

Food research – showcasing a dozen European Research projects

All projects below have been funded through the food quality and safety priority of the EU's Sixth Research Framework programme (FP6, 2002-2006).

BIOCOP - A five-year Integrated Project detecting multiple chemical contaminants in foods.

Both consumers and regulators demand safe food, however a wide range of man-made substances are able to contaminate food on the farm and/or along the supply chain. Potentially harmful contaminants range from pesticide and hormone residues to heavy metals and illegal growth promoters. At present, tests for foreign chemicals are laborious and expensive because they are carried out individually. Whilst advances in biotechnology offer the possibility to make these essential tests cheaper and faster, the procedures need substantial development before they can be used for routine monitoring. BioCop aims to use new technologies to develop a new range of tools to measure the cumulative effect of contaminants rather than analysing them individually. For example, transcriptomics is being used in assays of phytoestrogens, organochlorides and tricothecenes. In addition the methods used to prepare samples will make use of modern technology.

Speaker: Chris Elliott, Queen's University, Belfast, UK

Countries involved: UK, Canada, the Netherlands, Sweden, Spain, Switzerland, France, Belgium, Finland, Czech Republic, Italy, Austria, Lithuania, Germany, Ireland

EU Contribution: €9.6 million

Website: www.biocop.org

CASCADE - A five-year Network of Excellence to investigate whether grain and berry phytoestrogens affect cancer risk through the estrogen signalling system.

Increased consumer concern about toxic chemicals contaminating the food chain is understandable, however it is not yet clear how justified this anxiety is due to the multidisciplinary nature of the risk. The CASCADE Network of Excellence aims to collect this fragmented European research into the health risks posed by chemical pollutants in food, taking into account many aspects. Questions including how much contamination is absorbed by the body and whether chemicals could react with each other in the diet will be researched. As a result, knowledge gaps will be identified and communication of evidence improved. The project will focus on 'endocrine disruptor' chemicals, which affect hormone receptors in the cell nucleus and accumulate in both the environment and the body. Much research needs to be carried out in order to understand the how these chemicals cause health risks and the effects of exposure, whilst taking into account certain variables including sex, age and diet.

Effective communication of the results is essential to challenge the preconceived idea that research institutes operate independently and therefore the science-society office plays an important role. CASCADE also aims to address the need to train young researchers and has allocated funds for ten PhD students to work within the network.

Speaker: Sari Mäkelä, University of Turku, FI

Countries involved: Sweden, Italy, Germany, France, Spain, Finland, Hungary, the Netherlands

EU contribution: €14.4 million

Website: www.cascadenet.org

CLEANFRUIT – A three-year EU specific targeted research project enabling cleaner fruit production in the Mediterranean using sterile insect technique (SIT)

The Medfly is a serious pest for European fruit producers and is often treated with chemical sprays. The CLEANFRUIT project aims to develop alternative methods of crop protection using SIT, which has already proved to be successful in other areas of the World, including Central America, California and Florida. By releasing sterile male insects into the fly population, no young are produced and the total number of flies decreases. Therefore both growers and consumers win because the fruit is free from pest damage and the residues produced by pesticides are greatly reduced. The CLEANFRUIT project will research into how the insects are hatched and raised as well as improved methods of transportation. The aim is to achieve the use of STI Medfly to 25% of European citrus production by 2010.

Speaker: Neil Goldsmith, Insecta Ltd., UK

Countries involved: Slovakia, UK, Spain, Portugal, Israel

EU contribution: €2.37 million

Website: www.insecta.co.uk

EADGENE - A Network of Excellence for integration of genomics research tools and common research objectives for animal health.

Whilst European husbandry leads the World in efficiency and animal welfare, all livestock is prone to disease. An increased pressure to reduce the number of drugs used in the food chain and the decreased effectiveness of traditional therapies mean that new methods of preventing disease need to be found. Therefore, the improved health of farmed animals must be a key priority for Europe.

Genomics offers exciting opportunities for animal health and controlling disease. For example, it can be used to breed genetic resistance into animals, developing new vaccines and for rapid diagnosis. By identifying the genes that are used for defence against disease, animals with natural immunity can be quickly identified and bred quickly. Although genomics is a high-cost science, it offers new hope for diseases, which are currently untreatable. The project aims to ensure that both the consumer and society at large benefit from safer, more sustainable food.

The EADGENE project is keen to communicate the results back to the industry and has therefore set up a 'club of interest' to achieve this goal.

Speaker: Steve Bishop, Roslin Institute, UK

Countries involved: France, the Netherlands, UK, Denmark, Belgium, Slovenia, Spain, Norway, Germany, Italy

EU Contribution: €11.5 million

Website: www.eadgene.org

Grain Legumes - An integrated Project to develop new strategies to improve grain legumes for food and feed.

Animal food needs to contain both energy and protein. Following the BSE crisis, which led to the removal of animal derived protein from livestock feed, the lack of vegetable protein sources came to light. As 75% of European plant-derived protein is exported, the European Union wants to encourage farmers to increase the growth of protein-rich legume crops for animal feed. This type of crop, including peas and beans, is currently under-used in European agriculture, despite having the advantages of reducing the need for fertiliser and pesticides. However farmers complain that the yield of these legumes is lower than that of other crops and that the harvests are variable. Grain Legumes aims to make legume crops more competitive for European agriculture through implementation of the latest developments in genomics, plant improvement, crop management and feed processing.

Speaker: Noel Ellis, John Innes Centre, UK

Countries involved: UK, France, the Netherlands, Germany, Spain, Denmark, Hungary, Switzerland, Belgium, Norway, Sweden, Poland, Portugal, Czech Republic, Israel, Bulgaria, Australia, Italy

EU Contribution: €14.2 million

Website: www.eugrainlegumes.org

HEATOX - A three-year Specific Targeted Research Project to determine whether acrylamide in foods is still a health risk.

In April 2002, Swedish scientists left food safety officials surprised and perplexed when they produced research demonstrating disturbingly high levels of a carcinogen called acrylamide in certain cooked foods. Little is known about acrylamide at present, however it is known to induce cancer in animals, damage nerves and impair male fertility. The European Commission responded to the findings by generating a database on all research activities. The World Health Organisation has additionally developed an international network of researchers.

Diet is thought to contribute to about 30% of some cancers and the increasing dependence on processed food means that research is essential. The HEATOX project aims to fill the knowledge gaps with regards to acrylamide and other substances that are formed during the cooking of starchy foods and to determine the risk faced by consumers. The project also involves consumer groups and communication specialists who will concentrate on effective and appropriate communication of the results.

Speaker: Karl-Erik Hellenäs, National Food Administration, SE

Countries involved: Sweden, Austria, UK, Italy, the Netherlands, Czech Republic, Spain, Turkey, Denmark, Norway, Germany, Belgium, Switzerland, Chile

EU Contribution: €4.2 million

Website: www.heattox.org

Med-Vet-Net - A five-year Network of Excellence working together across the food chain to prevent pains in the gut.

Zoonoses are diseases that can be transmitted from animals to people and they are responsible for some of the most serious health problems. Almost two-thirds of human pathogens are zoonotic and a large number are food-borne and carried by domestic livestock. Changes in human society may increase the threat from zoonoses and previously unknown diseases can emerge rapidly. Whilst all scientists agree that outbreaks can have rapid and serious consequences, control is often hampered by the divisions between medical and veterinary science. According to Med-Vet-Net, tens of thousands of samples are collected from farms and hospitals annually by different institutes, but they are rarely compared. By utilising resources better and encouraging communication with the general public, the project aims to significantly improve the ability to understand and control zoonoses.

Speaker: Anne Ridley, Veterinary laboratories Agency, New Haw, UK

Countries involved: France, the Netherlands, Spain, Denmark, Italy, Poland, UK, Sweden, Hungary, Germany

EU Contribution: €14.4 million

Website: www.medvetnet.org

REPLACE - A specific Targeted Research Project, which uses results of the screening of 500 plant samples to suggest alternatives to antimicrobial growth promoters.

The use of antibiotics in farming has allowed the treatment and prevention of infection among farm animals and also reduces the cost of food by enhancing weight gain. However, an increased use of these antibiotics can lead to resistance or more virulent strains of pathogens and consequently the EU has banned the use of growth promoting antibiotics (GPA) in farming from 2006. If Europe wants to remain competitive, it is necessary to find alternative methods, which can act as substitutes for the GPAs. The REPLACE project aims to demonstrate that natural feedstuffs and supplements taken from plants could replace these antibiotics in farming, using previous research carried out on ruminants (RUMEN-UP). This work suggests that it is possible to improve the content of conjugated linoleic acids in beef, lamb and dairy products, which offer a number of health benefits to humans. Plant extracts could also offer an alternative to antibiotics in fish farming.

Speaker: John Wallace, Rowett Research Institute, UK

Countries involved: UK, Germany, Spain, Denmark, Slovak Republic, Norway, Poland, Switzerland, Ireland

EU Contribution: €2.87 million

Website: www.replace-eu.com

SAFE FOODS – A four-year Integrated Project aimed at improving decision-making on food safety.

Consumers need to have confidence in the food they are buying and eating and therefore they must have sufficient information. By increasing the transparency of risk analysis, the declining consumer trust in the safety of food could be restored. There are three main elements to this: risk assessment, risk management and risk communication and the SAFEFOODS project aims to design new and more effective procedures using different production practices and different breeding technologies.

The potential role of regulatory organisations in managing risks in the food chain will also be explored. In addition, public information and education is needed to restore confidence in effective risk analysis practises in food.

EU Contribution: €11.4 million

Speaker: Ariane König, University of Oxford, UK

Countries involved: the Netherlands, UK, Germany, Finland, Poland, Italy, South Africa, China, Ireland, Latvia, Hungary, Switzerland, Sweden, Denmark, Czech Republic, Greece, Belgium

Website: www.safefoods.nl/default.aspx

SEAFOODplus - A five-year Integrated Project researching improving health and well being of the European consumer.

Fish contains polyunsaturated fatty acids, which can reduce the risk of heart disease and cancer. The increased market-demand has led to intensified fish farming, but the quality and safety must also be maintained. As sources of wild fish are limited and some stocks are under threat, the European Union encourages consumers to eat a greater variety of fish. SEAFOODplus will study the production, marketing and consumption of seafood and its effects on health. As mentioned there are a number of health benefits associated with seafood and research is being conducted to determine if further benefits can be identified. This project will also weigh these benefits against the risks of food poisoning or histamine reactions associated with shellfish.

Speaker: Gertjan Schaafsma, Wageningen University, NL

Countries involved: Denmark, Norway, France, the Netherlands, UK, Spain, Iceland, Belgium, Germany, Ireland, Portugal, Sweden, Italy, Finland, Canada, Hungary, Poland

EU contribution: €14.4 million

Website: www.seafoodplus.org

QUALITY LOW INPUT FOOD - An integrated Project to improve organic and "low input" cereal production systems; the importance of developing a whole systems approach.

Organic food has experienced a boom over the last decade, as recognised by the European Action Plan. However, it is necessary to improve the quality and safety of organic and 'low-input' food, whilst reducing the cost to the consumer and in order to achieve this, the entire supply chain – from farmer to shopper – needs to be consulted. Tests will be conducted on the nutritional value of low-input and commercial products as well as the risk of pathogens reaching food from animal manure fertilisers and fungal toxins. 31 partners are involved in the project which will investigate both consumer behaviour and the safety and quality of organic and 'low input' food.

Speaker: Carlo Leifert, University of Newcastle, UK

Countries involved: UK, Switzerland, Denmark, the Netherlands, Germany, Italy, France, Poland, Austria, Portugal, Crete, Czech Republic, Finland, Turkey

EU contribution: €12.4 million

Website: www.qlif.org

Welfare Quality - A five-year Integrated Project to integrate animal welfare in the food quality chain.

In the past, the main focus of animal production and research in this field was concerned with supplying an adequate amount of food at an affordable price. However, this led to increasingly intensive husbandry methods and as a result consumers have begun to express concern about how these animals are kept. A greater emphasis is now placed on how the animals are raised and respect for the environment. This concern has only increased with the development of BSE and swine fever. The Integration of Animal Welfare in the Food Quality Chain project aims to improve the quality of food by ensuring the welfare of farm animals and will count on the expertise of forty European organisations and university departments. By reducing the levels of boredom, anxiety and stress, the animals health and welfare will improve, as will the quality of the products produced from them. In addition, the project will ensure that the consumer receives the information that it wants on food packaging.

Speaker: Linda Keeling, Swedish University of Agricultural Sciences, SE

Countries involved: the Netherlands, Austria, Belgium, Czech Republic, Germany, Denmark, Spain, France, Ireland, Italy, Norway, Sweden, UK

EU Contribution: €14.4 million

Website: www.welfarequality.net