed upon during the Action. Innovative procedures to operationalize assessments of the state of soil concerning biodiversity and ESS will be offered. For this, specific analytical tools will be developed for applied uses of policy, management and regulatory agencies. These tools will recognize and visualize (i.e. on maps) functional biological characteristics of soils related to type, use and management practices as well as determine and delineate ecosystem services, baselines, relationships and set the basis for forecasting changes.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Earth and related Environmental sciences: Terrestrial ecology, land cover change<br>● Earth and related Environmental sciences: Databases, data mining, data curation, computational modelling<br>● Biological sciences: Biodiversity, comparative biology<br>● Biological sciences: Environmental and marine biology<br>● Other agricultural sciences: Sustainable production | ● Soil biodiversity<br>● Data warehouse<br>● Soil assessment<br>● Evaluation tools<br>● Baselines and thresholds |

## COST Countries

Main Proposer: DE
Network of Proposers: BG, CH, CZ, DE, DK, EE, ES, FI, FR, HR, HU, IE, IT, LV, NL, PL, PT, RS, SI, SK, TR, UK
Main and secondary proposers: 30% ECI / 22% Women / 55% ITC

## Industrial Dimension

**SMEs:** Bulgaria, Germany

# CA18238 - European transdisciplinary networking platform for marine biotechnology

## SUMMARY

Marine organisms produce a vast diversity of primary and secondary metabolites with antibacterial, antifungal, anticancer, analgesic, anti-inflammatory, nutritional, photoprotective activity or other beneficial properties. The exploitation of marine bioresources and the valorisation of their natural products are encompassed by the burgeoning field of marine biotechnology, which is a high priority for the successful implementation of Blue Growth and Bioeconomy strategies within the EU. Marine biotechnology contributes to achieving 14 out of 17 UN sustainable development goals.
While the demand for alternative sources of food, drugs and chemicals is increasing, the sea and its vast biota remain largely underexplored and unexploited. Despite the short history marine organisms delivered close to 30.000 natural products, many more awaiting to be discovered. This implies a strong need for enhanced transdisciplinary collaborations within scientific fields and multisectoral collaboration where citizens, researchers, policy makers, industrial and societal actors can work together.
The overall aim of Ocean4Biotech is to bring together experts in the field of marine biotechnology, to provide a platform for sharing experience, knowledge and technologies, and to design a roadmap for a more efficient and rapid development of marine biotechnology research in Europe and beyond. To best of our knowledge, such a large, diverse and geographically dispersed network of experts in marine biotechnology does not exist. Since marine biotechnology is still in its infancy, we believe this is the optimal timing to create this efficient, operational, motivated, inclusive and sustainable network with a serious and ambitious commitment for proactive dissemination and science communication activities.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Biological sciences: Biodiversity, comparative biology<br>● Industrial biotechnology: Pharmaceutical applications<br>● Industrial biotechnology: Ethics of biotechnology<br>● Industrial biotechnology: Other bioproducts (products manufactured using biological material as feedstock)<br>● Chemical sciences: Analytical chemistry | ● Marine biotechnology<br>● Marine biodiscovery<br>● Ethics and legal aspects of bioprospecting and biotechnology<br>● Blue growth<br>● Marine biodiversity and chemodiversity |

## COST Countries

Main Proposer: SI
Network of Proposers: CY, DE, EE, EL, ES, FR, HR, IE, IS, IT, LT, LV, ME, MT, NO, PT, RS, SI
Main and secondary proposers: 38% ECI / 72% Women / 56% ITC

## International Cooperation

**Near Neighbour Country:** Tunisia

## Industrial Dimension

**SMEs:** Cyprus, Estonia, France, Malta

# CA18239 - Conservation of freshwater mussels: a pan-European approach

## SUMMARY

Freshwater bivalves are a large, diverse and important group, since they can dominate in some habitats in terms of quantity and biomass. At the same time they are among the World's most imperilled taxonomic groups.
Studies on freshwater bivalves' ecology and conservation provide the ground for inter- and trans-disciplinary research and innovation, integrating knowledge into practice of freshwater protection. Freshwater bivalves provide crucial ecosystem functions and services such as water purification or nutrient cycling, thus can be used as nature-based tools for improving ecosystem functions and services as well as indicators of ecosystem health.
Through development of international cooperation of scientists from various fields within and outside biological sciences, with participation of administration and NGO sector, we want to draw the full picture of freshwater mussels biodiversity crisis in Europe and develop scientific basis to halt the loss of biodiversity and ecosystem services mediated by these organisms.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Biological sciences: Conservation biology, ecology, genetics | ● freshwater<br>● conservation biology<br>● freshwater mussels<br>● ecosystem services<br>● biodiversity |

## COST Countries

Main Proposer: PL
Network of Proposers: AT, BG, CZ, DE, ES, FI, HR, IT, LT, LU, LV, ME, NO, PL, PT, RO, RS, SE, SI, TR, UK
Main and secondary proposers: 52% ECI / 48% Women / 62% ITC

## International Cooperation

**Near Neighbour Country:** Kosovo (under UNSCR 1244/99), Russian Federation, Ukraine
**International Partner Country (IPC):** United States

## Industrial Dimension

**SMEs:** Finland

# CA18240 - ADHEsion GPCR Network: Research and Implementation Set the path for future Exploration

## SUMMARY

This Action aims to promote, stimulate and translate research on Adhesion-G protein-coupled receptors (aGPCRs) 'from bench to bedside' in Europe. Adhesion-GPCRs are a class of structurally and functionally highly intriguing cell surface receptors with essential functions in health and disease, which have remained understudied for a long time and thus, display a vastly unexploited pharmacological potential. Only the past years have seen an increase in efforts to unravel the mysteries of this enigmatic family of GPCRs. Scientists as well as clinicians from different fields with divergent expertise and interests begin to recognise the relevance of aGPCRs and get involved into aspects of aGPCR research. As a consequence, the community is young, only just forming and not well organised. The Action will assemble this community to increase the awareness of fellow scientist and the interaction between them so that their separate efforts and methods can be complemented. Especially Early Career Investigators (ECIs) who represent a great proportion of the community but most of the time lack the means to interact, will be encouraged and integrated to ensure the development of novel ideas and the long-term progress of the field. To achieve this goal the Action will establish a network of dedicated non-tenured ECIs, clinicians and representatives of pharmaceutical companies, provide communication platforms and opportunities to interact. This will lead to a more focused approach to tackle the most pressing scientific questions in the field and will help bridging the gap between fundamental research and therapeutic innovation.

## SCIENTIFIC SCOPE

| Areas of Expertise | Keywords |
|---|---|
| ● Biological sciences: Biochemistry<br>● Biological sciences: Signal transduction<br>● Biological sciences: Structural biology (crystallography, NMR, EM)<br>● Basic medicine: Databases, data mining, data curation, computational modelling<br>● Basic medicine: Pharmacology, pharmacogenomics, drug discovery and design, drug therapy | ● Adhesion GPCRs<br>● signal transduction<br>● animal models<br>● translational science<br>● bioinformatics and structural studies |

## COST Countries

Main Proposer: DE
Network of Proposers: CH, CZ, DE, DK, ES, HR, IT, ME, NL, PL, PT, RO, RS, SE, TR, UK
Main and secondary proposers: 64% ECI / 58% Women / 50% ITC

## International Cooperation

**International Partner Country (IPC):** Japan, Taiwan, United States

## Industrial Dimension

**Large companies:** Japan, Switzerland, United Kingdom