New COST Actions – Medicine and Health related research

(COST Actions approved by the Committee of Senior Officials on 30 Oct 2015)

Action N° Action title	Page
CA15105 European Medicines Shortages Research Network – addressing supply problems to patients	2
CA15110 Harmonising standardisation strategies to increase efficiency and competitiveness of European life-science research	3
CA15111 European Network on Myalgic Encephalomyelitis / Chronic Fatigue Syndrome	4
CA15112 Functional Annotation of Animal Genomes – European network	5
CA15114 Anti-Microbial Coating Innovations to prevent infectious disease	6
CA15120 Open Multiscale Systems Medicine	7
CA15124 A new Network of European BioImage Analysts to advance life science imaging	8
CA15126 Between Atom and Cell: Integrating Molecular Biophysics Approaches for Biology and Healthcare	9
CA15129 Diagnosis, Monitoring and Prevention of Exposure-Related Noncommunicable Diseases	10
CA15131 Animal Behaviour Management and Training of Laboratory Non-human Primates and Large Laboratory Animals	11
CA15132 The comet assay as a human biomonitoring tool	12
CA15133 The Biogenesis of Iron-sulfur Proteins: from Cellular Biology to Molecular Aspects	13
CA15135 Multi-target paradigm for innovative ligand identification in the drug discovery process	14
CA15136 European network to advance carotenoid research and applications in agro-food and health	15
CA15138 European Network of Multidisciplinary Research and Translation of Autophagy knowledge	16
Full list (all fields)	17

CA15105 – European Medicines Shortages Research Network – addressing supply problems to patients

OBJECTIVE

The main objective is to denominate the steps needed to be taken to reduce the medicines shortage problem affecting patients and healthcare systems.

SUMMARY

The problems created by supply shortages of medicines have been widely reported by healthcare professionals and patients over recent years, and acknowledged at the European level by the European Medicines Agency and European Commission. The cited causes are multifaceted ranging from production disruptions, natural disasters, discontinuations as well as difficulties created by various legal, trade and pricing frameworks.

Healthcare professionals require access to reliable and up-to-date information regarding the unavailability of a medicine in order that they can treat the patient in the best way possible. The lack of a medicine can have significant impact for the patient, in terms of safety and management of their condition. In addition the forced substitution to an alternative product or requirement to produce a medicine may increase the risk of error, stress and overall cost to the healthcare system.

According to the largest pan-European survey of healthcare professionals yet conducted on the topic, the products mainly affected in the European hospital sector are antimicrobials and oncology products used for large populations.

This Action will encourage systematic sharing of information and research about past, ongoing and future shortages of medicines and nutritional products. The Action aims to achieve coordination and agreement on definitions of a shortage, criteria for measurement and analysis of the problem, and reflection on best practices.

The Action is also intended to highlight any restrictive legal and economic frameworks, erroneous incentives in the supply chain, conflicts of interest, and problematic cost-benefit ratios that serve to exacerbate or create shortages.

SCIENTIFIC SCOPE

Areas of Expertise

- Health Sciences: Health services, health care research
- Health Sciences: Public and environmental health
- Political Science: Public administration, public policy

Keywords

- medicine
- shortages
- healthcare
- patients
- supply

NETWORK OF PROPOSERS

Main Proposer: CH

Network of Proposers (23): AT, BE, BG, CH, CY, CZ, DE, DK, EL, FR, HR, HU, IT, LV, MK, MT, NL, PT, RO, RS, SI, TR, UK (ITC: 57%)

Near Neighbour Country: Egypt

International Partner Country: Canada, United States

Industrial participation: SMEs (Canada), Large companies (Croatia, Romania, United States)

Gender balance of Proposers: 48% F / 52% M

CA15110 – Harmonising standardisation strategies to increase efficiency and competitiveness of European life-science research

OBJECTIVE

The main objective is to avoid duplication and overlap of existing standardisation activities and to achieve a breakthrough in standardisation efforts; the Action aims to bridge, combine and team up with other initiatives. This shall be achieved through a coordinated, long-term strategy by active involvement of all stakeholders from research, industry and policy.

SUMMARY

An essential prerequisite of modern life-science R&D is a high quality of the research data. By enabling the reuse of research assets, research becomes considerably more efficient and economical. This can only be achieved reliably and efficiently if these are generated according to standards and Standard-Operating-Procedures (SOPs). Thus, standards represent important drivers in the life-sciences and technology transfer because they guarantee that data become accessible, shareable and comparable along the value chain. Several initiatives launched the development and implementation of standards. Unfortunately these efforts remain fragmented and largely disconnected. The Action will merge the different approaches in the field with a particular reference to systems biology, and thus avoid too many different solutions being generated in parallel universes that – in the worst case – are neither compatible nor suitable for large-scale approaches. The Action will increase the awareness for the need of standards, enabling the reuse of research data and its interoperability within the scientific community. The Action provide a common ground for researchers from academia, research institutes, SMEs and multinational organizations.
The fruitful interactions between these sectors will firstly combine and review existing community standards and standardization options including the development of a common understanding/definition of the needs, secondly push the implementation of minimal standards in biotechnology especially in systems biology, and thirdly provide and establish interdisciplinary training for ESRs and emphasise inclusiveness by COST priority member countries. This will be achieved via workshops, short-term scientific missions, training schools and symposia, and deployment of standards optimising the transfer from basic research into innovation.

SCIENTIFIC SCOPE

Areas of Expertise

- Biological sciences: Systems biology
- Industrial biotechnology: Industrial bioengineering, bioreactors
- Health Sciences: Applied mathematics, statistics, noncomputational modeling for health sciences
- Agricultural biotechnology: Biotechnology (non-medical)
- Biological sciences: Bioinformatics

Keywords

- standardisation
- harmonisation
- competitiveness
- life-sciences
- biotechnology

NETWORK OF PROPOSERS

Main Proposer: DE
Network of Proposers (26): AT, BE, BG, CH, CZ, DE, DK, EL, ES, FR, HR, HU, IE, IL, IT, LU, LV, MT, NL, PL, PT, SE, SI, SK, TR, UK (ITC: 46%)
Near Neighbour Country: -
International Partner Country: Australia, Brazil, Canada, Chile, Costa Rica, Mexico, New Zealand, Panama, South Africa, United States
Industrial participation: SMEs (Bulgaria, Germany, Slovenia, Turkey)
Gender balance of Proposers: 23% F / 77% M

CA15111 – European Network on Myalgic Encephalomyelitis / Chronic Fatigue Syndrome

OBJECTIVE

The main objective is to create a sustainable integrated network of researchers in Europe working in the field of Myalgic Encephalomyelitis/Chronic Fatigue Syndrome, this way tackling the research challenges arising from unknown aetiology, clinical variability, lack of diagnostic biomarkers and limited treatment options, high associated socio-economic burden.

SUMMARY

Chronic Fatigue Syndrome (also known as Myalgic encephalomyelitis, post-viral/post-infectious fatigue syndrome or effort syndrome) - ME/CFS - is a disabling condition of unknown aetiology that affects individuals of all ages. Disease is causing significant social and economic burden.
While there have been research efforts in the last 20 years on ME/CFS, they still remain rather fragmented, and there is clearly lack of coordination of European research on the topic. Action will provide clear benefits via coordination of research activities, support to development of common standards, database synchronisation, and promotion of new research projects in the area. Data depositories harmonisation, data collection protocol synchronisation can greatly benefit better use of existing data and allow the development of coherent future research strategies.
Innovation will benefit from coordination of introduction of new technologies in research area, experience on novel data analysis approaches, patient stratification, synergistic approach to existing data. All this will be supporting the development of translational platform which has a long-term potential of new product development addressing the challenge.
Early Carrier investigators will receive a special training package built on two training schools, training workshops, clinical research introductory, STSMs. Researchers with high potential from other areas will enrich their scientific focus by interaction on events and obtaining dissemination materials produced by the Action. Inclusiveness countries will get special supportive measures, as many of them still lack streamlined research agendas on ME/CFS.

SCIENTIFIC SCOPE

Areas of Expertise

- Clinical medicine: Neurological disorders (e.g. Alzheimer's disease, Huntington's disease, Parkinson's disease)
- Basic medicine: Systems neuroscience

Keywords

- chronic fatigue syndrome
- myalgic encephalomyelitis
- neuroinfections
- neuroinflammation
- neuroimmunology

NETWORK OF PROPOSERS

Main Proposer: IE
Network of Proposers (23): AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, HU, IE, IL, IT, LU, NL, PL, RS, SE, SI, TR, UK (ITC: 43%)
Near Neighbour Country: Lebanon, Russian Federation
International Partner Country: Canada, New Zealand, South Africa, United States
Industrial participation: -
Gender balance of Proposers: 68% F / 32% M

CA15112 – Functional Annotation of Animal Genomes – European network

OBJECTIVE

The main objective is to improve the functional annotation of animal genomes in order to facilitate efforts to bridge the gap between genotype and phenotype, thus enabling predictive biology.

SUMMARY

Research on domesticated animals has important socio-economic impacts, including underpinning improvements in the livestock sector, contributions to medical research, animal health and welfare, the evolution of domestication and the understanding of natural animal populations.
Whilst progress has been made with the identification of genome sequences, which determines the proteins encoded by farm and domseticated animal genomes, there is little information on the sequences that are transcribed but not coding, and in particular sequences that regulate gene expression. Thus, although the genomes of the major domesticated animal species have been sequenced, significant investment is now required in order to identify the functional elements within these genomes, especially the regulatory sequences.
The recently launched "Functional Annotation of Animal Genomes" (FAANG) initiative aims to improve the functional annotation of animal genomes. This Action will facilitate the aims of the FAANG project through coordination, development of agreed standards for experiments, data and metadata, training and dissemination of standards and results.

SCIENTIFIC SCOPE

Areas of Expertise

- Biological sciences: Genomics, comparative genomics, functional genomics
- Veterinary science: Databases, data mining, data curation, computational modelling

Keywords

- genomes
- functional annotation
- farmed and domesticated animals
- epigenetics
- gene regulation

NETWORK OF PROPOSERS

Main Proposer: UK
Network of Proposers (15): CZ, DE, DK, EL, ES, FI, FR, IE, IT, NL, PL, PT, SE, SI, UK (ITC: 27%)
Near Neighbour Country: -
International Partner Country: Australia, New Zealand, United States
Industrial participation: -
Gender balance of Proposers: 41% F / 59% M

CA15114 – Anti-Microbial Coating Innovations to prevent infectious disease

OBJECTIVE

The main objective is to evaluate the impact of (introducing) AntiMicrobial Coatings in healthcare on the spread of infections and on the efficacy in fighting HealthCare Associated Infections and bacterial resistance to current antibiotics.

SUMMARY

Infections and infectious diseases are a continuous threat to human health. According to the European Centre for Disease prevention and Control (ECDC), over 4 million people are estimated to acquire a HealthCare Associated Infection (HCAI).The AMICI-consortium is convinced that new methods, additional or alternatively to an appropriate use of disinfectants and antibiotics, are required to reduce microbial activity, associated infections and the increase of Antimicrobial Resistance.
A potential and promising weapon against bacterial growth and possibly the development of multi-drug resistant bacteria has been found in AntiMicrobial (nano)-Coatings (AMC). In coatings fortified with an active ingredient, the ingredient is responsible for the elimination of the microorganisms.
So far, little is known about the effectiveness of AMC application on surfaces, on the prevention of spreading infections and their impact on induction of multi-drug resistant bacteria in healthcare (e.g. hospitals, nursery homes). The presence of active substances in AMC may promote/induce resistance mechanisms which needs to be understood and alternative strategies sought. A balanced risk-benefit analysis of widespread application is needed to guide a 'Safe-by-Design' development and introduction in complicated chains with high demand for compliance such as healthcare.
AMICI brings together partners from different countries and disciplines with the central aim of evaluating the impact of (introducing) AMC in healthcare on spreading infection episodes and on the efficacy in fighting bacterial resistance to current antibiotics. The partners involved include knowledge institutes, producers and processors of antimicrobial coatings, and organizations involved in the compliance with international standards on hygiene.

SCIENTIFIC SCOPE

Areas of Expertise

- Health Sciences: Infectious diseases
- Health Sciences: Public and environmental health
- Health Sciences: Health services, health care research
- Nano-technology: Nano-materials and nanostructures
- Biological sciences: Microbiology

Keywords

- antimicrobial resistance
- antimicrobial (nano)coatings
- health sector
- LCA
- OneHealth

NETWORK OF PROPOSERS

Main Proposer: NL
Network of Proposers (12): AT, BE, CH, DE, EE, FI, IE, NL, PL, PT, TR, UK (ITC: 33%)
Near Neighbour Country: Lebanon, Russian Federation
International Partner Country: Canada, New Zealand, South Africa, United States
Industrial participation: SMEs (Austria, Estonia, Finland, Germany, Ireland, Netherlands, United Kingdom)
Gender balance of Proposers: 29% F / 71% M

CA15120 – Open Multiscale Systems Medicine

OBJECTIVE

The main objective is to develop novel multiscale systems medicine concepts, methods and technologies that provide effective, efficient and economical solutions for emerging and future approaches to multiscale systems medicine; as well as a transdisciplinary multiscale systems medicine framework that integrates systems medicine, multiscale modelling, multiscale data science, and multiscale computing.

SUMMARY

Multiscale systems medicine assumes that the growing amounts of highly diverse (multiscale) data relevant to human health and disease are the key to address current and future medical challenges. Transforming these data into effective and economical medical solutions requires appropriate means for multiscale data modelling, integration and analysis. The overarching aim of the Open Multiscale Systems Medicine (OpenMultiMed) COST Action is to gather a critical mass of international researchers and coordinate them as a team that develops and evaluates a transdisciplinary framework for multiscale systems medicine, consisting of novel concepts, methodologies and technologies. The unique concept and ambition of the OpenMultiMed Action rests on three pillars: (1) A transdisciplinary strategy in which medical researchers, mathematical modellers, data scientist, and computer scientists work jointly using a shared conceptual framework and combined disciplinary-specific approaches. (2) A strong focus on multiscaleness across systems medicine, multiscale modelling, multiscale data science and multiscale computing. (3) An open-science approach, making scientific research, data and dissemination in multiscale systems medicine accessible to all levels of an inquiring European and international society. The potential impacts resulting from the OpenMultiMed Action include more effective and economical ways of health promotion, disease prevention and therapy; more effective and efficient concepts, methods and tools for multiscale systems and data modelling, and multiscale computing; and a strengthening of scientific excellence and industrial competitiveness of individuals and organizations in medical, analytical and technological areas.

SCIENTIFIC SCOPE

Areas of Expertise

- Biological sciences: Biological systems analysis, modelling and simulation
- Mathematics: Numerical analysis
- Computer and Information Sciences: Mathematics applied to computer science, mathematical aspects of computer science

Keywords

- multiscale systems medicine
- multiscale modeling and simulation
- multiscale data science
- multiscale computing
- complex disease

NETWORK OF PROPOSERS

Main Proposer: UK

Network of Proposers (17): BG, CH, DE, ES, FR, HU, IE, IT, LU, MT, NL, NO, PL, PT, SI, TR, UK (ITC: 47%)

Near Neighbour Country: Lebanon, Russian Federation

International Partner Country: Canada, New Zealand, South Africa, United States

Industrial participation: SMEs (Austria, Estonia, Finland, Germany, Ireland, Netherlands, United Kingdom)

Gender balance of Proposers: 17% F / 83% M

CA15124 – A new Network of European BioImage Analysts to advance life science imaging

OBJECTIVE

The main objective is to establish a BioImage-Analysts network to maximise the impact of advances in imaging technology in Life Sciences and to boost bioimaging-based research. “BioImage-Analysts” recently emerged in research institutions to support biologists with image analysis resources, but their own network is missing, thus hindering the exchange of experience, knowledge and techniques.

SUMMARY

This Action is a program for establishing a BioImage Analysts’ (BIAlysts) network. Its high-level goals are to maximize the impact of imaging technology advances on the Life-Sciences (LSc), and to boost the productivity of bioimaging-based research projects in Europe.
BIAlysts have recently started to appear in various research institutions but this new specialism is still not well recognized in the LSc community. They are specialized in customizing image analysis (IA) workflows by assembling and automating multiple computational tools, and by interacting with Software developers and Life Scientists to facilitate IA.
The Action aims to provide a stronger identity to BIAlysts by organizing a new type of meeting fostering interactions between all stakeholders including: Life scientists, BIAlysts, microscopists, developers and companies. It will collaborate with European Imaging research infrastructures to set up best practice guidelines for IA. The Action plans to create an interactive database for BioImage analysis tools and workflows with annotated image sample datasets, to help match practical needs with software solutions. It will also implement a benchmarking platform for these tools, applied to identified biology problems. To increase the overall level of IA expertise in the LSc, the Action proposes a novel of training program with three levels of courses, as well as open textbooks and a short term scientific missions program to foster collaborations, IA-technology access, and knowledge transfer for scientists and specialists lacking these locally. This Action will support the longterm scientific goals of European science and industry by bridging essential fields of scientific excellence.

SCIENTIFIC SCOPE

Areas of Expertise

- Biological sciences: Morphology and functional imaging of cells
- Biological sciences: Molecular biology and interactions
- Biological sciences: Cell biology and molecular transport mechanisms
- Electrical engineering, electronic engineering, Information engineering: Computer vision
- Electrical engineering, electronic engineering, Information engineering: Development of scientific computing, data processing, simulation and modelling tools

Keywords

- bioimage analysis
- imaging
- digital image processing
- advanced microscopy

NETWORK OF PROPOSERS

Main Proposer: ES
Network of Proposers (15): BE, CH, DE, DK, ES, FI, FR, HR, IL, LU, NL, PL, PT, SE, UK (ITC: 27%)
Near Neighbour Country: -
International Partner Country: United States
Industrial participation: SMEs (France, Germany, Switzerland)
Gender balance of Proposers: 34% F / 66% M

CA15126 – Between Atom and Cell: Integrating Molecular Biophysics Approaches for Biology and Healthcare

OBJECTIVE

The main objective is to bridge efficiently the gap between atomic-scale structural determination and cellular-level in situ studies, by synergizing the power of spectroscopic, hydrodynamic, real-time microfluidic, thermodynamic and single-molecule approaches, thus shedding new light on intricate mechanisms involved in life and pathology and enabling significant discoveries of biomedical relevance.

SUMMARY

Molecular-scale biophysics is a dynamic and ever-expanding interdisciplinary field that aims to study biological macromolecules and assemblies as a whole, at an intermediate level between atomic-resolution structural descriptions and cellular-level observations ("Between Atom and Cell"), with significant applications in biomedicine and drug discovery. The Action aims to seed a large-scale pan-European interdisciplinary synergistic clustering, allowing to ally and synergize the power of spectroscopic, hydrodynamic, real-time microfluidic, thermodynamic and single-molecule approaches. This novel open network will create an optimal environment for the development of innovative integrative biophysical approaches, at the level of data acquisition, analysis and modeling, as well as for the design of unprecedented and ambitious combinations of methodologies, to decipher more efficiently crucial biological phenomena and to overcome significant biomedical challenges. The Action will also broadly disseminate knowledge, notably through the organization of a strong programme of workshops and Training Schools, and the setting up of a STSM scheme, aimed in priority to Early Career Investigators and technical scientists. In parallel, it will place a special emphasis on the construction of a new distributed molecular-scale biophysics European infrastructure, aiming to facilitate the transnational access to instrumentation and expertise for a wide user community, in particular from Inclusiveness Target Countries. Finally, the Action will provide a platform for scientists to establish early contacts with instrument developers (at the level of concept or prototype), allowing to set-up win-win partnerships that will allow to define and develop together future instrumentation that genuinely meets the needs of the broad biomedical and life sciences communities.

SCIENTIFIC SCOPE

Areas of Expertise

- Biological sciences: Biophysics
- Biological sciences: Molecular biology and interactions
- Biological sciences: Biochemistry
- Nano-technology: Biophysics for nano-technology applications
- Medical biotechnology: Medical biotechnology

Keywords

- molecular-scale biophysics
- biomedicine and biotechnology
- hybrid and correlative integrative technologies
- R&D partnerships with instrument developers
- distributed Research Infrastructure

NETWORK OF PROPOSERS

Main Proposer: FR
Network of Proposers (17): AT, BE, CH, CZ, DE, DK, ES, FR, IT, LT, NL, PL, PT, RS, SE, SI, UK (ITC: 35%)
Near Neighbour Country: Lebanon, Russian Federation
International Partner Country: -
Industrial participation: SMEs (Austria, Germany)
Gender balance of Proposers: 39% F / 61% M

CA15129 – Diagnosis, Monitoring and Prevention of Exposure-Related Noncommunicable Diseases

OBJECTIVE

The main objective is to develop new concepts for better understanding of health-environment (or gene-environment) interactions in the etiology of exposure related Non-communicable diseases (NCD) and to enhance the complementarity and synergy between the separate disciplines giving attention to the joint development of skills in interdisciplinary problem-solving.

SUMMARY

Studying adverse health outcomes related to the environmental exposures (in the living and working environment) is a major societal challenge today. According to estimates made by the WHO, worldwide about 55 million people died in 2011 from non-communicable diseases (NCDs), including cancer, diabetes, chronic cardiovascular, neurological and lung disease. Although epidemiological and toxicological studies provide evidence for a significant role of environmental exposure in initiation and progression of degenerative diseases and cancer, there is still the challenge of identifying determinants of prevalence and morbidity of NCDs. After spending much time and resources to identify the contribution of genetic factors in the onset of NCDs, it is time to look closer at the evidence for a role of environment factors in the prevalence and morbidity of NCDs, DiMoPEx will develop an interdisciplinary collaborative network, providing insight into emerging issues of morbidity and mortality from exposure-related health outcomes. The action will offer interdisciplinary opportunities for cooperation between scientists and physicians/clinicians. In addition, DiMoPEx aims to attract the interest of next generation early career investigators to the emerging issues of exposure-related disease burden and various aspects of exposure sciences. DiMoPEx will foster the capacity building in Europe from the bottom up to advance ongoing long term studies and to promote new research projects in this field. DiMoPEx will meet current public health challenges in joint research and training to understand the health-environment interactions in NCD etiology. The action will contribute to the development of successful preventive strategies in European countries.

SCIENTIFIC SCOPE

Areas of Expertise

- Health Sciences: Public and environmental health
- Health Sciences: Occupational medicine
- Environmental engineering: Risk assessment, prevention and mitigation
- Basic medicine: Environmental toxicology, environmental stress

Keywords

- environmental exposure
- non-communicable exposure related diseases
- Interdisciplinary etwork on exposure assessment
- validated evidence based exposure assessment
- human biomonitoring

NETWORK OF PROPOSERS

Main Proposer: DE
Network of Proposers (9): BE, DE, DK, IT, NL, NO, RO, SE, TR (ITC: 22%)
Near Neighbour Country: -
International Partner Country: -
Industrial participation: -
Gender balance of Proposers: 50% F / 50% M

CA15131 – Animal Behavioural Management and Training of Laboratory Non-human Primates and Large Laboratory Animals

OBJECTIVE

The main objective is to focus on Positive Reinforcement Training (PRT) and Animal Behaviour Management (ABM) essential when working with non-human primates (NHP) in biomedical research. The Action provides a network for personnel working with NHP (and other large laboratory animals) to facilitate the competence and skills needed to successfully apply PRT and ABM.

SUMMARY

Positive Reinforcement Training (PRT) and Animal Behavioural Management (ABM) of non-human primates (NHP) and other large laboratory animals used in biomedical research reduce the stress level for the animals, promote more reliable results, facilitate the refinement of methods and procedures and lead to increased safety, both for animals and personnel. Furthermore, well trained animals, which are physically and psychologically healthy, are very much in demand and have a high market value. Laboratory animal training was introduced in Europe as best practice in the last two decades. However, animal facilities are yet poorly connected and despite Directive 2010/63/EC which boosted the education of laboratory animal staff, there is no systematic approach for animal trainers and ABM experts for NHP and other large laboratory animals. This lack can now be closed through the Action, a network of animal care takers, animal trainers, ethologists, veterinarians, neuroscientists, and other biomedical researchers using NHP and large laboratory animals. Besides the recommendation of a minimum European standard for all primate laboratories with regard to animal training, new training protocols will be developed and existing training protocols will be exchanged. Moreover a catalogue of relevant literature will be compiled. The Action will offer Workshops, Training Schools, and STSM for staff working with NHP or other large laboratory animals. Especially early-stage researcher and staff from animal facilities in smaller COST countries will be encouraged to get involved. This will yield the largest network of animal trainers and ABM staff in Europe and in the world.

SCIENTIFIC SCOPE

Areas of Expertise

- Biological sciences: Zoology, including animal behaviour
- Basic medicine: Behavioral neuroscience (e.g. sleep, consciousness, handedness)
- Veterinary science: Veterinary medicine (miscellaneous)
- Health Sciences: Infectious diseases
- Animal and dairy science: Ethics of animal and dairy science

Keywords

- non-human primates (nhp)
- large laboratory animals
- animal behavioural management (abm)
- positive reinforcement training (prt)
- education, capacity building, increase competency

NETWORK OF PROPOSERS

Main Proposer: DE
Network of Proposers (9): BE, DE, DK, ES, FR, IL, IT, NL, UK (ITC: 0%)
Near Neighbour Country: Russian Federation
International Partner Country: -
Industrial participation: SME (France)
Gender balance of Proposers: 42% F / 58% M

CA15132 – The comet assay as a human biomonitoring tool

OBJECTIVE

The main objective is to reduce inter-laboratory variation in future studies, by providing standard protocols. The mass of available data on DNA damage and DNA repair in humans, obtained with the comet assay, requires a pooled analysis to produce definitive information on factors causing or preventing DNA damage.

SUMMARY

Many human biomonitoring studies have used the comet assay to measure DNA damage (some also measuring DNA repair). In most cases, the assay is applied to peripheral blood mononuclear cells. Results from relatively small individual studies are often inconsistent, and it is advantageous to carry out a pooled analysis of the combined data from all available studies. hCOMET will be a network comprising researchers who are active (or intend to be active) in human biomonitoring with this assay. Results supplied by these researchers will be compiled as a single database representing an estimated 19,000 individual DNA damage measurements. The pooled analysis will allow us to determine which factors (smoking, age, nutrition, sex, occupational exposure etc.) affect DNA damage, and to what extent. Fewer studies have included DNA repair capacity as an endpoint; we will collect what data we can and carry out a detailed review (or a pooled analysis if enough data). In addition, hCOMET will address the issue of inter-laboratory reproducibility of the assay by devising standard protocols, for both DNA damage and DNA repair measurement, coordinating ring studies to test these protocols, and offering training courses and exchanges, so that in future comparison of results from different studies will be facilitated. We will review applications of the assay to other human cell types and isolation methods (such as leukocytes obtained from frozen blood).

SCIENTIFIC SCOPE

Areas of Expertise

- Biological sciences: DNA synthesis, modification, repair, recombination and degradation
- Health Sciences: Epidemiology

Keywords

- DNA damage
- comet assay
- human biomonitoring
- pooled analysis
- standardisation

NETWORK OF PROPOSERS

Main Proposer: NO
Network of Proposers (10): BE, DK, ES, HR, IT, NL, NO, PT, SK, TR (ITC: 40%)
Near Neighbour Country: -
International Partner Country: Cuba, India
Industrial participation: SMEs (Norway), Large companies (Italy)
Gender balance of Proposers: 52% F / 48% M

CA15133 – The Biogenesis of Iron-sulfur Proteins: from Cellular Biology to Molecular Aspects

OBJECTIVE

The main objective is to address iron-sulfur (Fe/S) protein biogenesis in living systems and to investigate molecular mechanisms underlying human diseases related to Fe/S protein biogenesis dysfunctions. The Action will provide a molecular view of Fe/S proteins assembly processes and trafficking pathways at a systemic level, including their connections with cellular iron homeostasis processes.

SUMMARY

The importance of iron-sulfur (Fe/S) proteins for human life and the comprehension, at molecular and cellular level, of their biogenesis is documented by an increasing number of diseases linked to functional impairment of these proteins and of their maturation processes. Fe/S protein biogenesis needs to guarantee that the right metal reaches the right binding site in any subcellular compartments, through specific cellular pathways, which control the steps of Fe/S cluster assembly and transfer. This Action is an intersectoral, pan-European network to: address Fe/S protein biogenesis in living systems; investigate pathophysiological mechanisms underlying human diseases related to Fe/S protein biogenesis dysfunctions; provide a molecular view of Fe/S protein assembly processes and trafficking pathways in the context of the cellular metallomes. The Action will build a joined research agenda and a translational consortium with different expertises and infrastructures, henceforth it will be able to i) support young researchers and research groups from emerging countries; ii) frame the research of individual groups within wider scenarios; iii) achieve scientific deliverables that could not be reached without knowledge and infrastructure sharing based approaches.The understanding of molecular mechanisms at the basis of Fe/S protein biogenesis needs to be addressed by a team of chemists, biologists and genetists in order to provide a full picture of the possible and feasible cures to these genetic diseases. We will foster knowledge exchange among different areas, explore the intersection of fundamental science with applications,act as incubator for translational studies, diffuse good practice of gathering different expertises under the same Action.

SCIENTIFIC SCOPE

Areas of Expertise

- Biological sciences: Systems biology
- Biological sciences: General biochemistry and metabolism
- Biological sciences: Structural biology (crystallography, NMR, EM)
- Biological sciences: Molecular biology and interactions

Keywords

- iron-sulfur protein biogenesis
- human diseases
- spectroscopy
- iron trafficking and homeostasis

NETWORK OF PROPOSERS

Main Proposer: IT
Network of Proposers (9): CZ, DE, EE, FR, IT, PL, PT, SE, UK (ITC: 44%)
Near Neighbour Country: -
International Partner Country: -
Industrial participation: SME (Italy)
Gender balance of Proposers: 40% F / 60% M

CA15135 – Multi-target paradigm for innovative ligand identification in the drug discovery process

OBJECTIVE

The main objective is to promote European interaction among Medicinal Chemistry research groups. The goal is to speed up the discovery process of novel therapeutic agents against multiple targets, combining competencies from synthetic chemistry, natural products and biophysics, to theoretical chemistry, molecular modelling and biological screening

SUMMARY

The aim of this Action is to join highly-qualified research teams working in disciplines around the field of Medicinal Chemistry, into a novel network devoted to the multi-target issue in drug discovery. The choice of this theme is related to its marked multidisciplinary character, which can ensure a strong interaction among all COST participants. Currently, an important and emerging issue in modern drug discovery is to design novel or identify existing bioactive compounds, endowed with the capability to interact selectively with two or more macromolecular targets, exerting their effects against certain therapeutic goals in a synergic fashion. This leading concept stimulated to propose the Action "Multi-target paradigm for innovative ligand identification in the drug discovery process" MuTaLig, focusing on novel ligands able to recognize selected multiple targets, to promote closer scientific links among European research groups involved in Medicinal Chemistry field at both academic and industrial level. Their research competencies will span around medicinal chemistry, from synthetic chemistry, natural products and biophysics to theoretical chemistry, molecular modelling and biological screening.

SCIENTIFIC SCOPE

Areas of Expertise

- Chemical sciences: Theoretical and computational chemistry
- Chemical sciences: Organic chemistry
- Chemical sciences: Databases, data mining, data curation, computational modelling

Keywords

- medicinal chemistry
- multi-target paradigm
- lead identification
- chemical databases
- lead optimization

NETWORK OF PROPOSERS

Main Proposer: IT
Network of Proposers (5): AT, IT, PT, SI, UK (ITC: 40%)
Near Neighbour Country: -
International Partner Country: -
Industrial participation: SMEs (Austria, United Kingdom)
Gender balance of Proposers: 40% F / 60% M

CA15136 – European network to advance carotenoid research and applications in agro-food and health

OBJECTIVE

The main objective is to implement a network for the advancement of carotenoid research and applications in agro-food and health. The key research question is: what novel sources of carotenoids, little studied carotenoids and/or beneficial actions can be harnessed to increase the competitiveness of the European agro-food industry and promote health?

SUMMARY

The goal of the Action is to enhance the competitiveness of the European agro-food industry and promote health by coordinating research on carotenoids. These are of great importance in this context as they are versatile and can be used as natural colorants, antioxidants, sources of vitamin A and functional ingredients. Of the over 750 carotenoids described ca. 10 are being thoroughly studied, so there is much potential to produce positive impacts at different levels. The research question the Action will address is: what novel sources of carotenoids, little studied carotenoids and/or beneficial actions can be harnessed to increase the competitiveness of the European agro-food industry and promote health? However, research on carotenoids is challenging as they are very difficult to work with. This and the lack of dialogue between largely scattered groups result in a waste of resources that hinders progress. Unlike in other regions, there is not a European network on carotenoids. This scenario is not appropriate to optimize efforts and create synergies and undoubtedly places Europe in a disadvantageous position. The Action will gather and articulate a critical mass of European actors to promote the co-operative use of infrastructures, synergistic interactions and the sharing, generation, application and communication of knowledge. This will contribute to strengthening Europe's research and innovation capacities. As a result it will generate breakthroughs leading to applications like new technologies and/or high-quality foods and the establishment of health-promoting nutritional recommendations. Thus, the Action will contribute to create wealth, improve health and reduce costs related to serious diseases.

SCIENTIFIC SCOPE

Areas of Expertise

- Other engineering and technologies: Food science and technology
- Health Sciences: Nutrition and dietetics
- Health Sciences: Public and environmental health
- Agriculture, Forestry, and Fisheries: Sustainable production

Keywords

- carotenoids
- agro-food
- functional foods
- health
- ingredients

NETWORK OF PROPOSERS

Main Proposer: ES
Network of Proposers (27): AT, BE, CH, CZ, DE, DK, EL, ES, FR, HR, HU, IE, IL, IT, LT, LU, LV, NL, NO, PL, PT, RO, SE, SI, SK, TR, UK (ITC: 44%)
Near Neighbour Country: Algeria, Tunisia
International Partner Country: -
Industrial participation: SMEs (Spain, Switzerland), Large companies (Denmark)
Gender balance of Proposers: 51% F / 49% M

CA15138 – European Network of Multidisciplinary Research and Translation of Autophagy knowledge

OBJECTIVE

The main objective is to extend multidisciplinary knowledge about Autophagy and to accelerate its translation: for biomedical purposes, particularly prevention, accurate disease diagnosis and therapy development, and for biotechnological applications, such as enhanced crop production and energy generation.

SUMMARY

Maintaining homeostasis is a necessary condition for an independent cellular or a whole organism life. It is central our understanding of the connection between cellular homeostatic disequilibrium and organ and system dysfunction. Autophagy is a mechanism by which the cell purges excessive or damaged organelles, misfolded proteins, and invading microorganisms and it also provides nutrients to maintain crucial cellular functions. Autophagy has over the past decade been recognized as an essential process of cellular metabolism and homeostasis. In the health spectrum, recent discoveries have shown that is possible to destroy tumour cells by targeting autophagy; that some autophagy-based treatments, already in phase III of clinical trials may serve to cure lupus erythematosus, or that autophagy is now recognized as a an anti-aging mechanism. Biotechnological innovative applications for optimum agro-food production or obtaining alternative energy sources from microalgae are possible by modulating autophagy.
The present consortium is a platform of stakeholders from different disciplines such as nanotechnology, bioinformatics, physics, chemist, biology and medicine, and activities including researchers from public institutions and 11 SMEs sharing the common interest in autophagy. We cooperate within the Action to generate and accelerate translation of multidisciplinary knowledge in autophagy for biomedical and biotechnological purposes. Among the expected outcomes are included recommendations for healthy aging or to prevent diseases or the discovery of new specific drugs, bio-based components or nanodevices capable to specific modulate autophagy to be applied at the clinics, as antineoplasic or neuroprotective agents for instance, and to exploit plants and microorganisms to improve environmental conditions.

SCIENTIFIC SCOPE

Areas of Expertise

- Industrial biotechnology: Industrial biofuel production
- Agricultural biotechnology: Sustainable production
- Basic medicine: Organelle biology
- Basic medicine: Pharmacology, pharmacogenomics, drug discovery and design, drug therapy
- Basic medicine: Organ physiology

Keywords

- membrane dynamics
- organelle handling
- biomedicine
- agronomy
- biofuel

NETWORK OF PROPOSERS

Main Proposer: ES
Network of Proposers (21): AT, BE, CH, CZ, DE, DK, EL, ES, FI, FR, HU, IE, IT, LU, NL, NO, PL, PT, SE, TR, UK (ITC: 29%)
Near Neighbour Country: -
International Partner Country: United States
Industrial participation: SMEs (France, Italy, Spain, Sweden), Large companies (Portugal)
Gender balance of Proposers: 36% F / 64% M

New COST Actions October 2015 – Full list

Action N° Action title
CA15101 Comparative Analysis of Conspiracy Theories
CA15102 Solutions for Critical Raw Materials Under Extreme Conditions
CA15103 Uncovering the Mediterranean salt giant
CA15104 Inclusive Radio Communication Networks for 5G and beyond
CA15105 European Medicines Shortages Research Network – addressing supply problems to patients
CA15106 C-H Activation in Organic Synthesis
CA15107 Multi-Functional Nano-Carbon Composite Materials Network
CA15108 Connecting insights in fundamental physics
CA15109 European Cooperation for Statistics of Network data science
CA15110 Harmonising standardisation strategies to increase efficiency and competitiveness of European life-science research
CA15111 European Network on Myalgic Encephalomyelitis / Chronic Fatigue Syndrome
CA15112 Functional Annotation of Animal Genomes – European network
CA15113 Science and Management of Intermittent Rivers and Ephemeral Streams
CA15114 Anti-Microbial Coating Innovations to prevent infectious disease
CA15115 Mining the European Anthroposphere
CA15116 Understanding and combating African Swine Fever in Europe
CA15117 Cosmology and Astrophysics Network for Theoretical Advances and Training Actions
CA15118 Mathematical and Computer Science Methods for Food Science and Industry
CA15119 Overcoming Barriers to Nanofluids Market Uptake
CA15120 Open Multiscale Systems Medicine
CA15121 Advancing marine conservation in the European and contiguous seas
CA15122 Reducing Old-Age Social Exclusion – Collaborations in Research and Policy
CA15123 The European research network on types for programming and verification
CA15124 A new Network of European BioImage Analysts to advance life science imaging
CA15125 Designs for Noise Reducing Materials and Structures
CA15126 Between Atom and Cell: Integrating Molecular Biophysics Approaches for Biology and Healthcare
CA15127 Resilient communication services protecting end-user applications from disaster-based failures
CA15128 Molecular Spintronics
CA15129 Diagnosis, Monitoring and Prevention of Exposure-Related Noncommunicable Diseases
CA15130 Study Abroad Research in European Perspective
CA15131 Animal Behaviour Management and Training of Laboratory Non-human Primates and Large Laboratory Animals
CA15132 The comet assay as a human biomonitoring tool
CA15133 The Biogenesis of Iron-sulfur Proteins: from Cellular Biology to Molecular Aspects
CA15134 Synergy for preventing damaging behaviour in group housed pigs and chickens
CA15135 Multi-target paradigm for innovative ligand identification in the drug discovery process
CA15136 European network to advance carotenoid research and applications in agro-food and health
CA15137 European Network for Research Evaluation in the Social Sciences and the Humanities
CA15138 European Network of Multidisciplinary Research and Translation of Autophagy knowledge
CA15139 Combining forces for a novel European facility for neutrino-antineutrino symmetry-violation discovery
CA15140 Improving Applicability of Nature-Inspired Optimisation by Joining Theory and Practice