

## Action FA1201

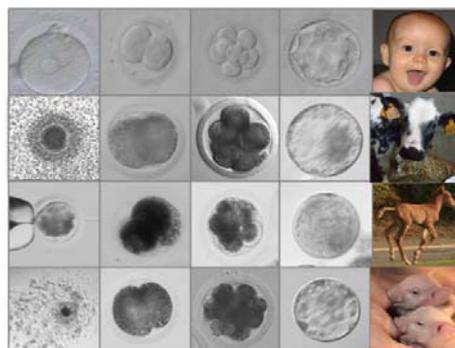
### Epigenetics and Perconception Environment – Perconception Environment as an Epigenomic Lever for Optimising Food Production and Health in Livestock

#### Objectives

The main objective of the Action is to establish a network of European researchers and industries working together in order to define how the perconception environment influences the production of healthy, fertile and productive livestock and which factors provoke epigenetic changes in gametes/embryos.

#### Abstract

Parental stress before, during and after conception (i.e. the perconception period) induces epigenetic changes in gametes and embryos. Such epigenetic changes may adversely affect the future health, development, productivity and fertility of those offspring. While there is increasing evidence for this in agricultural species, most of this knowledge derives from epidemiological studies in humans and controlled studies in laboratory animals. In this COST Action, time frames and mechanisms during which the gametes and early embryos are susceptible to epigenetic modifications will be determined in livestock in order to optimise their health and productivity. This COST Action will identify stressors and molecules which induce, modulate or remove epigenetic marks on genes that are relevant for different applications in farm animals. Public engagement activities are planned during the COST Action to inform the general public on the importance of the epigenome via the perconception environment in future food production, health and welfare. Research on epigenetic control of development is 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 in this field through a large collaborative EU network. These goals can only be achieved under a COST programme.



**Keywords:** Epigenetics, gametogenesis, embryogenesis, livestock, perconception environment.

#### Working Groups

- WG1 Epigenomic tools
- WG2 Perconception environment
- WG3 Cross-species epigenetics, gametogenesis and embryogenesis
- WG4 Public, peri-conception and epigenome

**Non-COST participation:** Australia, USA and Argentina

#### Interested Countries : 20

Proposer : **BE**  
AT, DE, DK, EE, EL,  
ES, FR, HR, HU, IE,  
IL, IT, LT, MK, NL,  
PL, SK, SE, UK



## Action FA1202

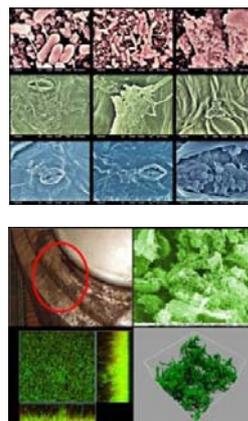
### A European Network for Mitigating Bacterial Colonisation and Persistence on Foods and Food Processing Environments

#### Objectives

The main objective of the Action is to create a network for mitigating colonisation and persistence of bacteria on foods and processing environments to achieve targeted solutions for the control of associated risks in food industry through a multidisciplinary European network.

#### Abstract

Persistent bacteria on foods and processing sites are of great concern in food industry causing continuous recontamination and safety problems. Removal of persistent bacteria and biofilms is not only costly but can lead to loss of productivity and environmental issues. Therefore there is a need to combine and re-evaluate the current scientific knowledge on the persistence of bacteria, and to introduce new engineering approaches for controlling pathogens. The objective of this Action is to enable the development/promotion of targeted solutions for controlling risks associated with persistent bacteria and biofilms in the food industry. It involves a multidisciplinary network which will expand our knowledge on colonisation and persistence, and validate/identify appropriate methods for monitoring colonisation patterns. Known and emerging intervention methods will be explored and re-evaluated. The knowledge obtained will be promoted to the relevant food industries and the scientific community.



**Keywords:** Bacteria, colonisation, persistence, biofilms, intervention.

#### Working Groups

- WG1 Harmonisation/standardisation of tools for the analysis of colonisation patterns
- WG2 Mechanisms of bacterial attachment/detachment, survival and biofilm formation on surfaces
- WG3 Stress responses vs. resistance development and persistence
- WG4 Ways of prevention and intervention

**Non-COST participation:** Australia, New Zealand and Ukraine

#### Interested Countries : 18

Proposer: TR

BE, CZ, DE, DK, EL,  
ES, FI, FR, IE, IL, IT,  
NL, NO, PL, PT, SE,  
UK



## Action FA1203

### Sustainable Management of *Ambrosia artemisiifolia* in Europe (SMARTER)

#### Objectives

The aim of the Action is to initiate and coordinate long-term management options to reduce ragweed in Europe by establishing an inter-disciplinary consortium that serves as a template for implementing integrated control measures against invasive alien species across Europe.

#### Abstract

Common ragweed (*Ambrosia artemisiifolia*) is one of the most prominent invasive alien species (IAS) in Europe. Its pollen grains are noxious aeroallergens, it is an important agricultural weed and also occupies large non-crop areas with a range that is likely to accelerate under climate change. As a result, long-term and widely applicable options are required for its sustainable management, as well as the coordination of institutions involved in *Ambrosia* research and management throughout Europe. SMARTER will establish an interdisciplinary network including experts currently involved in the control of ragweed, Non-COST key-experts, health care professionals, aerobiologists, economists, and atmospheric and agricultural modellers. SMARTER will provide a forum for discussing long-term management and monitoring options and the development of new innovative management solutions, such as a synergy between biological, physical and chemical control measures and vegetation management, and assess their cost-effectiveness in mitigating the effects of IAS. SMARTER will act as a catalyst for long-term research, provide an information platform and develop best practice manuals for the integrated management of ragweed. It will also help to tackle other IAS, benefit all sectors affected by IAS, promote outstanding R&D, innovation in industry and provide support for policy-makers in the European Research Area (ERA).

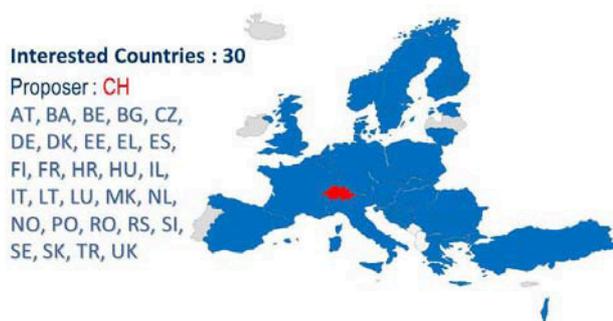


**Keywords:** Invasive alien species, Common Ragweed, biological control, integrated weed management, economic and environmental management assessment.

#### Working Groups

- WG1 Biological Control
- WG2 Vegetation management
- WG3 Integration of management options
- WG4 Management evaluation

**Non-COST participation:** Armenia, Australia, Canada, China, Georgia, Iran, Russian Federation, Ukraine, USA, European Bodies Participants



## Action FA1204

### Vegetable Grafting to Improve Yield and Fruit Quality under Biotic and Abiotic Stress Conditions

#### Objectives

The main objective of the Action is to understand the biological basis of rootstock-mediated improvement of Cucurbits and Solanaceous crops and their compatibility by combining already existing scientific information generated in several COST and non-COST countries as a basis for development and exploitation of new rootstocks.

#### Abstract

Due to limited availability of arable land and water resources, the widespread use of fertilizers, and the great market demand for vegetables, cucurbits and solanaceous crops are frequently cultivated under unfavourable soil and environmental conditions. These include soilborne pathogens, salinity, thermal stress, drought, and high concentrations of heavy metals. These harmful conditions are magnified by the changes in climate and environmental conditions and the restrictive policies of agrochemical usage. One way to avoid or reduce loss in production caused by adverse conditions in vegetables would be to graft them onto rootstocks capable of alleviating the effect of external stresses on the shoot. This Action aims to stimulate cutting-edge multidisciplinary collaborations towards identifying and understanding how rootstock-mediated traits can improve vegetable crop yield and quality under adverse biotic and abiotic conditions. Shared knowledge and enhanced scientific and technical collaboration will surely fill knowledge gaps in the area of vegetable grafting. This Action can also stimulate a widespread commercial development and exploitation of this technique in Europe. The knowledge collected will be presented in a book as a final output of this Action. Moreover, all data and information of this Action will be made available to the public through a specific website.



**Keywords:** Vegetable grafting, rootstock breeding and genetics, rootstock-scion interaction, biotic and abiotic stress resistance, fruit quality.

#### Working Groups

- WG1 Genetic resources and rootstock breeding
- WG2 Rootstock-scion interactions and graft compatibility
- WG3 Rootstock-mediated resistance to biotic and abiotic stresses
- WG4 Rootstock-mediated improvement of fruit quality

**Non-COST participation:** China, Republic of Korea, Lebanon, USA



## Action FA1205

**Assessing and improving the quality of aquatic animal gametes to enhance aquatic resources. The need to harmonize and standardize evolving methodologies, and improve transfer from academia to industry.**

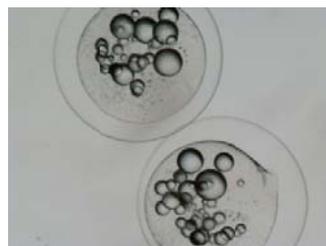
### Objectives

The main objective of the Action is to harmonize and standardize evolving analytical methodologies used in assessing the quality of aquatic gametes, improving their different uses, enhancing aquatic resources and transfer from academia to the industry.

### Abstract

During the past six years, three international workshops on fish gametes demonstrated a rapid development of methodologies that encompass extensive opportunities for promising use in basic reproductive biology, genetic research, biotechnology and aquaculture practice. All of these can have far-reaching consequences on conservation of endangered species, assessment of anthropogenic and climatic impacts on aquatic species and application in aquaculture, as well as in fisheries management. In particular, it has been recognized that there are many highly diverting details in the practical application of these new methods used by most scientists and laboratories, which can cause highly variable if not contradicting results, even using the same species. There is an urgent need towards a universal scale to assess both the precise state of sexual maturation (for secure broodstock use) and related life history traits (gamete quality assessment, incubation of eggs) in teleost fish and other commercially important invertebrates used in either bioassays or aquaculture.

The aim of the proposed AQUAGAMETE COST Action is to reach a consensus on protocols and guidelines (using internationally defined terminology, units of measurement and format of reporting) that permit the use of results in relational databanks for sound and common application in aquaculture research and commerce.

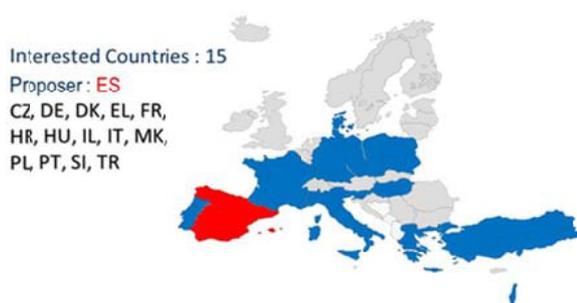


**Keywords:** Aquatic species gametes, Aquaculture, Endangered species, Biotechnology, Cryopreservation.

### Working Groups

- WG1 Techniques for evaluation of gametes quality
- WG2 Gametes storage and preservation
- WG3 Basic and applied research on gametes biochemistry and physiology, including omics
- WG4 Organization of training courses and coordinate meetings and two next International Workshops on Biology of Fish Gametes

**Non-COST participants:** Brazil, Japan, Singapore, South Africa



Food and Agriculture (FA)

## Action TD1203 (FA, CMST)

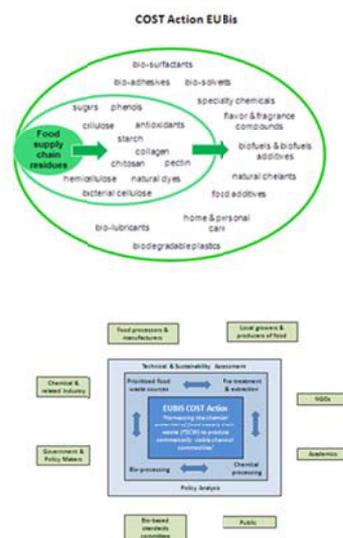
### Food Waste Valorisation for Sustainable Chemicals, Materials and Fuels (EUBis)

#### Objectives

The main objective of the Action is to provide an integrated alternative renewable source of carbon for the production of industrially relevant bio-derived chemicals, fuels and material via the exploration of novel and advanced routes for food supply chain waste valorisation

#### Abstract

Food supply chain waste (FSCW) creates huge environmental, economic and social problems. There is now a growing recognition that the twin problems of waste management and resource depletion can be solved together through the utilisation of waste as a resource, using green and sustainable technologies. The EUBis Action represents a timely opportunity to develop novel strategies for the valorisation of FSCW to new, sustainable and functional feedstocks. The symbiotic organisation of a COST Action will greatly benefit EU research in this field, and will focus on key areas to provide cohesive direction on the valorisation of FSCW within a multidisciplinary and multinational collaborative network. The overall aim of EUBis is to bring about a critical mass of researchers and stakeholders to harness the potential of FSCW as an alternative carbon source to produce commercially viable chemical commodities. The EUBis Action will bring together skills and expertise that cross scientific borders, covering biology, chemistry, biotechnology and food science and technology as well as experts in environmental and economic assessment. EUBis will interconnect different technology hubs across Europe, overcome technological barriers, go beyond current waste exploitation/management approaches, and bridge gaps between academic disciplines as well as between academia and industry.



**Keywords:** Food supply chain waste, valorisation, sustainability, bio-derived chemicals, alternative carbon source

#### Working Groups

- WG1 Pre-treatment and extraction
- WG2 Bio-processing
- WG3 Chemical processing
- WG4 Technical and Sustainability Assessment/ Policy Analysis

#### Interested Countries : 12

Proposer : UK  
 BE, DE, EL, ES, FI,  
 FR, IE, IT, NL, RO,  
 SE

