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CA16101 - Multi-modal Imaging of Forensic Science Evidence - tools for Forensic Science (Acronym: MIFE)

Summary

The main objective of this Action, entitled 'Multi-modal Imaging of forensic evidence (MIFE)- tools for Forensic Science', is to promote innovative, multi-informative, operationally deployable and commercially exploitable imaging solutions/technology to analyse forensic evidence. Forensic evidence includes, but not limited to fingermarks, hair, paint, biofluids, digital evidence, fibers, documents and living individuals. Imaging technologies include optical, mass spectrometric, spectroscopic, chemical, physical and digital forensic techniques complemented by expertise in IT solutions and computational modelling. Imaging technologies enable multiple physical and chemical information to be captured in one analysis, from one 'specimen', with information being more easily conveyed and understood for a more rapid exploitation. The 'enhanced' value of the evidence gathered will be conducive to much more informed investigations and judicial decisions thus contributing to both savings to the public purse and to a speedier and stronger criminal justice system. Lack of knowledge sharing, standardised protocols and communication between Academia, End Users and industry has been a barrier to translational science in this field; the Action will use the unique networking and capacity-building capabilities provided by the COST framework to bring together their knowledge and expertise; this is paramount to engage in a synergistic approach to boost imaging technological developments, allowing scientifically sound, highly reliable and multi-informative intelligence to be provided to investigators, prosecutors and defence. COST support is crucial to conquer the challenge on short term basis and to provide a legacy to Europe to advance knowledge leading to the deployment of cutting edge, innovative and implementable imaging forensic science.

Scientific Scope

Areas of Expertise: Spectroscopic and spectrometric techniques; Databases, data mining, data curation, computational modelling; Analytical chemistry; Criminal law
Keywords: Imaging; Forensics; Evidence; Digital;

COST Countries

Main Proposer: United Kingdom
Network of Proposers (14 countries – ITC: 36%): Belgium; Croatia; France; Germany; Hungary; Italy; Latvia; Netherlands; Poland; Portugal; Spain; Sweden; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -
International Partner Country (IPC): -
European Commission and EU Agencies: 1

Industrial Dimension

SMEs: 6
Large companies: -

Total Proposers: 49 (Women: 22%/Men: 78% - ECI: 16)

COST Mission and Policies

This Action addresses the COST Excellence and Inclusiveness policy by connecting excellent scientists from three Sectors (Academia, End Users, Industry) operating in the European Union, thus breaking communication barriers and maximising the impact on technological innovation within the challenge

described. This Action's network comprises internationally recognised scientists, at different stages of their careers, who will collectively advance forensic imaging science through annual conferences, workshops and round-robin studies led by the cementing action of the Management Committee (MC). Emphasis will be given on fostering PhD students and early career investigators (ECI) operating in the field of multi-modal imaging of forensic evidence. Their scientific development will be aided by training schools and Short Term Scientific Missions (STSMs) within European Excellence Laboratories. Additionally, by strongly promoting their active participation at Conferences/Workshops, PhD students and ECI will advance their research thanks to feedback and knowledge exchange. All of the above will help ECI to develop their leadership and career, posing the basis for a succession plan of scientific excellence in Europe. In agreement with the COST mission, attention will be paid to promote geographical balance throughout this Action. Presently, the network has reached an Inclusiveness Target Countries of 35.7% and further less research-intensive Countries will be encouraged to join the Network through diversified dissemination activities, the present network contacts and the MC's active reaching out operations. Furthermore, gender balance is promoted through: a) presenting research at conferences/meetings; b) a balanced uptake of the available leadership roles within the Network (MC Chair, Work Package Leaders, COST website maintenance and Action "marketing" activities, training schools and round robin studies organisation). An initial step in this direction is exemplified by the coordination role of the main proposer of this Action, who is a woman. Presently, 22.4 % of the total proposers is female, due to high profile roles in Europe still taken up by men, by large. However there is a high potential to increase this percentage through future outreach endeavours and ECI participation. Age balance will also be considered for the duration of the Action. Amongst proposers with a PhD degree, the average number of years elapsed since PhD graduation is 16 and this is testimony to an active engagement with the COST policy already at this initial stage. Finally this Action addresses the COST policy on the industrial dimension by actively involving this Sector in conferences, training schools and round robin studies (participation and organisation). This will provide a suitable platform to facilitate the dialogue with researchers and End Users, increasing the impact on implementable and exploitable technological innovation. The Industry presence (16% of the sector representatives in this Action), is testimony to the recognition of the importance of this dimension. Collaborative projects developing within the Action will contribute to further network with Industry.

CA16102 - European Network on Individualized Psychotherapy Treatment of Young People with Mental Disorders

(Acronym: TREATME)

Summary

The main aim of the Action TREATME is to establish a sustainable European multidisciplinary researcher network focusing on individualized psychotherapy for young people with mental disorders.

50% of lifetime mental health disorders start by the age of 14, and the number increases to 75% by the age of 24. Mental disorders in youth are associated with direct and indirect costs including personal distress, costs to family and friends, high healthcare costs, barriers to employment and job performance, poverty and economic deprivation and social exclusion.

The 'Roadmap for Mental Health Research in Europe' concludes on the need for coordinated and multidisciplinary efforts to improve knowledge on individualized psychological treatment for young people. Psychotherapy works for the most frequent mental disorders such as anxiety and depression. Different psychotherapy modalities work on average equally well. However, little is known about how different treatment modalities work (the mechanisms of change/mediators) and for whom (specific markers/moderators). Thus, empirically informed individualized treatment cannot be delivered.

The Action reviews the state of the art and identifies putative specific markers and mechanisms of change in different psychotherapy modalities, as well as suitable psychotherapy process and treatment



measures, and study designs. Research capacity increases by supporting a high proportion of ECIs and especially female and ITC researchers. Shared knowledge is disseminated to policy makers and stakeholders.

The network promotes collaborative funding applications and meets societal challenges connected to mental health. TREATME paves the way for the matching of mental health research to the needs of young people in Europe.

Scientific Scope

Areas of Expertise: Psychiatry; Clinical Psychology; Work and professions; Developmental psychology; Gender and sexuality studies

Keywords: Psychotherapy for young people; Individualized treatment; Mechanisms; Moderators; Process - outcome studies

COST Countries

Main Proposer: Norway

Network of Proposers (14 countries – ITC: 36%): Bulgaria; Cyprus; Denmark; Finland; Germany; Greece; Israel; Norway; Poland; Serbia; Sweden; Switzerland; Turkey; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): United States

Industrial Dimension

SMEs: -

Large companies: 1

Total Proposers: 16 (Women: 56%/Men: 44% - ECI: 10)

COST Mission and Policies

TREATME responds to the COST Excellence, Inclusiveness and Widening policy. TREATME meets the challenging societal need for individualized treatment for mental disorders in young people. Better and stepped treatment will prevent long-lasting adverse developmental outcomes for the individual and the society as a whole. Knowledge sharing and coordinated applications for research funding among stakeholders will strengthen the scientific basis for youth psychotherapy.

Preparing the future and building research capacity: young talents/next generation leaders/providing networking opportunities for early career investigators:

- Among the network builders experienced researchers from highly recognized, multidisciplinary nationally funded research projects and groups are represented. Also a high percentage of Early Career Investigators(ECIs), Inclusiveness Target Country(ITCs) and female researchers are involved.

- ECIs, ITCs and female researchers will be encouraged to participate.

- The Action will ensure age and gender balance.

- Preparing for future collaborative research, TREATME focuses on knowledge advancement and development on the issues of: specific markers, mechanisms of change, study designs, assessment tools, and advanced statistical methods.

- An important focus is best practices and increased efficiency in project management. To help young talents turn into next generation research leaders, ECIs will fully participate in the whole range of the Action's activities;

as members of the Management Committee(MC)

by full involvement in Working Groups(WGs)

by planning and organizing local and international conferences.

by full involvement in dissemination of research

by extensive co-operation with stakeholders and policymakers

Participate on Training Schools(TSs) and Short Term Scientific Missions(STSMs)

-ECIs and ITC researchers will be fully involved in joint funding applications for national and pan-European, high quality research projects. They will receive important knowledge and establish potentially lasting contacts for future collaboration on present and future projects, consortiums, common databases and other infrastructure (e.g. follow-up data, brain imaging, and genes).

TREATME is output-oriented, knowledge sharing and emphasize dissemination through:

-WGs, conferences, TSs, and STSMs

-Including a high number of ECIs and ITC researchers

-Co-operating with Non-governmental organizations(NGOs)

-Interacting with policy makers on local, national, and European level

-Involving funding agencies on local, national, and European level

-Co-operating with psychotherapy training organizations on national and European level

Connecting research infrastructures to all potential users/increasing the impact of research on policy makers, regulatory bodies and national decision makers as well as the private sector:

TREATME aims to help close the gap between science, policy makers and society throughout Europe and beyond on psychotherapy treatment and research for young people with mental disorders by:

-including young mental health users(NGOs) in the activities

-co-operating with psychotherapy training institutions

-involving clinicians in the activities

-inviting policy makers (European, National government, and sector level) and research funding agencies

-organizing local workshops with policy makers and research funding agencies

Building capacity by connecting high-quality scientific communities throughout

Europe and worldwide:

The Action aims to achieve synergies by joint collaboration in the network on applications with EU-funded research project

CA16103 - Magnetic Resonance Imaging Biomarkers for Chronic Kidney Disease

(Acronym: PARENCHIMA)

Summary

The rising prevalence of Chronic Kidney Disease (CKD) poses a major public health challenge affecting >10% of the population. But the field has not seen a truly new therapy in over 15 years, and an alarming number of large recent CKD progression trials have failed. In order to overcome this challenge, there is an urgent need for better biomarkers to identify patients that are at risk of progression, or are likely to respond to candidate therapeutics. Magnetic Resonance Imaging (MRI) biomarkers have shown a high potential to help fill this gap as they are non-invasive and sensitive to CKD pathophysiology.

Despite their potential, renal MRI biomarkers are today underused in research and in clinical practice due to the need for dedicated in-house expertise and development. Transferring solutions to other centres is therefore a challenge, and this leads to a significant duplication of efforts, a lack of standardisation in the methods, and difficulties in comparing results between centres. This also limits commercial exploitation, and hinders the set-up of multi-centre trials or translation into clinical practice.

The overall aim of PARENCHIMA is to eliminate the main barriers to the broader study, commercial exploitation and clinical use of renal MRI biomarkers. PARENCHIMA will coordinate the research of leading European groups in this area to: (1) improve the reproducibility and standardisation of renal MRI biomarkers; (2) increase their availability by developing an open-access toolbox with software and data; (3) demonstrate biological validity and clinical utility in a prospective multicentre clinical study.

Scientific Scope

Areas of Expertise: Diagnostic tools (e.g. genetic, imaging); Radiology, nuclear medicine and medical



imaging; Nephrology; Signal processing, 1-D and multidimensional signal processing, compression, signal acquisition

Keywords: Magnetic Resonance Imaging; Biomarkers; Kidney; Standardisation; Research infrastructure

COST Countries

Main Proposer: United Kingdom

Network of Proposers (14 countries – ITC: 29%): Austria; Croatia; Czech Republic; Denmark; France; Germany; Italy; Norway; Poland; Slovenia; Spain; Sweden; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): South Korea; United States

International Organisation: 1

Industrial Dimension

SMEs: 4

Large companies: 1

Total Proposers: 83 (Women: 27%/Men: 73% - ECI: 30)

COST Mission and Policies

Mission

PARENCHIMA results from a growing consensus within the field that a more coordinated approach to research is needed if quantitative MRI is to fulfill its promise as a diagnostic technique. COST actions are an ideal instrument to build the foundations for this shift in scientific practice.

Excellence and inclusiveness

Engaging ITC's: PARENCHIMA is committed to organising 50% of its events in ITC's, by selecting local organising committees among the action participants.

Counterbalancing unequal resources: Open access to research tools is part of PARENCHIMA's core strategy and is the sole objective of WG2. WG3 will reduce the cost of joining a multi-centre study by central provision of infrastructure. Participants in the training schools and annual meeting will receive financial support.

Increase visibility to knowledge hubs: Europe's leading professional bodies in radiology and MRI science will have a formal role for governance of the research infrastructure and in the organisation of the workshops.

Providing leadership skills: The steering groups of each WG will ensure a leading role for ECI's, either as Chair or Vice-chair.

Identify European excellence: The training schools for scientists and clinicians will help identify promising young scientists. The annual meeting will be an opportunity for more senior scientists to showcase their research.

International Cooperation: International cooperation is a key ingredient to addressing the objective of defining global standards.

Member countries: PARENCHIMA's strategy is to unite key experts within COST member countries, and use this as a foundation for a more global consensus building effort.

IPC's: WG 1 will include specialists from the US to ensure a proper representation of all relevant expertise. WG 5 will actively seek participation from leading imaging biomarker initiatives in the US to prepare global impact.

NNC's: The steering committee's of each WG will draw up a mailing list of key groups in NNC's. These will be specifically targeted in the publication of the annual meeting and training schools.

Industrial Dimension: Increasing the impact of research by promoting commercialisation is a key objective of PARENCHIMA.

Research-business interactions: PARENCHIMA will seek to develop close and lasting ties between research and private sector by creating a framework to reduce the cost of developing and validating novel diagnostic tools - thereby increasing the benefit of the private sector and the impact of research.

Promoting the use of technology: In the short term, PARENCHIMA will significantly increase the use of



cutting-edge imaging tools to increase the efficiency of drug trials, which may significantly increase the rate at which new treatments become available. In the longer run this may increase the role of imaging technology as an essential tool for renal precision medicine.

Exploitation targeting SME and industry: SME's will be involved in various aspects of the workplan, including the provision of QA materials to measure figures-of-merit or calibration of devices, support in the development and maintenance of software and databases, and running of a multi-centre study. Scanner manufacturers will play an essential role in the efforts to derive more standardised quality indices for MRI biomarkers.

CA16104 - Gravitational waves, black holes and fundamental physics

(Acronym: GWniverse)

Summary

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Scientific Scope

Areas of Expertise: Astrophysics, astronomy, space sciences; Gravitational astronomy; Relativistic astrophysics; Fundamental interactions and fields (theory)

Keywords: Gravitational waves; Gravitation; Black holes; Fundamental physics;

COST Countries

Main Proposer: Portugal

Network of Proposers (9 countries – ITC: 22%): France; Germany; Greece; Italy; Netherlands; Portugal; Slovenia; Spain; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): -

Industrial Dimension

SMEs: -

Large companies: -

Total Proposers: 12 (Women: 42%/Men: 58% - ECI: 1)

COST Mission and Policies

This Action will target International cooperation, by bringing together at least 13 different countries, two of which (including the Main Proposer) are ITCs. The management structure (Section 3.2) is built in order to enforce a good geographical distribution of all WGs and topic leaders. The network meetings will be geographically distributed throughout all participating countries, promoting cooperation between groups in different countries. The Action will produce a number of multimedia contents and outreach events, including one short-movie, a TV documentary and a book which will be distributed in all of Europe, disseminating knowledge on gravitational physics and raising awareness for this science in Europe, and most specially in less research-intensive countries.

This Action will foster Excellence and Inclusiveness. The Action includes already, in the Network of Proposers, practically all of the current ERC grantees on the topic, contributing to an excellency level of the Action and of the training of the new generation of gravitational-wave astronomers. The Action is gender-balanced at the level of the Network of Proposers and includes in its structure a Gender Coordinator. The Action will enforce transmission of knowledge and responsibilities to early-career



investigators, by nominating these as Topic Leaders in its management structure, and directing yearly training schools specifically at young researchers.

The Action will promote networking opportunities for Early Career Investigators (ECI), through information about research activities, workshops, training schools, training courses, seminars, job opportunities, and gender forum. The action will have an impact on policy makers, through meetings with the different Science National Foundation or the European space agency.

The Action is expected to train at least 100 new students from across Europe with the standards of excellency appropriate to ERC grantees. These will become the new generation of leading astronomers and astrophysicists in Europe, trained with a global view of Europe, with networking knowledge to promote and explore science across Europe.

CA16105 - European Network for Combining Language Learning with Crowdsourcing Techniques

(Acronym: enCollect)

Summary

The enCollect Action addresses the major European challenge of fostering the language skills of all citizens regardless of their diversified social, educational, and linguistic backgrounds. To this end, the Action is concerned with the domain of Language Learning and focuses on enhancing the production of learning material in order to cope with the increasing demand for language learning and the striking diversification of learner profiles due to the intensified migration flows motivated by educational, professional/economic or geopolitical circumstances.

EnCollect addresses this challenge by performing the groundwork to set into motion a Research and Innovation (R&I) trend combining the well-established domain of Language Learning with recent and successful crowdsourcing approaches in order to unlock a crowdsourcing potential available for all languages and trigger an innovation breakthrough for the production of language learning material. EnCollect approaches this objective by building an international and interdisciplinary R&I community, creating a comprehensive theoretical framework and running experiments while following an overall Open Science, Open Access and Open Data policy.

EnCollect also aims at simultaneously crowdsourcing language learning material and language-related datasets in order to attract language-related R&I players (e.g. computational linguistics), gain their support, and develop the R&I trend in numerous, concurrent and mutually beneficial ways favoring its flexible short- and long-term success.

As a result, enCollect will constitute the first step towards the sustainable and continuous production of language learning material for any language and target group.

Scientific Scope

Areas of Expertise: Second language teaching and learning; Education: training, pedagogy, didactics; Theoretical aspects of data curation, data mining and database handling; Databases, data mining, data curation, computational modelling; Linguistics: formal, cognitive, funct

Keywords: Language Learning; Crowdsourcing; Language-related Datasets; Computer-assisted Language Learning; Open Data and Science

COST Countries

Main Proposer: Italy

Network of Proposers (31 countries – ITC: 55%): Austria; Belgium; Bosnia and Herzegovina; Bulgaria; Croatia; Czech Republic; Denmark; Estonia; France; fYR Macedonia; Germany; Greece; Hungary;



Ireland; Italy; Latvia; Lithuania; Luxembourg; Malta; Netherlands; Norway; Poland; Portugal; Serbia; Slovakia; Slovenia; Spain; Sweden; Switzerland; Turkey; United Kingdom

International Cooperation

Near Neighbour Country (NNC): Albania
International Partner Country (IPC): Canada; United States

Industrial Dimension

SMEs: 4
Large companies: 1

Total Proposers: 68 (Women: 56%/Men: 44% - ECI: 39)

COST Mission and Policies

EnCollect contributes to strengthening European research and innovation capacities by enabling breakthrough scientific developments consisting in the research, creation and experimentation of a comprehensive theoretical framework for combining Language Learning and Crowdsourcing. EnCollect is building capacity by connecting high-quality scientific communities of stakeholders from Europe and worldwide.

EnCollect provides numerous networking opportunities for ECIs through its WGs, its management structure, its Collective Workforce and its Outreach Plan. As ECIs tend to be knowledgeable regarding modern technologies (e.g. crowdsourcing), enCollect fosters ECIs' participation in key roles.

The impact of the research on policy makers, regulatory bodies and national decision makers as well as on the private sector is enforced by involving stakeholders from varied backgrounds, countries and institutions. Its exploitation and dissemination activities and its Open Access, Open Data and Open Science orientation also allow enCollect to reach, involve and impact more stakeholders.

EnCollect addresses the policy of COST Excellence and Inclusiveness through the creation of a cross-border network of researchers with appropriate geographical, gender and age balances (34 countries, 44% Males / 56% Females, 39 ECIs out of 68 proposers). Its Outreach Plan also safeguards its balances while fostering its extension.

EnCollect fully meets the objectives of the policy as follows. (1) Its ITC rate is appropriate (54.8 %), (2) EnCollect helps equaling out access to knowledge and infrastructures by addressing language-independent questions and sharing best practices. By targeting several languages and since for each language only few research communities have the language-specific expertise, enCollect broadly involves varied research communities. Accordingly, enCollect counterbalances the access to funding and resources. (3) EnCollect provides numerous research and network opportunities to increase the visibility and integration of researchers to the leading knowledge hubs of Europe as well as to acquire their necessary leadership skills. Since location, age or gender balances are appropriate, all researchers can benefit. (4) By unlocking a massive crowdsourcing potential, enCollect fosters structural changes benefitting several R&I workflows. Its inclusiveness also fosters the intranational and international sharing of best practices (private vs public, research vs innovation vs end-users, non-ITC vs ITC). EnCollect thus fosters structural changes in the national research systems represented. (5) Thanks to its inclusiveness, to its numerous networking opportunities and to its ground-breaking nature, enCollect helps identifying excellence across Europe.

EnCollect addresses the Policy on International Cooperation by fostering cooperation between 34 countries. As it combines its members' expertises to tackle language-specific questions while joining their efforts to better address language-independent questions, enCollect's ascertained mutual benefit, complementary expertise and scientific added value are guaranteed.

EnCollect addresses the Policy on Industrial Dimension by targeting the worldwide and growing market of Language Learning, and by involving the public, private, research, innovation and end-users sectors. While enCollect's WGs promote the use and development of technologies, its varied dedicated exploitation and dissemination activities foster a collegiate-like effect allowing to build mutual trust and facilitating the creation of an R&I community. Accordingly, enCollect sets into motion an R&I trend benefitting Language Learnin

CA16106 - Ammonia and Greenhouse Gases Emissions from Animal Production Buildings (Acronym: LivAGE)

Summary

According to the Food Agriculture Organisation (FAO), world food production must increase by 50% within the next 20 years, while 80% of that increase must come from the intensification of agricultural production. The global livestock sector is growing faster than any other agricultural sub-sector. While livestock production forms one of the pillars of the EU food industry it faces many societal challenges, not least from the rising demand for meat protein, increasingly stringent environmental regulations, coupled with the falling numbers of young farmers entering the industry. Modern farm animal production is increasingly regarded as a source of solid, liquid and gaseous and dusts emissions which can be both a nuisance and environmentally harmful. The main objective of LivAGE Action is to enhance international discipline cooperation for exchanging ideas and knowledge, sharing good practices, assess technologies that could result in reducing the emissions of GHGs and ammonia from livestock buildings and thus to lead to a more environmental friendly and sustainable livestock production. The role of nutrition and productivity will be also taken under consideration. The results will be made readily available in order to significantly enhance awareness in the livestock sector of the current hazard level and the perspectives related to the future. Some secondary objectives are the estimation of emission factors, the impact of the applied diets, prevailing microclimate and ventilation schemes on emissions, the assessment of integrated monitoring systems, the improvement of CFD applications, the assessment of mitigation techniques and the environmental analysis of the proposed techniques and solution.

Scientific Scope

Areas of Expertise: Agriculture related to animal husbandry, dairying, livestock raising, animal welfare; Air pollution; Sustainable production
Keywords: Livestock; Air quality; Nutrition; Ventilation; Environmental assesment

COST Countries

Main Proposer: Denmark
Network of Proposers (16 countries – ITC: 37%): Belgium; Bulgaria; Cyprus; Denmark; France; fYR Macedonia; Germany; Greece; Italy; Netherlands; Romania; Slovakia; Slovenia; Spain; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -
International Partner Country (IPC): Australia; China; South Korea

Industrial Dimension

SMEs: -
Large companies: -

Total Proposers: 27 (Women: 22%/Men: 78% - ECI: 5)

COST Mission and Policies

The LiveAGE COST action implements COST mission as it enables scientific developments leading to new concepts and methods contributing to strengthening European research and innovation capacities. This mission is accomplished as high-quality European scientific research teams participate in the consortium, while non European partners (China, Australia, and South Korea) are also involved. Additionally, the

action provides networking opportunities for early career investigators. Some of them will have leadership roles in the Action structure, while many of them will benefit from COST networking tools (i.e. short-term scientific missions, workshops and training schools). Moreover, a significant objective of this action is to involve policy makers, decision makers, national authorities and the industrial sector to the project from the beginning so as to increase the impact of research on them.

The LivAGE COST action also addresses COST policies, namely inclusiveness, international cooperation and SMEs/industry participation. At every meeting of the management committee decisions will be taken so as to encourage and enable researchers from less research-intensive countries across the COST member countries to set up and/or join COST action and get more intensively involved in all COST activities. 37.5 % of the participants are from COST inclusiveness target countries, while continuous efforts will be made to attract researchers and stakeholders also from other countries. Moreover, the action connects excellence centers in science and technology operating from diverse locations in Europe. Therefore, this plan provides the opportunity to European researchers, regardless of their location, age or gender, to participate to the action's events and improve their knowledge and skills.

Regarding the promotion of international cooperation, researchers and stakeholders from five COST International Partner Countries (IPC) are involved. However, the action also aims to support the involvement of researchers from COST Near Neighbour Countries (NNC). Approved IPC and NNC Institutions can host short-term scientific missions, researchers from approved NNC Institutions can apply for short-term scientific missions or/and attend training schools, while researchers from approved IPC and NNC institutions will be invited to contribute as trainers in the training schools.

Special activities will be implemented to encourage and facilitate the participation of industry (including SMEs). Sessions dedicated to industrial participation and roundtable discussions with industrial partners will be organized during the action's events. Additionally, proposals will be made to industry to host short-term scientific missions. These facts will develop fruitful collaborations between researchers and business and promote the use and development of technologies, increasing the impact of research in the industrial sector across Europe.

CA16107 - Integrating science on Xanthomonadaceae for integrated plant disease management in Europe

(Acronym: EuroXanth)

Summary

Bacteria of the family Xanthomonadaceae, including species of *Xanthomonas* and *Xylella fastidiosa*, belong to the most devastating plant pathogens continually challenging food security. Many of the pathogens are listed as quarantine organisms in the EU and their study is of uttermost importance. The concerned pathogens infect all kinds of crop plants, such as cereals, forage crops for ruminant feed, vegetables, fruits, shrubs and trees.

This COST Action will bring together some of the brightest and best minds to join in an interdisciplinary network to develop strategies for sustainably protecting plants and significantly reducing yield losses. Specifically, this initiative will address several key aspects of the pathogen-vector-host interactions from the cellular to the population level. A better insight into population structures and virulence mechanisms of the pathogens, together with the exploration of the molecular mechanisms underlying disease resistance to the pathogen, will enable development of durably resistant plant cultivars and exploitation of bio-control schemes tailored to population and pathogen.

This Action will generate a platform that gathers experts from different disciplines, such as molecular diagnostics, molecular host-microbe interactions, plant resistance breeding, and applied microbiology. Joining their efforts will help to develop and implement effective plant protection schemes, be it via resistant crop cultivars or via other control mechanisms. This goal will be achieved by mobilizing and training scientists from major European institutions, regulatory bodies and commercial companies working on the various aspects of this complex of problems.



Scientific Scope

Areas of Expertise: Microbiology; Sustainable Agriculture; Agriculture related to crop production, soil biology and cultivation, applied plant biology, crop protection; Ecology (theoretical, community, population, microbial, evolutionary ecology); Genetic engineering, transg
Keywords: Genetic Diversity; Molecular Plant-Pathogen Interaction; Resistance Gene; Xanthomonas; Xylella fastidiosa

COST Countries

Main Proposer: France

Network of Proposers (17 countries – ITC: 41%): Belgium; Czech Republic; France; FYR Macedonia; Germany; Greece; Israel; Italy; Netherlands; Poland; Portugal; Serbia; Slovenia; Spain; Switzerland; Turkey; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): United States

International Organisations: 1

Industrial Dimension

SMEs: 2

Large companies: 1

Total Proposers: 86 (Women: 40%/Men: 60% - ECI: 20)

COST Mission and Policies

This COST Action will provide the necessary means to establish and stimulate a European platform for scientists active in control, research and development in the field of bacterial plant pathology. This Action is based on the concept that knowledge of pathogen population structures and profound insight into the biology of the pathogen is key to the efficient and sustainable control of microbial plant pathogens by several complementary means. This platform will enable efficient exchange of expertise, staff, material and technologies originating from on-going research programs. Moreover, this platform will also stimulate new ideas and allow to rapidly test them, thus helping to develop new strategies of disease control. Close links to private partners will ensure rapid technology transfer.

This Action will generate a platform that gathers experts from different disciplines, such as molecular diagnostics and epidemiology, molecular host-microbe interactions, plant resistance breeding, and applied microbiology. Joining their efforts will help to develop and implement effective plant protection schemes. This goal will be achieved by mobilizing and training scientists from major European institutions, regulatory bodies and commercial companies working on the various aspects of this complex of problems. At present, the network includes 53 partners from 17 European countries representing 26 universities, 18 academic research institutions and 9 other partners (bio-control agencies, companies). This network will bring together and stimulate the collaboration between scientists from research and development, aiming to translate knowledge and expertise into field applications.

The COST Action will be coordinated and supervised by a Management Committee (MC). The MC will be composed of one representative of each country and will meet once a year in conjunction with the annual conference. The MC will ensure that this COST Action respects an adequate gender balance in all its activities, such as COST management, workshops, meetings and Short-Term Scientific Missions (STSMs). The current network of 82 European scientists includes 40% women and 60% men. Members of the consortium originate from 17 European countries with a broad geographic coverage, among them 7 (41%) from inclusiveness countries. Inclusiveness countries will be represented with the same percentage in the MC, thus fostering their active participation in the Action's activities, such as STSM grants and training schools.

The COST Action will also stimulate activities by early-career investigators, be it their representation in the MC, their training in specific workshops, and their active participation in the Working Group (WG)-specific and annual meetings. Early-career investigators will be given priority in STSMs to other laboratories. Early-career investigators and both men and women will play leading roles in the



Management of the Action and the coordination of WGs. Networking within the COST Action will help early-careerinvestigators to establish themselves in the field and to create valuable contacts for further career steps. One specific training school will focus on the skills required by early-careerinvestigators to develop a successful career in this field. Two MC members will be appointed that will monitor gender balance and appropriate participation of early-career investigators in the activities of the Action.

CA16108 - Vector Boson Scattering Coordination and Action Network

(Acronym: VBSCan)

Summary

The ATLAS and CMS collaborations at CERN recently discovered a new resonance, matching the features of the Higgs boson, the missing piece of the Standard Model of particle physics. Yet, several fundamental issues remain unsolved: gravitational interactions are not unified with other forces, no valid candidates exist for dark matter, no explanation was found for the relative abundance of matter over anti-matter in the Universe. These open issues call for a more general theory, introducing new phenomena which might be visible during future measurements, among the main objectives of current and future particle colliders. Vector Boson Scattering at hadron colliders is the ideal testbench for such new processes as the Standard Model predicts them to be highly suppressed through interference effects and a variety of new physics scenarios may disturb this delicate balance. However, these measurements are very challenging, because of the overwhelming backgrounds, the tiny effects investigated, and the required precision of theory predictions. Only a very coordinated and thorough effort involving all the stakeholders will allow to reach the best sensitivity from the data.

This COST Action will connect all main players studying Vector Boson Scattering at hadron colliders, gathering the solid and multidisciplinary community needed.

The initial consortium has the critical mass, expertise and geographical distribution needed to become the worldwide reference on Vector Boson Scattering. The capacity of the community will be maximised with a thorough inclusiveness campaign, targeting early stage researchers, gender balance and maximal geographical openness.

Scientific Scope

Areas of Expertise: Particle physics (theory)

Keywords: particle physics; hadron colliders; electroweak symmetry breaking; beyond standard model;

COST Countries

Main Proposer: Italy

Network of Proposers (8 countries – ITC: 25%): Belgium; Croatia; France; Germany; Italy; Poland; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): United States

European RTD Organisation: 1

Industrial Dimension

SMEs: -

Large companies: -



Total Proposers: 55 (Women: 27%/Men: 73% - ECI: 23)

COST Mission and Policies

The VBSCan network will connect top-level European experts on vector boson scattering (VBS): the consortium of proponents already guarantees the high scientific profile of the COST Action. The interdisciplinarity of the team is granted by participation of theoretical physicists, experimental ones and statisticians. The theory community is composed of members with expertise in different aspects of the discipline, as is the case for the experimental community, whose members work in the major experiments taking data at colliders suited to VBS studies. The statisticians involved have strong interests in working on particle physics big data.

To foster the connections among the Action participants, a working group will be dedicated to knowledge exchanges and cross-activities. It will organise a kickoff event to coordinate the start of the works, regular meetings within the working groups (every six months) and among them (every year), a mid-term workshop and a final conference. Virtual meeting technology and short-term scientific missions will be used to interconnect researchers across all countries involved.

A wiki-based website will be used to create an open, common, global and evolving documentation platform, while all the meeting material will be openly available in digital form. This Action includes national and international European laboratories, where all Action members will get visibility and further connections with the rest of the scientific community.

A working group will be dedicated to counteract unequal researchers access to knowledge, infrastructures, funding and resources. Constant monitoring will grant gender balance at all levels of the Action activities and management, and effective involvement of researchers from COST inclusiveness target countries (ICT). The display of young and senior role models, both women and from ICT countries, will counteract cultural barriers promoting a more even pursue of a scientific career among genders and across Europe.

Once approved, this COST Action will generate several research lines. The initial proponents, who are mostly members of universities, will enrol in the Action a significant number of master students, PhD students and post-docs. Short term scientific missions will be used to let these early career investigators (ECI) meet experts in the field and visit international laboratories, across Europe and worldwide. The list of experts will be prepared and made available in the COST Action documentation. Three schools will be organised covering theoretical and experimental aspects of the VBS. ECI will get leadership training by taking coordination roles in the Action. Job finding for ECI will be supported by means of a single platform collecting job offers.

The research impact on the scientific community will be obtained by means of publications in highly ranked open-access journals, participation to major and topical conferences, the organisation of a final conference and the publication of a summary VBS handbook. The impact on the general public and policy makers will be pursued with outreach activities for school pupils and young students, and dissemination material in the form of a website and printed documents. Special care will be given to outreach targeting girls and young women, and ICT countries.

CA16109 - Chemical on-line composition and source apportionment of fine aerosol

(Acronym: COLOSSAL)

Summary

It is well known that exposure to aerosols exerts a negative impact on human health and that aerosols affect climate and the environment. These effects are dependent on the composition and sources of these fine atmospheric aerosols (particulate matter with aerodynamic diameter below 2.5 μm , PM_{2.5}). The main challenge of the Action is to consistently assess their spatial variability (across Europe), their temporal variability (at a one hour time resolution or better), their seasonality (using long term datasets), their phenomenology (chemical composition) and their sources. To this end many research

groups and some air quality monitoring networks in Europe and across the world have acquired recently-developed chemical composition measurement instrumentation. These include the Aerosol Chemical Speciation Monitor (ACSM) (based on Aerosol Mass Spectrometer (AMS) technology), which measures non-refractory ammonium, nitrate, sulfate, chloride, and organic mass, and instruments that measure the refractory black carbon, such as the Aethalometer and Multi Angle Absorption Photometer (MAAP). These new high time resolution techniques, which chemically characterize the aerosols, are capable of operating for long time periods and have only been available in 5-10 years. The processing and interpretation of the data from these instruments has matured to a stage where harmonized across Europe is now possible; this will be achieved by a network built through the present Action to jointly develop the capacity for the interpretation of the measurements gathered using these techniques. The outcomes of the Action will be relevant for air quality modellers and policy makers.

Scientific Scope

Areas of Expertise: Atmospheric chemistry and composition; Environment chemistry; Chemical instrumentation

Keywords: aerosol; on-line measurements; source apportionment; black carbon; organic aerosol

COST Countries

Main Proposer: Spain

Network of Proposers (21 countries – ITC: 38%): Austria; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Lithuania; Norway; Romania; Serbia; Slovenia; Spain; Sweden; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): United States

Industrial Dimension

SMEs: 6

Large companies: -

Total Proposers: 77 (Women: 36%/Men: 64% - ECI: 39)

COST Mission and Policies

The Action will contribute to achieve the COST Mission by contributing to strengthening European research and innovation capacities. Specifically, the Action will:

- build capacity by connecting scientific communities throughout Europe;
- ensure knowledge transfer from more experienced research groups to less experienced ones including regional or national authorities;
- provide networking opportunities for PhD students and Early Career Investigators (ECI), by giving priority to PhD students and ECI in the STSM;
- increase the impact of research on policy makers, by communicating to local, regional, national and/or European environmental authorities.

The policy on COST Excellence will be addressed by:

- the creation of and support to the networking of researchers.

The policy on COST Inclusiveness will be addressed by:

- the active participation of 8 Inclusiveness Target Countries (ITC) in the Action (36% of the total number of countries), encouraging their leadership roles in the Action. Given the expertise of some of them, it can almost be assured that some of them will be in the Steering Committee (being leaders of a WG)
- the active participation of 39 Early Career Investigators (ECI) (51% of the total number of proposers), prioritizing their STSM, and encouraging their leadership roles in the Action
- the active participation of 18 PhD students (23% of the total number of proposers), prioritizing their STSM
- promoting gender balance within the Action as a whole, approaching new participants if necessary. The

gender balance of the network of proposers is 64% males and 36% females

- promoting gender balance within the Management Committee and the Steering Committee. Given the expertise of the proposers, it can almost be assured that some females will be part of the Steering Committee

The policy on COST International Cooperation will be addressed by:

- the participation of 1 COST International Partner Country (IPCs), which will be of mutual benefit both the IPC and the COST Member Countries, giving that the Action will enable frequent and close collaboration and exchange of expertise

The policy on Industrial Dimension will be addressed by:

- the participation of 3 Small and Medium Enterprise (SME) (6 participants), which are the developers and manufacturers of the instrumentation used to achieve the Action Challenge. The participation of these SMEs will result in a mutual benefit, such that the rest of participants will benefit from their expertise and deep knowledge of the instrumentation, and the SME will benefit from the expertise of researchers (users of the instrumentation), who will define the needs for improvement or new development of instrumentation based on the scientific outcome on the ongoing and upcoming activities.

CA16110 - Control of Human Pathogenic Micro-organisms in Plant Production Systems

(Acronym: HUPLANTcontrol)

Summary

Food-borne disease outbreaks resulting from consumption of plant-derived fresh produce have been reported worldwide such as from spinach in the USA, from mung bean sprouts in Japan and most recently also in Europe from fenugreek sprouts (Hamburg, 2011). It is clear that particular groups of human pathogenic micro-organisms (HPMO) can find their ecological niches in plant production systems. Contamination routes of HPMO to plants are poorly understood. Basic resources for agro-production, such as soils, water and fertilizers can play a role in contamination of plants, but micro-organisms taxonomically closely related with HPMO are also present in plant microbiomes. HPMO must be considered as integral components of the plant microbiome and it is the intention of HUPLANTcontrol to investigate the potential negative aspects of plant microbiomes on human health and to integrate novel scientific insight into sanitary measures and agricultural management practices. The HUPLANTcontrol network will consist of five working groups: 1) on the ecology of HPMO in plants, 2) on taxonomical identification of HPMO from plants, 3) on characterization of the potential human-threatening nature of HPMOs, 4) on sanitary and agricultural management procedures to control HPMO in plant production facilities and 5) on dissemination of achieved knowledge via connections between science groups and relevant stakeholders from agriculture, industry and public health authorities. The proposed program integrates molecular biology, bio-informatics, microbiology, ecology, agronomy, veterinary and clinical sciences and places a strong focus on primary plant production, in principle covering all micro-organisms posing potential threats to humans found to be present in these systems.

Scientific Scope

Areas of Expertise: Agriculture related to crop production, soil biology and cultivation, applied plant biology, crop protection

Keywords: human pathogens; Microbiome; Plant; fresh produce; Agriculture

COST Countries

Main Proposer: Netherlands

Network of Proposers (14 countries – ITC: 21%): Austria; Belgium; Cyprus; France; Germany; Greece; Hungary; Israel; Italy; Netherlands; Norway; Portugal; Spain; United Kingdom



International Cooperation

Near Neighbour Country (NNC): Tunisia
International Partner Country (IPC): India; United States
European Commission and EU Agencies: 1

Industrial Dimension

SMEs: 1
Large companies: 2

Total Proposers: 36 (Women: 50%/Men: 50% - ECI: 5)

COST Mission and Policies

In the most recent Strategic Research and Innovation Agenda of the European Technology Platform (ETP) for food and life (2012 - 2020 and beyond), it is recognized that food-safety related issues in plant production are important. In the agenda, it is specified that emergence of new and more riskfull variants of food-borne pathogens are of concern. Further it is specified in the agenda that advances in 'omics technologies and in plant biology will lead to novel insights in safe and sustainable food production and that integrated and more holistic approaches must be encouraged. The intentions stated within HUPLANTcontrol perfectly matches with the most recent strategic agenda of ETP for food and life. Relevant stakeholders are growers, growers organizations and commodity boards, trade organizations, industry (producers of -biological- fertilizers, compost, plant growth promoting agents, biological control agents, seed producers, sprout producers, fresh food packaging), retail, public health and food-safety authorities. These stakeholders are already involved in current and past European projects, workshops and symposia related with HUPLANTcontrol. Interactions between scientific research groups and stakeholders currently are ad hoc organized and activities performed within HUPLANTcontrol are aimed to bring all involved European stakeholders into closer contact with the scientific community. The HUPLANTcontrol Action consist of five workpackages, of which four emphasize the following individual objectives:

To improve current understanding on the role of the plant microbiome on ecological behaviour, colonization and physiological and genetic adaptation of HPMO in APS,

To improve and intensify taxonomical identification of individual members in plant microbiomes that are anticipated to pose negative impact on human health,

To evaluate and improve human proxies where possible, or to develop new/ adapt existing systems for testing the human health threatening nature of particular representatives in plant microbiomes,

To evaluate, improve and design new sanitary and agronomic practices, based on the plant microbiome concept and aimed to control HPMO in APS such as in the open field, in greenhouses (soil substrate, aquaculture), or at industrial scale level for example in production of sprouts,

One WG will be dedicated to activities bridging between WG s and stakeholders and on the dissemination of network endeavours. An equal balance in nationality, gender and age group will be strived over all CG members. STSM will be controlled by the MC keeping balance between the different objectives within each WG and encouraging young scientist especially from less research-intensive countries to participate, keeping an equal balance between genders. WG group meetings, symposia, workshops and training schools will be organized within each WG and between WGs.

The field of expertise is emerging and via networking new skills will be developed for early career researchers and scientists, also from less science intensive countries. STSMs within the HUPLANTcontrol offer unique opportunities for young scientist which is important for strengthening and enlargement of a cohort of new scientists capable to handle massive datasets obtained from plant microbiome studies. The HUPLANTcontrol network will create new opportunities for young scientists and researchers in this challenging and rapidly developing scientific field.

CA16111 - International Ethnic and Immigrant Minorities' Survey Data Network

(Acronym: ETHMIGSURVEYDATA)

Summary

The main goal of this network is to bring together researchers, policy makers, and survey data producers to join efforts to improve the access, usability, dissemination and standards of the multiple and scattered survey data that exist on the economic, social and political integration of ethnic and migrant minorities (EMMs). This Action is both relevant and timely, as it will provide the mechanisms that will enhance the research capacity in Europe in the field of EMM's economic, social and political integration, and will allow a solid and evidence based transfer of knowledge to policymakers and civil society organizations about the key consequences and social processes related to the integration of EMMs in European societies and elsewhere. The COST network will focus at once on multiplying research capacity and on transferring knowledge to a multiplicity of audiences and stakeholders. The network will achieve these goals by compiling, documenting, archiving and pooling a large amount of data coming from various comparable studies conducted around Europe, thus providing the means to improve the empirical basis of high-quality research. Data will be made available on a web-based platform or Data Hub. The Action also includes a specific research training and educational component with the aim of guaranteeing that these coordinated efforts are carried over into the future through the next generations of researchers. The network proposed is backed by 47 researchers from 20 European countries and the US and its composition is balanced in terms of gender, geography, type of organization and career stage.

Scientific Scope

Areas of Expertise: Migration, interethnic relations; Databases, data mining, data curation, computational modelling; Political sociology; Databases, data mining, data curation, computational modelling
Keywords: Ethnic minorities; Immigrant minorities; Refugees; Survey data; Integration

COST Countries

Main Proposer: United Kingdom

Network of Proposers (22 countries – ITC: 36%): Austria; Belgium; Denmark; Estonia; France; Germany; Greece; Hungary; Ireland; Italy; Lithuania; Luxembourg; Netherlands; Norway; Poland; Portugal; Romania; Slovakia; Spain; Sweden; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): United States

European Commission and EU Agencies: 1

European RTD Organisations: 1

Industrial Dimension

SMEs: 1

Large companies: -

Total Proposers: 47 (Women: 47%/Men: 53% - ECI: 18)

COST Mission and Policies

The Action proposed pursues the COST mission in the following ways: - It envisages the formation of a truly pan-European network of scholars, practitioners and stakeholders undertaking research and designing policies that relate to the integration of ethnic and migrant minorities in Europe and



elsewhere.- It addresses a key societal challenge (the economic, social and civic/political integration of ethnic and migrant minorities) for Europe in a trans-disciplinary way and with a strong focus on the production and transfer of knowledge in ways that can be of use to policymakers.- It constitutes an open initiative in its ambition of using the COST network award to expand its reach to the widest possible membership with the aim of multiplying its impact.- It will promote and further generate research capacity within the European Research Area by providing the means to share and disseminate existing scattered research and place European researchers at the forefront of research in this field.- It will provide a wide range of career enhancement opportunities to researchers who are often excluded from networking opportunities, particularly Early career researchers and researchers from Central and Eastern Europe.- Its focus on the dissemination and integration of existing datasets as key outputs will provide great leverage to prior national funding and will contribute to further produce cutting-edge research.- Its commitment with open access and open data sharing will contribute to generate research capacity in line with the transparency and replication standards promoted by EU research policies. Moreover, this COST action promotes COST policies by: - Having a deliberate strategy of inclusiveness that is reflected in the fact that researchers from 8 inclusiveness target countries (40%) and 18 Early Career researchers (38%) are participants in this application.- Keeping gender balance at the centre of its mission, as demonstrated by the gender balance of the proposers (53% men, 47% women); something that will be facilitated by the fact that the main applicant is a woman.- Having a clear strategy for the inclusion of stakeholders and non-academic researchers in the network, as indicated by the affiliation of several of the applicants.- Fostering international cooperation beyond the European area, with the collaboration with US researchers.- Including a detailed plan to support early stage researchers through the design of Short Term Scientific Missions that are specifically targeted at them, as well as the organization of several training schools, and their active involvement in all components of the Action, including Working Group coordination roles.

CA16112 - Personalized Nutrition in aging society: redox control of major age-related diseases

(Acronym: NutriOx)

Summary

The importance of a healthy ageing process becomes apparent when considering that (a) the Generation 50+ (G50+) already has a share in population of around one third across Europe, with obvious regional variations, (b) this share is likely to increase further in the future, and (c) vitality at older age is not only an important measure of quality of life but also key to participation and productivity. The theme 'nutrition and ageing' has many different aspects and poses numerous challenges, which provide a fertile ground for many research themes and networks. Among them, the 'NutriOx' network will focus on the impact of redox active compounds in food on healthy ageing, chemoprevention and redox control in the context of major age-related diseases.

The Main Aim of the NutriOx network is the gathering of experts from across Europe, including other Mediterranean countries, and from different disciplines who are involved in the study of biological redox active food components and are relevant to the ageing organism, its health, function and vulnerability to disease. Together, these experts will form a major and sustainable EU-wide cluster in form of the 'NutriOx Centre of Excellence' able to address the topic from different perspectives, with the long-term aim to provide a scientific basis for (improved) nutritional and lifestyle habits, to train the next generation of multidisciplinary researchers in this field, to raise awareness of such habits among the wider population, and also to engage with Industry to develop age-adequate foods and medicines.

Scientific Scope

Areas of Expertise: Biochemistry

Keywords: Age-related diseases; cellular redox signaling; cellular organelles diagnostic; Nutriment-microbiome interactions; Redox active secondary metabolites



COST Countries

Main Proposer: France

Network of Proposers (10 countries – ITC: 20%): Austria; Belgium; France; Germany; Ireland; Italy; Luxembourg; Poland; Spain; United Kingdom

International Cooperation

Near Neighbour Country (NNC): Algeria; Armenia; Georgia; Morocco; Tunisia

International Partner Country (IPC):

Industrial Dimension

SMEs: 2

Large companies: -

Total Proposers: 52 (Women: 35%/Men: 65% - ECI: 11)

COST Mission and Policies

The NutriOx action addresses the COST policies by a combination of different activities including regular meetings of the entire network and of each Working Group (which combine aspects of networking with management, and structured Training Schools in research and research-associated skills) and Short-Term Scientific Missions (i.e. short international secondments for early stage researchers and specifically branded NutriOx lectureships for emerging faculty members in the early stages of their career) under the umbrella of the 'NutriOx Centre of Excellence' (NCE). The regular gatherings combine training and research with dissemination activities, such as technology transfer to Industry and public outreach.

The network-wide meetings will take place annually, and at destinations which together ensure (a) a good geographical spread and (b) inclusiveness of locations in less research-intensive countries, i.e. the actions will be brought to partners and locations, which are interesting, yet also less exposed internationally so far. They will be complemented by more specific, focussed Working Group (WG) meetings, which will be planned by each WG, and are anticipated to occur once or twice a year.

The general theme of NutriOx, i.e. research into nutrition, ageing, health and disease and the biochemistry thereof lends itself to interactions with companies active in the fields of Nutrition, Supplements, Medicine and Cosmetics and, at the same time, to intensive interactions with the wider public. Hence each of the annual Meetings and relevant WG meetings will also run a technology transfer exchange (by inviting local, national companies) and public outreach measures, such as a Café Scientifique and media presence.

The theme of NutriOx also implies a strong interest of leading research and researchers across Europe (and beyond). Therefore, several partners from Inclusiveness Target Countries (ITC) are involved in the network, for instance from Eastern Europe (e.g. Poland), the Caucasus region (e.g. Armenia, Georgia) and North African countries. The involvement of partners from ITC also ensures a geographically rather balanced network, with respect to age (because most of its measures focus on early stage researchers and faculty members) and by gender (as highlighted by the partners who have already expressed an interest and also by the fact that many of the subjects involved in NutriOx, such as Biology, Biochemistry, Nutrition and Medicine show an excellent gender balance).

Ultimately, the COST mission and policy will be ensured by the NCE, which as virtual multisite centre will provide the joint infrastructure, expertise and personnel for ongoing and future research. By sharing existing capacities for new challenges, it will catalyse the formation of a high profile and quality scientific community across Europe, which can rely on technology and expertise well beyond the limited capacity of the individual partners. Because of its multidisciplinary, multisite character, the NCE will be inclusive when it comes to participants from emergent research countries, and will strive to ensure a balance in geographical spread, age and gender. Here, its own NutriOx website will not only increase its visibility, it will also enable the integration of researchers from many countries, including less research active ones.

CA16113 - CliniMARK: ‘good biomarker practice’ to increase the number of clinically validated biomarkers.

(Acronym: CliniMARK)

Summary

Thousands of circulating proteins have been shown to be hallmarks of emerging disease, response to treatment, or a patients’ prognosis. The identification of these small molecule biomarkers holds a great promise for significant improvement of personalized medicine based on simple blood tests. For instance, diagnosis and prognosis with biomarkers (e.g. carcinoembryonic antigen (CEA)) has significantly improved patient survival and decreased healthcare costs in colorectal cancer patients. Unfortunately, despite significant investments to increase the number of biomarker studies, only ~150 out of thousands of identified biomarkers have currently been implemented in clinical practice. This is mainly caused by the time-consuming process of reliably detecting biomarkers, the irreproducibility of studies that determine a biomarkers’ clinical value, and by a mismatch in studies that are performed by academia and what is required for regulatory and market approval. To increase the number of clinically validated biomarkers, rather than further increasing the number of biomarker discovery studies, CliniMARK will improve the quality and reproducibility of studies and establish a coherent biomarker development pipeline from discovery to market introduction.

CliniMARK aims to achieve said goal by creating a BestBiomarker Practice (BBP) community, which will provide guidance to:

Classify biomarkers according to their characteristics, anticipated clinical use, and their phase of development,

Select and validate appropriate research-grade biomarker detection tests,

Select appropriately designed studies and biological samples to reliably and reproducibly validate biomarkers clinically, and

Select and report on appropriate clinical data storage, biomarker data storage, data analysis protocols, privacy concerns, ethical issues, and statistical analysis methods.

Scientific Scope

Areas of Expertise: Proteomics

Keywords: biomarkers; guidelines; technologies; clinical translation; validation

COST Countries

Main Proposer: Netherlands

Network of Proposers (15 countries – ITC: 40%): Austria; Belgium; Cyprus; Czech Republic; Estonia; France; Germany; Greece; Hungary; Netherlands; Portugal; Romania; Spain; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): Canada; United States

European Commission and EU Agencies: 1



Industrial Dimension

SMEs: 6

Large companies: 3

Total Proposers: 25 (Women: 16%/Men: 84% - ECI: 2)

COST Mission and Policies

CliniMARK, will establish a high-quality collaborative pan-European network consisting of multidisciplinary experts active in protein biomarker discovery, biomarker feasibility studies, and biomarker assay development and clinical validation. The experts in CliniMARK will establish 'good biomarker practice' guidelines for biomarker measurement and clinical feasibility studies, and apply these guidelines to biomarkers of COPD.

This will provide guidance to streamline existing biomarker research initiatives in Europe thereby strengthening Europe's research and innovation capacities in this field. CliniMARK brings together multidisciplinary experts from academic and industrial research centers and companies, in particular small and medium-sized enterprises (SMEs). The CliniMARK consortium advocates international cooperation by bringing together experts from 16 countries across the globe, which includes 14 COST member countries, 2 COST international partner countries and 5 COST inclusiveness target countries. CliniMARK includes early career investigators from across Europe. Moreover, young early stage investigators from the research groups of CliniMARK partners will be encouraged to participate in the networking activities (meetings, workshops, training schools and short term scientific missions (STSMs)) of CliniMARK. It is worth noting that early-stage female scientists have already played a major role in the conception and delineation of the objectives of CliniMARK. It is therefore expected that young female scientists will also play leading roles in the Management of the Action. As described above, gender balance will be observed in the Workshops, Teaching Activities and Short Term Scientific Missions, in which early stage researchers are expected to form the majority of participants.

CA16114 - Rethinking Sustainability Towards a Regenerative Economy (Acronym: RESTORE)

Summary

Sustainable buildings and facilities are critical to a future that is socially just, ecologically restorative, culturally rich and economically viable within the climate change context

Despite over a decade of strategies and programmes, progress on built environment sustainability fails to address these key issues. Consequently the built environment sector no longer has the luxury of being incrementally less bad, but, with urgency, needs to adopt net-positive, restorative sustainability thinking to incrementally do 'more good'.

Within the built environment sustainability agenda a shift is occurring, from a narrow focus on building energy performance, mitigation strategies, and minimisation of environmental impacts to a broader framework that enriches places, people, ecology, culture, and climate at the core of the design task, with particular emphasis on the benefits towards health.

Sustainability in buildings, as understood today, is an inadequate measure for current and future architectural design, for it aims no higher than trying to make buildings 'less bad'. Building on current European Standards restorative sustainability approaches will raise aspirations and deliver restorative outcomes.

The RESTORE Action will affect a paradigm shift towards restorative sustainability for new and existing buildings, promoting forward thinking and multidisciplinary knowledge, leading to solutions that celebrate the richness of design creativity while enhancing users' experience, health and wellbeing inside and outside buildings, in harmony with urban ecosystems, reconnecting users to nature.

The COST proposal will advocate, mentor and influence for a restorative built environment sustainability through work groups, training schools (including learning design competitions) and Short Term Scientific Missions (STSMs).

Scientific Scope

Areas of Expertise: Sustainable engineering, adaptation to long-term environmental changes; Sustainability; Environmental impact, Life Cycle Assessment

Keywords: restorative sustainability; restorative design processes-methods-tools; climate change; health and well-being; sustainable urban development

COST Countries

Main Proposer: Italy

Network of Proposers (16 countries – ITC: 31%): Austria; Belgium; Denmark; Germany; Hungary; Italy; Latvia; Netherlands; Norway; Poland; Romania; Slovenia; Spain; Sweden; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): Albania

International Partner Country (IPC): United States

Industrial Dimension

SMEs: 10

Large companies: -

Total Proposers: 33 (Women: 58%/Men: 42% - ECI: 28)

COST Mission and Policies

COST Excellence and Inclusiveness

The COST proposal will advocate, mentor and influence restorative built environment sustainability through work groups, training schools (including learning design competitions) and Short Term Scientific Missions (STSMs). Collaborative inclusiveness, diversity, equity and just practice are central to the philosophies of restorative sustainability and will be reflected within the scope, management and participant of this COST Action programme.

The RESTORE proposal core team and members to date focuses on cross-border built environment sustainability networking. We have developed the proposal to address geographical, age and gender balance throughout our activities and operations. Further widening and development of the proposal will follow this same philosophy and values.

In addition we have engaged with researchers from less research-intensive countries across Europe to participate in the development of this proposal, for example Latvia and Albania, who will play a core role in the activities of the programme.

International Cooperation

RESTORE will access and enable a wider International Focus and Cooperation through the presence of researchers from COST Member Countries, COST Near Neighbour Countries and COST International Partner Countries. A reference scientific partner is based in the United States; moreover it will access RESTORE results' development also within Canada, Australia and New Zealand.

Industrial dimension.

RESTORE will encompass a range of industrial SME partner participation across the EU member states, from sole trader to larger SME organisations across the built environment spectrum, including industry clients, designers, architects, material specialists, constructors, building operators and users, educators and advisors.

Engagement of the industrial participants will widen their understanding and implementation of built environment sustainability to embrace societal well-being, health, energy, resource consumption and climate change management.

This will have a beneficial impact on business and competitiveness for European built environment industries. The green build market sector is estimated to be growing at 22% per annum.

Resource Sharing

To promote the advocacy value of the programme, events and activities planned within the RESTORE programme will rotate across member locations. The consortium will use appropriate social media sharing platforms to ensure access to participants to enable learning and sharing of knowledge and resources. Networking activity through the RESTORE COST Programme will encourage 'Thinking Differently' to established built environment practices and working methods -leading towards communities of practice and centres of excellence, further enabling a responsible collaborative, lean and sustainable Sector.

Research Dimension

Research will play a central role across the planned RESTORE activities, enabling researchers to engage with research knowledge hubs within the EU and globally who have undertaken research in the field of restorative sustainability.

In addition this COST programme will provide further and deeper opportunities for 'spin off' research activity for researchers, research organisations and national research programmes within the Restorative Sustainability arena of the vital and critical role that buildings and facilities have on societal well-being, health, energy, resource consumption and climate change management.

CA16115 - A European Network for Connective Tissue Calcifying Diseases (Acronym: EuroSoftCalcNet)

Summary

Calcification and crystal deposition into the connective tissues is an independent risk factor for cardiovascular disease, also associated to aging, several chronic metabolic diseases & tumor malignancy and in rare inherited diseases. Initially considered as a passive, unregulated and degenerative dystrophic process, there is now evidence that this process is regulated. Advances have been made in the understanding of these finely tuned biological mechanisms; but discoveries remain to be made to provide efficient treatments to patients. Indeed, the study of these diseases is crucial for the understanding of the mechanisms of connective tissue calcification (CTC) but is hampered by the rarity of the cases and cohorts with limited access for researchers.

Advances in the diagnosis, management and treatment of inherited CTC remain also a major drawback mainly because of the lack of training among both clinicians and patients.

In view of the different actors and their common objectives, creating a network would be the opportunity to build a community bringing together for the first time not only researchers and clinicians groups but also patients and patients' associations, public institutions and industries through meetings, training schools and the use of social media in order to provide visibility, funding and advances in health management.

Scientific Scope

Areas of Expertise: Cardiovascular diseases

Keywords: Calcification, connective, tissues; Inherited genetic rare diseases; Biomarkers; Cohorts; Clinical trial, drugs

COST Countries

Main Proposer: France

Network of Proposers (15 countries – ITC: 27%): Belgium; Croatia; France; Germany; Greece; Hungary;



Israel; Italy; Netherlands; Poland; Portugal; Spain; Sweden; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): Algeria
International Partner Country (IPC): United States

Industrial Dimension

SMEs: 1
Large companies: -

Total Proposers: 43 (Women: 49%/Men: 51% - ECI: 19)

COST Mission and Policies

The Action respects the COST Policies for the following reasons:

Excellence and Inclusiveness:

Inclusiveness: the Consortium includes 4 Inclusiveness Target Countries (ITC) and 1 Near Neighbour Country (NNC). In addition, a representative of ITC have a leadership role in COST Action as he/she will be WG leader and proposed to the National Coordinator to become appointed representative in the MC.
Excellence: The proposed COST Action is interdisciplinary, i.e. it includes partners from health sciences, clinical medicine, biology, basic medicine, chemical sciences, as well as industrial partners and Patients' associations.

Early career investigators:

The Consortium includes 19 Early Career Investigators.

Geographical coverage:

The Consortium includes partners from 15 COST Member Countries including COST Cooperating State, 1 Near-Neighbour Country and 1 International Partner Country.

SME & Industry cooperation:

The Network of Proposers include representatives of industrial partners.

Gender:

A special effort was made to respect gender parity. Thus, the Network of Proposers has established a perfect gender balance (51% of males, 49% of females). In addition, women will have a leadership role in EuroSoftCalcNet COST Actions as a gender balance will be respected among Working Group leaders, when elected by Action MC.

International Cooperation:

The Action will beneficiate from international cooperation with a partner from the United States of America. Partners benefit from individual partnerships in International Partner Countries. The participation of representatives from IPCs is expected on their own founding resources.

CA16116 - Wearable Robots for Augmentation, Assistance or Substitution of Human Motor Functions (Acronym: WearableRobots)

Summary

Wearable Robots (WRs) is an emerging field of personal devices that are integrated parts of human functioning, and that are constructed of typical robotic components such as actuators, sensors and control algorithms. Where conventional robots were typically intended for use in industrial environments to help in tedious and repetitive tasks and tasks requiring high precision, the situation is currently evolving to one where there is an increasing direct physical interaction between robot and human operator. The interaction with humans in WRs is not only physical, but also includes cognitive aspects, as in the interaction, control of functions is typically shared by human and machine. WRs can be used either to augment, train or supplement motor functions or to replace them completely. Wearable Robots

operate alongside human limbs, as is the case in orthotic robots, exoskeletons or robotic suits. WRs are expected to find applications in Medical, Industrial and Consumer Domains, such as neuro-rehabilitation, worker support, or general augmentation. As WRs continuously interact with humans in multiple situations, Human Robot Interaction, Ergonomics, and Ethical, Legal and Societal (ELS) considerations, as well as early involvement of stakeholders are of essential interest. This Action focuses on the European integration of different underlying disciplines in science and engineering, as well as on engaging of stakeholders to improve WR technology and its societal impact.

Scientific Scope

Areas of Expertise: Control engineering; Product design, ergonomics, mechanical engineering aspects of man-machine interfaces; Ethics of other engineering and technologies; Robotics for medical applications (medical engineering); Sport and fitness sciences

Keywords: Wearable Robots; Physical Human Robot Interaction; Human Motor Control; ELS Aspects; Quality of Life

COST Countries

Main Proposer: Spain

Network of Proposers (18 countries – ITC: 39%): Austria; Belgium; Bulgaria; Cyprus; Estonia; France; Germany; Hungary; Iceland; Ireland; Italy; Netherlands; Serbia; Slovakia; Spain; Switzerland; Turkey; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): China; Japan; Singapore; South Korea; United States

International Organisation: 1

Industrial Dimension

SMEs: 5

Large companies: 1

Total Proposers: 50 (Women: 40%/Men: 60% - ECI: 23)

COST Mission and Policies

Main aim of the Action is to integrate the diverse expertise and develop the trans-domain competences that are essential to the development of a new generation of Wearable Robots (WRs). This new generation of WRs is characterized by better cooperation with and adjustment to the human users, as well as to specific domains of application, thus allowing WRs to become a mainstream type of technology with potential for greatly expanded socioeconomical impact. This requires to involve different Science & Technology expertise, Ethical, Legal, and Societal Aspects expertise, as well as to early engage with important stakeholders, according a Responsible Research and Innovation approach.

The action supports the following breakthroughs in WRs:

Scientific: Knowledge on how to perform effective physical Human-Robot Collaboration

Technological: Integration of engineering disciplines to achieve desired WR functions

Socio-economical: a) Addressing an aging society by developing beneficial WR applications;

b) Embedding WR in society.

The statistics of the supporting network show that there is a good basis to set up a cross-domain, multi-faceted network around a new generation of WRs, with sufficient critical mass to perform the work that is proposed. This involves an adequate number of ELS experts as well as researchers from the necessary wide range of science and engineering expertise, complemented by experts from WR-component and WR-devices industry, as well as experts closely linked to user networks, such as clinical experts. Other stakeholders will be involved through dissemination and communication activities, for example through targeted newsletters or workshops. Finally, the Action could be already linked to key IPC researchers from the WR domain including the main global areas of WR R&I i.e. USA and Asia. Additional selected researchers from sideways important fields will be approached as Invited Speakers, to inform the Action

about developments in their fields, such as 3D printing, new materials, FES, BCI and other relevant component technologies.

Specific measures to support COST policies

- Involve ITC Action Participants in proposal stage.
 - Assign leading roles in the Action secondary (after gender balance) by preference according to ITC involvement.
 - Promote participation of ITC representatives (especially ECI, as ITC representatives are usually senior researchers) for STSMs combined with lab visits to established labs
 - Assign leading roles in the Action by preference according to gender balance.
 - Make gender balance a recurrent topic in MC meetings
 - Promote gender balance in authorship of reports and publications, organization of events and keynotes.
 - Make ECI participation a recurrent topic in MC meetings
 - Encourage ECI participation through participation in Action events and preparations and through STSMs
- Dissemination will be primarily focused on: user representative bodies (such as application industry associations; medical, healthcare or physical therapy associations; and patient or carers platforms), the Action Participants, research institutes active in WR relevant areas, Early Career and female (underrepresented gender) Investigators, SMEs and large Industry selling and developing WRs, policy makers and funders (at European and national level), CSOs, regulatory bodies, standardization and benchmarking committees (IEC, ISO, IEEE) as well as the general public.

CA16117 - Chemical Elements as Tracers of the Evolution of the Cosmos (Acronym: ChETEC)

Summary

The Universe started with a big bang 13.7 billion years ago and has been expanding ever since. A few hundred million years later, the first stars and galaxies started forming. A powerful way to study the evolution of the cosmos is via the chemical fingerprints left by the nuclear reactions that take place in stars. Recently, many challenges to our understanding of the early universe have spawned from observations of the oldest stars in our Galaxy, and the Nobel prize in physics was awarded to using stellar thermonuclear explosions as candles for cosmological distances. The ESA Gaia satellite and many ground-based spectroscopic surveys (Gaia-ESO, ESO-PESSTO, Pan-STARRS) will bring new discoveries. In parallel, world-leading nuclear physics experimental facilities are located across Europe; among them GANIL (France), the first underground laboratory for nuclear astrophysics LUNA (Italy) and the accelerator facility FAIR (Germany), one of the largest research projects in the world, currently being built at GSI. To maximise the scientific and innovative return of these huge European investments it is essential: to coordinate research efforts in astronomy, astrophysics, and nuclear physics; to build pan-European interdisciplinary bridges between these disciplines; and to link this blue skies research with SMEs who can provide the technological tools required for the exploitation of data, software and techniques and in return join the innovation cycle. These are the goals of this Action. The Action will also train a new generation of European scientists providing inter-disciplinary expertise and knowledge-transfer skills with the aim of strengthening the Innovation Union.

Scientific Scope

Areas of Expertise: Nuclear astrophysics (theory); Astrophysics, astronomy, space sciences; Stars and stellar systems

Keywords: Astrophysics; Astronomy; Nuclear physics; Cosmology; Computational physics

COST Countries

Main Proposer: United Kingdom

Network of Proposers (27 countries – ITC: 48%): Austria; Belgium; Bulgaria; Croatia; Denmark; Estonia; Finland; France; Germany; Hungary; Ireland; Italy; Latvia; Malta; Netherlands; Norway; Poland; Portugal; Romania; Serbia; Slovakia; Slovenia; Spain; Sweden; Switzerland; Turkey; United Kingdom



International Cooperation

Near Neighbour Country (NNC): -
International Partner Country (IPC): -

Industrial Dimension

SMEs: 4
Large companies: -

Total Proposers: 38 (Women: 39%/Men: 61% - ECI: 6)

COST Mission and Policies

The Action will contribute to the COST policies and thus its Mission in many ways.

Concerning COST Excellence:

- Answering the key open questions listed in the proposal would not be possible without a multi-disciplinary approach linking nuclear physics, astrophysics and astronomy. Funding in these fields are, however, separated by national and disciplinary boundaries. The main goal of this COST Action is to build upon and extend synergies at the European level between these disciplines. Synergy agents interactions with WG leaders will promote and facilitate these.

- Furthermore, it is impossible for a single research group to develop the modelling theoretical pipeline. This Action will bring together all the world-leading experts scattered across Europe to establish this pipeline.

- This multi-disciplinary European Action will provide an enhanced training to ECIs as well as many networking activities.

Concerning COST International Cooperation:

- The modelling pipeline connects Nuclear experimental facilities to astronomical observing facilities (large telescopes and satellites), which represent billions of Euros of investments. This modelling pipeline will create a theoretical framework of analysis of the data obtained at these facilities, accelerate the dissemination of results between the facilities and related theory groups and thus boost their innovation cycle.

- The Action will coordinate efforts at these large facilities and the complementary small/medium large facilities. It will create an extensive network of resources, expertise and tools. The network will also provide motivation and guidance for new experiments and observations via this extensive exchange.

Concerning COST Industrial dimension:

- Fundamental research in nuclear physics and astrophysics is usually disconnected from other sectors. This Action has identified key technological challenges that would greatly benefit from an cross-sectoral cooperation and has a great potential for exploitation. The Action will set-up a dedicated inter-sectoral working group, including SMEs, to tackle these challenges and exploit breakthroughs. SMEs will also play a key role in delivering training at Schools and hosting ECIs for STSMs, which will enable a cross-disciplinary training. This will better prepare ECIs for a career both in industry or research and will enhance the human capacity and strengthen the Innovation Union. A bi-directional knowledge transfer coordinator (KTC) will be appointed to oversee and maximise knowledge transfer across the Action and the exploitation of its results.

Concerning COST Inclusiveness:

- Gender: The Action will set-up a gender balance strategy (see Sect. 3.2 for details) and a gender coordinator to oversee its implementation, monitor its progress and report on its impact.

- Pan-European: This Action will undertake the following steps to establish a level playing field across Europe:

- 1) Share a network of expertise, tools and resources that ITC researchers will be able to tap into.
- 2) Give priority to ITC members for STSMs to access Europe's central hubs of knowledge.
- 3) Encourage ITC members to take leading roles (MC members, ...)
- 4) Organise events like training schools in ITC countries to raise profile of host institutions
- 5) Elect a pan-European coordinator to monitor progress made on Inclusiveness and provide additional support for ITC members.

CA16118 - European Network on Brain Malformations

(Acronym: Neuro-MIG)

Summary

Among congenital brain disorders, malformations of cortical development (MCD) are a group of rare diseases, but constitute a major cause of chronic epilepsy and psychomotor disability worldwide. Little is known about the natural history and no curative therapy exists. The etiology is mainly genetic, and rarely environmental or multi-factorial, but diagnosis requires special expertise among neurodevelopmental disorders. The emergence of novel neuroimaging and genomic technologies potentially allows rapid and accurate characterization and gene discovery, but challenges scientists and clinicians of efficiently interpreting and translating these data for the benefit of patients. In Europe, expertise on MCD is very fragmented and confined to personal interest of a few experts and basic scientists studying cortical development are not always connected with clinicians. This COST Action will, for the first time, bring together clinicians and researchers in the field of brain malformations, to create the interdisciplinary, pan-European Network Neuro-MIG, advancing the understanding of MCD pathophysiology and translating this knowledge to improve the diagnostic and clinical management of the patients. This Action will harmonize MCD classification, based on the advances in genetics and neuroimaging, develop guidelines for clinical management, create best practice diagnostic pathways, coordinate databases from different countries to utilize them for collective research initiatives aimed at developing appropriate therapies, identify common pathophysiological mechanisms through collaborations, educate young clinicians and scientists, and stimulate translational and transnational exchange. This Action will join forces of MCD experts to reduce health care costs and increase the quality of life of the affected individuals and their families.

Scientific Scope

Areas of Expertise: Molecular genetics, reverse genetics and RNAi

Keywords: brain; cortex; malformation; genetics; neuroimaging

COST Countries

Main Proposer: Netherlands

Network of Proposers (14 countries – ITC: 29%): Austria; Belgium; Croatia; Denmark; France; Germany; Israel; Italy; Netherlands; Romania; Serbia; Spain; Turkey; United Kingdom

International Cooperation

Near Neighbour Country (NNC): Egypt

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

Industrial Dimension

SMEs: 1

Large companies: -

Total Proposers: 43 (Women: 56%/Men: 44% - ECI: 12)

COST Mission and Policies

MCD research currently relies on individual or national efforts and infrequent collaborations of super motivated clinician and basic scientists. This COST Action will leverage a break-through in translational MCD research by building a strong network of MCD experts, producing protocols and guidelines, and facilitation of data sharing in order to reinforce research aimed at finding genetic cause and targeted therapy. Hereby it will follow the COST policies as outlined below.

Excellence and Inclusiveness:



Already excellent MCD research groups exist, and by connecting and collaborating they will leverage their results to the optimal level. Bringing MCD experts together in this COST Action will promote evaluation of European state of current diagnosis and disease management, stimulate gene discovery and understanding of disease mechanism, stimulate basic research to models for targeted therapies, all leading to optimized patient care throughout Europe. Also, building this network strengthens the position of Europe in brain research and facilitates networking and training opportunities for young researchers. Inclusiveness is an integral feature of this Action. Already almost one third of involved countries are ITCs, and the MC will commit itself to adding more (minimum of 3 extra) ITC partners in the first year of the Action by actively approaching potential partners through our network, and planning WG meetings in several countries, especially ITCs, not only to integrate knowledge but also to provide a benefit for a maximum number of patients by involving and reaching out to clinicians and organise meetings in countries where the knowledge on MCD is less widespread or the diagnostic possibilities are more limited. The proposers of this Action are confident that gender balance will be respected, which is reflected by the already quite even gender contribution. This will be further stimulated by composing working groups by approximately equal numbers of males and females and to do the same with the assignment of Leadership roles (e.g. WG leader, Task Coordinators). Special attention will be given to encouraging participation and creating new opportunities for ECIs (e.g. training schools, STSMs, appointment of ECIs in MC, WG) thereby securing future MCD research. STSMs leading to more equal geographical distribution of knowledge will be encouraged.

International cooperation:

In order to maximize the number of stakeholders benefiting, especially the group of MCD patients, this Action will actively approach worldwide experts from IPCs and NNCs (4 partners are already committed) and reach out to worldwide patient organizations. These partners will be involved in the new guidelines, will be invited for seminars and stimulated to promote the Action activities in international meetings and consortia on complementary disorders (e.g. ID, autism, cerebral palsy and epilepsy consortia) thereby providing network opportunities and stimulating international cooperation.

Industrial dimension:

For building the database and website this Action partners with a business software developer from a COST country. This way the Action members will benefit from state-of-the-art technological solutions and user friendliness, professionalizing the appearance and providing an opportunity for industry to showcase their expertise and seek novel partners in research.

CA16119 - In vitro 3-D total cell guidance and fitness

(Acronym: CellFit)

Summary

The present Action is aimed at refining our understanding of the in vivo microenvironment, reducing the differences when translating it in vitro, to create 3D total guidance ex vivo culture systems for the replacement of animal use.

Traditional in vitro 2D culture systems fail to imitate the physiological and biochemical features of cells in the original tissue. Differences between the microenvironment provided by cell culture models and that distinct of the in vivo tissues are significant and can cause deviations in cell response and behaviour.

In this COST Action, the present understanding of in vivo micro/macro-environment will be refined in order to reproduce in vitro the physiological system in the best possible way: surface topography, substrate stiffness, mechanical stimulation, chemical cues and localised density will be analysed. This will allow to develop reliable '3D total guidance' in vitro models reducing the number of animals used and allowing a safe translation of the present basic knowledge in cell repair and regeneration from the laboratory bench to the clinical application, with a positive impact on every day's life patients and general Health costs.

Researches in this field are being performed by different groups in the EU, but efforts need to be coordinated in order to avoid duplication, set targets and guidance for future research and to standardise protocols through a large interdisciplinary collaborative EU network. These goals can only be achieved under a COST programme

Scientific Scope

Areas of Expertise: Cell differentiation, physiology and dynamics; Biotechnology (non-medical), bioreactors, applied microbiology for medical biotechnology; Cell biology and molecular transport mechanisms

Keywords: 3D culture system; micro/macro environment; cell fitness; cell guidance; chemical/mechanical cues

COST Countries

Main Proposer: Italy

Network of Proposers (24 countries – ITC: 46%): Belgium; Bulgaria; Croatia; Czech Republic; Denmark; Estonia; Finland; France; FYR Macedonia; Germany; Greece; Hungary; Ireland; Israel; Italy; Netherlands; Poland; Portugal; Serbia; Slovenia; Spain; Switzerland; Turkey; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): -

European Commission and EU Agencies: 1

Industrial Dimension

SMEs: 2

Large companies: -

Total Proposers: 52 (Women: 44%/Men: 56% - ECI: 12)

COST Mission and Policies

The main objective of the proposed Action is to constitute a European network of excellence, with competence on all levels within fundamental biology, bio-engineering as well as clinical research, to create synergies, to optimize the use of human and financial resources and foster the value of ex vivo models for European R&D operations. Ultimate goals of the Action are to refine our understanding of the 'in vivo' microenvironment, reduce the differences when translating it 'in vitro', to create 3-D total guidance ex vivo culture systems for the replacement of animal use. The approach proposed couples biological processes with future and emerging technologies to study intra and inter cell interactions, regulations, sensing (nano-chem-artificial and macro molecular crowding) and communications (exosomes and microRNAs).

The Action will bring together researchers and biotechnology companies from different European countries, who are currently working on various aspects of the specific models. In particular a network of experts from 21 COST countries, as well as institutions from COST Inclusiveness Target Countries (ITC), and Near Neighbour Countries (NNC) are directly involved in preparing this proposal, on the basis of mutual benefit.

The topic proposed is a very new and cutting edge research with immediate application in many different fields, from health sector to bio technology that make the objectives TIMELY for the development of new 3-D total guidance in vitro systems and ready to use kits that may find promising commercial niches within European Biotech Companies to boost economy and create new jobs. A general objective of this action is to generate economical wealth for Europe, boosting activities of many newly funded SMEs and heavy technology spinout companies as well as inspiring young scientists to become future entrepreneurs, and create wealth and new jobs for EU.

The results obtained will allow to reduce the number of animals used to address similar questions with a particular emphasis on the concept of non-invasive investigations and will represent a new pharmacological and toxicological tool for the evaluation of molecules, drugs, vaccines and medical

devices that will allow to further decrease the current use of animal testing.

The network will avoid duplication of research in different European member states and optimize communication between scientists, clinicians, industry and patients' associations, both using traditional approaches, and social media as permanent tools for dissemination, interaction and translation of new findings as well as visibility and integration of researchers. The Action will also encourage mutual benefit and interactions supporting Short Term Scientific Missions (STSMs) to share new technologies and tools between different groups of the Action as well as Training schools specially dedicated to young scientists to acquire their necessary leadership abilities, regardless of their gender, age or origin.

CA16120 - European Epitranscriptomics Network

(Acronym: EPITRAN)

Summary

The proposed COST actions aims at fostering the development of the emerging field of epitranscriptomics in Europe. We believe that, by understanding the role of RNA modifications in physiology and pathology, novel and powerful disease biomarkers and drug targets could be identified. This will in turn lead to the development of a whole new class of diagnostic tools and targeted therapies, with particular attention devoted to cancer treatment. Furthermore, mechanistic understanding of this set of phenomena will allow to deepen our understanding of the contribution of post-transcriptional regulation of gene expression to proteome and thus phenotype variation.

By implementing collaborative efforts, data sharing and mobility-based learning opportunities, this COST action will accelerate discovery in the epitranscriptomics field and contribute to the ultimate realization of this vision. Tightly integrating biotech companies in this networking initiatives will be key to the complete achievement of the action goals and a considerable added value for the European biomedical sector, potentially offering a competitive advantage in the ensuing market.

Scientific Scope

Areas of Expertise: Transcriptomics; RNA synthesis, processing, modification and degradation; Bioinformatics; Transcriptomics; Epigenetics and gene regulation

Keywords: Epitranscriptomics; RNA Modifications; Post-transcriptional Control of Gene Expression; Drug Discovery; Biomarker Discovery

COST Countries

Main Proposer: Italy

Network of Proposers (13 countries – ITC: 23%): Austria; Belgium; Czech Republic; France; Germany; Hungary; Israel; Italy; Norway; Poland; Sweden; Switzerland; United Kingdom

International Cooperation

Near Neighbour Country (NNC): Russian Federation

International Partner Country (IPC): -

Industrial Dimension

SMEs: 2

Large companies: -

Total Proposers: 23 (Women: 35%/Men: 65% - ECI: 2)

COST Mission and Policies



The EPITRAN Action will structure European scientists working on an emerging topic that has the potential to revolutionise the understanding of how gene expression is modulated in cell development and disease, and which has entered an exponential growth phase in the US and China. Many leading European academic experts in the field are already involved as proposers, representing an active new community in Europe that interacted through a pre-proposal meeting, done in person, before the project submission. At the beginning of its activity, the network will widen the participation of researchers, clinicians, R&D companies, other stakeholders by ad hoc dissemination measures embedded in its dissemination plan. The Action proposers collected several expressions of interests by scholars and stakeholders as additional future participants, registering positive feedbacks. A particular policy toward the involvement of Inclusiveness Target Countries has also been planned and described in the application. In the course of the action, extreme attention will be given to the enrolment of young competitive principal investigators (already in 2 among the network of proposers) and the training of early-stage researchers through the STSMs, to invest on future excellent scholars working on epitranscriptomics. Joint grant applications and recommendations for EU research funding are among the central objectives of the network and in this framework measures to involve EU institutions and funding agencies' representatives are key actions of the EPITRAN dissemination plan. EPITRAN is keen to foster EU research capacity and competitiveness all over the world, with relevant implications for the European health sector and biomedical industry. At the moment of the proposal, the EPITRAN network involves 13 countries, of which 25% COST Inclusiveness Target Countries and one Near-Neighbour Country Institution, and eight of twenty-three proposers (35%) are women. These features are the result of a clear strategy in widening the participation to more countries and scholars as possible, with the intent to integrate EU-wide research and gender balance in the action. To increase this balance during its implementation is a strategy of the network. EPITRAN will act assuring equal access to knowledge, infrastructures, funding and resources, offering the same to the action's newcomers, promoting geographical, age and gender balance throughout its activities and operations. The team of proposers includes two representatives from R&D companies specialising in research tools, being the involvement of industrial research a pillar of the network's actions. The development of drugs and technology-transferable tools for diagnostics based on epitranscriptomics are objectives of a dedicated working group whose prerequisite is the recruitment of scientists from companies in the MC and as WG members to identify a roadmap for innovation in health economy through epitranscriptomics. Apart from the participating firms, the network collected the interest in participating in the action by several representatives from other companies specialised in biomarker and drug development, as well as representatives from clinical research institutes. The Action activities will be a solid opportunity to establish academy-industry collaborations and to create a platform for knowledge transfer and co-creation of innovation.

CA16121 - From Sharing to Caring: Examining Socio-Technical Aspects of the Collaborative Economy

(Acronym: SharingAndCaring)

Summary

The terms "Sharing Economy" or 'Collaborative Economy' have been commonly used in recent years to refer to a proliferation of initiatives, business models and forms of work.

The main objective of this action is to develop a European network of actors (including scholars, practitioners, communities and policy makers) focusing on the development of collaborative economy models and platforms and on social and technological implications of the collaborative economy through a practice-focused approach.

The specific aims of the proposal are:

- (i) To develop a deeper understanding of the collaborative economy phenomenon in all its aspects, by studying in-depth the sociotechnical systems and human practices involved, comparing and reflecting upon local, regional, national and international initiatives;
- (ii) To discuss and critique elements of the current discourse on the collaborative economy, and proposing a richer definition and characterisation of the phenomenon;
- (iii) To formulate a European research agenda for the socio-technical aspects of the collaborative economy, including specifically the design of future technological platforms, the technical infrastructure, their legal, ethical and financial implications;
- (iv) To articulate a European research perspective on the collaborative economy, based on EU values of social innovation, and in line with the Europe 2020 strategy objective to become a smart, sustainable and inclusive economy by 2020.

The Action will produce online resources including publications offering a comprehensive view of the current European collaborative economy and socio-technical and policy recommendations for the future.

No prior COST action has been dedicated to this topic thus far.

Scientific Scope

Areas of Expertise: Media and communications, social aspects of information science and surveillance, socio-cultural communication; Organization studies; Sustainability; Human computer interaction and interface, visualization and natural language processing; Work and profess

Keywords: Collaborative Economy; Social Innovation; Socio-Technical Systems; CSCW; Human practices

COST Countries

Main Proposer: Ireland

Network of Proposers (11 countries – ITC: 27%): Denmark; Finland; France; Germany; Greece; Ireland; Italy; Portugal; Romania; Sweden; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): Australia

Industrial Dimension

SMEs: 1

Large companies: -

Total Proposers: 16 (Women: 56%/Men: 44% - ECI: 9)

COST Mission and Policies

The COST Action 'SharingAndCaring' will enable the creation and development of a European network of actors (including scholars, practitioners, communities, businesses and policy makers) examining the collaborative economy, its models and platforms, and studying the social and technological implications of the collaborative economy through a practice-focused approach.

The Action addresses the COST Excellence and Inclusiveness Policy by:

Providing networking and development opportunities for Early Career Investigators, who will be given leadership roles and responsibilities in WGs, event organization and participation, and deliverables. 56% (9 out of 16) of the initial proposers are Early Career Investigators.

Increasing the impact of research on policy makers, national and regional authorities, communities and



the private sector by providing reports, policy briefs and White Papers on the mechanisms and implications of the collaborative economy. The Action involves these stakeholders in its strategic events, and one non-governmental organization and an SME as initial proposers in the Network itself.

Connecting pioneering research communities across Europe and internationally. The initial set of proposers covers 11 COST Countries of which 27.3% (3) are Inclusiveness Target Countries. The action additionally involves 1 International Partner Country.

The Action sustains an almost equal gender balance (43.8% M / 56.3% F). The main proposer and coordinator is female.

The Action plans to host at least 3 of its 8 combined MC Meetings and WG Workshops in the ITC countries in order to increase interest in the Action's themes and generate more partners in these regions.

'SharingAndCaring' will act as a springboard for a European multi-disciplinary approach to the collaborative economy, underpinning scientific breakthroughs in support of the practices occurring in the diverse manifestations of the phenomenon and of the technological infrastructures that enable them. The Action will be key in strengthening European research and innovation capacity regarding the collaborative economy, connecting disciplines such as collaborative computing and computer science, social sciences, community informatics, organisational and workplace studies with practitioners and activist communities. 'SharingAndCaring' will champion themed events, collaboration opportunities and training initiatives engaging a variety of actors (researchers, activists, community organisations, businesses and public and policy institutions), and will build a common digital space for networking and exchange.

CA16122 - Biomaterials and advanced physical techniques for regenerative cardiology and neurology

(Acronym: BIONECA)

Summary

Cardiovascular diseases are the leading cause of death in the western world. A progressively ageing population is increasingly affected by neurological diseases, which brings a negative impact on European economies with more than 1 billion euros cost of patients rehabilitation per year. Faced with too slow and expensive progress in development of new therapies, new approaches to discover therapeutic protocols are urgently needed. One of the most promising strategies is based on stem cells application for cardiovascular and neurologic diseases and on the employment of biomaterials for supporting cultivation and integration of stem cells in disease-affected tissue. However, considering the tremendous amount of completely new data and a very wide spectrum of stem cells applications, there is the problem of unnecessary multiplication of experiments and redundancy in fragmented European centres. Thus, the regenerative medicine, as the youngest biomedical field, requires a harmonized multidisciplinary approach involving urgent coordinated action among stem cell and adjoined experts. The main aim of BIONECA project is to establish the platform for coordinated interaction among top-level scientists of the following scientific disciplines: regenerative cardiology, regenerative neurology, stem cell biology, physics, chemistry, material science, material engineering, rapid prototyping, computational modelling and advanced imaging technologies. This interdisciplinary approach is highly needed at this moment and it can be obtained exclusively through the COST networking tool. BIONECA aims to become the most effective instrument in coordination, harmonization and defragmentation of the stem cell research across Europe, bringing unification of protocols for application of stem cells for neurological and cardiovascular diseases.

Scientific Scope

Areas of Expertise: Biophysics; Cardiovascular diseases; Neurological disorders (e.g. Alzheimer's disease, Huntington's disease, Parkinson's disease); Stem cell biology; Biomaterials, metals, ceramics, polymers, composites

Keywords: cardiovascular and neurological diseases; stem cells; biomaterials; regenerative cardiology and neurology; advanced characterization techniques

COST Countries

Main Proposer: Italy

Network of Proposers (14 countries – ITC: 50%): Austria; Croatia; Czech Republic; Finland; France; Germany; Greece; Hungary; Italy; Poland; Portugal; Serbia; Slovenia; Spain

International Cooperation

Near Neighbour Country (NNC): -

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

Industrial Dimension

SMEs: 2

Large companies: -

Total Proposers: 27 (Women: 22%/Men: 78% - ECI: 2)

COST Mission and Policies

BIONECA has undoubtedly an ambition to breakthrough scientific developments leading to new concepts and products. The development of new therapies for regenerative cardiology and neurology through an interdisciplinary and largely international network is one of the main aims of BIONECA. Novel cells as well as cell-free therapies are certainly highly promising approach of modern medicine. Development of composite scaffolds and systems with controlled drug delivery will play a key role for these novel therapies. Success in this direction needs, undoubtedly, a multidisciplinary approach. BIONECA consortium composition is carefully and strategically selected for establishing an intensive interaction among top-level European Institutions of different scientific communities like physics, chemistry, mathematics, informatics, material science, material engineering, nanotechnology, surface science, rapid prototyping, advanced imaging technology, cell biology, molecular biology, regenerative cardiology, and regenerative neurology. This interdisciplinary approach, rather unusual for biomedical field, can be achieved only using COST networking tool as the most effective instrument in coordination, harmonization and defragmentation of the stem cell research in neurology and cardiology across Europe. Naturally, this is the way how BIONECA wants to connect high-quality scientific communities throughout Europe and worldwide, in order to produce faster progresses in these areas.

One of the key aims regard the networking opportunities for Early Career Investigators. Short-Term Scientific Missions will be encouraged. Young scientists belonging to a given research area will visit an institution of complementary interest, with a beneficial influence on their future career opportunities. The name BIONECA could be taken as equal to the term international cooperation. Besides the exchange of personnel, the scientific meetings and workshops will also contribute to establishing and consolidating a pan-European scientific community in Regenerative Cardiology and Neurology, bridging separate fields of disciplines and bringing together the current isolated approaches. BIONECA will induce the proposed scientific and technological networking to pilot innovative and multidisciplinary activities, with large consequent benefits, producing a faster progress in all the involved disciplines.

Faced with too slow and too expensive progress in development of new drugs, new approaches in regenerative medicine are urgently need. Application of cell-free systems and scaffold functionalization directly by surgeons is expected to influence also regulatory bodies for approval of novel therapeutic methods and their competitive price will attract the attention of the private sector. BIONECA aims at clustering research institutes with SMEs for a mutual beneficial influence. The scientists involved in COST mission will serve as key liaison officers for this task. This is the way how BIONECA, via international cooperation, addresses research excellence connecting with industrial dimension and interests.

In order to produce an high impact on the policy makers it is foreseen to invite some of them to each important event organized within the Action.

To secure excellence and inclusiveness, networking of researchers is stressed as a key point of BIONECA interest, with a special attention devoted to geographical, age and gender balance. Composition of the consortium is scientifically broad enough to fulfill the aims and simultaneously sufficiently compact for fast spreading of excellence through cross-borders.

CA16123 - Safety Culture and Risk Management in Agriculture

(Acronym: SACU)

Summary

Agriculture is one of the most hazardous industries in Europe, measured by work-related injuries, illnesses, disabilities and deaths. Statistics and studies show great differences in national injury and illness rates, as well as approaches and support for prevention of these adverse outcomes. Only few successful interventions have been found in systematic reviews. Understanding of the determinants of safety culture is lacking and consequently, well-informed actions to improve health, safety and risk management cannot be made. This Cooperation in Science and Technology (COST) Action explores reasons why agriculture lags behind other sectors, and why some countries have been more successful than others in reducing agricultural injuries and illnesses. This COST Action will 1) evaluate health and safety programmes and approaches on the national level, 2) identify knowledge, attitudes, behaviours and priorities among farmers regarding safety, health and risk management, 3) identify effective measures for training and integrating vulnerable populations (including refugees) into the agricultural workforce, 4) develop means and indicators for monitoring progress and evaluating the impact of interventions on injuries and illnesses in agriculture, and 5) disseminate results to stakeholders and the agricultural community. This COST Action will produce benchmarked and evidence-based recommendations to inform and guide national initiatives and efforts. The results will be made available to the scientific community, policy makers, vocational training, administrative and insurance personnel, farmers and practitioners working towards better social sustainability and safety culture in agriculture.

Scientific Scope

Areas of Expertise: Health services, health care research; Sustainable production; Sustainable Agriculture
Keywords: agriculture; safety; risk management; food security; production culture

COST Countries

Main Proposer: Finland

Network of Proposers (12 countries – ITC: 50%): Belgium; Croatia; Finland; Germany; Ireland; Italy; Latvia; Lithuania; Poland; Romania; Sweden; Turkey

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): -

Industrial Dimension

SMEs: -

Large companies: -

Total Proposers: 14 (Women: 50%/Men: 50% - ECI: 6)

COST Mission and Policies

Agriculture is one of the most hazardous industries in Europe. The mission of this COST Action is to reduce work-related injuries, illnesses, disability and deaths in the European countries in the long term. This COST Action will 1) evaluate health and safety programmes and approaches on the national level, 2) identify knowledge, attitudes, behaviours and priorities among farmers regarding safety, health and risk management, 3) identify effective measures for training and integrating vulnerable populations (including refugees) into the agricultural workforce, 4) develop means and indicators for monitoring progress and evaluating the impact of interventions on injuries and illnesses in agriculture, and 5) disseminate results to stakeholders and the agricultural community. This COST Action will produce benchmarked and

evidence-based recommendations to inform and guide national initiatives and efforts. The results will be made available to the scientific community, policy makers, vocational training, administrative and insurance personnel, farmers and practitioners working towards better social sustainability and safety culture in agriculture.

The policies in this Action prioritize involvement of 'Inclusiveness' Target Countries (ITC), Early Career Investigators (ECI) and gender balance. Finland serves as Action Chair and other Action countries include Belgium, Croatia, Germany, Ireland, Italy, Latvia, Lithuania, Poland, Romania, Sweden and Turkey (12 countries in total). At the proposal stage, 50 % of the Action members are from Croatia, Latvia, Lithuania, Poland, Romania and Turkey, which are COST Target Countries. 'Inclusiveness' is a high priority as Poland and Romania alone represent 1/3 of the farm holders in EU. International partners from USA and New Zealand have expressed interest to join. The Action members are well connected to health, safety culture and business risk management experts practically in all countries with substantial agriculture. This COST Action provides research opportunities for Early Career Investigators (ECI). The Action includes six members at Early Career Investigator stage. Action policies encourage involving ITC and ECI members in Working Groups and Short-Term Scientific Missions. Gender equity has been a high priority in network building as well. About half of the Action members are women.

This Action strengthens European research and innovation capacity by bringing together a network leading researchers and practitioners throughout Europe and worldwide to address a common problem. Synergies will be achieved through the collaboration between persons representing various countries and scientific backgrounds (agricultural medicine, agriculture occupational health and safety, farm safety management, risk management, ergonomics, cultural studies, cultural planning, safety system policies, social policy, social psychology, human geography, future studies, rural business, environmental sciences, economics, epidemiology). The Action facilitates scientific discovery leading to novel concepts and policy recommendations towards improved safety culture and risk management in agriculture and the food supply chain. The results will be made available to the scientific community, policy makers, vocational training, administrative and insurance personnel and practitioners working towards better safety culture and social sustainability in agriculture.

CA16124 - Brillouin Light Scattering Microspectroscopy for Biological and Biomedical Research and Applications

(Acronym: BioBrillouin)

Summary

This Action will establish a collaborative network of leading European researchers and instrument developers working in the field of Brillouin Light Scattering Spectroscopy (BLSS) applied to life sciences and health related problems. BLSS uses visible or infrared light from a laser source to probe the mechanics of a material through light scattering from thermally induced acoustic modes. It gives access to the viscoelasticity and structure of matter in a non-destructive contactless way, and when coupled to optical (confocal) microscopy, it has proven to be particularly well suited for biomedical applications. Though an established tool in condensed matter physics, only more recently has BLSS seen promising applications in life sciences and medical diagnostics. This can largely be attributed to advances in instrument (spectrometer) design coupled with increasing interest in the biomechanics of cells and tissues and their relation to disease, and underlying genetics and biochemistry. There are now a significant and increasing number of researchers actively working in BLSS for biomedical research in Europe. It is the aim of this COST Action to for the first time bring together the diverse community working in the field, which includes instrument developers, physicists, chemists, biologists and clinicians, with the core aim of stimulating collaboration, promote technological advancement and pave the way towards routine life science research and clinical applications.

Scientific Scope

Areas of Expertise: Biophysics; Biophysics; Lasers, ultra-short lasers and laser physics; Optics, non-linear optics (theory); Morphology and functional imaging of cells

Keywords: Brillouin Light Scattering Spectroscopy; Optical microscopy; viscoelasticity; Biomechanics;



mechanobiology

COST Countries

Main Proposer: Austria

Network of Proposers (9 countries – ITC: 22%): Austria; Czech Republic; France; Germany; Israel; Italy; Portugal; Sweden; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -

International Partner Country (IPC): India; South Korea; United States

Industrial Dimension

SMEs: 1

Large companies: -

Total Proposers: 29 (Women: 14%/Men: 86% - ECI: 4)

COST Mission and Policies

The BioBrillouin Action is a network of leading experts and other stakeholders in Brillouin Light Scattering Spectroscopy (BLSS) in Europe and overseas countries. Its aim is to integrate the so far scattered efforts on BLSS application in life sciences into one platform, which will enable to speed up the development of this emerging technology. The platform will work as a central point for interaction of researchers (instrument developers, physicists, chemists, and biologists), clinicians, and manufacturers of optical devices resulting in building up mutually beneficial long-term collaborations, thus contributing to closing the gap between science (BLSS researchers), society (patients suffering from e.g. Alzheimer's disease, several types of cancer), and industry (producers of optical instrumentation).

Application of BLSS in life sciences holds an enormous potential for new research directions and its clinical exploitation is still waiting for its full exploration. The BioBrillouin COST Action is a perfectly fitting tool for tackling this new challenge, promoting the technology in Europe and worldwide. The BioBrillouin Action is established as a network of 11 countries with the possibility to enlarge the number of participating countries. The main aim in this context is to enable an equal access to this technology to as broad an audience as possible in terms of instrumentation use, education, exchange of the latest discoveries and fostering the young generation of talented researchers in farther development of BLSS in life sciences. The Action is open for all COST member countries with emphasize on the involvement of European less developed countries. All these partners will be fully embedded in the Action structure and are expected to actively participate in all its activities, particularly in STSMs, Hands-on Workshops, and Work Group meetings. Particular attention will be paid on involvement of ESRs (master students, PhD students, postdocs) in order to produce a new, highly educated generation of BLSS specialists who will be able to shift the knowledge beyond the state-of-the-art in the near future. A significant asset of the Action is its strong focus on attraction of female researchers, clinicians, and industry representatives at all levels of the Action structure, starting from the Management Committee members till the exchange stays of ESRs. This arrangement will contribute significantly to the COST policy on Excellence and Inclusiveness.

Several NNCs and IPCs are being appointed as Secondary partners of the Action. The overseas scientific partners are expected to bring their complementary knowledge to the network, while the industrial partners are expected to be future manufacturers of new instrumentation which is going to be developed as result of the mutual work of the involved experts from various disciplines. Involvement of these partners will be fully in accord with the COST International Cooperation policy and the COST policy on Industrial Dimension.

CA16125 - European network for translational research in children's and adult interstitial lung disease

(Acronym: ENTeR- chILD)

Summary

Interstitial lung disease in children (chILD) is a term that describes a collection of more than 200 rare lung disorders. It is a heterogeneous group of non-neoplastic disorders resulting from damage by varying patterns of inflammation and fibrosis with the interstitium as the primary site of injury. As with other orphan diseases, chILD data is lacking on the natural course, phenotypic variability, associations with genotype, and effectiveness of treatments. The disease course is very variable, and depending on more than just the underlying cause; for example, within a given family, the phenotypic variability of chILDs such as surfactant protein C mutation is huge. The rarity of individual chILDs contributes to a lack of randomised control trial data on effectiveness of treatments. Management strategies derive from other diseases or are based on physicians' experience and remain controversial.

This Action will create a pan-Europe-led network of multidisciplinary clinicians (adult and paediatric), scientists, and patients and their families with the aim of accurate and early diagnosis with structured, potentially personalised, management and therapies. The Action will stimulate and coordinate multidisciplinary research in chILD from infancy to adulthood, as well as reveal the pathophysiological commonalities between different forms of ILD at the molecular level. The results of these efforts will create large incremental changes in understanding and management of chILD. Since chILD is an umbrella term for a number of conditions most of which imply more than purely medical or scientific expertise, the Action will pay due attention to the larger societal implications of chILD research.

Scientific Scope

Areas of Expertise: Paediatrics; Respiratory systems; Cell biology and molecular transport mechanisms; Molecular genetics, reverse genetics and RNAi; Pharmacology, pharmacogenomics, drug discovery and design, drug therapy
Keywords: Paediatrics; Interstitial lung disease; therapy and management; diagnostics;

COST Countries

Main Proposer: Italy
Network of Proposers (11 countries – ITC: 27%): Austria; Czech Republic; France; Germany; Israel; Italy; Netherlands; Portugal; Spain; Turkey; United Kingdom

International Cooperation

Near Neighbour Country (NNC): -
International Partner Country (IPC): -

Industrial Dimension

SMEs: -
Large companies: -

Total Proposers: 16 (Women: 44%/Men: 56% - ECI: 5)

COST Mission and Policies

The Action is the first network of scientists, clinicians and patient representatives to push the European research agenda for development of large patient cohorts of interstitial lung disease in children (chILD) to improve treatment. The time is now right to coordinate these efforts by creating a pan-European network

to increase the study population for clinical trials and to accelerate and streamline the research agenda. The impact on patients is our measure of success for this Action. The importance of trans-European networking is to take the efforts of smaller groups or limited larger networks forward whilst avoiding duplication. It will provide an opportunity for researchers from previous smaller collaborations to integrate their efforts providing a comprehensive platform for cross-discipline collaboration, whilst encouraging new recruitment of additional experts into the field. The Cost Action will allow the strengthening of European research and the integration of national datasets and funded research in a larger contest to permit innovation and increase research capacities. The aim of this Action is unite participants from these projects under one umbrella, to build on them and will add a value from networking, which would otherwise be lost completely. As the Action aims to include a large group of clinicians, scientists and patients organisations, the potential to increase knowledge, stimulate research and improve management is huge. chILD is rare, and the average European children's hospital will see no more than 5 cases/year, hence networking is vital if new research and clinical trials to improve management are to be conducted. The COST Action enables breakthrough scientific and technological developments in the progress of management strategies for ILD from child to adult care, leading to new concepts and drugs to be tested along the way. The Action will build on Early Stage Researchers (ESRs) to increase their enthusiasm for chILD research. Training schools will improve diagnostic approach and align the diagnosis in all participation countries. Cross border movement of the ESRs will be promoted to allow a wide possibility to see many different entities of chILD and create career development opportunities. The COST Action will respect an appropriate gender balance in all its activities. A significant number (>40% - ECI: 0) of the experts who were consulted during the development of this COST Action proposal are female, including internationally recognised researchers. The proposer of this Action is female and mother of dependent children. The gender gap at leadership level is a cause of the perpetuated gender imbalance in sciences. The Action pre alerted 23 countries of which 18 COST countries that already signed up or will do so in the near future; these will include not only clinicians but also basic scientists and patient organisations. Near future objectives are the involvement of the pharmaceutical industry in allowing the development of (new) treatment for chILD. The Action also is in line with The European Commission policy to improve the recognition of rare disease and strengthen European-level cooperation and coordination, by creating networks with experts in the field to stimulate research to support rare diseases