EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

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LIST OF ACTIONS

CA17101 - EUROPEAN NETWORK ON PSEUDOMYXOMA PERITONEI

SUMMARY

Pseudomyxoma peritonei (PMP) is a rare abdominal cancer originating in the appendix, causing extensive tumour growth in the peritoneal cavity. Although rare, PMP still dramatically affects the lives of almost 4,000 new persons in Europe every year, posing a huge financial and logistical challenge for health-care providers. If complete surgical removal cannot be accomplished at expert centres, prognosis is very poor, and no other effective treatments are currently available.
Because it is a rare disease, research into the pathogenesis, classification, molecular composition and treatment of PMP has been fragmented and challenging. The EuroPMP Action aims to sculpt a new, collaborative landscape within PMP research through the creation of a strong and capable network of experts from many fields, including surgeons, pathologists, oncologists, radiologists, molecular biologists, bioinformaticians and allied health care professionals. The Action will work towards a cure for PMP through the facilitation of collaborative research projects, the sharing and dissemination of knowledge, and the improvement of standards of care for the thousands of patients afflicted with PMP.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Clinical medicine: Oncology ● Clinical medicine: Surgery	● Pseudomyxoma peritonei ● Rare cancer ● Surgery ● Hyperthermic intraperitoneal chemotherapy ● Oncology

COST COUNTRIES

Main Proposer: NO
Network of Proposers: BE, FR, IT, LV, NO, PL, RO, TR, UK
Main and secondary proposers: 60% ECI / 40% Women / 44% ITC

CA17102 - POLICE STOPS

SUMMARY

Stop and search' (S&S) is a worldwide practice carried out by the police which enables police officers to stop a person, prevent him or her from pursuing his or her passage (Bowling & Philips, 2007; Bowling & Weber, 2011) and if necessary, proceed with a search. Two types of S&S approaches can be distinguished: the reactive approach, where the police decide to stop someone as a response to suspicious behaviour or circumstances in order to find proof of criminal activity, and the proactive approach, where the goal is to deter future offences and maintain public order (Murray, 2014). The latter fits well within the current 'culture of control' which aims at spotting risky individuals as soon as possible (van der Leun & van der Woude, 2011). In various European countries S&S has been a source of considerable debate. It us argued that S&S principally targets certain population groups and more specifically ethnic minority groups (ethnic profiling) and youngsters (Delsol & Shiner, 2006; Sollund, 2006). Consequently, S&S is a rather controversial practice, which can cause a negative effect on the public and can affect the legitimacy of the police (Bowling & Phillips, 2007; van der Leun et al., 2014; Quinton, 2013). Despite the heavy debates that exist around S&S in Europe, so far no cross-country scientific research has been carried out on the practice. Therefore, the main aim of the Action is to exchange and deepen our knowledge and understanding of police stops in Europe.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Law: Criminal law ● Sociology: Deviance studies ● Political Science: Public administration, public policy	● police stop and search ● police accountability ● police governance ● police legitimacy ● comparative criminal justice

COST COUNTRIES

Main Proposer: BE
Network of Proposers: BA, BE, DK, ES, FI, FR, HR, IE, IT, MK, NL, NO, PL, PT, SI, UK
Main and secondary proposers: 55% ECI / 58% Women / 38% ITC

CA17103 - DELIVERY OF RNA THERAPY

SUMMARY

Antisense oligonucleotides (ASOs) are a new class of drugs that, through very specific targeting, could correct genetic defects for rare inherited diseases, modulate autoimmune or neurodegenerative diseases or target tumors or viruses. However, only a few of such drugs are currently in the market and they have been less effective as expected. The main hurdle for their efficacy seems to be their deficient delivery to target tissues but, while translational research on ASO is surging, very little is known about the mechanisms by which ASOs are taken up by different tissues and specific cells.
Regarding delivery, the ASO field is fragmented, with researchers in academia and industry working in isolation on specific diseases, generally focusing on therapeutic effects in target tissues. The main aim of the Delivery of Antisense RNA Therapeutics (DART) Action is to use networking and capacity building in the field of nucleic acid therapy delivery to allow RNA-targeting nucleic acid drugs to reach their full potential and become a mainstream therapeutic option.
DART will act through 3 working groups with research objectives (delivery strategies, model systems, safety and toxicology) and 2 capacity building groups (training and stakeholder communication) with the objective of achieving consensus on protocols and assessment of ASO delivery and toxicology and training new researchers within a cooperative research framework. DART COST network contains 70+ participants from 21 EU countries plus several international partners, including academics, industrial partners, patient representatives and clinicians and it is open to other interested stakeholders.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Medical biotechnology: Medical biotechnology, other ● Biological sciences: RNA synthesis, processing, modification and degradation ● Basic medicine: Pharmacology, pharmacogenomics, drug discovery and design, drug therapy	● Oligonucleotides ● Delivery ● RNA ● Antisense ● Therapeutics

COST COUNTRIES

Main Proposer: ES
Network of Proposers: BE, CY, CZ, DE, DK, EE, EL, ES, FR, HU, IL, IT, MT, NL, NO, PT, RO, RS, SE, SI, UK
Main and secondary proposers: 29% ECI / 53% Women / 43% ITC

INTERNATIONAL COOPERATION

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

INDUSTRIAL DIMENSION

SMEs: Hungary, Norway, United Kingdom
Large companies: Denmark, Germany, Spain, Sweden, United Kingdom

CA17104 - NEW DIAGNOSTIC AND THERAPEUTIC TOOLS AGAINST MULTIDRUG RESISTANT TUMORS

SUMMARY

This Action will build the first multidisciplinary network, including academic laboratories, research institutes, small and medium enterprises (SMEs), with a wide range of excellent and non overlapping expertise, aiming at improving at the same timethe diagnosis and therapy of multidrug resistant (MDR) solid tumors. Until now, there are fragmented knowledge on biomarkers and therapeutic tools used against MDR tumors; there are not algorithms predictive/diagnostic of MDR tumors ex ante; all the past therapies against MDR tumors failed. The key challenge of this Action is to fill these gaps, by producing a comprehensive, open and user-friendly platform of knowledge on MDR tumors, identifying new diagnostic redictive biomarkers, producing new and safe compounds applicable to personalized treatments of MDR tumors. Up to 70% of solid tumors are resistant at the diagnosis: this means poor life quality and poor prognosis for patients, high management costs for the European healthcare systems. This Action is working to improve diagnosis and treatment of patients with MDR tumors and reduce the costs for their management. Second, by creating fruitful collaborations between basic and industrial research, we will give impulse to the creation of new Start-up and SMEs in Europe. Finally, the Action aims at raising the level of European research on MDR, reducing the disparity in the research quality between EU countries and ITC, providing the necessary training for European early stage researchers (ESRs) to grow as future independent research leaders, regardless of location, age or gender.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Biological sciences: Biochemistry ● Chemical sciences: Molecular chemistry ● Medical biotechnology: Databases, data mining, data curation, computational modelling ● Basic medicine: Pharmacology, pharmacogenomics, drug discovery and design, drug therapy	● Multidrug resistant tumor biomarkers ● Therapeutic tools against multidrug resistant tumors ● Computer-assisted drug design, computational biology ● Nanosystems for drug delivery ● Safety pharmacology

COST COUNTRIES

Main Proposer: IT
Network of Proposers: AT, BG, DE, ES, FR, HU, IT, PL, PT, RS, UK
Main and secondary proposers: 16% ECI / 58% Women / 45% ITC

INDUSTRIAL DIMENSION

SMEs: Austria, United Kingdom

CA17105 - A PAN-EUROPEAN NETWORK FOR MARINE RENEWABLE ENERGY WITH A FOCUS ON WAVE ENERGY

SUMMARY

The pressure of climate change and the growing energy demand has increased interest in marine renewable energy resources, such as wave energy which can be harvested through Wave Energy Converter (WECs) Arrays. However, the wave energy industry is currently at a significant juncture in its development, facing a number of challenges which require that research re-focusses onto a techno-economic perspective, where the economics considers the full life-cycle costs of the technology. It also requires development of WECs suitable for niche markets, because in Europe there are inequalities regarding wave energy resources, wave energy companies, national programmes and investments. As a result, in Europe there are leading and non-leading countries in wave energy technology. The sector also needs to increase confidence of potential investors by reducing (non-)technological risks. This can be achieved through an interdisciplinary approach by involving engineers, economists, environmental scientists, legislation and policy experts etc.
Consequently, the wave energy sector needs to receive the necessary attention compared to other more advanced and commercial ocean energy technologies (e.g. tidal and offshore wind). The formation of the first pan-European Network on an interdisciplinary marine wave energy approach will contribute to large-scale WEC Array deployment by dealing with the current bottlenecks. The WECANet Action aims at a collaborative approach, as it provides a strong networking platform that also creates the space for dialogue between all stakeholders in wave energy. WECANet's main target is the equal research, collaboration and funding opportunities for all researchers and professionals, regardless of age, gender and location.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Civil engineering: Fluid mechanics, hydraulic-, turbo-, and piston engines ● Environmental engineering: Sustainable engineering ● Environmental engineering: Ocean engineering, sea vessels ● Environmental engineering: Renewable and alternative energy sources (theoretical aspects) ● Electrical engineering, electronic engineering, Information engineering: Energy aspects of electrical and electronic engineering ● Environmental engineering: Maritime and hydraulic engineering	● Marine renewable energy ● wave energy ● ocean waves ● renewable energy resources ● climate change

COST COUNTRIES

Main Proposer: BE
Network of Proposers: BE, BG, CY, DE, DK, EE, EL, ES, FR, HR, IE, IT, LT, MT, NL, NO, PL, PT, RO, RS, SE, SI, TR, UK
Main and secondary proposers: 51% ECI / 29% Women / 50% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): United States
International Organisations (IO): France, Netherlands, Sweden

INDUSTRIAL DIMENSION

SMEs: Belgium, Bulgaria, Cyprus, Denmark, Malta, Slovenia, United Kingdom
Large companies: Belgium, Poland, United State

CA17106 - MOBILISING DATA, POLICIES AND EXPERTS IN SCIENTIFIC COLLECTIONS

SUMMARY

European Natural Science Collections host approximately 1.5 billion biological and geological collection objects, which represent about 80% of the known recent and past bio- and geodiversity on earth. The scope of this COST Action is to foster a cooperative network in Europe to support excellent research activities, and facilitate knowledge and technology transfer. This will prepare the ground for a future pan-European Distributed Research Infrastructure.
Technical innovations like Next-Generation Sequencing and large-scale digitisation, including 3D imaging, increase the volume of research data rapidly. Strategies and protocols for sustainable data storage and availability have to be adjusted accordingly.
Current changes in legislation (e.g. (EU) Nr. 511/2014) increase the need for traceability of genetic resources and for practical tools for documentation of specimens in collections. Technical solutions to provide scientific collections as digital data have been developed, but need to scale up and evolve from isolated project-based solutions in individual institutes to pan-European industry solutions targeted to rapidly changing societal needs, embedded in long-term sustainable structures. The COST Action MOBILISE will:
Facilitate the transfer of knowledge and technology between researchers, domain specialists, data aggregators and industry by networking activities, events, workshops and trainings (“Open to the world”)
Promote the development of innovative techniques and coordinated prioritisation to increase efficiency of large scale collection digitisation and mobilisation (“Open innovation”)
Raise awareness about the need in science and society that, apart from physical access, sustainable data access infrastructures are an integral component of biodiversity research (“Open access”)

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Biological sciences: Biodiversity, comparative biology ● Electrical engineering, electronic engineering, Information engineering: Databases, data mining, data curation, computational modelling ● Earth and related Environmental sciences: Databases, data mining, data curation, computational modelling	● Biodiversity ● Natural Science ● collections ● informatics ● e-infrastructure

COST COUNTRIES

Main Proposer: UK
Network of Proposers: AT, BE, BG, CZ, DE, DK, EL, ES, FR, HU, IT, NL, PL, PT, SE, SK, UK
Main and secondary proposers: 32% ECI / 28% Women / 35% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): United States
International Organisations (IO): Denmark

INDUSTRIAL DIMENSION

SMEs: Bulgaria

CA17107 - EUROPEAN NETWORK TO CONNECT RESEARCH AND INNOVATION EFFORTS ON ADVANCED SMART TEXTILES

SUMMARY

CONTEXT Action objective is to create a network of European researchers and main relevant stakeholders in order to develop joint ideas and initiatives which can be turned into advanced smart textile products.
A smart textile material is a “functional textile material, which interacts actively with its environment, i.e. it responds or adapts to changes in the environment”. They find applications in all sectors and especially in health and medical; automotive and aeronautic; personal protective equipment; sports and wearables and buildings and interior design.
Although several R&D projects have been carried out during last years in that field, most of the prototypes obtained haven’t reached the market due to many reasons such as: product reliability, production economies, missing a demonstrated use case and/or value proposition.
In that sense, what CONTEXT aims is to ignite research and innovation projects (with high TRLs output expected) by joining under the same network and through Working Groups, people with the right competencies and experiences from the academic and research fields, the industrial sector and from clusters.
CONTEXT will promote the development of a joint research roadmap for smart textiles, will foster the transfer of knowledge among different actors in order to find suitable applications in various multidisciplinary fields, will act as stakeholder platform to identify needs and requirements from different points of view in a bottom-up approach and will promote networking activities in order to attract talent, build more and better research projects with more consciousness on the objectives of creating exploitable results.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Materials engineering: Biomaterials, metals, ceramics, polymers, composites ● Electrical engineering, electronic engineering, Information engineering: Sensors and sensor systems ● Nano-technology: Nano-materials and nano-structures	● "smart textile" ● "technical textile" ● "innovative textile" ● "advanced textile" ● "functional textile"

COST COUNTRIES

Main Proposer: ES
Network of Proposers: BE, DE, EL, ES, FR, LT, PT, RO, SE, SI
Main and secondary proposers: 64% ECI / 41% Women / 40% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Japan

INDUSTRIAL DIMENSION

SMEs: Belgium, France, Portugal, Slovenia, Spain
Large companies: Belgium, Spain

CA17108 - AEDES INVASIVE MOQUITOES

SUMMARY

In tropical areas, *Aedes* mosquitos cause >100m symptomatic cases/year of viral diseases, such as dengue, yellow fever, chikungunya and Zika, and thousands of deaths. With increasing trade and travel, several *Aedes* species have been introduced into Europe and are now spreading spectacularly rapidly becoming a widespread significant public health risk which needs to be effectively addressed, as testified by recent cases of autochthonous chikungunya and dengue transmission.
Transboundary risks require effective surveillance, risk assessment, and vector control, with efficient dissemination of information and guidance to stakeholders, requiring collaboration between the normative, research, public health, commercial and civil society sectors at international, national and local scales. This is not happening. Despite the range of institutional guidelines available, current mitigation activities are largely uncoordinated, and implemented piecemeal nationally or locally, reducing cost-effectiveness and impact.
AIM Action will build a gender, age and geographically balanced network from critical stakeholder sectors. The Action will assess and review current surveillance, control and analysis practices, develop best practice guidelines and protocols ensuring consistency across Europe. It will facilitate development of new tools and identify priority research topics. Recommendations to standardise and streamline entomological and spatial analysis will promote enhanced risk assessments needed for reliable targeting and planning. Critical elements maximising impact will be involvement of civil society and citizen scientists, as well as collaborative dissemination ensuring that technical outputs and guidelines are customised at different geographical scales for each operational stakeholder group. Lessons learned will be transferrable to other emerging vector borne diseases worldwide,

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Health Sciences: Infectious diseases ● Health Sciences: Parasitology ● Health Sciences: Public and environmental health ● Biological sciences: Zoology, including animal behaviour ● Health Sciences: Databases, data mining, data curation, computational modelling	● Medical Entomology ● Invasive Mosquitoes ● Mosquito vector monitoring and surveillance ● Mosquito vector control ● Risk of Arbovirus (dengue, chikungunya, zika) transmission

COST COUNTRIES

Main Proposer: IT
Network of Proposers: AT, BA, BE, BG, CH, CY, CZ, DE, EL, ES, FR, HR, HU, IL, IT, ME, MK, MT, NL, PT, RO, RS, SI, SK, TR, UK
Main and secondary proposers: 52% ECI / 50% Women / 58% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Albania, Armenia, Republic of Moldova, Tunisia
International Partner Country (IPC): Kosovo (under UNSCR 1244/99) , United States
International Organisations (IO): Albania, Israel

INDUSTRIAL DIMENSION

SMEs: Belgium, Greece, Italy, Spain, United Kingdom

CA17109 - UNDERSTANDING AND MODELING COMPOUND CLIMATE AND WEATHER EVENTS

SUMMARY

Hazards such as floods, wildfires, heatwaves and droughts usually result from a combination of interacting physical processes that occur across multiple spatial and temporal scales. The combination of physical processes leading to an impact is referred to as a *Compound Event*. Examples of high-impact Compound Events include (i) droughts, heatwaves, wildfire and/or air pollution and their interactions involving a complex interplay between temperature, humidity and precipitation; (ii) extreme precipitation, river discharge and storm surge interactions, combining coastal storm processes with fluvial/pluvial and ocean dynamics; (iii) storms including clustering of major events leading to spatial and/or temporal dependence.
Climate change alters many of these processes and their interaction, making projections of future hazards based on single driver analyses difficult. Impact studies considering only one driver usually fail to assess the extent of the impacts of Compound Events. It is thus not clear whether climate models can capture major changes in risk associated with Compound Events. Existing modelling approaches used to assess risk may therefore lead to serious mal-adaptation.
DAMOCLES will (a) identify key process and variable combinations underpinning Compound Events; (b) describe the available statistical methods for modelling dependence in time, space, and between multiple variables; (c) identify data requirements needed to document, understand, and simulate Compound Events, and (d) propose an analysis framework to improve the assessment of Compound Events. DAMOCLES brings together climate scientists, impact modellers, statisticians, and stakeholders to better understand, describe and project Compound Events, and foresees a major breakthrough in future risk assessments.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Earth and related Environmental sciences: Climatology and climate change ● Earth and related Environmental sciences: Hydrology, water resources ● Earth and related Environmental sciences: Applied mathematics, statistics, non computational modelling	● climate change ● multivariate climate extremes ● multivariate extreme value statistics

COST COUNTRIES

Main Proposer: CH
Network of Proposers: AT, BE, CH, CZ, DE, EE, FR, HU, IT, NL, NO, PL, PT, TR, UK
Main and secondary proposers: 56% ECI / 41% Women / 40% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Australia, United States

CA17110 - STANDARDIZING OUTPUT-BASED SURVEILLANCE TO CONTROL NON-REGULATED DISEASES OF CATTLE IN THE EU

SUMMARY

Several countries have implemented programmes to control non-regulated cattle diseases in the European Union, impairing the comparison of the confidence of freedom for cattle originating from different countries. In order to facilitate safe trade, there is a need to support the development of transparent methods that enable comparison of outputs of surveillance, control or eradication programmes.
In this Action, Innovative methods for Standardizing OUtput-based surveillance to control Non-regulated Diseases in the EU (SOUND-control), work will be conducted in five workgroups to develop a generic and joint understanding about the requirements and characteristics needed for proof of freedom and subsequent costs-effectiveness, regardless of heterogeneities in the underlying data. SOUND-control will coordinate, stimulate and assist with initiatives to explore and implement a widely adaptable, output-based framework to substantiate confidence of freedom from infection and assess epidemiological and economic equivalence of control efforts.
The workgroups will describe current control programmes, provide requirements for an output-based framework, evaluate data availability and assess available and innovative methods for objective and standardised output-based comparison.
With the new Animal Health Law, it is anticipated that disease control will progressively change towards output-based approaches. SOUND-control will support the Animal Health Law by providing requirements and demands for a single general regulatory framework, adaptable to multiple diseases, which aims to enhance the safety of trade. Although the primary focus of this Action concerns non-regulated diseases, the outcomes of this work will be applicable to regulated diseases in the EU, which are currently underpinned by input-based standards.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Veterinary science: Veterinary medicine (miscellaneous) ● Veterinary science: Databases, data mining, data curation, computational modelling ● Animal and dairy science: Applied mathematics, statistics, non-computational modelling	● proof of freedom ● control programmes ● non-regulated diseases ● cattle ● output-based

COST COUNTRIES

Main Proposer: NL
Network of Proposers: AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, HU, IE, LT, LV, NL, NO, PL, PT, SE, SI, SK, UK
Main and secondary proposers: 33% ECI / 40% Women / 41% ITC

INDUSTRIAL DIMENSION

Large companies: Netherlands

CA17111 - DATA INTEGRATION TO MAXIMISE THE POWER OF OMICS FOR GRAPEVINE IMPROVEMENT

SUMMARY

INTEGRAPE is a proposed COST Action that will bring together all stakeholders in the grapevine research community (academic, industry, policymakers and consumers) in an open, international, and representative network to develop minimal data standards and good practices in order to integrate data repositories and improve interoperability between datasets. The ultimate objective is to harness and exploit all available data to achieve better management practices and more cost-effective breeding for improved genotypes. Grapevine is grown worldwide to produce fresh berries, processed fruits and wine. The major challenge is to control berry composition and maintain yields while limiting the use of pesticides, water and other inputs, thus adapting the industry to climate change while achieving environmental and economic sustainability. Grapevine research focuses on interactions between the genotype, phenotype and environment, and information must be integrated from heterogeneous datasets including ampelography, environmental biology, genetics, genomics, epigenomics, transcriptomics, proteomics and metabolomics. The data are currently dispersed and difficult to access, hindering meta-analysis (the re-use of grapevine data beyond the original experiments). No institution working in the field of grapevine research has yet taken on the mission to improve data integration and interoperability at the global level, although the grapevine research community is continuously producing large datasets. The concepts described in the INTEGRAPE proposal will support stakeholders by developing innovative strategies to integrate grapevine data from existing resources and new experiments in a cost-effective manner, as well as making interoperable grapevine datasets and tools available in a secure and standardised format.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Agriculture, Forestry, and Fisheries: Databases, data mining, data curation, computational modelling ● Biological sciences: Systems biology ● Biological sciences: Genomics, comparative genomics, functional genomics ● Biological sciences: Transcriptomics ● Biological sciences: Metabolomics	● Phenotype ● Genomics ● Metabolomics ● Systems Biology ● Grape

COST COUNTRIES

Main Proposer: IT
Network of Proposers: AT, BG, CY, DE, EL, ES, FR, HU, IL, IT, PT, RO, RS, SE, SI
Main and secondary proposers: 24% ECI / 29% Women / 47% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Armenia, Georgia, Republic of Moldova, Ukraine
International Partner Country (IPC): Argentina, Australia, Canada, Chile, South Africa, United States
International Organisations (IO): United Kingdom, United States

INDUSTRIAL DIMENSION

Large companies: United States

CA17112 - PROSPECTIVE EUROPEAN DRUG-INDUCED LIVER INJURY NETWORK

SUMMARY

There is a clear unmet need for a deeper understanding of idiosyncratic drug-induced liver injury (DILI), a multi-layered challenge that spans the life of the drug from pre-clinical development to clinical trials and post-marketing.

The objectives of the PRO-EURO-DILI-NET Cost Action are to create a unique, co-operative, interdisciplinary European-based DILI network of stakeholders to co-ordinate efforts in DILI, to facilitate bi-directional exchange of discovered knowledge and generated hypotheses among different disciplines, and to promote clinically impactful knowledge discovery and its translation into clinical practice.

This Action will: (a) harmonize efforts for in-depth DILI phenotyping and bio-sample repository and coordinate pre-funded database/repository studies to aggregate a large number of DILI cases in a standardized manner (WG1);

(b) Establish a strategy for development, validation and performance of DILI novel biomarkers and explore multifactorial DILI risk modifiers in clinical data sets using novel approaches for future precision medicine (WG2);

(c) Facilitate clinically impactful knowledge discovery by introducing biological variations and the complexity (i.e., multi-cellular/multi-organ systems) into toxicological experiments to assess hepatotoxicity to guide future drug safety testing (WG3).

(d) Define criteria and establish endpoints to measure efficacy on novel interventions in DILI (WG4);

(e) Draft policy recommendations about near-patient testing tools.

The network will promote and coordinate a highly translational and innovative research program in Europe and beyond with the ultimate goal to pre-empt and prevent DILI, develop innovative therapeutic approaches that could improve clinical outcomes and enhance public awareness, while developing a forum for knowledge exchange and training of young European researches.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Clinical medicine: Gastroenterology and hepatology	● Idiosyncratic Drug-induced liver injury ● Risk stratification ● Liver injury Diagnostics ● Preclinical toxicology ● End-points

COST COUNTRIES

Main Proposer: ES
Network of Proposers: BE, CH, CZ, DE, EE, ES, FR, HR, IL, IS, IT, LT, PT, SE, TR, UK
Main and secondary proposers: 24% ECI / 35% Women / 38% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Chile, China, India, United States, Uruguay

INDUSTRIAL DIMENSION

SMEs: France, Germany, Sweden, United Kingdom
Large companies: United States

CA17113 - TRAPPED IONS: PROGRESS IN CLASSICAL AND QUANTUM APPLICATIONS

SUMMARY

In recent years, ion traps have developed from a topic of fundamental research into a versatile tool for a wide range of research topics and quantum technologies. With the ability to isolate the ions from their environment, atomic and molecular ions can now be studied in unparalleled detail. This capability has led to important scientific progress in fundamental research, such as the measurement of cold collisions between trapped ions and cold atomic or molecular particles, the study of the interaction of light with trapped ions, or mass measurements with ultra-high precision. Beyond purely fundamental research, ion traps have become indispensable for many applications and technologies: Trapped ions are currently the most promising implementation of quantum information processing devices where many essential building blocks have been developed in recent years; magnetic field sensing with high sensitivity has been demonstrated and some of today's best atomic clocks are based on atomic ions. These applications have the potential to revolutionise many aspects of our daily life. The aim of this Action is to enhance the current applications of trapped ions by supporting Europe-wide collaborations and knowledge exchange, and to allow these technologies to be taken a step further towards their commercialisation. A large number of experimental and theoretical groups from about 20 European countries as well as the first international and socioeconomic partners have joined in for this COST Action ensuring that all necessary scientific and technological topics will be covered.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Physical Sciences: Atomic, molecular and chemical physics ● Physical Sciences: Ultra-cold atoms and molecules ● Chemical sciences: Chemical reactions: mechanisms, dynamics, kinetics and catalytic reactions ● Computer and Information Sciences: Quantum information processing	● ion trap, quantum information, cold molecules ● metrology and fundamental constants ● ultra-high resolution spectroscopy ● hybrid quantum systems, ion-neutral interactions

COST COUNTRIES

Main Proposer: SE
Network of Proposers: AT, BG, CH, CZ, DE, DK, ES, FI, FR, IE, IL, IT, MT, NL, PL, PT, RO, SE, SK, UK
Main and secondary proposers: 14% ECI / 14% Women / 35% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Argentina, Australia, China, India, Japan, United States
International Organisations (IO): India

INDUSTRIAL DIMENSION

SMEs: Germany, United Kingdom

CA17114 - TRANSDISCIPLINARY SOLUTIONS TO CROSS SECTORAL DISADVANTAGE IN YOUTH

SUMMARY

This COST Action aims to understand the interrelationship of disadvantages that young people across Europe face in the process of entering the adulthood and how policies can mitigate this negative spill-over effect. Specifically, we are interested in sets of circumstances and factors that prevent young people from:
- finding a decent job;
- starting a family when they want;
- making their voice heard in the policy processs.

The scientific challenge that the proposed Action addresses is to build awareness and mutual usability of research findings across research disciplines and societal contexts. This understanding is especially important due to the fact that life domains are interrelated and disadvantages in one domain may cause negative spillover effect in another. Based on transdisciplinary knowledge on disadvantages it is possible to propose relevant policy interventions to tackle such situations and eventually to reduce risk of social exclusion. Focus is on cross-sectoral youth policy and investment approach in social policy that represent two efforts in finding novel solutions to contemporary concerns. Yet the problem is that both are taken for granted as good solutions for youth without further in depth investigation. The Action sees its societal challenge in understanding how the approach to social investment and relevant policy interventions can be applied to young people without bringing about increase in inequality.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty ● Political Science: Social policies, welfare state ● Sociology: Family studies ● Political Science: Political sociology	● disadvantage ● youth employment ● citizenship ● social investment ● family formation

COST COUNTRIES

Main Proposer: EE
Network of Proposers: BE, BG, DE, DK, EE, EL, ES, FI, FR, HR, HU, IT, LV, PL, PT, SE, UK
Main and secondary proposers: 58% ECI / 67% Women / 41% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Russian Federation

CA17115 - EUROPEAN NETWORK FOR ADVANCING ELECTROMAGNETIC HYPERTHERMIC MEDICAL TECHNOLOGIES

SUMMARY

Electromagnetic (EM) hyperthermic technologies hold great potential in the treatment of diseases, especially for cancers that are resistant to standard regimens. These technologies modify tissue temperature: hyperthermia heats the diseased tissue to make it susceptible to treatments, and ablation heats the tissue until it is destroyed. Hyperthermia is particularly effective in treatment of cervical and breast cancer, head and neck cancers, sarcoma in adults, and germ cell tumours in children; while radiofrequency and microwave ablation offer promise for treating liver, kidney, and lung cancers.
Overall, these techniques have shown significant potential and there is substantial opportunity to solidify their use clinically and to apply them to a wider range of medical conditions. However, underpinning the development of these techniques is the need for accurate knowledge of the dielectric and thermal properties of tissues, which provide the foundation for these technologies and de-risk the technical challenge before commercialization. Furthermore, contributing to the stagnant market of EM hyperthermic medical devices is the fact that, often researchers working on the development of medical technologies are not fully aware of, and not trained to address, the clinical and commercialisation challenges facing novel medical devices.
To address these challenges, the MyWAVE Action takes a holistic approach by bringing together key players in the field of dielectric spectroscopy, translational research, and medical professionals. Conjoining these varied communities into one collaborative network is critical to advance the design, development, and commercialisation of EM hyperthermic technologies, so that they can reach patients faster and improve treatment outcomes.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Medical engineering: Medical engineering and technology ● Physical Sciences: Biophysics	● Electromagnetic therapeutics ● Hyperthermic therapies ● Dielectric spectroscopy ● Medical device development ● Translational research

COST COUNTRIES

Main Proposer: MT
Network of Proposers: AT, BE, BG, CZ, DE, EL, FR, HR, IE, IL, IT, MT, NL, PT, RO, TR, UK
Main and secondary proposers: 28% ECI / 34% Women / 41% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): United States

INDUSTRIAL DIMENSION

SMEs: Turkey
Large companies: Austria, Belgium, France

CA17116 - INTERNATIONAL NETWORK FOR TRANSLATING RESEARCH ON PERINATAL DERIVATIVES INTO THERAPEUTIC APPROACHES

SUMMARY

Stem cells hold great promise in the evolving field of regenerative medicine, and there are many sources from which they can be obtained. Over the past decade different perinatal (Pn) tissues have been shown to harbor a vast array of stem cells with therapeutic potential. This relatively new field of research is rapidly expanding, and its relevance is supported by the recent emergence of clinical trials in Europe and worldwide.
There are, however, many issues that need to be addressed to ensure optimal research outcome and clinical experimentation data interpretation. These issues range from the need to arrive to a consensus on nomenclature and optimal techniques for isolation, characterization, and cryopreservation, to more advanced issues such as collating data and expertise towards an understanding and exploitation of the mechanisms and therapeutic actions of perinatal derivatives. There is also the necessity to identify gaps in knowledge and how collaborative research can address them.
Therefore, this COST Action will unite a currently fragmented a critical mass of academic, clinical, and industry expertise to enhance both basic understanding and translational potential of perinatal derivatives.
The Action will develop a platform for the exchange of concepts, methods, and training of young researchers.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Medical biotechnology: Gene therapy, stem cell therapy, regenerative medicine for medical biotechnology	● regenerative medicine ● translational medicine ● stem cells ● human term placenta-derived cells ● amniotic fluid

COST COUNTRIES

Main Proposer: IT
Network of Proposers: AT, BE, BG, CH, ES, FI, FR, IE, IL, IT, LU, PL, PT, RO, SE, SI, UK
Main and secondary proposers: 24% ECI / 36% Women / 35% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Ukraine
International Partner Country (IPC): China, India, Iran, Japan, Saudi Arabia, United States

INDUSTRIAL DIMENSION

SMEs: Belgium, Finland, Israel, Italy, Luxembourg, Slovenia, Ukraine

CA17117 - TOWARDS AN INTERNATIONAL NETWORK FOR EVIDENCE-BASED RESEARCH IN CLINICAL HEALTH RESEARCH

SUMMARY

Redundant clinical research has been published due to the absent use of systematic reviews (SR) when new research is planned. It is unethical, limits the available funding for important and relevant research, and diminishes the public's trust in research. In order to raise awareness of this inappropriate practice, the EVBRES-consortium define "Evidence-Based Research" (EBR) as the use of prior research in a systematic and transparent way to inform a new study so that it answers the questions that matter in a valid, efficient and accessible manner. New studies should be informed by SRs as to the most appropriate design and methods. EVBRES will establish an international European-based network aiming to raise awareness of the need to use of SRs when planning new studies and when placing new results in context. PhD students and senior clinical researchers' needs to learn how to find, critically appraise and update a SR, answering the same clinical question the new study plans to answer. Closely related to this is the involvement and awareness of related stakeholders, including patients, ethics committees, funding agencies and scientific journals, to require SRs before approval of new clinical studies. By acknowledging and implementing an EBR approach these stakeholders can improve their own practice and can increase the incentives for clinical researchers to use an EBR approach. Further, EVBRES will catalyse more efficient updating and production of SRs, and monitor the implementation of an EBR approach both in clinical research and among related stakeholders.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Health Sciences: Health services, health care research ● Health Sciences: Medical ethics ● Basic medicine: Ethics of medicine	● Research Waste ● Systematic Reviews ● Evidence-based Research

COST COUNTRIES

Main Proposer: NO
Network of Proposers: BA, DK, ES, HR, IT, NO, SE, TR, UK
Main and secondary proposers: 47% ECI / 53% Women / 33% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Lebanon, Palestinian Authority
International Partner Country (IPC): Australia, Canada, India, United States

CA17118 - IDENTIFYING BIOMARKERS THROUGH TRANSLATIONAL RESEARCH FOR PREVENTION AND STRATIFICATION OF COLORECTAL CANCER

SUMMARY

This Action aims at using innovative translational research to identify colorectal cancer biomarkers for personalized medicine that will improve screening, early detection and disease follow-up, and attain better tumor profiling, state-of-the-art functional characterization of genetic variants and new therapy approaches. It will be organized in the following working groups:
- *Disease risk profiling applied to the optimization of current screening programs*. Germline predisposition variants, environmental factors, epigenetics, microbiome and metabolomics biomarkers will be used to better select patients eligible to be screened.
- *Non-invasive biomarkers for early detection and disease follow-up*. Circulating tumor cells, circulating tumor nucleic acids, tumor-educated platelets and exosomes will be explored in order to identify new tools for early detection and monitoring of the disease.
- *Tumor profiling to identify biomarkers with prognostics and predictive value for patient stratification*. Intra-tumor heterogeneity will be considered and tumor mutational profiling, epigenetics, single-cell genomics sequencing used as instruments to better inform tumor and precursor lesion characterization.
- *Functional genomics and new therapies*. Candidate genetic variants will be validated and routes to novel therapies for this disease will be conceived. To do so, cutting-edge approaches such as CRISPR-Cas9 and immunotherapy will be applied.
So far, the network will bring together participants from 18 countries and will facilitate the research interaction and collaboration between more than 70 research groups and enterprises interested in the described objectives. Diverse expertise includes clinical practice, germline and somatic genetics, epigenetics, bioinformatics, cell and molecular biology, microbiology, immunology, biostatistics, epidemiology, health economy and the industrial sector.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Biological sciences: Genomics, comparative genomics, functional genomics ● Basic medicine: Genetic epidemiology ● Clinical medicine: Gastroenterology and hepatology ● Basic medicine: Databases, data mining, data curation, computational modelling ● Medical biotechnology: Metabolomics for medical biotechnology	● Colorectal cancer ● Risk profiling ● Biomarker ● Tumor profiling ● Therapy

COST COUNTRIES

Main Proposer: ES
Network of Proposers: AT, CZ, DE, ES, FI, FR, HR, IL, IT, MT, NL, NO, PT, RS, SE, TR, UK
Main and secondary proposers: 18% ECI / 44% Women / 35% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): United States
International Organisations (IO): France, Spain

INDUSTRIAL DIMENSION

SMEs: Austria, France, Italy, Malta, Netherlands, Spain, Turkey, United Kingdom

CA17119 - EU FOREIGN POLICY FACING NEW REALITIES: PERCEPTIONS, CONTESTATION, COMMUNICATION AND RELATIONS

SUMMARY

EU foreign policy experiences unprecedented turbulences that put key achievements of the European integration project at risk. Externally, the EU's global environment is characterized by the reconfiguration of power, growing divisions, and the contestation of established liberal order. Simultaneously, the EU's neighbourhood is increasingly conflict prone and instable, triggering migration flows and the proliferation of illiberal values. 'Domestically', the EU faces severe internal conflicts, marked by austerity, Brexit, growing nationalism, populism and new protectionism.

The Action ENTER aims to improve our understanding of central properties of EU foreign policy in light of these new realities, focusing on perceptions, communication, contestation. In today's world, the success of EU foreign policy depends on the EU's ability to instantaneously respond to stimuli and pressures originating from both the international and the intra-EU levels. Linking internal and external policy dynamics, the Action has a strong potential for breakthrough scientific developments. A central objective of the action is to derive theoretically informed, policy relevant advice for the EU's strategic approach to its international relations, its communication, and for dealing with the interaction between internal and external challenges. It will generate a step change in how the new realities of EU foreign policy are theorized and addressed. This will be achieved by establishing multi-national, multidisciplinary collaborations at the nexus of policy fields and research communities that have not sufficiently communicated in the past. Substantive efforts to bridge between the "academic-practitioner divide" are made, to synthesize knowledge, facilitate shared understandings, and inform EU foreign policy.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Political Science: European studies ● Political Science: International studies, strategic studies, human rights, global and transnational governance	● European Union ● Foreign Policy ● Perceptions ● International Relations ● International Order

COST COUNTRIES

Main Proposer: DE
Network of Proposers: BE, CZ, DE, DK, ES, IE, IL, IT, LT, LV, PL, PT, SI, SK, TR, UK

INTERNATIONAL COOPERATION

Near Neighbour Country: Ukraine
International Partner Country (IPC): New Zealand

CA17120 - CHEMOBRIONICS

SUMMARY

Self-organizing precipitation processes, such as chemical gardens forming biomimetic micro- and nano-tubular forms, have the potential to drastically enhance future materials design, as well as allowing us to develop new methodologies to explore, quantify and understand non-equilibrium chemical systems, and might even shed light on the conditions for the origin of life. The physics and chemistry of these phenomena due to the assembly of material architectures under a flux of ions, and their exploitation in applications, has recently been termed chemobrionics. Advances in chemobrionics require a combination of expertise in physics, chemistry, mathematical modelling, biology and engineering, as well as in nonlinear and materials sciences, giving rise to a new synergistic disipline. Progress is currently limited due to the lack of an efficient combination of the talents of researchers from diverse fields, but Europe is uniquely placed to develop a unique and world leading activity. The aim of this CBrio Cost action is to link research groups throughout Europe to stimulate new, innovative and high-impact interdisciplinary scientific research on chemobrionics. Our objective is to build bridges between the various communities to allow understanding and controlling physical, chemical, and biological properties of self-organized precipitation processes. This integrated fundamental knowledge will be shared with research groups focusing on specific applications to boost new technological developments, as well as with groups involved in the popularization of science and those at the interface between science and the arts.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Physical Sciences: Non-linear physics	● chemical garden ● complex system ● origin of life ● nonlinear physics ● self-organization

COST COUNTRIES

Main Proposer: ES
Network of Proposers: BE, DE, DK, EL, ES, FR, HU, IT, PT, SI, SK, UK
Main and secondary proposers: 30% ECI / 24% Women / 33% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Mexico, United States

INDUSTRIAL DIMENSION

SMEs: France
Large companies: Germany

CA17121 - CORRELATED MULTIMODAL IMAGING IN LIFE SCIENCES

SUMMARY

The network aims at fueling urgently needed collaborations in the field of correlated multimodal imaging (CMI), promoting and disseminating its benefits through showcase pipelines, and paving the way for its technological advancement and implementation as a versatile tool in biological and preclinical research. CMI combines two or more imaging modalities to gather information about the same specimen. It creates a composite view of the sample with multidimensional information about its macro-, meso- and microscopic structure, dynamics, function and chemical composition. Since no single imaging technique can reveal all these details, CMI is the only way to understand biomedical processes and diseases mechanistically and holistically. CMI relies on the joint multidisciplinary expertise from biologists, physicists, chemists, clinicians and computer scientists, and depends on coordinated activities and knowledge transfer between academia and industry, and instrument developers and users. Due to its inherently multidisciplinary and cross-functional nature, the proposed network is indispensable for the success of CMI. Nevertheless, there is currently no European network in the field. Existing scattered efforts mainly focus on correlated light and electron microscopy or (pre)clinical hybrid imaging. This Action will consolidate their efforts, establish commonly-accepted protocols and quality standards for existing CMI approaches, identify and showcase novel CMI pipelines, bridge the gap between preclinical and biological imaging, and foster correlation software through networking, workshops and open databases. The network will raise awareness for CMI, train researchers in multimodal approaches, and work towards a scientific mindset that is enthusiastic about interdisciplinary imaging approaches in life sciences.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Biological sciences: Morphology and functional imaging of cells ● Biological sciences: Biophysics ● Biological sciences: Molecular biology and interactions ● Biological sciences: Development, developmental genetics, pattern formation and embryology in animals ● Physical Sciences: Biophysics	● Correlated Imaging ● Preclinical and Bioimaging ● Image Analysis ● CLEM ● Hybrid Imaging

COST COUNTRIES

Main Proposer: AT
Network of Proposers: AT, CH, CY, CZ, DE, EE, ES, FI, FR, HU, IE, IT, LT, LU, NL, NO, PL, PT, RO, RS, SE, SI, TR, UK
Main and secondary proposers: 30% ECI / 45% Women / 50% ITC

INTERNATIONAL COOPERATION

International Organisations (IO): Germany

INDUSTRIAL DIMENSION

SMEs: Austria, France, Germany, Poland, United Kingdom
Large companies: Germany

CA17122 - INCREASING UNDERSTANDING OF ALIEN SPECIES THROUGH CITIZEN SCIENCE

SUMMARY

There is no sign of saturation in accumulation of alien species (AS) introductions worldwide, additionally the rate of spread for some species has also been shown to be increasing. However, the challenges of gathering information on AS are recognized. Recent developments in citizen science (CS) provide an opportunity to improve data flow and knowledge on AS while ensuring effective and high quality societal engagement with the issue of IAS. Advances in technology, particularly on-line recording and smartphone apps, along with the development of social media, have revolutionized CS and increased connectivity while new and innovative analysis techniques are emerging to ensure appropriate management, visualization, interpretation and use and sharing of the data .
The Action will address multidisciplinary research questions in relation to developing and implementing CS, advancing scientific understanding of AS dynamics while informing decision-making specifically implementation of technical requirements of relevant legislation such as the EU Regulation 1143/2014 on IAS, support of the EU biodiversity goals and embedding science within society. The Action will explore and document approaches to establishing a European-wide CS AS network. It will embrace relevant innovations for data gathering and reporting to support the implementation of monitoring and surveillance measures, while ensuring benefits for society and citizens, through an AS CS European network. The Action will, therefore, increase levels of participation and quality of engagement with current CS initiatives, ensuring and evaluating educational value, and improve the value outcomes for potential users including citizens, scientists, alien species managers, policy-makers, local authorities, industry and other stakeholders.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Biological sciences: Conservation biology, ecology, genetics ● Earth and related Environmental sciences: Databases, data mining, data curation, computational modelling ● Biological sciences: Ecology ● Biological sciences: Bioinformatics ● Educational sciences: Education: training, pedagogy, didactics	● Invasive alien species ● Biodiversity monitoring ● Public Participation ● Scientific communication ● Visualisation and analysis

COST COUNTRIES

Main Proposer: UK
Network of Proposers: AT, BE, CY, CZ, DE, EL, ES, FR, IE, IT, LU, PT, RO, SK, UK
Main and secondary proposers: 15% ECI / 46% Women / 40% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Chile, New Zealand
International Organisations (IO): France

CA17123 - ULTRAFAST OPTO-MAGNETO-ELECTRONICS FOR NON-DISSIPATIVE INFORMATION TECHNOLOGY

SUMMARY

The explosive growth of digital data use and storage leads to an enormous rise in energy consumption, which is rapidly becoming unsustainable. Ultrafast opto-magneto-electronics is an emerging field that combines the ideas and concepts of opto-magnetism and spin transport with photonics for ultrafast low-dissipative manipulation and storage of information. Both light and spin currents can control magnetic order, but mechanisms as well as corresponding time scales and energy dissipation differ. The MAGNETOFON Action aims at the best of both worlds, combining short time scales and non-dissipative propagation of light with nanoscale selectivity and strong interactions of spin currents. The ultimate goal is to create and implement non-volatile, low-dissipative, and ultrafast functional elements for data technology.
The research objectives of the MAGNETOFON Action will be achieved by combining the existing expertise of the scientific communities dealing with ultrafast magnetism, spintronics, magnonics, photonics and advanced spectroscopy, and by sharing the new knowledge arising from the exchange between them. This Action will result in a considerable leap in the quality and effectiveness of research in Europe, by bridging the existing gaps between these areas.
The ambition of the Action is to initiate a breakthrough in the field of low-dissipative opto-magnetism and femtosecond spintronics with the help of a joint scientific program bringing together presently nearly non-overlapping scientific communities. By training a new generation of scientists at the interface of the involved disciplines, further development of the field will be ensured together with a successful translation of the scientific breakthroughs into innovative technological solutions.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Physical Sciences: Nanophysics: nanoelectronics, nanophotonics, nanomagnetism or classify ● Nano-technology: Magnetism for nano-technology applications ● Nano-technology: Spintronics for nano-technology applications	● Opto-magneto-electronics ● All-optical magnetization switching ● Ultrafast magneto-transport

COST COUNTRIES

Main Proposer: NL
Network of Proposers: AT, BE, CH, CZ, DE, DK, ES, FR, HU, IT, NL, PL, PT, RO, SE, SI, SK, TR, UK
Main and secondary proposers: 30% ECI / 18% Women / 42% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Belarus, Russian Federation, Ukraine

INDUSTRIAL DIMENSION

SMEs: Portugal
Large companies: Belarus, United Kingdom

CA17124 - DIGITAL FORENSICS: EVIDENCE ANALYSIS VIA INTELLIGENT SYSTEMS AND PRACTICES

SUMMARY

Digital Forensics is a part of the Criminalistics Sciences which deals with digital evidence recovery and exploitation in the solution of criminal cases through the application of scientific principles. There are several and increasingly sophisticated methods for collecting digital evidence. As a matter of fact, the evolution of technology continuously pushes such kind of methods. Rough evidence must however be used to elicit hypotheses concerning events, actions and facts (or sequences of them) with the goal to obtain evidence to present in court. Evidence analysis involves examining fragmented incomplete knowledge, and reconstructing and aggregating complex scenarios involving time, uncertainty, causality, and alternative possibilities. No established methodology exists today for digital evidence analysis. The Scientific Investigation experts usually proceed by means of their experience and intuition. The Challenge of the proposed COST Action consists in creating a Network for exploring the potential of the application of Artificial Intelligence and Automated Reasoning in the Digital Forensics field, and creating synergies between these fields. Specifically, the challenge is to address the Evidence Analysis phase, where evidence about possible crimes and crimes perpetrators collected from various electronic devices (by means of specialized software, and according to specific regulations) must be exploited so as to reconstruct possible events, event sequences and scenarios related to a crime. Evidence Analysis results are then made available to law enforcement, investigators, public prosecutors, lawyers and judges: it is therefore crucial that the adopted techniques guarantee reliability and verifiability, and that their result can be explained to the human actors.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Computer and Information Sciences: Theoretical computer science and formal methods	● Digital Forensics ● Automated Reasoning ● Artificial Intelligence ● Computational Logic

COST COUNTRIES

Main Proposer: ES
Network of Proposers: AT, BG, CY, CZ, DE, ES, FR, HU, IE, IT, NL, PL, PT, RO, RS, SE, SK, TR, UK
Main and secondary proposers: 33% ECI / 40% Women / 53% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Georgia, Russian Federation

INDUSTRIAL DIMENSION

SMEs: Italy
Large companies: Spain

CA17125 - PUBLIC VALUE CAPTURE OF INCREASING PROPERTY VALUES

SUMMARY

The shortage of financial resources is a Europe-wide problem. Coming out of the economic and financial crisis, countries as well as municipalities have decreasing means to fulfil all their public commitments. For this reason, the main aim of this COST Action is the development of a common framework for value capturing and the provision of innovative tools for public value capture based on comparative analysis to optimize the allocation of development costs and benefits as well as to disencumber the public budget. While a considerable database exists, it nonetheless shows big gaps in the data and in some cases disagreement between sources of data. Because of the different terms of unearned increments and classifications of value capture it is not possible to compare different studies of several countries. This gives strength to the idea of approaching the European Union for a study based on a network of specialist country representatives to get a common terminology and classification. A very important result will be the implementation of a permanent Europe-wide network of land management experts to interchange the knowledge concerning public value capture and its dissemination to policy-makers and the general public. This network allows the improvement of existing tools by detailed discussions with experts of countries that have similar tools. On the other hand, thought-provoking impulses can be given by countries that have a totally different understanding of value capture. Participants from more than 20 countries are willing to work for the socio-economic breakthrough of public value capture.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Social and economic geography: Spatial development, land use, regional planning	● land management ● public value capture ● planning ● policy implementation ● public finance sustainability

COST COUNTRIES

Main Proposer: DE
Network of Proposers: DE, EE, FR, LT, LV, SE, UK
Main and secondary proposers: 40% ECI / 50% Women / 43% ITC

CA17126 - TOWARDS UNDERSTADING AND MODELLING INTENSE ELECTRONIC EXCITATION

SUMMARY

Electronic excitation reaching high energy density is central in many different applications, from materials processing to medical treatments. It emerges when intense radiation arising from sources such as lasers, swift ions, or high-flux X-ray or electron pulses, interact with matter. In general, only partial aspects related to the excitation produced by this type of sources are treated. The lack of a systematic methodology to face the simulation of the underlying phenomena makes it essential to involve scientists from different fields, theoreticians, simulators, and experimentalists. A successful methodology will require smart strategies to make existing solutions, which are appropriate within restricted scopes, work together within a multiscale formalism. The proposed COST Action will tackle this challenge through the following approach
1.Identify and propose experiments to validate simulations as an optimal way to generate progress in the field of intense electronic excitation.
2. Identify the specific role of different radiation sources on electronic excitation-induced effects. This will allow us to connect distinct communities that explore similar effects in parallel.
3. Identify strategies to connect computational methods on different timescales. This will be a central point of the project, since most methods operate reasonably well within their scope of applicability but their coupling to other approaches is not straightforward.
4. Transfer the newly acquired knowledge to industry and societal applications by taking advantage of COST networking tools.
This Action aims at creating a network of research groups with expertise in the different parts of the challenge tackled and a common research objective.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Physical Sciences: Electronic properties of materials and transport (theory) ● Physical Sciences: Gas and plasma physics (theory) ● Physical Sciences: Atomic, molecular and chemical physics ● Materials engineering: Transport properties of condensed matter for materials engineering applications ● Materials engineering: Thermal properties of condensed matter for materials engineering applications	● Intense electronic excitation ● Intense irradiation sources ● Multiscale modelling

COST COUNTRIES

Main Proposer: ES
Network of Proposers: BG, CZ, DE, EL, ES, FI, FR, HU, IE, IT, NL, PL, PT, RS, SI, UK
Main and secondary proposers: 18% ECI / 23% Women / 44% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Russian Federation

INDUSTRIAL DIMENSION

SMEs: Germany, Portugal, Spain

CA17127 - BUILDING ON SCIENTIFIC LITERACY IN EVOLUTION TOWARDS SCIENTIFICALLY RESPONSIBLE EUROPEANS

SUMMARY

As citizens, we are confronted with a deluge of information and misinformation from the internet and the mass media. Scientific literacy, i.e. the ability to critically evaluate, apply and understand scientific knowledge and how it is produced, is therefore vital for responsible citizenship. It is a prerequisite for generating a knowledge-based society and for allowing citizens to make informed decisions. One of the most important fields of science is evolution, the foundation of modern biology. Evolutionary biology has great societal relevance and its findings have far-reaching implications for how we respond to climate change, drug resistance, issues of food security and controversies in modern medicine. However, it is frequently misunderstood or even rejected outright. This makes scientific literacy in evolution an ideal model to research approaches to improve the state of European scientific literacy. This Action will, for the first time, leverage the strengths of diverse stakeholders (evolutionary biologists, education researchers, educators, museum professionals and the media) to generate and analyse approaches used to improve public scientific literacy. Bridging differences in culture and education systems including participants from a wide range of countries and backgrounds is a source of innovation in itself. The expected result is to identify targeted strategies to raise levels of scientific literacy in Europe, thereby maximising Europe's innovation potential. The Action will contribute to a culture of responsible, research and innovation (RRI) and will result in a more scientifically literate European citizenship, instrumental to implementing Europe 2020's smart, sustainable and inclusive goals.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Biological sciences: Systems evolution, biological adaptation, phylogenetics, systematics ● Educational sciences: Education: training, pedagogy, didactics ● Media and communications: Museums and exhibitions ● Media and communications: Media and communications, social aspects of information science and surveillance, socio-cultural communication	● science literacy ● evolution ● science education ● outreach ● responsible science

COST COUNTRIES

Main Proposer: PL
Network of Proposers: BE, BG, CH, CY, CZ, DE, EE, EL, ES, FR, HR, HU, IL, IT, NL, PL, PT, RO, RS, SI, SK, TR, UK
Main and secondary proposers: 43% ECI / 57% Women / 57% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): United States

INDUSTRIAL DIMENSION

SMEs: Israel, United Kingdom

CA17128 - ESTABLISHMENT OF A PAN-EUROPEAN NETWORK ON THE SUSTAINABLE VALORIZATION OF LIGNIN

SUMMARY

Lignin has the potential to become the future aromatic raw material for the industry, but is largely underexploited due to lack of (information on) industrial availability, sustainable applications, environmental footprint. Economic considerations nonetheless make its valorization mandatory for the viability of future biorefinery operations. To facilitate the transition of a complex, highly underexploited side stream to a major biorefinery product and industrial commodity raw material, a European network is established to join and coordinate the many efforts underway in academia and provide industrial stakeholders including SMEs relevant and up-to-date information on lignin covering topics such as:
1.WikiLignin: Database comprising lignin sources, availability, properties and repository of state-of-the-art analytical methodologies and turn key methods for industry
2.Bio- and chemocatalytic conversion technologies including technology readiness level (TRL) assesment
3.Industrial application requirements (market demand) versus lignin properties (supply)
4.Development of value chains for lignin valorization
5.Technical and full sustainability aspects, LCA, market potential and implementation.
From different disciplines this LignoCOST ACTION brings together industrial stakeholders, SMEs, academia and institutes from pan-European regions active in the pulp&paper, agri&food, biorefinery, chemicals and plastics, infra and building, fuels and energy, and consumer productsindustries.
The main objective of LignoCOST is to establish a sound network covering the entire value chain in which relevant information can be produced with a focus on lignin valorization towards sustainable industrial applications. Only when working together this information can be gathered to cover the technical, non-technical, environmental and socio-economic implications of the most promising lignin value chains.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Agricultural biotechnology: Other bioproducts (products manufactured using biological material as feedstock) ● Chemical sciences: Green chemistry research ● Chemical engineering: Chemical engineering: processes and products (others) ● Biological sciences: Plant biology, Botany ● Materials engineering: Biomaterials, metals, ceramics, polymers, composites	● Pan-European network ● Lignin valorization ● Standardization ● Sustainable lignin value chain ● WikiLignin

COST COUNTRIES

Main Proposer: NL
Network of Proposers: AT, BE, CH, DE, DK, EL, ES, FI, FR, HR, HU, IT, LV, NL, NO, PL, PT, RO, SE, SI, SK, UK
Main and secondary proposers: 23% ECI / 31% Women / 36% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Canada

INDUSTRIAL DIMENSION

SMEs: Finland, Germany, Greece, Netherlands
Large companies: Austria, Belgium, Finland, Greece, Norway, Sweden

CA17129 - CATALYSING TRANSCRIPTOMICS RESEARCH IN CARDIOVASCULAR DISEASE

SUMMARY

This Action aims to create an interdisciplinary network to accelerate the understanding of transcriptomics in cardiovascular disease (CVD) and further the translation of experimental data into usable applications to improve personalized medicine in this field. CVD remains the leading cause of death worldwide and, despite continuous advances, better diagnostic and prognostic tools, as well as therapy, are needed. The human transcriptome, which is the set of all RNA produced in a cell, is much more complex than previously thought and the lack of dialogue between researchers and industrials and consensus on guidelines to generate data make it harder to compare and reproduce results. Currently, there is no network to address the complexity of transcriptomics in CVD, offering an advantage to this Action. It aims to provide opportunities for collaboration between stakeholders from complementary backgrounds, allowing the functions of different RNAs and their interactions to be more rapidly deciphered in the cardiovascular context for translation into the clinic. This Action will generate grant proposals to advance understanding of the transcriptome's role in CVD and to translate findings into clinical applications, thus fostering personalized medicine and meeting a current public health challenge. CardioRNA will refine guidelines for transcriptomics investigations in CVD to increase and reproducibility of results, facilitating clinical product development. It will disseminate knowledge and allow capacity-building through different types of meetings, prioritizing students and early career investigators. Thus, this Action will advance studies on cardiovascular transcriptomics, generate innovative projects and consolidate the leadership of European research groups in the field.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Biological sciences: Transcriptomics ● Biological sciences: Epigenetics and gene regulation ● Medical biotechnology: Transcriptomics for medical biotechnology ● Clinical medicine: Cardiovascular diseases	● cardiovascular disease ● transcriptomics ● best practices and guidelines ● translational research ● personalized medicine

COST COUNTRIES

Main Proposer: LU
Network of Proposers: CH, CZ, DE, DK, ES, FR, HU, IT, LU, NL, PL, TR, UK
Main and secondary proposers: 14% ECI / 43% Women / 38% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Australia

INDUSTRIAL DIMENSION

SMEs: France, Hungary
Large companies: Italy

CA17130 - ENHANCING PSYCHIATRIC GENETIC COUNSELLING, TESTING, AND TRAINING IN EUROPE

SUMMARY

The Action *Enhancing Psychiatric Genetic Counselling, Testing, and Training in Europe* (EnGagE) aims to strengthen pan-European research into the newly emerging disciplines Psychiatric Genetic Counselling (PsyGC) and Psychiatric Genetic Testing (PsyGT); and to develop a framework facilitating the implementation of both into clinical care.
Psychiatric disorders are common, with estimated life-time risks of around 1-3 % for schizophrenia, bipolar disorder, and major depressive disorder. The last decade has witnessed major advances in psychiatric genetics; At the time of writing, no form of valid, high certainty diagnostic PsyGT is routinely available. However, in view of recent genetic findings (particularly the identification of pathogenic Copy Number Variants that are associated with high risks for schizophrenia), major efforts to establish such testing are now underway. The publication of the major advances in psychiatric genetics have received wide media coverage and awareness grows among patients and their family members of the role of genetics in psychiatric disorders. An increased demand for high-quality information on psychiatric genetics; likely provided in the form of PsyGC is anticipated.
EnGagE is a knowledge-sharing and expertise-enhancing network comprising preclinical and clinical researchers from the fields of neuroscience, psychiatric genetics, psychosocial research, and ethics; clinicians from the fields of psychiatry, psychology, and medical genetics; genetic counsellors, and scientists from diagnostic genetic testing laboratories from Europe and beyond. EnGagE will establish a framework for PsyGC and PsyGT; develop standardised guidelines, practice recommendations and research protocols; and share scientific knowledge and data and provide standardized training in PsyGC and PsyGT.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Clinical medicine: Psychiatric disorders ● Biological sciences: Genomics, comparative genomics, functional genomics	● Psychiatric Genetics ● Psychiatrig Genetic Testing ● Psychiatric Genetic Counselling

COST COUNTRIES

Main Proposer: DE
Network of Proposers: AT, BA, BE, BG, CZ, DE, DK, EE, ES, FI, HR, HU, IE, IT, MK, NL, NO, PL, PT, RO, SE, UK
Main and secondary proposers: 43% ECI / 51% Women / 45% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Albania
International Partner Country (IPC): Australia, Canada

INDUSTRIAL DIMENSION

SMEs: Belgium

CA17131 - THE SOIL SCIENCE & ARCHAEO-GEOPHYSICS ALLIANCE: GOING BEYOND PROSPECTION

SUMMARY

Archaeological sites can be discovered and recorded in a high-resolution and non-invasive manner using geophysical methods. These measure the spatial variation of a range of physical properties of the soil which may be representative proxies of the subsurface archaeology. Less-invasive and cost-effective field procedures have become top-priority to mitigate the destructive effects on our cultural heritage from intensified land use, climate change and the current conflict panorama.
At a time when many organisations are investing in advanced geophysical equipment, a major problem is that our ability to fully interpret the information available from geophysical datasets is still very limited. This deficiency prevents geophysical survey moving beyond basic prospection and becoming a significant tool for answering nuanced questions about archaeology and their host landscapes. This limitation arises from an incomplete understanding of the relationship between soil properties and geophysical measurements. Bridging this gap requires multi-disciplinary teams, testing novel methods, plus scholarly discussion to collate the outcomes of projects on this topic. Overcoming these challenges is a prerequisite for maximising the cost-effectiveness of geophysical methods, realising the expected benefits of technological investment and allowing broader utility of geophysical methods in the cultural heritage sector. SAGA will build an international network of geophysicists, archaeologists, soil scientists and other experts to develop our capability to interpret geophysical data and promote research collaborations. Our vision is that after four years, SAGA will have created an environment within which emerging field procedures, enhanced data interpretation and a broader understanding of integrated geophysical methods can flourish.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● History and Archeology: Archaeology, archaeometry, landscape archaeology ● Earth and related Environmental sciences: Thermodynamics, geophysics ● Earth and related Environmental sciences: Sedimentology, soil science, palaeontology, earth evolution	● archaeological prospection ● near-surface geophysics ● soil analysis for archaeological investigations ● geoarchaeology

COST COUNTRIES

Main Proposer: NO
Network of Proposers: BE, BG, CY, CZ, DE, EL, ES, FI, FR, HU, IE, LT, LV, MT, NL, NO, PT, RO, SE, SK, TR, UK
Main and secondary proposers: 47% ECI / 44% Women / 50% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Tunisia, Ukraine
International Partner Country (IPC): Australia

INDUSTRIAL DIMENSION

SMEs: United Kingdom

CA17132 - EUROPEAN NETWORK FOR ARGUMENTATION AND PUBLIC POLICY ANALYSIS

SUMMARY

Providing and criticising reasons is indispensable to achieve sound public policy that commands the support of both citizens and stakeholders. This need is now widely acknowledged in the recent literature and key EU documents, which highlight the perils of populist discourse and policies. The European network for Argumentation and Public PoLicY analysis (APPLY) improves the way European citizens understand, evaluate and contribute to public decision-making on such matters of common concern as climate change or energy policies. Addressing this need from a multidisciplinary perspective on argumentation, the APPLY Action identifies gaps between the citizens', policymakers' and scholarly experts' argumentation, and explores ways of treating them. This occurs through coordinated research activities in three main areas: a) empirical: an argumentative analysis of EU policy documents and procedures, the media and citizens' discourse results in an annotated pan-European database on institutional and citizens' argumentation; b) normative: a critical study of concepts and methods to measure the quality of arguments in public policies results in a unified theoretical and methodological framework to analyse and evaluate public policy argument; c) prescriptive: the development of tools by which policymakers, citizens and various stakeholders engage in well-informed argumentative discussions. APPLY coordinates such networking activities as workshops, conferences, training schools and short-term scientific missions among European and international scholars and stakeholders. This provides insights into the understanding, evaluation and production of public policy arguments. APPLY thus benefits European policymakers and citizens, but also consolidates a currently dispersed argumentation scholarship across Europe and beyond.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Philosophy, Ethics and Religion: Epistemology, logic, philosophy of science and technology ● Media and communications: Media and communications, social aspects of information science and surveillance, socio-cultural communication ● Psychology: Social psychology ● Law: Legal theory, legal systems, constitutions, comparative law ● Languages and literature: Use of language: form, pragmatics, sociolinguistics, discourse analysis, lexicography, terminology	● argumentation ● public policy ● argumentation design ● practical reasoning ● discourse analysis

COST COUNTRIES

Main Proposer: PT
Network of Proposers: CH, ES, FR, IT, MT, NL, PL, PT, RO, SE, TR, UK
Main and secondary proposers: 45% ECI / 36% Women / 42% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Canada, United States

CA17133 - IMPLEMENTING NATURE BASED SOLUTIONS FOR CREATING A RESOURCEFUL CIRCULAR CITY

SUMMARY

Resource depletion, climate change and degradation of ecosystems are challenges faced by cities worldwide and will increase if cities do not adapt. In order to tackle those challenges, it is necessary to transform our cities into sustainable systems using a holistic approach. One element in achieving this transition is the implementation of nature-based solutions (NBS). They can provide a range of ecosystem services beneficial for the urban biosphere such as regulation of micro-climates, flood prevention, water treatment, food provision and more. However, most NBS are implemented serving only one single purpose. Adopting the concept of circular economy by combining different types of services and returning resources to the city, would increase the benefits gained for urban areas. This COST Action aims to establish a network testing the hypothesis that: *"A circular flow system that implements NBS for managing nutrients and resources within the urban biosphere will lead to a resilient, sustainable and healthy urban environment*". To tackle this challenge five working groups (WGs) give their contribution on closing the resource cycle within the urban biosphere. The five WGs will deal with the built environment, urban water, resource recovery, urban farming and transformation tools connecting the WGs and the socio-economic impact. The network of researches, companies and stakeholders spread over Europe and near neighboring countries brings together a large diversity of disciplines and is therefore well equipped taking holistic approach on embedding NBS within circular economy

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Environmental engineering: Water management and technology ● Other agricultural sciences: Sustainable production ● Other engineering and technologies: Sustainability for other engineering and technologies	● Circular economy ● Nature-based solutions ● Resources recovery ● Urban farming ● Water

COST COUNTRIES

Main Proposer: AT
Network of Proposers: AT, BA, BE, BG, CH, EL, ES, FI, FR, HR, IL, IT, LT, NL, PT, RO, SE, SI, SK, UK
Main and secondary proposers: 44% ECI / 48% Women / 40% ITC

INDUSTRIAL DIMENSION

SMEs: Austria, France, Italy, Netherlands
Large companies: Belgium

CA17134 - OPTICAL SYNERGIES FOR SPATIOTEMPORAL SENSING OF SCALABLE ECOPHYSIOLOGICAL TRAITS

SUMMARY

Vegetated ecosystems largely mediate terrestrial gas and energy exchange at the atmosphere-biosphere-pedosphere interface. The spatial and temporal acquisition of information on vegetation status, health and photosynthetic functioning is fundamental to model the dynamic response of vegetation to changing environmental conditions, necessary for climate change and food security studies. Satellite or airborne Earth Observation (EO) provides the opportunity to collect spatially continuous information of vegetation reflectance globally and at ecologically relevant scales. Optical EO is now advancing towards measuring a signal that is emitted by vegetation (sun-induced chlorophyll fluorescence: SIF). By flying in tandem with Sentinel-3 (S3), ESA's forthcoming FLEX mission will observe SIF, which can, in combination with reflectance, provide an indicator of actual photosynthetic activity. The FLEX-S3 multi-sensor concept exemplifies the synergistic use of multi-source data to capture scalable ecophysiological traits. This, in combination with other Copernicus missions will allow novel data analytical techniques to be realised. Then, by combining these data with proximal sensing from drones and flux towers it becomes possible to address critical open spatiotemporal scaling questions. The synergistic use, processing and interpretation of data from multiple optical instruments at multiple scales have matured to a stage where harmonization across Europe is now possible. This will be achieved by forming the network proposed in this Action and bringing together the Sentinel-2, S3 and FLEX passive EO communities. This Action will therefore develop and further the capabilities for the interpretation of multi-sensor and multi-scale optical measurements and develop common protocols for community use.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Earth and related Environmental sciences: Terrestrial ecology, land cover change	● Ecophysiology ● Copernicus and ESA Explorer optical and thermal missions ● Optical measurements ● Scaling ● Synergy

COST COUNTRIES

Main Proposer: LU
Network of Proposers: AT, BE, BG, CH, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, IE, IL, IT, LU, LV, NL, PL, PT, RO, SE, TR, UK
Main and secondary proposers: 46% ECI / 40% Women / 42% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Ukraine
International Partner Country (IPC): Australia, Canada, Japan, United States
International Organisations (IO): Luxembourg

CA17135 - CONSTITUTION-MAKING AND DELIBERATIVE DEMOCRACY

SUMMARY

In Europe and across the world, several countries are turning to deliberative democracy to reform their constitutions, and in many others this question is high on the political agenda. Such transformation also shuffles quite radically the role of the citizenry regarding constitutional changes. Traditionally such changes are the sole responsibility of elected officials, in collaboration with experts. With the deliberative turn, many more actors may be involved in the designing of constitutions: citizens both individually and collectively in the forms of informal associations, social movements, civil society organisations, participatory consultants and research teams. The Main Aim of the Action is to bring together all these actors – who are usually not in contact – to discuss and reflect on this democratic challenge, not only in terms of normative ideals but also and above all on the empirical challenges raised by this complex and multi-faceted democratic transformation. Because the focus of ConstDeb is on constitutions and deliberative democracy, the Action itself as a network is intended to work in a deliberative fashion.
This action has three research coordination objectives:
To gather and organize information about all deliberative democracy experiments related to constitution-like issues, research and writing about constitutional deliberative democracy, and the actors involved in both;
To make this information widely available and widely used;
To promote interaction between actors involved in this area, and also interested actors who are not yet involved.
The primary vehicle to achieve these objectives will be a deliberative portal.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Political Science: Political systems and institutions, governance ● Political Science: Democratization, social movements ● Law: Legal theory, legal systems, constitutions, comparative law	● Democracy ● Deliberation ● Constitution ● Citizens ● Participation

COST COUNTRIES

Main Proposer: BE
Network of Proposers: BE, CH, CZ, DE, EE, FI, FR, IE, IS, IT, LU, MK, NL, RO, SK, TR, UK
Main and secondary proposers: 47% ECI / 50% Women / 41% ITC

INTERNATIONAL COOPERATION

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

INDUSTRIAL DIMENSION

SMEs: Switzerland

CA17136 - INDOOR AIR POLLUTION NETWORK

SUMMARY

In developed countries, we spend 80-90% of our time indoors, where we receive most of our exposure to air pollution. However, regulation for air pollution focuses mainly on outdoors and the indoor environment is much less well characterised. The concentrations of many air pollutants can be higher indoors than out, particularly following activities such as cleaning and cooking. With increasing climate change impacts, related energy efficiency measures are making buildings considerably more airtight. Such measures can increase indoor pollutant concentrations even further. Therefore, to reduce our exposure to air pollution, we must consider both the indoor and outdoor environments and the role of ventilation, in order to mitigate through appropriate building operation, use and design.
INDAIRPOLLNET (INDoor AIR POLLution NETwork) will improve our understanding of the cause of high concentrations of indoor air pollutants. It will assemble experts in laboratory and chamber experiments, modelling studies and measurements of relevance to indoor air quality (IAQ), including outdoor air chemists. Our network includes experts in chemistry, biology, standardisation, particulate matter characterisation, toxicology, exposure assessment, building materials (including those manufactured specifically to improve IAQ such as green materials), building physics and engineering (including ventilation and energy) and building design. This Action aims to significantly advance the field of indoor air pollution science, to highlight future research areas and to bridge the gap between research and business to identify appropriate mitigation strategies that optimise IAQ. The findings will be disseminated to relevant stakeholders such as architects, building engineers and instrument manufacturers.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Earth and related Environmental sciences: Atmospheric chemistry and composition ● Environmental engineering: Air pollution	● Indoor Air Pollution ● Indoor Air Chemistry ● Indoor air measurements and modelling ● Indoor Air Quality

COST COUNTRIES

Main Proposer: UK
Network of Proposers: AT, BE, CH, DE, ES, FI, FR, HU, LT, MT, NO, PL, SE, SI, UK
Main and secondary proposers: 25% ECI / 25% Women / 33% ITC

INTERNATIONAL COOPERATION

Near Neighbour Country: Jordan
International Partner Country (IPC): United States

INDUSTRIAL DIMENSION

SMEs: Austria, France, Spain, Sweden, United Kingdom
Large companies: Belgium

CA17137 - A NETWORK FOR GRAVITATIONAL WAVES, GEOPHYSICS AND MACHINE LEARNING

SUMMARY

The breakthrough discovery of gravitational waves on September 14, 2015 was made possible through synergy of techniques drawing from expertise in physics, mathematics, information science and computing. At present, there is a rapidly growing interest in Machine Learning (ML), Deep Learning (DL), classification problems, data mining and visualization and, in general, in the development of new techniques and algorithms for efficiently handling the complex and massive data sets found in what has been coined "Big Data", across a broad range of disciplines, ranging from Social Sciences to Natural Sciences. The rapid increase in computing power at our disposal and the development of innovative techniques for the rapid analysis of data will be vital to the exciting new field of Gravitational Wave (GW) Astronomy, on specific topics such as control and feedback systems for next-generation detectors, noise removal, data analysis and data-conditioning tools.The discovery of GW signals from colliding binary black holes (BBH) and the likely existence of a newly observable population of massive, stellar-origin black holes, has made the analysis of low-frequency GW data a crucial mission of GW science. The low-frequency performance of Earth-based GW detectors is largely influenced by the capability of handling ambient seismic noise suppression. This Cost Action aims at creating a broad network of scientists from four different areas of expertise, namely GW physics, Geophysics, Computing Science and Robotics, with a common goal of tackling challenges in data analysis and noise characterization for GW detectors.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Physical Sciences: Gravitational astronomy ● Computer and Information Sciences: Machine learning algorithms ● Earth and related Environmental sciences: Physics of earth's interior, seismology	● Gravitational Waves ● Geophysics ● Machine Learning ● Robotics ● Noise removal

COST COUNTRIES

Main Proposer: IT
Network of Proposers: ES, HU, IT, NL, PL, PT, UK
Main and secondary proposers: 41% ECI / 19% Women / 43% ITC

CA17138 - INTEGRATED EUROPEAN NETWORK ON CHRONIC GRAFT VERSUS HOST DISEASE

SUMMARY

Chronic GvHD (cGvHD) is a multi-organ allo and auto immune disorder and a major cause of non-relapse morbidity and mortality following allogeneic haematopoietic stem cell transplantation. It occurs in an estimated 50% of patients per year worldwide and causes a plethora of co-morbidities. There is a lack of coordination at the European research level into cGVHD diagnosis and therapy and this impacts on patient care, due to a non-uniform treatment approach across transplant centres. This COST Action will serve as a platform for industry, clinical teams and researchers from numerous disciplines, including bioinformatics, immunology, epidemiology, genetics and cell biology, to enable the dissemination of integrated clinical and laboratory information via established and improved databases. The COST Action will promote novel research as well as more uniform treatment of the disease. Innovation will be accelerated by coordination, networking and introduction of new technologies and therapies for the benefit of patients by being able to more accurately predict and treat the disease and its co-morbidities. Early career investigators (ECI's) will learn how genomics, proteomics and immunology interact to provide a more personalised medicine approach to treat disease and improve patient outcomes. By studying large-scale populations and coming together as a network, we will further understand the pathogenesis of cGvHD, its subsets and associated co-morbidities and develop a coordinated approach to therapy. Workshops on innovative multidisciplinary research will include, genetics, epigenetics, (DNA methylation, microRNAs free and in exosomes) proteomics, lipidomics, the role of the microbiome, and novel stem cell therapies.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Clinical medicine: Transplantation ● Clinical medicine: Hematology	● comorbidity prediction of disease ● chronic graft versus host disease ● haematopoietic stem cell transplantation ● geonomics proteomics immunology ● stem cell therapies

COST COUNTRIES

Main Proposer: UK
Network of Proposers: AT, BE, BG, CZ, DE, FR, HR, HU, IT, NL, NO, PL, RO, UK
Main and secondary proposers: 9% ECI / 56% Women / 43% ITC

INTERNATIONAL COOPERATION

International Partner Country (IPC): Canada

INDUSTRIAL DIMENSION

SMEs: Belgium, Germany, Netherlands, United Kingdom

CA17139 - EUROPEAN TOPOLOGY INTERDISCIPLINARY ACTION

SUMMARY

The physical properties of many systems, ranging from naturally occurring biopolymers to artificial materials, often crucially depend on those global features that cannot be ascribed to a particular geometry or arrangement, rather to a more abstract notion: topology. The latter manifests itself in the knotted state of proteins and artificial polymers, the intertwining among DNA rings, or the topologically distinct classes of defect lines that can be found in liquid crystals. A better understanding of the interplay between a system's topological state, its three-dimensional structure, and its overall characteristics paves the way to an improved control of relevant natural molecules or human-made materials, with remarkable impact on fundamental science as well as high-tech applications. These goals, however, can only be achieved through a multidisciplinary effort, involving a wide spectrum of expertise in a concerted manner.
The EUTOPIA COST Action will establish a collaborative platform to approach all those problems, in the study of biological and soft matter, that feature topological characteristics. In doing this, it will create a pan-European, synergistic network of researchers from different fields that will overcome geographical, economical and societal barriers, as well as those naturally surrounding traditional academic communities. The outcomes of the research carried out thanks to the EUTOPIA Action will push forward the boundaries of our current understanding of key systems, and foster the knowledge transfer of scientific findings to industry and, ultimately, to society as a whole.

SCIENTIFIC SCOPE

Areas of Expertise	Keywords
● Physical Sciences: Biophysics ● Physical Sciences: Soft condensed matter (e.g. liquid crystals) ● Mathematics: Topology	● Topology in soft matter ● Entanglements in (bio)polymers ● DNA and chromatin ● Fundamental and computational methods in knot analysis

COST COUNTRIES

Main Proposer: AT
Network of Proposers: AT, CH, DE, ES, FR, IT, PL, PT, SI, SK, UK
Main and secondary proposers: 29% ECI / 24% Women / 36% ITC

INTERNATIONAL COOPERATION

International Organisations (IO): Switzerland