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Project Catalogue

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Food Quality and Safety in Europe

Directorate-General for Research
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FOREWORD BY THE COMMISSIONER

Even though these are not times of food scarcity for Europe, people are still affected by food-related anxieties. When the European Commission started to develop the ideas behind the Sixth Research Framework Programme, the role of microbes, vitamins and carbohydrates were already familiar, a new era of discourse on food began.

At that time, citizens started to concern themselves with questions of pesticide in fruits, nutritional content, bovine growth hormones in milk, mad cow disease, allergies and obesity. There was only one way to differentiate between the good, the bad, and the inedible and to support the new emerging rights of the "informed choice"; we needed to invest in food safety and quality research across the board, from fork to farm.

Food industry is Europe's largest manufacturing sector. Surprisingly, it remains non-research intensive. Less vulnerable than others to economic fluctuations, it is instead affected by consumer habits and perceptions more than anything else. If we want to remain competitive and rise to the challenge in providing our citizens with the high-quality safe food they request, we have to discover and unveil the potential of new technologies and transfer the knowledge to large companies as well as to the many SMEs that represent the economic backbone of Europe.

By responding to pressing requests from consumers, market and Member States, the forward-looking thematic priority Food Quality and Safety in the Sixth Framework Programme has been a great success. It effectively supported research to develop an environmentally friendly production and distribution chain able to deliver safer, healthier and more varied food to people.

I hope you will look forward to the new Seventh Research Framework Programme with equal enthusiasm.

Janez Potočnik
European Commissioner
for Science and Research

STEADFAST COMMITMENT TO HIGH-QUALITY AND SAFE FOOD IN EUROPE

Over the last decade, food quality and safety has grown into a significant sector, in the public opinion and the media. At the beginning of 2000, related research needed to become a priority as various food scares had caused a serious lack of confidence among EU citizens. Recognising that food safety is a fundamental and ongoing issue, EU policymakers developed Thematic Priority 5 (TP5), Food Quality and Safety. The driving force for setting up TP5 in the Sixth Research Framework Programme (FP6) was the need to improve the health and well-being of European citizens through higher quality food and improved control of food production and related environmental factors.

Using the classic 'farm-to-fork' approach, the programme gave priority to identifying the major issues for consumers, and then proceeded along the production chain, outlining issues associated with primary production, animal feeds, processing, distribution, consumption and environmental health risks.

In addition to combining production, processing, nutritional and analytical expertise, the projects funded through TP5 drew on expertise from such areas as genomics, medicine, information technologies, ethics, environmental, economic and the social sciences, to achieve their aims. In doing so, the strategy provided the fertile ground for the development of a 'total food chain' approach to food quality and safety.

Accordingly, the food sector shifted its focus towards consumer needs, resulting in improved links between production, distribution and consumption. This all-encompassing approach has helped allay concerns and restore consumer confidence across Europe.

This catalogue highlights the challenge undertaken by Food Quality and Safety during FP6. A total of EUR 751 million in funding was injected into research activities between 2002 and 2006 to deepen understanding of the links between food production, consumption and health. TP5 supported 181 research projects to help develop an environmentally friendly production and distribution chain able to deliver safer, healthier and varied food to European citizens. The scope of the theme is indicative of the scale of the research issues addressed – from food-related risks and diseases (relying in particular on biotechnology and the results of post-genomic research) to the health risks associated with environmental changes.

The research activities funded by FP6 also contributed to the realisation of a European Research Area promoting mobility, cooperation and training of EU scientists through the pooling of know-how and expertise.
Contemporary philosophers have already noted the key role played by modern food production in western societies. Furthermore, food safety regulation and the governance of regional and global biotechnology markets present new and more complex challenges for European policymakers. The selected research projects served to reinforce and establish European governance around food production and consumption. Combined, they offer valuable insight into the complexity of research issues regarding one of the most pressing international problems of today.

** Statistical analysis of the 181 projects funded under TP5 in FP6 is available at http://cordis.europa.eu/food/*

FP6 portfolio of instruments*

The Food Quality and Safety Priority 5 (TP5) of the Sixth Framework Programme (FP6) encompassed many of the research topics and themes funded by the previous FP5 Quality of Life programme. However, new scientific areas had been introduced: total food chain; epidemiology of food-related diseases and allergies; impact of food on health; 'traceability' processes along the production chain; methods of analysis, detection and control; safer and more environmentally friendly production methods and technologies; impact of animal feed on health; and environmental health risks.

Between 2002 and 2006, 3 130 participants of 181 projects were selected under four main calls incorporated in ten deadlines. FP6-2002-FOOD-1; FP6-2003-FOOD-2-A; FP6-2003-FOOD-2-B; FP6-2004-FOOD-3-A; FP6-2004-FOOD-3-B; FP6-2004-FOOD-3-C; FP6-2005-FOOD-4-A; FP6-2005-FOOD-4-B; FP6-2005-FOOD-4-C and FP6-2003-ACC-SSA-FOOD.

In addition to the traditional funding instruments of the scientific research community such as Specific Targeted Research Projects (STREPs), Coordination Actions (CAs) and Specific Support Actions (SSAs), FP6 moved towards funding larger, more ambitious projects. In particular, two new funding instruments were introduced: Integrated Projects (IPs) and the Networks of Excellence (NoEs).

STREPs

The 60 Specific Targeted Research Projects were designed to gain knowledge or demonstrate the feasibility of new technologies. Available to small and emerging players, they played an important function for the scientific community because they financed research on new technologies that do not necessarily have a direct impact on the market.

FP6 supported the improvement of innovative non-thermal processing technologies to develop the quality and safety of ready-to-eat meals; determined whether pharmaceutical products were present in food and whether they affected human fertility; and assessed if the composition of flavonoids in various foods had similar effects as antioxidants in decreasing the risk of cardiovascular diseases and enhancing the body's immune system. STREPs also helped to create recommendations for lifestyles and healthy habits to improve the quality of life of EU citizens.

CAs

The 7 Coordinated Actions (CAs) covered the definition, organisation and management of joint initiatives that aimed to avoid duplication of efforts in different Member States and sought to build synergies between existing national and other international initiatives so as to better integrate European research.

SSAs

The 71 Specific Support Actions (SSAs) helped to prepare and support new research activities. The SSAs also aided in the preparation of Seventh Framework Programme, encouraging and facilitating participation in European collaborative research efforts. In particular, FP6 Specific Support Actions (SSA) were directed at the following seven objectives: achieving

ERA objectives; promotion of SME participation; stimulating international cooperation; linking with candidate countries; supporting policy development; stimulating exploitation; and contributing to the EU strategy for life sciences and biotechnology.

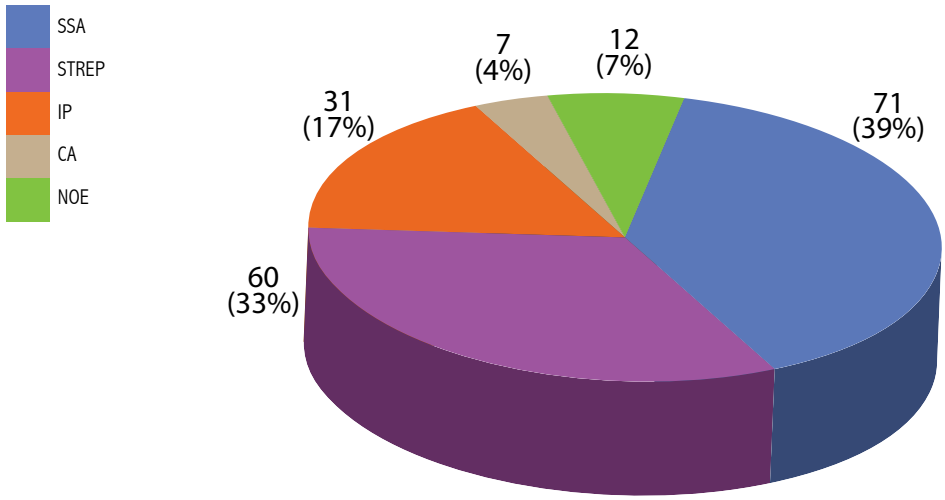
IPs

The 31 Integrated Projects were designed to deliver new knowledge, a competitive advantage to European industry, and respond to SME needs by integrating and mobilising the critical mass of research activities and resources. Some IPs put into service innovative biomarkers to detect the exposure to chemicals and metals in food and set up diagnosis procedures to help food industries to manage allergies.

NoEs

The 12 Networks of Excellence were aimed at strengthening excellence by connecting resources and expertise and supporting effective integration and cooperation in the research activities of the network partners, as well as advancing the overall topics of interest.

Food Quality and Safety projects in FP6:



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NUTRI-SENEX

AN APPETITE FOR LIFE

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- Leatherhead Food International (UK)
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- Deutsche See GmbH & Co. KG (Germany)
- University College Cork (Ireland)
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- Innovative Qualifikation in der Altenpflege (Germany)
- WBI Technology (Ireland)
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- NIZO Food Research (The Netherlands)
- University of Tartu (Estonia)
- Wageningen University (The Netherlands)
- Findus R&D AB (Sweden)
- Polish Academy of Sciences (Poland)
- BIMBO (Spain)
- Institut postgraduálního vzdelávání ve zdravotnictví (Czech Republic)
- Unilever Nederland (The Netherlands)

Declining birth rates and longer life expectancy in developed countries mean that their populations are ageing at a rapid rate. Europe is the world's most affected region, with a projection of one in three Europeans over the age of 60 by the middle of this century. Many frail elderly will need to live in care homes, placing a growing economic burden on people of working age.

This burden would be eased if people could stay healthy and active in later life – adequate nutrition is known to be one of the most significant factors in a good quality of life for the elderly. Yet elderly people often become undernourished, a condition which leads to a more rapid decline in their health and well-being. A three-year Coordination Action, NUTRI-SENEX (Improving the quality of life of elderly people by coordinating research into malnutrition of the elderly) will bring together the results of EU research programmes into better nutrition for old people. It will produce recommendations, survey health legislation, and develop guidelines for functional foods. The result will be greater awareness of the problems faced by the elderly and should indicate how best to meet their nutritional needs.

IN GOOD TASTE

As people grow older, their senses of taste and smell become less acute, especially if they suffer from chronic diseases. When they stop enjoying eating, they may also lose their appetite, lose weight and become more frail. One solution is to create special foods for the elderly, with heightened flavour and fortified with nutrients. A particular problem arises in care homes, where all residents tend to be served the same meals, regardless of personal or cultural preferences. In one study, nursing home residents given flavour-enhanced meals became hungrier and actually put on weight.

Another problem in the nutrition of the elderly is the fear of certain foods, often as the result of media coverage of health threats. A low-fat diet may be good for the heart, but foods with high nutritional density may give you more energy. One aim of NUTRI-SENEX is to examine the 'one diet fits all' concept in relation to the nutritional needs of older people.

RESEARCH NEEDS COORDINATION

The European Commission already supported several projects in this area and NUTRI-SENEX partners are prominent in this research field. Current EC projects include: HEALTHSENSE-CHOICE, looking at how factors such as changes in sensory perception affect what the elderly choose to eat; CROWNALIFE, investigating intestinal micro-organisms in old people to help in designing food priorities and functional foods to benefit their intestinal flora; VITAGE, examining the role of fat-soluble vitamins in the diet and how this changes with ageing; and SENIOR FOOD, studying old people's attitudes to food, including delivered meals, convenience foods and snacks.

This work is largely based in academic institutions, so it will be important to convey it to the community of the elderly and those caring for them. For this reason, NUTRI-SENEX has a strong communication element. There will be workshops to explain to the health and care industries the guidelines the network will draw up for best practice in food preparation, as well as technology transfer and training workshops. The development of special food products for older people may prove to be an attractive and growing market for the food industry. The involvement of organisations which take care of the elderly will be important to transfer results to the end-users of this Coordination Action.

The consortium will be open to new centres of excellence in the field to enable it to become the ERA's leading forum for research into the nutrition of elderly people.

Acronym: NUTRI-SENEX

Full title: improving the quality of life of elderly people by coordinating research into malnutrition of the elderly

Contract n°: 506382

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EU contribution:
€ 1M

PROMOTING GRAIN LEGUMES FOR EUROPEAN LIVESTOCK

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- Max-Planck Institut, Golm (Germany)
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- Génoscope (France)
- Royal Veterinary and Agricultural University (Denmark)
- Genome Research, Sanger Centre (UK)
- University of Frankfurt Biocentre (Germany)
- University of Dundee (UK)
- Institute of Genetics, BRC, Hungarian Academy of Sciences (Hungary)
- Institute of Plant Genetics, Polish Academy of Sciences (Poland)
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- Central Science Laboratory, York (UK)
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- Instituto de Biologia Molecular e Celular, Porto (Portugal)
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- Confederation Espanola de Fabricantes de Alimentos Compuestos (Spain)
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- University of Reading (UK)
- Institute of Grassland and Environmental Research (UK)
- ID Lelystad (The Netherlands)
- University of Córdoba (Spain)
- Technische Universität München (Germany)
- De Schothorst Institute of Animal Nutrition (Germany)
- University of Aarhus (Denmark)
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- UNIP Paris (France)
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- Agricultural Research Organisation (Israel)
- AgroBioInstitute (Bulgaria)
- AEL, Associación Española de Leguminosas (Spain)
- University of York (UK)
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- CNR, Consiglio Nazionale delle Ricerche (Italy)
- IPBO, Institute for Plant Biotechnology for Developing Countries (Belgium)
- Commonwealth Science and Industry Research Organisation, Division of Plant Industry (Australia)
- GenXPro (Germany)
- Grain Legumes Technology Transfer Platform (to be created)
- All Russia Research Institute for Agricultural Microbiology (Russian Federation)
- Kafr El-Sheikh University, Faculty of Agriculture (Egypt)
- An-Najah National University, (Occupied Palestinian Territory)
- Institute Agronomique et Veterinaire Hassan II (Morocco)
- Institut National de la Recherche Agronomique de Tunisie (Tunisie)
- EMBRAPA — CENARGEN, (Brazil)
- UCB — Catholic University of Brasilia, (Brazil)
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- Centre de Biotechnologie, Borj Cedria (Tunisia)
- University of the Witwatersrand (South Africa)
- Instituto de Tecnologia Quimica e Biologica (Portugal)

Animals need both energy and proteins in their food. BSE or mad cow disease, which led to the removal of animal-derived protein from livestock feed, has highlighted the shortfall in vegetable protein sources. Europe imports 75% of its plant-derived protein, mostly as soyabean meal. For this reason, the European Union wants to encourage farmers to grow protein-rich legume crops like peas and faba beans for animal feeds. Such plants are currently under-used in European agriculture, despite having the advantage of reducing fertiliser and pesticide inputs, which is better for the environment. A large Integrated Project called "Grain Legumes" is combining the efforts of scientists from 18 countries in order to make legume crops more competitive for European agriculture, using the latest progress in genomics and ranging from plant improvement and crop management to feed processing.

TEMPTING FARMERS

Peas, faba beans, chickpeas, lupins, common beans and lentils are the main legume crops most suited to European agriculture. They offer farmers several environmental benefits. First, by fixing nitrogen due to natural symbiosis they reduce the need for industrial fertilisers. They increase the diversity in crop rotations, breaking the annual cycle of cereals and reducing the build-up of cereal weeds and pests and the corresponding need for pesticides.

With all these benefits, why are farmers reluctant to grow them? Currently, they represent just 5% of Europe's arable land, compared with 15 to 30% elsewhere. Farmers complain that their yield is lower than that of other crops and is variable. Foliar diseases and root rots are largely to blame and pea-like plants tend to collapse under their own weight, making harvesting more difficult.

The overriding aim of the Grain Legumes project is to provide tools to facilitate genetics and to develop new varieties of legumes alongside new ways of growing, treating, processing and using them. The strategy is to accelerate plant breeding by harnessing the progress in the description of legume genes and their genome organisation.

THE LEGUME CODE

Progress towards understanding the genetic code of legume crops lags behind other crops such as cereals. A species adopted as a genetic model for legumes, the barrel medick, is about to have its gene content fully sequenced and the partners in Grain Legumes will contribute to these international efforts. This will provide the gene order of this model species, which will in turn provide a blueprint to analyse the genetic organisation of legume crops. The project will also create a library of pea genes and mutants and will develop microarray methods to tell which genes are active in key cell pathways. These genomic tools will pave the way to identifying genes, or sets of genes responsible for important attributes such as plant shape, disease resistance, and content of protein or other constituents in seeds. This information will enable the monitoring of plant breeding and the identification of genetic diversity for breeders to work with.

Meanwhile, agronomists and agro-ecologists will measure the impact of legume crops, in terms of agronomic and economic criteria, cost and energy use. Animal nutritionists will study their potential to improve animal feed and will test feed, that is processed using novel methods, on pigs and salmon to establish whether or not animal health can be improved, and to provide new sources of protein so urgently needed for fish farming.

The project will develop links with other international programmes on legume genomics, to avoid duplicating effort. European plant breeding, food and animal feed companies will be kept informed of results and have access to these publicly funded activities through an interactive Technology Transfer Platform so that the results can be developed into real products. The predicted outcome should be legume crops that are more attractive for European agriculture and industry so that, in future,

Europe's citizens and animals can look forward to eating more locally-grown grain legumes with the benefits of enhanced traceability and health.

Acronym: GRAIN LEGUMES

Full title: new strategies to improve grain legumes for food and feed

Contract n°: 506223

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REDUCING THE BURDEN OF OBESITY

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- University of Bergen (Norway)
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- Maastricht University (The Netherlands)
- Hospital Universitario Reina Sofía, University of Córdoba (Spain)
- The Jagiellonian University Medical College (Poland)
- Uppsala University (Sweden)
- Unilever Bestfoods (The Netherlands)
- BASF Plant Science (Germany)
- University of York (UK)
- Rothamsted Research (UK)
- Rowett Research Institute (UK)
- MTT Agrifood Finland (UK)
- Clermont-Theix Research Centre and UR-1154 Châtenay-Malabry, Institut National de la Recherche Agronomique (France)
- University of Ulster (UK)
- University of Porto (Portugal)
- British Nutrition Foundation (UK)
- LMC International (UK)
- Hitachi Europe (Ireland)

The population of Europe is growing older and fatter. By 2030, nearly a third of Europeans will be over 60. The European Council of Ministers has expressed grave concern about the social and economic impact of increasing obesity in Europe. In several countries, the cost of obesity is already 5% of total public health expenditure, largely due to the treatment of older people suffering from high blood pressure, diabetes and high levels of fat in the blood. These conditions characterise what is known as the metabolic syndrome which affects overweight people, generally in middle and old age. By 2010, some 31 million Europeans will require treatment for diabetes. But recent research shows that diet and exercise are better than drug treatment at preventing development of obesity-related diabetes.

LIPGENE, a five-year Sixth Framework Programme Integrated Project, is helping to reduce the economic and social burden of obesity by assessing the potential for diet-based prevention of metabolic syndrome. It involves 21 partners from ten countries, including scientists, economists and business.

FOOD FOR THOUGHT

One major scientific aspect of LIPGENE is to find out whether our genes modify the way diet affects our body. Can everyone benefit from a better diet, or are some people at risk whatever they eat? Using the data from a population-based study of 13 000 people, scientists will search for genes that predispose us to suffering ill effects from obesity. Are some people more sensitive to certain types of fat? Some fats, such as saturated fats, enhance the ill effects of being overweight. Other types of fat, notably the n-3 long chain polyunsaturated fatty acids which are found mainly in fish oil, are healthier. LIPGENE will carry out a large study on what happens to those people at risk of metabolic syndrome if they change the fats in their diet. How much of an improvement is possible using diet alone? Do the genes associated with metabolic syndrome make a difference? The scientists will also study key mechanisms in fat and muscle tissue to find out how these genes work.

If some fats are better than others, why not use modern technology to modify the fat composition of food? LIPGENE scientists will engineer genes from marine algae into linseed plants so as to produce oil with a higher composition of healthy fatty acids. Another group will try to improve the composition of milk and meat fats by changing animal diets. Following this research, the project will produce a range of demonstration foods containing the improved fats, such as milk, cheese, poultry meat and margarine. This consumer test will be addressed not just to the general public, but also to companies which might be willing to develop such products.

A BALANCED APPROACH

On the social and economic front, LIPGENE will assess the true European cost of obesity-related health problems and weigh up both the costs and benefits of introducing modified fats in food. It is crucial to ask how the general public feels about dealing with obesity in this way. Are we happy to change the nutritional content of foods? Are genetically modified foods acceptable in this context? Equally, how do Europeans feel about accessing the information in our genes which tells us whether we are likely to suffer complications from being overweight? LIPGENE will survey opinions of metabolic syndrome sufferers across Europe to find out whether introducing these technologies would be popular, effective and would have a high cost benefit. The consortium will work hard to publicise all its findings and hopes to stimulate debate on the future of food policy at the highest level.

Acronym: LIPGENE

Full title: diet, genomics and the metabolic syndrome: an integrated nutrition, agro-food, social and economic analysis

Contract n°: 505944

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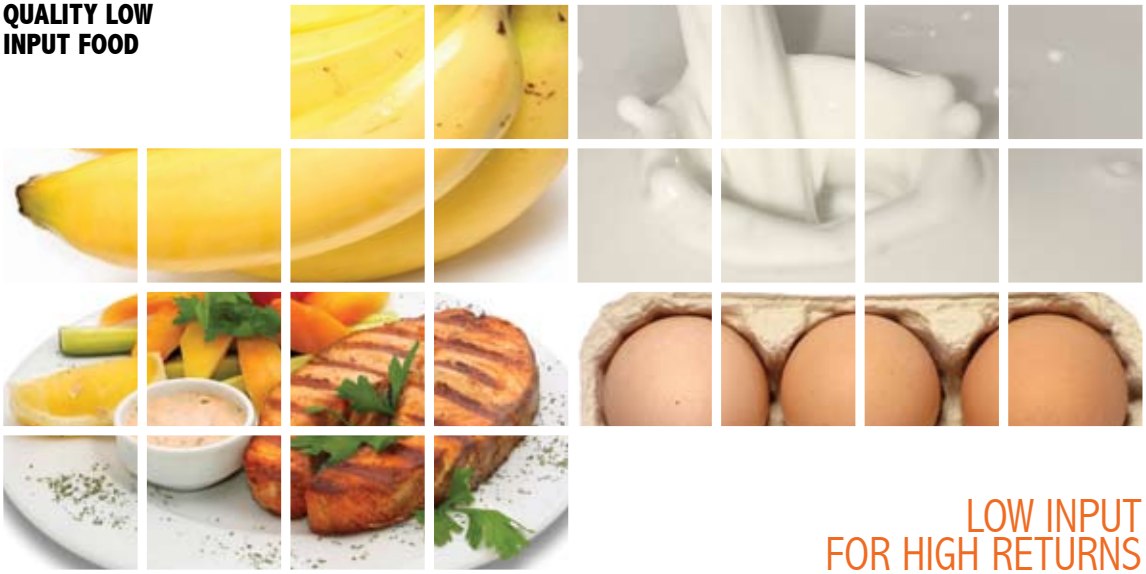
EU contribution:
€12.5M

QUALITY LOW INPUT FOOD



LOW INPUT FOR HIGH RETURNS

LIST OF PARTNERS

- University of Newcastle upon Tyne (UK)
- Forschungsinstitut für Biologischen Landbau (Switzerland)
- Danish Research Centre for Organic Farming/ Danish Institute of Agricultural Sciences (Denmark)
- Praktijkondersoek Veehouderij (The Netherlands)
- University of Kassel (Germany)
- Campden and Chorleywood Food Research Association (UK)
- University of Wales, Aberystwyth (UK)
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- University of Basel (Switzerland)
- Institute of Grassland and Environmental Research (UK)
- Universitat Hohenheim (Germany)
- Università Politecnica delle Marche (Italy)
- Granarolo (Italy)
- Roger White and Associates (UK)
- Guaber (Italy)
- Anidral (Italy)
- Gilchesters Organics (UK)
- Agro Eco Consultancy
- (The Netherlands)
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- Groupe de Recherche et d'Echanges Technologiques (France)

As recognised by the European Action Plan on Organic Food and Farming, organic food has experienced a boom over the last decade. But farmers and the whole supply chain still have some way to go. An Integrated Project under the European Commission's Sixth Framework Programme (FP6) brings together European research on a wide range of low-input and organic farming research, from consumer perceptions of quality to individual activities on the farm. The overall objective of the project is to improve the quality and safety of organic and 'low-input' food, whilst reducing its cost to the consumer. By involving the entire supply chain – from farmer to shopper – it hopes to align producers better with the expectations of their markets.

According to the FP6 project, 'Quality Low Input Food', the research challenges are: to improve the match between what producers aim at, and what consumers want; to increase cost efficiency (but not at the expense of quality, or food safety); and to draw all possible environmental and energy use benefits from organic and 'low-input' farming.

The project will address these issues by rigorously investigating consumer behaviour, testing the safety and quality of organic and low-input food, and by applying Europe's research expertise to improving the cost-effectiveness of low-input production. The project involves 31 partners – eight are European companies, including six SMEs, involved in the production, processing and quality assurance of organic food.

WHAT DO CONSUMERS WANT?

The first phase of the project is to ask consumers what they want from low-input foods, to measure what they actually buy, and to use the results in planning the research. To complement this, the project will compare the nutritional value and quality of low-input and conventional products. This will be followed by a carefully programmed series of studies, among them a comparison of the nutritional content of milk, and a test to demonstrate the effect of fungicide residues on animal fertility. The risk of pathogens reaching food from animal manure fertilisers, and of fungal toxins on organic grain will be quantified, and solutions sought. The research will help identify points in the low-input food chain where such hazards occur, and the new control measures will be disseminated to professionals in the food industry. It is planned to follow up the first results with studies focused on consumer health.

WHAT CAN PRODUCERS DO?

The research continues back down the chain to the primary production systems themselves. There will be focused research packages in the cereal, vegetable, dairy, poultry and pork sectors. Scientists will try out novel techniques to produce better and cheaper products in line with consumer requirements. For example, agronomists will test different weeding methods and crop rotations, while livestock experts will assess whether housing animals differently can reduce their worm burden.

Each year of the project, the partners will hold a major colloquium to present their results to user- and consumer-representatives. The colloquium will be used to measure progress towards the project's overall goal of improving quality, ensuring safety, and reducing cost along the European organic and low-input food supply chains.

Acronym: QUALITY LOW INPUT FOOD

Full title: improving quality and safety and reduction of costs in the European organic and low input supply chain

Contract n°: 506358

Website:
www.qlif.org

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EU contribution:
€ 12.4M

SAFE FOODS

BOOST FOR CONSUMER CONFIDENCE

LIST OF PARTNERS

- DLO-RIKILT - Institute of Food Safety (The Netherlands)
- Scottish Crop Research Institute (UK)
- Technical University Munich (Germany)
- University of Kuopio (Finland)
- Plant Breeding and Acclimatization Institute (Poland)
- National Institute of Health (Italy)
- Council for Scientific and Industrial Research
- (South Africa)
- Biomathematics and Statistics Scotland Research Institution (UK)
- Institute of Crop Germplasm Resources (China)
- National Food Centre (Ireland)
- Catholic University of Piacenza (Italy)
- Latvian Food Centre (Latvia)
- Central Food Research Institute (Hungary)
- National Institute of Public Health and the Environment (The Netherlands)
- Federal Institute for Risk Assessment (Germany)
- Swiss Federal Office of Public Health (Switzerland)
- National Food Administration (Sweden)
- National Institute of Nutrition and Food Safety (China)
- Danish Institute for Food and Veterinary Research (Denmark)
- National Institute of Public Health (Czech Republic)
- Wageningen University (The Netherlands)
- Institute of Food Research (UK)
- Royal Veterinary and Agricultural University, (Denmark)
- DIALOGIK (Germany)
- Agricultural University of Athens (Greece)
- University of Sussex (UK)
- University of Maastricht (The Netherlands)
- University of Göteborg (Sweden)
- King's College London (UK)
- Institute of Sociology at the Hungarian Academy of Sciences (Hungary)
- Centre for International Studies on Economic Growth (CEIS), University of Rome (Italy)
- European Food Information Council (Belgium)
- Institute for Risk Assessment Science - IRAS, (The Netherlands)
- INRA (France)
- Matforsk (Norway)
- Sociedade Portuguesa de Innovaçao (Portugal)
- The A.N. Bakh Institute of Biochemistry (INBI) Russian Academy of Sciences (Russia)

Risk analysis has three main components: risk assessment (scientific advice and information analysis), risk management (regulation and control), and risk communication. For consumers to have confidence in the food they buy and eat, they need access to all the important information and must put trust in risk analysis as a viable procedure ensuring that the food is safe and that the consumer can make her/his informed choice. Increased transparency in risk analysis can help to solve the problem of a lack of consumer confidence in the safety of food, and restore trust. Consumer trust in the food chain has declined as the result of a number of highly publicised scares like BSE, but is now improving in some European countries thanks to the hard work of all parties involved in risk analyses.

If risk analysis could be applied to new processes in food production, such as changes in breeding programmes, potential dangers could be spotted before they become serious. It is vital not only to carry out such checks, but to take public opinion into account when accepting their conclusions, to avoid food scares in the future.

A new Integrated Project within the Sixth Framework Programme, SAFE FOODS (Promoting Food Safety Through a New Integrated Risk Analysis Approach) seeks to refine risk analysis practice for food safety. Lasting four years, it combines the skills of natural and social scientists, stockbreeders, food producers, and regulatory bodies, coming from 37 institutions, not only in Europe but from other continents, too.

COHERENT RESEARCH

The tenor of the research is to design new and effective procedures for analysing risks for foods produced by different production practices (high- or low-input systems) and with different breeding technologies (traditional, molecular, and genetic modification). New systems will be compared with traditional methods to see if they introduce greater risks; for example, high-input, intensive animal rearing will be contrasted with low-input traditional methods. Projects will seek ways to detect emerging risks associated with food and feed production, and to make quantitative assessments of the risk of human exposure to mixtures of food contaminants.

The potential role of regulatory organisations in managing risks in the food chain will be explored and, ultimately, a new integrated risk analysis approach for foods will be designed. A wide range of concerned organisations – food producers, plant and animal breeders, and national and international organisations associated with risk analysis – will all test this new framework.

MORE CONFIDENCE IN FOOD CHAIN

The project acknowledges the importance of consumer confidence for the societal acceptability of effective risk analysis practices in foods. In fact, an entire work package is dedicated to consumer confidence in risk analysis practices regarding novel and conventional foods. The public debate on GM foods has shown that there is a good deal of public information and education needed. Consumer organisations will be asked to trial the risk analysis approach developed in the research, and due publicity will be given to the results.

This Integrated Project will put assessing risks associated with food production on a firm basis with transparent, effective and balanced procedures. These will form the foundation for further development of this novel approach to food safety. A clear demonstration of the safety of European food, breeding and rearing practices will make them more competitive in world markets. The inclusion in the project of researchers from South Africa and China will give it an international direction so that the risk analysis strategies developed could be applied globally. The net result will be to restore consumer confidence in the safety of European food, both within our borders and on a global scale.

Acronym: SAFE FOODS

Full title: promoting food safety through a new integrated risk analysis approach for foods

Contract n°: 506446

Website:
www.safefoods.nl

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EU contribution:
€ 11.6M

FOCUS ON FISH

LIST OF PARTNERS

- Danish Institute for Fisheries Research (Denmark)
- Norwegian Institute of Fisheries and Aquaculture Research (Norway)
- Institut Français de Recherche pour l'Exploitation de la Mer (France)
- Netherlands Institute for Fisheries Research (The Netherlands)
- Institute of Food Research (UK)
- SINTEF Fisheries and Aquaculture (Norway)
- AZTI Fundazioa (Spain)
- Wageningen University (The Netherlands)
- Icelandic Fisheries Laboratories (Iceland)
- Aarhus School of Business (Denmark)
- Universidad de Santiago de Compostela (Spain)
- Matforsk-Norwegian Food Research Institute (Norway)
- Consejo Superior De Investigaciones Científicas (Spain)
- Ghent University (Belgium)
- TNO Nutrition and Food Research (The Netherlands)
- Friedrich-Schiler-University of Jena (Germany)
- University College Cork (Ireland)
- National Research Institute on Agriculture and Fisheries (Portugal)
- Chalmers University of Technology (Sweden)
- University of St. Andrews (UK)
- Centre for Environment Fisheries and Aquaculture (UK)
- Landspitali-University Hospital & University of Iceland (Iceland)
- Istituto Superiore di Sanità (Italy)
- Federal Research Centre for Fisheries (Germany)
- Göteborg University (Sweden)
- University of Tromsø (Norway)
- Universitat de Barcelona (Spain)
- Wageningen Centre for Food Sciences (The Netherlands)
- University of Coruna (Spain)
- University of Glasgow (UK)
- Norwegian University of Science and Technology (Norway)
- Danish Veterinary and Food Administration (Denmark)
- Plant Research International (The Netherlands)
- University of Navarra (Spain)
- University College Dublin (Ireland)
- Ecole Nationale d'Ingénieurs des Techniques des Industries Agricole et Alimentaires (France)
- University of Helsinki (Finland)
- Institute for Animal Science and Health (The Netherlands)
- Université de Bretagne Sud - GIS PROGEBIO (France)
- Moere Research (Norway)
- Academisch Ziekenhuis bij de Universiteit van Amsterdam (The Netherlands)
- Maastricht University (The Netherlands)
- University of West Brittany (France)
- TEAGAS (Ireland)
- Statens Serum Institut (Denmark)
- AquaNet (UBC) (Canada)
- Double Delta Kereskedelmi Termelo es Kutatasfejlestesi Beteti Tarsasag (Hungary)
- Cannes Aquaculture E.A.R.L (France)
- Coopérative de traitement des produits de la Pêche (France)
- Muséum National d'Histoire Naturelle (France)
- University of La Rochelle (France)
- Unilever UK Central Resources (UK)
- Salica Industria Alimentaria, (Spain)
- Association Européenne des Producteurs de Mollusques (Belgium)
- Primex ehf (Iceland)
- Institut National de la Recherche Agronomique (France)
- Marinova aps (Denmark)
- National Institute of Public Health and The Environment (The Netherlands)
- Johnson Seafarms (UK)
- Fish Farm Yerseke (The Netherlands)
- BioMar (Denmark)
- Dønna Oppdrettsmiljø (Norway)
- Royal Greenland Seafood (Denmark)
- International organisation for the development of fisheries in Eastern and Central Europe - EUROFISH (Denmark)
- Fjord Seafood ASA (Norway)
- Trace Tracker Innovation (Norway)
- Albacora (Spain)
- GEASA, Gestión Empresarial Alavesa (Spain)
- Institute of Ichthyobiology and Aquaculture of the Polish Academy of Science (Poland)
- EWOS Innovation (UK)
- Fish Farm Krol Jerzy (Poland)

The benefits to human health of eating a reasonable quantity of seafood regularly are well known and have led to an increase in fish farming to meet market demand. The EU wants to maintain the quality and safety of farmed and caught seafood, tailor products to give consumers what they want, and encourage them to eat a greater variety of fish. Consequently, it has set up SEAFOODplus, a large-scale integrated project to study the production, marketing and consumption of seafood, and its effects on health. Research institutes and organisations from all over Europe are working on the programme, which could last up to five years, and is initially being divided up into three 18-month reporting periods.

SIX MAIN THEMES

The programme is structured around the following six main themes:

1. SEAFOOD AND NUTRITION: Doctors recommend fish as part of a healthy diet because the polyunsaturated fatty acids it contains can reduce the risk of heart disease and cancer. The project will also investigate the possible role fish consumption could have in helping to prevent other chronic diseases such as inflammatory bowel disease, irregular heartbeat, along with its role in younger people's health, and in combating obesity, post-natal depression and brittle bones.
2. CONSUMER HEALTH: Although many consumers already know that seafood is good for them, the amount they eat varies widely. The project will study attitudes and preferences in detail, and the results will be used to develop new seafood products which offer health benefits and are able to meet consumer expectations. This should encourage more people to eat more fish and improve their health.
3. SAFETY AND RISK/BENEFIT ANALYSIS: Shellfish can sometimes cause food poisoning or histamine reactions. SEAFOODplus will develop standard universal methods to detect certain viruses in susceptible shellfish, and develop early-warning systems for viral contamination. These risks will be balanced against health benefits and the results will be publicised.
4. NEW SEAFOOD CONSUMER PRODUCTS: Sources of wild fish are limited and some stocks are under threat, while fishing and fish farming produce by-products that are not being used to their full potential. The aim is to extract compounds beneficial to health from such sources and develop them into new functional food products. The approach taken will also enhance the consumer appeal of fish products while identifying new types of convenience and functional foods.
5. AQUACULTURE: Intensively reared fish can create problems of pollution and product quality. The public is concerned that farmed fish should be well treated and that wild species are not adversely affected. SEAFOODplus will study what goes into producing high-quality fish products, including genetics and what the fish are fed. It will establish a framework for farming European fish to a standard that is acceptable on quality, ethical, and environmental grounds.
6. TRACEABILITY: Consumers want reassurance about where their food comes from, that the environment has not been damaged in its production, and that it is safe to eat. Across all the research projects, a systematic approach will be developed to ensure that every fish on the European market can always be traced back to its source. A standard vocabulary of terms will be devised and integrated into a traceability system which will be tested on several seafood chains and validated for wider use.

A BALANCED APPROACH

The strategy of the SEAFOODplus programme is to promote the production of better, safer fish of all kinds, and to increase their consumption across Europe. In the long term, it is expected that through increased consumption and awareness a quantifiable improvement in human health can be recorded.

Acronym: SEAFOODPLUS

Full title: health promoting, safe seafood of high quality in a con-sumer driven fork-to-farm concept

Contract n°: 506359

Website:
www.seafoodplus.org

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EU contribution:
€ 14.4M

WELFARE QUALITY

IMPROVING ANIMAL WELFARE AND SATISFYING CONSUMERS FISH

LIST OF PARTNERS

- ID-Lelystad (The Netherlands)
- University of Natural Resources and Applied Life Sciences (Austria)
- Veterinary University of Vienna (Austria)
- Katholieke Universiteit Leuven (Belgium)
- Vyzkumny Ustav Zivocisne Wyroby (Czech Republic)
- University of Kassel (Germany)
- Danish Institute of Agricultural Science (Denmark)
- Royal veterinary and agricultural university (Denmark)
- Institut de recerca i tecnologlia agroalimentaries (Spain)
- Universita Autonoma de Barcelona (Spain)
- Institut Technique du Porc (France)
- Coopérative Interdepartementale Aube, Loiret, Yonne, Nievre (France)
- Institut National de la Recherche Agronomique (France)
- Institut de L'Elevage (France)
- L' Institut Supérieur d'Agriculture Lille (France)
- France Limousin Selection (France)
- Université Pierre et Marie Curie-Paris 6 (France)
- University of Toulouse le Mirail (France)
- Teagasc (Ireland)
- University of Milan (Italy)
- University of Parma (Italy)
- University of Padova (Italy)
- University of Pisa (Italy)
- Centro Ricerche Produzioni Animali (Italy)
- Research Institute for Animal Husbandry (The Netherlands)
- Wageningen University (The Netherlands)
- National Institute for Consumer Research (Norway)
- Norwegian Agricultural Economics Research Institute (Norway)
- Agricultural University of Norway (Norway)
- Sveriges Lantbruksuniversitet (Sweden)
- Göteborg University (Sweden)
- University of Lund (Sweden)
- Stockholm University (Sweden)
- University of Wales, Cardiff (UK)
- University of Exeter (UK)
- Roslin Institute (UK)
- Scottish Agricultural College (UK)
- University of Newcastle upon Tyne (UK)
- University of Bristol (UK)
- University of Reading (UK)

In the past, the main focus of animal production and related research in Europe was on ensuring an adequate food supply at a reasonable price, which led to increasingly intensive husbandry methods. When prompted, consumers in different EU Member States expressed grave reservations about how farm animals are kept. Problems such as BSE or swine fever increase their concerns and emphasise the fact that 'you are what you eat'. A growing number of consumers today want to be reassured that the animals that produce their food have been raised under humane conditions and with proper regard for the environment. Animal welfare has become both an integral part of the concept of food quality and a priority theme in the EU's Sixth Framework Programme.

A major new project, Integration of Animal Welfare in the Food Quality Chain (WELFARE QUALITY), aims to improve food quality by ensuring the welfare of farm animals. It will create standards for assessing the welfare of farm animals throughout Europe and develop practical strategies to improve it. A product information system will be drawn up to assure consumers that their food has been produced according to ethically sound procedures. Forty organisations and university departments throughout Europe will contribute to this five-year Integrated Project, using expertise from many areas of science.

LIFE ON THE FARM

WELFARE QUALITY will investigate ways to improve the welfare of different species on the farm, for example by relieving the boredom and anti-social behaviour of pigs and chickens reared in groups. Breeding programmes will play a part in this improvement, as will better contact between humans and animals, and provision of a more stimulating environment that allows animals to express their natural behaviour. Innovative housing design is required to significantly improve animal welfare. Reducing stress, anxiety and boredom will not only enhance the animals' health and welfare but will also lead to better product quality.

The effect of welfare improvements will be interpreted through performance measures based on the actual health, physiology, behaviour and disease resistance of animals. Some methods of monitoring these conditions are already in use, and more will be developed. A continuous information loop will be established in which the results of the monitoring will be used to suggest practical welfare improvements. These are fed back to the farmer who can then take up the recommendations. The benefits to animal welfare should show up in future monitoring, the goal being to develop a European standard for assessing the welfare of animals on farms.

INFORMED CONSUMERS

Shoppers want more and more details about the source and quality of the food they buy. The project will analyse consumer concerns about animal welfare and find out what information they want on their packaging. In this 'fork-to-farm' approach, clear marketing and profiling of products will allow consumers to make an informed choice and to support animal welfare policies. A transparent and standardised information system will be vital to countries joining the EU to help them meet the requirements of European markets.

Europe is leading the World Trade Organisation and the Organisation for Economic Cooperation and Development in its commitment to introducing animal welfare into the conditions for international trade.

WELFARE QUALITY will set up a dialogue between the stakeholders, including the public, academia, industry, welfare organisations and government, using traditional publications, school visits and the internet. Education and training will also be offered to key players along the supply chain.

Acronym: WELFARE QUALITY

Full title: integration of animal welfare in the food quality chain: from public concern to improved welfare and transparent quality

Contract n°: 506508

Website:
www.welfarequality.net

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EU contribution:
€ 14.4M

CASCADE

HANDLING HORMONE DISRUPTORS

LIST OF PARTNERS

- Karolinska Institutet (Sweden)
- Istituto di Ricerche Farmacologiche "Mario Negri" (Italy)
- University of Milan (Italy)
- Johannes Gutenberg University of Mainz (Germany)
- Ecole Normale Supérieure de Lyon (France)
- University of Granada (Spain)
- Centre Nationale de Recherche Scientifique (France)
- University of Turku (Finland)
- Georg August University, Göttingen (Germany)
- University of Pecs (Hungary)
- Institut National de la Recherche Agronomique (France)
- University of Tübingen (Germany)
- KaroBio (Sweden)
- Puleva Biotech (Spain)
- National Institute for Public Health and the Environment (The Netherlands)
- University of Helsinki (Finland)
- Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (Italy)
- GSF-National Research Centre for Environment and Health (Germany)

Understanding the health risk of chemical pollutants in food is a complex multidisciplinary task. There are many aspects, such as how much contamination is taken up by the body and whether effects are different for different people. The chemicals could interact with one another in the diet. European research on this health risk is currently fragmented and disorganised, resulting in poor information for consumers and policy-makers alike. A Network of Excellence, known as CASCADE, is bringing scientists together to address gaps in the knowledge, train young researchers, and communicate useful evidence and information to those who need to know.

ACCUMULATING POISONS

The CASCADE network of 16 academic institutes and two small companies is a five-year project. It will focus on chemicals known as 'endocrine disruptors' which affect hormone receptors in the cell nucleus. Such chemicals, which include dioxins and PCBs (polychlorinated biphenyls), accumulate in both the environment and in the body. They can influence gene expression and have potentially serious effects on development and health. The risks from these contaminants are poorly understood, and in some countries such chemicals continue to be manufactured and used.

The network will carry out a joint programme of research, uniting scientists from different disciplines, including physiology, chemistry and toxicology. They will review global knowledge in the field, and make an inventory of active research in partner organisations. Resources, such as antibodies and relevant genes, will be collected and stored in a central library, and researcher exchange will be encouraged and financed.

WHO IS AT RISK?

The project has identified areas where lack of knowledge prevents accurate risk assessment. For example, it is difficult to measure people's exposure to many contaminants because the toxins are altered in the body. Exposure to, rather than quantity in food, is the crucial statistic when it comes to health risk, and it depends on your sex, age and diet. Chemicals produced by the body in response to the toxins, known as biological markers, must be identified to indicate how much contaminant is active in a person. Scientists have yet to understand how the chemicals cause conditions such as cancer or infertility, and there is little knowledge concerning long-term low dose effects.

The network aims to allocate 15% of its budget to small and medium-sized companies for contract research. There are opportunities for the commercial exploitation of results, because cheap testing methods are needed for endocrine disrupting chemicals, in anticipation of future EU legislation. CASCADE has staffed a 'science-society' office at the Karolinska Institute, who will communicate the research on endocrine disruptors to European food safety agencies and consumer organisations, distributing brochures and a quarterly newsletter.

THE NEXT GENERATION

An ambitious training programme for young researchers aims to broaden the perspective of the next generation of scientists studying contaminants in the food chain. Ten Ph.D. students will be funded to carry out collaborative projects within the network, and a course on Environmental Health Risk Assessment, and a series of summer schools will be organised.

At present, there is a perception that research institutes leading this field operate independently, neither sharing results nor collaborating. CASCADE should reverse this approach to the benefit of all European consumers.

Acronym: CASCADE

Full title: chemicals as contaminants in the food chain: an NoE for research, risk assessment and education

Contract n°: 506319

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EU contribution:
€ 14.4M

EADGENE

GENOMICS TO ADVANCE ANIMAL HEALTH

LIST OF PARTNERS

- Institut National de la Recherche Agronomique (France)
- Wageningen University (The Netherlands)
- Ljubljana University (Slovenia)
- Cordoba University (Spain)
- Norwegian School of Veterinary Science (Norway)
- ID-Lelystad
- (The Netherlands)
- Institute for Animal Health, Compton (UK)
- Roslin Institute (UK)
- Danish Institute of Agricultural Sciences (Denmark)
- Liège University (Belgium)
- Research Institute for
- the Biology of Farm Animals (Germany)
- Parco Tecnologico Padano (Italy)
- European Forum of Farm Animal Breeders (The Netherlands)

Improving the health of farmed animals is a pressing issue for Europe. At the moment, European husbandry leads the world in efficiency and animal welfare, but livestock everywhere is prone to disease. Traditional therapies, such as antibiotics and anti-worm treatments, are becoming less effective as pathogens continue to develop resistance to them and there is increased pressure to cut down the use of drugs in order to reduce the risk of them entering the food chain. So, new control methods must be found to keep animals healthy and prevent diseases, many of which also infect humans, affecting food. Genomics offers new opportunities for controlling disease – for example, by breeding genetic resistance into animals, developing new vaccines, and for rapid diagnosis. A Network of Excellence concentrating on the genomics of animal-pathogen interactions is bringing together European research on livestock diseases, and will help ensure that Europe retains its status as a world leader in animal health for years to come.

GREAT POTENTIAL

The genome holds a lot of promise for animal health. Identifying animal genes used in defence against disease makes it possible to screen for resistance, so animals with natural immunity can be identified and bred quickly. Knowing which genes in infectious agents are responsible for their ill effects enables the development of live vaccines in which the disease-causing genes can be disabled or removed while preserving the potency of the vaccine. Studying the behaviour of genes during disease leads to a better understanding of the interaction between a pathogen and the animal's immunity, which may in turn assist in drug development. In diseases that are currently untreatable, such as paratuberculosis in cattle, these methods offer new hope. As a relatively new technology, the use of genomics in agriculture and aquaculture is still in its infancy.

MONEY WELL SPENT

Genomics is a high-cost science. Equipment is expensive and specialist knowledge and facilities are needed to deal with the information and resources being generated. The European Animal Disease Genomics Network comprises 13 research centres, each committed to a progressive pooling of resources and facilities and integrating of research strategies. The network is multidisciplinary and will relate findings from genomics to more traditional pathology and aspects of animal husbandry, such as housing. This integrated approach is also likely to enhance our understanding of human disease. The institutes will initiate joint research and training programmes on major diseases caused by bacteria, viruses and other parasites in pigs, cattle, chickens and farmed fish.

HI-TECH HEALTHCARE

To ensure the science reaches vets and farmers, research will be targeted on the needs of industry. A 'club of interest', made up of companies working in animal disease control, will advise the network directly, and regular workshops will communicate results back to the industry. By helping animal breeding companies to retain their competitive edge, the network will also help maintain Europe's rural infrastructure. In line with the European Commission's 'farm-to-fork' philosophy, the network will also consult consumers, through public hearings, and incorporate their opinions into research directions.

There will be many beneficiaries from this network. Research careers will be enhanced, animal health and breeding companies will make great advances, and animal health will be improved. But ultimately it is the consumer and society at large that will benefit from safer food produced from more sustainable farming systems.

Acronym: EADGENE

Full title: European animal disease genomics network of excellence for animal health and food safety

Contract n°: 506416

Website:
http://www.eadgene.info/

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EU contribution:
€ 11.5M

GA²LEN

FIGHTING EUROPE'S CHRONIC DISEASES

LIST OF PARTNERS

- University of Ghent (Belgium)
- European Academy of Allergology and Clinical Immunology
- European Federation of Allergy and Asthma Associations
- University of Vienna Medical School (Austria)
- Odense University Hospital (Denmark)
- Helsinki University Central Hospital (Finland)
- INSERM (France)
- Charité, Medical Faculty of Humboldt University, Berlin (Germany)
- Ludwig Maximilians Universität München (Germany)
- Technische Universität München (Germany)
- National and Kapodistrian University of Athens (Greece)
- Consiglio Nazionale delle Ricerche (CNR), div. Palermo (Italy)
- Consiglio Nazionale delle Ricerche (CNR), INMN Rome (Italy)
- University of Genova (Italy)
- Academic Medical Centre, Amsterdam (The Netherlands)
- University of Utrecht (The Netherlands)
- Voksentoppen BKL, National Hospital, Oslo (Norway)
- Jagiellonian University Medical College, Krakow (Poland)
- Medical University of Lodz (Poland)
- Universitad de Coimbra (Portugal)
- Institut Municipal Investigacio Medica (IMIM), Barcelona (Spain)
- Autonoma University of Madrid (Spain)
- Göteborg University (Sweden)
- Karolinska Institutet (Sweden)
- University of Zurich, Swiss Institute of Allergy and Asthma research (SIAF) (Switzerland)
- University of London (UK)
- University of Southampton (UK)

Asthma and allergy are Europe's most common chronic diseases.

Their incidence has doubled over the last 30 years one in four children are affected and, ten years from now, more than half Europe's citizens are likely to have an allergy. Scientists suspect changes in social or environmental conditions are responsible for this. Around the world, they are working hard to understand what causes these debilitating conditions and how to control them.

To ensure Europe retains its leading position in this research, a Network of Excellence has been established covering all aspects of asthma and allergy including its genetic basis, clinical treatment, environmental aspects, and social causes.

AGGRAVATED AIRWAYS

The Global Allergy and Asthma European Network, or GA^{2}LEN has been named after Galenos, the ancient physician who described the relationship between the nose and the lungs. It addresses respiratory allergies, such as hay fever, rather than food allergies. Twenty-five leading research teams from all over Europe are involved, along with a patients' organisation and the European Academy of Allergology and Clinical Immunology. The latter already performs network-building activities such as training and communicating research. GA^{2}LEN will initiate international research collaboration, and communicate its findings to patients, doctors and policy-makers.

Like other Networks of Excellence, GA^{2}LEN will share data and biological resources, train young scientists, and exchange staff between institutes. It will foster close communications, using the internet and video-conferencing. However, this network has one unique feature that will make it a strong global player it is linking clinical trials and population studies from different countries in order to compile larger studies. Asthma and allergies are associated with environmental conditions and diet, so the more varieties of lifestyle included in the study, the better. If everyone in the study is exposed to the same diet, little information can be gathered about its effect.

THE SOONER THE BETTER

One sub-network will investigate eight 'birth cohorts'.These studies follow children from early foetal development through childhood, tracking nutritional, environmental and social conditions. Early-life experiences, especially in the womb, are crucial to the onset of asthma or allergies, but these trigger factors are poorly understood. Breastfeeding, or exposure to allergens, could be important. The European birth cohorts are the only well-established studies of this type in the world.

Other factors which are key to understanding asthma and allergies include infection, genetics and the immunology of the disease itself. Asthma is warded off by chronic infection with parasitic worms during childhood. Can it be treated, or prevented, by the chemicals that elicit this reaction? The association between environment and genes could yield exciting discoveries, and the network will pool genetic samples to see if certain genes make a person likely to suffer from asthma or an allergy. Identifying a method of early diagnosis for general practitioners is also a priority.

GA^{2}LEN will standardise the quality of patient care and research into asthma and allergies by setting up quality management systems for all partners. It will liaise directly with patient representatives and policy-makers so that both groups are made aware of the latest research and can influence it. In the long term, the network should reduce the burden of two of the 21st century's most significant and least understood chronic diseases.

Acronym: GA^{2}LEN

Full title: global allergy and asthma European network

Contract n°: 506378

Website:
www.Ga2len.net

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EU contribution:
€ 14.4M

MED-VET-NET

VETS AND DOCTORS JOIN FORCES

LIST OF PARTNERS

- French Food Safety Agency (France)
- Central Institute for Animal Disease Control (The Netherlands)
- Instituut voor Dierhouderij en Diergezondheid, ID-Lelystad (The Netherlands)
- National Centre of Microbiology, Carlos III Institute of Health (Spain)
- National Veterinary Institute (Sweden)
- Statens Serum Institute (Denmark)
- Veterinary Laboratories Agency (UK)
- National Institute for Public Health and the Environment RIVM (The Netherlands)
- Society for Applied Microbiology (UK)
- Danish Institute of Food and Veterinary Research, (Denmark)
- Italian National Institute of Health (Italy)
- Veterinary Medical Research Institute (Hungary)
- Federal Institute for Risk Assessment (Germany)
- National Institute of Hygiene (Poland)
- Health Protection Agency (UK)
- Complutense University Madrid, (Spain)

Diseases that can be transmitted from animals to people, known as zoonoses, are responsible for some of our most serious public health problems. Many are food-borne, such as salmonella, and carried by domestic livestock. Outbreaks can have a rapid and very serious impact. Control of these diseases is being hampered by 'divisions' between the medical and veterinary sciences. Scientists monitoring outbreaks in humans appear to be out of touch with those who monitor the diseases on farms. Tracing sources and predicting outbreaks is difficult under such circumstances. For the first time, under the Sixth Framework Programme, a Network of Excellence is connecting medical and veterinary expertise on all zoonoses, a move that will significantly improve our ability to understand and control these diseases.

BURGEONING THREAT

Nearly two-thirds of known human pathogens are zoonotic – they can be caught from animals. The EC Directive on zoonoses lists 23 zoonotic agents that are public health threats and should be monitored. Some are carried by livestock, while others, such as rabies and trichinella, have a major reservoir in wildlife. Changes in human society, particularly globalisation, may increase the threat from zoonoses, and previously unknown diseases, such as the SARS virus, can emerge from animals quite suddenly.

MED-VET-NET, the Network for Prevention and Control of Zoonoses, is being funded for five years to establish a virtual European institute studying zoonotic disease throughout the food chain. The network comprises eight veterinary and seven public health institutes from ten European countries. In addition, an SME partner is included to disseminate knowledge. The network involves 150 key scientists of international renown and will forge links with other organisations involved in zoonosis research.

The main elements of the network are strong communication, shared resources, and joint research. The network will have a Governing Board, with director-level representation for each partner, and a coordinating forum to plan and implement integrated scientific research. It will establish an interactive project website (www.medvetnet.org) and an electronic journal so that staff from different institutes can communicate and share their findings more easily. It will also train scientists to communicate beter with the general public.

OLD DIVISIONS

Fragmentation of resources and expertise is a major problem in the study of zoonoses. Tens of thousands of samples are collected from farms and hospitals annually by different institutes, but they are seldom ever compared. The field is split, not just into medical and veterinary studies, but also into branches of science representing different organism types – virology, bacteriology, and parasitology. Yet there are common themes in the dynamics of the diseases and common techniques for studying them. Some, like DNA sequencing, involve expensive equipment and generate huge amounts of data. MED-VET-NET will make better use of resources by sharing facilities internationally. It plans to centralise archives of reference material and standardise procedures to enable information to be pooled.

The network will initiate joint research work packages where international collaboration could be valuable – using Geographical Information Systems to study outbreak distributions across Europe, for example. Such work packages, supported by technology transfer and training, will mean that all MED-VET-NET partners will have access to the best knowledge and facilities concerning all zoonoses. The team hopes the network will result in the establishment of a permanent virtual international institute and harmonised and standardised surveillance systems.

Acronym: MED-VET-NET

Full title: network of prevention and control of zoonoses

Contract n°: 506122

Website:
www.medvetnet.org

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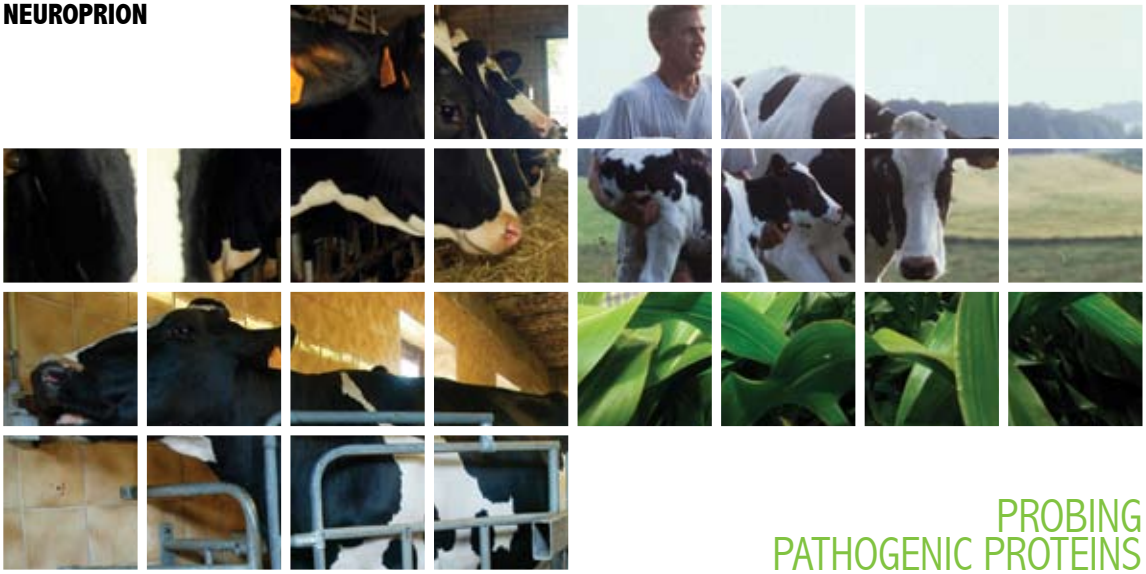
EU contribution:
€ 14.4M

NEUROPRION



PROBING PATHOGENIC PROTEINS

LIST OF PARTNERS

- Commissariat à l'Energie Atomique (France)
- Institut National de le Recherche Agronomique (France)
- Agence Française de Sécurité Sanitaire des Aliments (France)
- Centre National de la Recherche Scientifique (France)
- Institut National de la Santé et de la Recherche Médicale (France)
- Association pour la Recherche et la Développement des Méthodes et Processus Industriels (France)
- University of Edinburgh (UK)
- Department for Environment, Food and Rural Affairs (UK)
- Institute for Animal Health (UK)
- Health Protection Agency (UK)
- Instituto Nacional de Investigación y Tecnologiá Agraria y Alimentaria (Spain)
- Institut Neuropatologica, Hospital Universitari Bellvitge (Spain)
- Universidad de Zaragoza (Spain)
- Centre for Research and Technology – Hellas/Institute for Agrobiotechnology (Greece)
- Medical Research Council (UK)
- Ecole Nationale Vétérinaire d'Alfort (France)
- Faculty of Mathematics, Physics and Computer Sciences, Comenius University (Slovakia)
- Royal Veterinary College (UK)
- Moredun Research Institute, Edinburgh (UK)
- National University of Ireland, Dublin (Ireland)
- Heinrich-Heine-Universität Düsseldorf (Germany)
- Ludwig-Maximilians-Universität (Germany)
- Federal Research Centre for Virus Diseases of Animals (Germany)
- Robert Koch-Institut (Germany)
- Centraal Institut voor DierziekteControle-Lelystad, part of DLO foundation (The Netherlands)
- Istituto Nazionale Neurologico Carlo Besta (Italy)
- Istituto Supreriore di Sanità (Italy)
- Istituto di Richerche Farmacologiche "Mario Negri" (Italy)
- Cea-Centro Encefalopatie Animali Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Vallee d'Aosta (Italy)
- Università di Bologna (Italy)
- Institut für Neurologie, Universität Wien (Austria)
- University of Zurich (Switzerland)
- National Veterinary Institute (Norway)
- European Commission Joint Research Centre (Belgium)
- Hadassah Medical Organisation (Israel)
- University of Southampton (UK)
- Roslin Institute (UK)
- ID-Lelystad, Institut voor Dierhouderij en Diergezondheid (The Netherlands)
- Technische Universität München (Germany)
- Institute of Zoo and Wildlife Research, Berlin (Germany)
- Norwegian School of Veterinary Science (Norway)
- National Veterinary Institute (Sweden)
- Karolinska Institute (Sweden)
- Danish Veterinary Institute (Denmark)
- National Veterinary and Food Research Institute (Finland)
- Institute for Experimental Pathology (Iceland)
- Consejo Superior de Investigaciones Cientificas (Spain)
- Medical University of Lodz (Poland)
- Université René Descartes (Paris 5) (France)
- Westfälische Wilhelms-University, University Hospital Münster (Germany)
- Laboratorio Nacional de Investigacao Veterinaria (Portugal)
- University of Verona (Italy)

Mad cow disease, or bovine spongiform ence-phalopathy (BSE), cost Europe dearly – €2.7 billion were spent buying cattle from farmers for destruction in 2000-2001 alone. The risk from the human form of BSE, known as variant Creutzfeldt-Jakob disease (vCJD), is still uncertain. BSE has a five-year 'silent' incubation period in cattle; in humans, the infection can remain silent for up to 40 years. Sheep were also exposed to the infectious agent via contaminated feed. Although no naturally occurring case of sheep BSE has been found, questions remain. The discovery of cases outside Europe also raises concerns for the rest of the world. Thus, whilst European cases of cattle BSE are on the decrease, we cannot be complacent.

These and similar diseases, such as scrapie in sheep, are thought to be caused by self-replicating malformed variants of proteins, the normal forms of which are present in many animals. This theory, known as the 'prion hypothesis', was very controversial when it was first proposed, since all other infectious diseases are caused by organisms which contain genetic material (DNA or RNA). Whilst many scientists now support the prion hypothesis, there remains significant debate on the exact nature of these diseases.

What is certain is that the diseases are difficult to diagnose in their early stages and are, as yet, invariably fatal. The NeuroPrion Network of Excellence incorporates most European research groups studying prions and aims to become the leading international task force on prion biology.

THE ENEMY WITHIN

The exact function of normal prion protein is not known. In disease, the malformed protein accumulates in the brain causing dementia. A number of animal species may carry different genes encoding subtly different forms of prion protein, some of which make them more susceptible to developing disease. This can occur spontaneously, or, as in the case of BSE, as a result of being exposed to modified prions from a sick animal.

The network involves 52 leading research groups, accounting for more than 80% of European prion research. It aims to create a research infrastructure that will attract private investment, during and beyond the five years funding allocated by the EU. The group has identified areas where novel, applied research is needed, and areas where greater coordination of research would be beneficial.

DIAGNOSIS AND TREATMENT

The most urgent research need concerns diagnosing prion diseases well before death. It is hoped that detection methods analysing easily accessible body fluids early on in the incubation period will be developed. Such tests could be used to screen both people and animals. Early diagnosis in humans will increase the likelihood of the success of therapeutic interventions; in animals, it will enhance food safety even further.

PRION SURVEILLANCE

Surveillance and the analysis of risk from prion diseases both require international coordination. NeuroPrion encompasses all national surveillance centres for vCJD and will link animal surveillance also. Institutes will share training, exchange staff and have access to a specially designed website. Tissue and fluid banks will also be shared and standard methods agreed. Genetically altered mice strains held by different institutions will be made available to partners. These are a vital tool as they can be engineered to carry prion genes from other species, and can be used to model the disease over a much shorter timeframe.

The network will interact with the greater scientific community and the public at an annual world congress on prions.

Acronym: NEUROPRION

Full title: prevention, control and management of prion diseases

Contract n°: 506579

Website:
www.neuroprion.com

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EU contribution:
€ 14.4M

NUGO

A GENETIC BASIS FOR BETTER NUTRITION

LIST OF PARTNERS

- Wageningen University (The Netherlands)
- TNO Nutrition and Food Research (The Netherlands)
- RIKILT – Institute of Food Safety (The Netherlands)
- Rowett Research Institute (UK)
- University of Reading (UK)
- University of Firenze (Italy)
- Jagiellonian University Medical College of Kraków (Poland)
- Maastricht University (The Netherlands)
- National Institute of Public Health and the Environment (The Netherlands)
- University College Cork (Ireland)
- Trinity College Dublin (Ireland)
- University of Ulster (UK)
- German Institute of Human Nutrition (Germany)
- Technical University of Munich (Germany)
- Institute of Food Research (UK)
- Lund University (Sweden)
- University of Balearic Islands (Spain)
- University of Newcastle (UK)
- INSERM - research unit on human nutrition and lipids (France)
- University of Oslo (Norway)
- European Bioinformatics Institute, EMBL Outstation Hinxton (UK)
- Topshare International (The Netherlands)
- Scienion AG (Germany)

Cells are the working units of every living system. Our cells contain almost two metres of carefully folded deoxyribonucleic acid (DNA), which contains some 3 billion building blocks (genetic code). The sequence is highly organised although only a small percentage of the code appears to be used. These areas (genes) are 'read' by proteins to create a message that is subsequently reread by other proteins to form new proteins. It is these proteins that enable us to grow and live, and keep our bodies and minds functioning effectively. The complete package, code and genes, is the human genome. Much scientific effort is being expended on unravelling genomes from plants, bacteria and animals as well as humans. As we begin to know more about our genes – what they do and how – we also understand more about health and disease.

We eat a complex mixture of thousands of different compounds and food has a significant impact on our health. It is important to maintain a balance in which the correct amount of each food component is absorbed, stored in the right place and used at an appropriate time. We have learnt that success in these key processes is achieved by switching our genes on and off. Until recently, however, researchers could only look at a few pre-selected genes, and single or simple groups of nutrients. The human genome project, or rather the information it has supplied and the new tools developed, has enabled researchers to take a much broader view. Nutritional genomics, or nutrigenomics, is the study of how food and our genes interact.

For many of us our response to food will be very similar. However, some individuals respond differently to the whole foods or food compounds, depending on their genetic make-up. Nutrigenomics has the potential for fine-tuning what foods and how much these individuals should eat as well as the population as a whole. Such information could improve public health generally but also increase quality of life as we get older.

NEW DIRECTION FOR NUTRITION

Europe has many researchers working in different centres in the field of nutritional genomics. These centres are linking up in a Network of Excellence, the European Nutrigenomics Organisation, or NuGO, within the Sixth Framework Programme. NuGO will enable researchers to work together to develop and use nutritional genomics research, and to reinforce Europe's competitiveness in this field.

Biomedical and pharmacological researchers already use genomics to search for cures for disease, new medicines and to determine how well people respond to different treatments. Nutrigenomics is attacking the problem from a different direction – how can we prevent disease by keeping our cells, tissues and organs healthy? NuGO will enhance our understanding of diet-gene interactions and consequences of these exchanges.

Researchers will study how we respond depending on our genetic make-up, age and gender. NuGO will also encourage the development of new joint research pro-jects, using the complementary skills from the various institutions, to answer key questions. However, the project will also work with consumers, food industry and governments in Europe to determine their priorities and discuss the social, ethical, economical and legislative concerns. This dialogue will enable the population as a whole, as well as specific groups, to make informed choices about diet and lifestyle.

VIRTUAL CENTRE OF EXCELLENCE

The increased complexity of nutrigenomic studies means researchers can no longer work in isolation. NuGO will enable European centres of research to work together to develop and use genomic technologies in nutritional science. So called critical mass – sufficient experts with complementary knowledge – will facilitate a faster, more inclusive approach to problem-solving. It will attract and train a new generation of European scientists and thus contribute to improving the health of EU citizens. The food industry will be able to use this new scientific knowledge to develop innovative, functional products that satisfy consumers' needs and desires. It should also help SMEs to grow by finding appropriate market niches. Conferences and publications will help to spread existing knowledge and new information throughout the European community and beyond.

Initially, the network comprised 22 collaborators but it will remain open to new members throughout its six-year term. The work is organised into a range of distinct packages, to be reviewed at the end of every year, enabling NuGO to respond flexibly to progress in this field.

Acronym: NUGO

Full title: european nutrigenomics organisation – linking genomics, nutrition and health research

Contract n°: 506360

Website:
www.nugo.org

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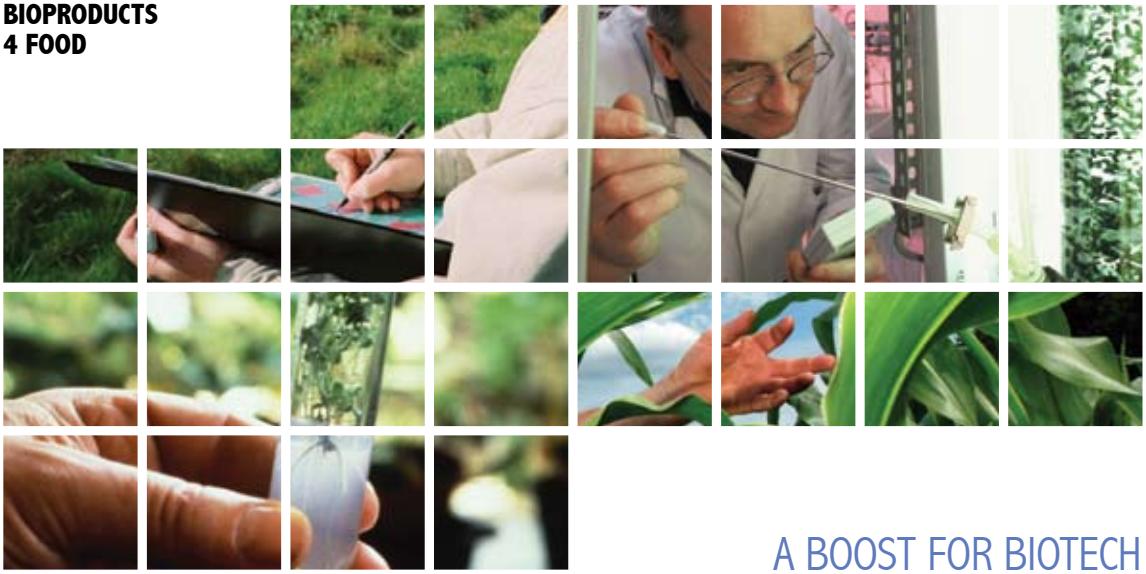
EU contribution:
€17.3M

BIOPRODUCTS 4 FOOD



A BOOST FOR BIOTECH

LIST OF PARTNERS

- Rothamsted Research (UK)

Biotechnology has a huge potential to improve the quality and safety of food. Crops could be designed to produce more nutritious food, with lower chemical and energy inputs. Microbe or plant cells can become 'factories' producing new bioactive chemicals. Genes could help trace the constituents of food to their origins. The knowledge is out there, but generating real technology which is accessible to farmers and/or consumers depends on companies being able to translate new research into marketable products. The crucial link between scientists and biotech companies is the focus of the BioProducts 4 Food project, a Specific Support Action currently being carried out by Rothamsted Research in the UK.

RESEARCH INTO ACTION

BioProducts 4 Food links biotech companies from Europe and the wider world with scientists carrying out research on plant and microbial biotechnology within the European Commission's Framework Programmes. It represents continued development of a project that has been running since 2000, funded initially by the Fifth Framework Programme and now being supported for a further three years under FP6. It holds an annual technology transfer meeting, known as the Rothamsted International BioMarket, and operates a networking website.

After four years, the BioMarket has become a well-established event in the biotech calendar. During the three-day meetings, EC-funded scientists are invited to present their research in a 'Discoveries Showcase', while companies and researchers can publicise themselves and their products on posters. Financiers and service providers to the biotech industry also attend. Delegates can arrange one-to-one meetings with potential partners, an approach which has been received enthusiastically in the past. BioProducts 4 Food hopes and plans for 350 individual partner meetings at each event. Now there are ambitious aims for widening international coverage – a target of 250 delegates from at least 20 countries (including 15 EU Member States) at the 2006 event. A panel of food industry representatives will be asked to advise on industry sectors that may have been overlooked in the network.

ONLINE DISCOVERIES

The BioProducts 4 Food website offers a year-round networking arena. It has a database of more than 350 organisations from 50 countries involved in translating biotechnology into real improvements in food production, with small and medium-sized European companies well represented. Organisers hope to raise this figure to over 1 000 in the next three years. Participants can search the database for organisations with similar expertise, and receive e-mail alerts about new organisations meeting their search criteria. The list of subjects is broad, ranging from biocontrol agents to biopolymers.

The website includes a database of new discoveries. Scientists will be able to enter their results in the database, having taken advice on how best to protect their findings. There should be 50 new discoveries on the website by the end of 2004, further promoting the BioProducts website as a live forum for the exchange of innovative ideas between scientists and businessmen.

The BioProducts 4 Food project disseminates European food-related biotechnology research to companies in EU Member States, Accession States, Associated States and various other countries including China, Australia and South Africa. What better way to ensure that research investment is working for society?

Acronym: BIOPRODUCTS 4 FOOD

Full title: disseminating the results of EC funded research into food quality and safety to facilitate their transfer and exploitation into new products and processes to improve European health and well-being

Contract n°: 505997

Website:
www.BioProduct.info

Project co-ordinator:
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EU contribution:
€ 273,000

CEC ANIMAL SCIENCE

CENTRAL SUPPORT FOR ANIMAL SCIENCE

LIST OF PARTNERS

- Euroquality (France)
- Agenzia per la Promozione della Ricerca Europea (Italy)
- Euro Consultants (Israel)
- Lithuanian Veterinary Academy (Lithuania)
- Institute of Fundamental Technological Research Polish Academy of Science (Poland)
- National Research Institute of Animal Production (Slovakia)
- University of Plovdiv (Bulgaria)
- Research Institute for Cattle Breeding (Czech Republic)
- Hungarian Scientific Society for Food Industry (Hungary)
- Research Institute for Animal Breeding and Nutrition (Hungary)
- Agency for International Science and Technology Development Programmes (Lithuania)
- Institute of Food Bioresources (Romania)
- Institute of Biology and Animal Production (Romania)
- Slovak University of Agriculture of Nitra (Slovakia)
- Research Institute for Animal Production (Slovakia)
- The Scientific and Technical Research Council of Turkey (Turkey)

The highly reputed animal research centres in the central European accession countries could make a significant contribution to the food quality and safety objectives of the Sixth Framework Programme (FP6). These countries need to know more about what is happening in EU animal research, how it is organised and how to find partners. At the same time, European researchers could help the candidate countries to update their knowledge and get the best value from their expertise. The Specific Support Action, CEC Animal Science (Support to animal science organisations from central European Candidate Countries) will spend two years on measures to integrate the new Member State animal research centres, their staff and their clients into Europe's research activities.

The project will cover all the animals raised for food production on a large scale – cattle, sheep, pigs and poultry. All the new Member States in central Europe are represented: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia, Slovakia and Turkey, many with more than one such institution. Some, like the Hungarian Research Institute for Animal Breeding and Nutrition, have their roots in the 19th century. Others, such as the Research Institute for Cattle Breeding at Rapotin in the Czech Republic, were founded after World War II. Since the break up of centralised economies, many have suffered from a lack of funds.

IN THE SPOTLIGHT

Initially, the project will map the expertise in these countries in relevant fields such as genetics and breeding, animal nutrition and feed production, animal health and welfare, and meat production. They will survey more than 100 research organisations.

Once the survey is complete, a detailed database of research organisations and of private companies (SMEs) will be created. Anyone setting up a consortium to make proposals or do research can use this tool to find partners.

The information will also go into an animal science website with a facility for partner search (http://www.animal-science.net). Other publicity efforts will include mailing shots and a series of five newsletters on the animal science sector in general, and the FP6 priority action on food quality and safety.

SPECIAL NETWORKS

To encourage networking among researchers from all the countries involved in the project, five working groups will be set up. They will focus on the sectors of genetics and breeding, nutrition and animal feed, meat technology, animal health and welfare, and fisheries. The aim is to develop joint research programmes and to screen other research project ideas for possible further collaboration. A newsletter will be disseminated among the members of the network in order to provide information, both on their respective research activities and FP6 opportunities. A prospective study on research organisation and policy in the animal science sector will be carried out in each partner country.

Small and medium-sized enterprises (SMEs) make up a significant proportion of business in all candidate countries, so one objective is to encourage them to join FP6 programmes. SMEs and researchers alike will receive special help if they want to participate in any FP6 Integrated Projects, Networks of Excellence, Coordination Actions, or Specific Targeted Research Projects. France, Italy and Bulgaria will hold workshops to present the skills and knowledge of researchers and institutes in the new Member States.
All these measures have been designed to benefit the institutions themselves and European research into animal science in general.

Acronym: CEC ANIMAL SCIENCE

Full title: support to animal science organisation from central European candidate countries

Contract n°: 506087

Website:
www.animal-science.net

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EU contribution:
€ 678,000

CODE-EFABAR

TRANSPARENT AND VERIFIABLE FARM ANIMAL BREEDING

LIST OF PARTNERS

- European Forum of Animal Breeders (The Netherlands)
- Danish Institute of Agricultural Sciences (Denmark)
- European Federation of Biotechnology (The Netherlands)
- Institute for Pig Genetics
- (The Netherlands)
- Aqua Gen (Norway)
- Semenitaly (Italy)
- SGS Nederland (The Netherlands)
- Svensk Avel (Sweden)
- Lohmann (Germany)
- Institut de Recerca i Tecnologia Agroalimentàries.
- (Spain)
- Badi Besbes ISA (France)
- Loredana Locatelli (Italy)

European farm animal breeders want to demonstrate to the public their concern over animal welfare and the environment by creating a Code of Good Practice for Farm Animal Breeding and Reproduction. This will be done in an 18-month EU Specific Support Action (CODE-EFABAR). The Code will help breeders to demonstrate in a transparent and verifiable way what their goals are and how they can achieve them. Animals used for breeding are a special case as their genetic make-up is passed on to future generations of stock.

FROM FORK TO BREEDING ANIMAL

The breeding and reproduction standards suggested will apply to cattle, pigs, poultry and fish. Breeding is the first link in the food chain producing meat, milk, fish and eggs, which makes up a significant part of agricultural production. It includes choice of breed, selection, genes, animal welfare, genetic diversity, public and animal health, food quality and the environment.

An earlier EU-funded project on animal breeding, Sustainable European Farm Breeding and Production (SEFABAR), found that breeders do have a reliable image for providing the information consumers want. SEFABAR's conclusions about sustainable breeding, which took into account ethical, sociological, welfare, and economic work, are essential in the outline of this project.

EUROPEAN-WIDE CODE

The Code aims to build trust among consumers and create transparency for European citizens, as well as towards farmers who are the customers of animal breeders. While some larger producers might be able to draw up their own codes, a high proportion of European farm animal breeders are small or medium-sized enterprises (SMEs). In any case, a universal code can be written and checked more carefully and should prove more widely acceptable to society as a whole. An association of breeders from northern and southern
Europe, the European Forum of Farm Animal Breeders (EFFAB, formerly Farm Animal Industrial Platform – FAIP), will draft the technical sections of the Code. The bioethical and risk-assessment elements will be researched by a bioethical centre in Denmark, while the European Forum of Biotechnology will deal with communication, and Société Générale de la Surveillance will provide verification and certification information.

The draft Code will be discussed at a workshop for NGOs and European breeders before the final version is refined and published. A verification and certification mechanism is planned to allow breeders to develop their own standards within the Code, and to have them approved and publicised in the way they choose.

The strategy for spreading awareness of the Code will include its publication on the SEFABAR website (www.sefabar.org/code-efabar) alongside information for those involved in the food chain, politicians and NGOs. Brochures for breeders will be published in several languages and breeding organisations will be trained to apply the Code. At the end of the project, EFFAB (FAIP) will take responsibility for maintaining the Code.

MARKET BOOST

The prime effect of the Code will be greater transparency about European farm animal breeding practices which, it is hoped, will make consumers more confident about the quality and safety of farm animal products. In addition, it will increase the competitiveness of Europe's animal breeding and reproduction sector.

The Code will demonstrate the professionalism of breeding organisations. It will play a part in preserving traditional breeds, in marketing local food varieties, and in creating new markets for indigenous breeds from eastern European accession countries. It is important to stress that European farm animal breeders have declared that they have no interest in the use of genetic modification or cloning for food production. These technologies do not bring advantages for food production. Moreover, European consumers do not want these technologies to be applied, and this wish is being respected by means of, among other tools, a verifiable and transparent Code.

Acronym: CODE-EFABAR

Full title: code of good practice for farm animal breeding and reproduction organizations

Contract n°: 506506

Website:
www. code-efabar.org

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EC Scientific Officer:
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EU contribution:
€ 300,000

GUTHEALTH SUPPORT

PROACTIVE APPROACH TO GUT AND HEALTH

LIST OF PARTNERS

- VTT Biotechnology (Finland)
- Institut National de la Recherche Agronomique (France)
- Wageningen University (The Netherlands)

The human intestine uses an army of bacteria to extract nutrients from the digested food that passes through it. At the same time, our intestine is vulnerable to harmful microbes that can cause a range of gastrointestinal disorders. Fortunately, the food and food supplements that we consume can also support beneficial gut microbes which help to fight off the harmful ones. As part of a strong drive by the European Union to improve the health and quality of life of European citizens, it has clustered several multidisciplinary research projects on food, the functionality of the gastrointestinal tract, and human health under a generic umbrella called PROEUHEALTH. Since 2001, the aim of this multidisciplinary research network has been to disseminate information, results, and highlights among Europe's scientists, industrialists and consumers. Furthermore, the cluster has a mission to organise debates and discussion forums among these three audiences.

Initiatives are already in place to spread the results of this wide research programme, with its 64 different research groups from 16 European countries, throughout the current Member States. In addition, the EU wants to bring the Candidate Countries into the network so that they too can benefit from this work and the results. It has set up a new Specific Support Action, GUTHEALTH, which – over a three-year period will promote a range of activities intended to improve knowledge about intestinal health in Candidate Countries (including those that became new Member States on 1 May 2004).

SPREADING THE WORD

GUTHEALTH is organising six innovative roadshows for those Candidate Countries with an active interest in nutrition: Estonia, the Czech Republic, Poland, Hungary, Malta and Latvia/Bulgaria. Their aim is to share European research results on food, intestinal microbiota and human health with a targeted audience, and to show how this research can be translated into consumer products. Local organisers will be recruited from the interested scientific community to help run these roadshows and to find local interest and contacts. The roadshows will be held in central locations in major cities so that they are readily accessible. The organisers will select scientists and industrialists, along with a representative number of women, to attend the roadshows. The first roadshow has already been held in Tallinn, Estonia in January 2004, raising tremendous interest among local scientists and citizens. The next event will take place in Prague, Czech Republic, on 30 September 2004.

These events, alongside other GUTHEALTH initiatives, will be open to all the Candidate Countries. Advertisements and e-flyers on the PROEUHEALTH website will help to publicise them. The SME database of companies in the food, biotechnology and pharmaceuticals areas, in particular, will also be notified in case they have sister companies in the relevant countries.

TRAINING COURSES

Selected researchers from those countries being targeted will be invited to two-week courses with a high practical content, to teach them more about the GUTHEALTH field. The training will focus on identification of bacteria and microbial diversity, and will be aimed at Ph.D. and postdoctorate physicians, microbiologists and engineers, representing a good cross-section of all Candidate Countries. In this way, health science networks will be expanded to include members from these countries, enabling a cross-fertilisation of ideas and know-how between the different areas of gut bacteria research. The first training course took place in October 2003 in Paris, France.

Targeted invitations will be issued for three inter-national conferences, planned to take place outside the GUTHEALTH programme, including one on PROEUHEALTH and another on lactic acid bacteria. GUTHEALTH will endeavour to invite a wide spectrum of researchers, representatives from the food industry, policymakers, legislators, dieticians, and local organisations. This, in turn, will strengthen the networks involved in research collaboration and promoting gut health.

Acronym: GUTHEALTH SUPPORT

Full title: networking in associated candidate countries towards food, Gi-tract functionality and human health

Contract n°: 505318

Website:
http://guthealth.vtt.fi
http://proeuhealth.vtt.fi

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EU contribution:
€ 350,000

IRFOS

SERVING UP SAFE FOOD

LIST OF PARTNERS

- Institut National de la Recherche Agronomique (France)
- Société Scientifique d'Hygiène Alimentaire (France)

Regular scares about food safety, from BSE to salmonella, indicate that the link between food and consumer health is still a major concern across the European Union. The delivery of safe food from the producer to the consumer requires meticulous monitoring at every stage in the supply chain, a concept now called 'farm to fork'. The Fifth Framework Programme (FP5) included many research projects designed to ensure the safety of food produced and eaten in the EU. Its results are now providing the main source of information for those who draw up Europe's food policy and the legislation that enacts it, and this approach will continue and be reinforced in FP6.

In this context, a Specific Support Action, Integration of European Food Safety Research from Producers to Consumers (IRFOS), has been launched to analyse the results of completed and ongoing projects, and to direct future research into the most relevant areas. IRFOS has set up a steering group of top European and international experts to promote networking at the highest level on the crucial topic of food safety and to oversee two conferences that will provide the material for its recommendations.

PREPARING THE GROUND

A preparatory IRFOS conference, called 'Food: new challenges after a century of progress', will be held in Paris in June 2004. It will aim at providing key material for a subsequent work conference. Eminent scientists will give presentations describing the achievements of a century of work on food safety, then parallel workshops will review current research.

Workshop subjects are:

- The food chain: risks and threats for consumers;
- Food science: trust and mistrust of consumers;
- Dissemination of food knowledge;
- Who influences food choices?

This conference is being supported by both the EU and the OECD (Organisation for Economic Cooperation and Development), and is organised by the SSHA (Société Scientifique d'Hygiène Alimentaire), a project partner currently celebrating its centenary. It will target consumers and people who work directly with nutrition, such as food manufacturers and dieticians.

FUTURE FOCUS

The work conference will be held in Lille (France) in October 2004. It will review the earlier event and look in detail at Europe's food safety research. It will focus in particular on the risks of infectious and toxic agents throughout the food chain, and on tests to detect them and ways to exclude them. Completed work in FP5 and early results from FP6 will both be included, clustered into five topics: microbiological risks; chemical and toxicological risks; detection techniques and traceability in the food chain; tampering and bio-terrorism; and communicating risks to the consumer.

A series of parallel workshops will also use the projects in FP5 and FP6 as a basis for their discussions. They will cover: SMEs and how they can be involved; dissemination and evaluation of results; the Framework Programme tools (Networks of Excellence, Integrated Projects, STREP, CA, SSA); integrating new Member States and accession states; international opportunities; and coordination of national policies in the European Research Area. This conference will be aimed at scientists, policymakers and those who control the safety of Europe's food.

The messages delivered there will be gathered into a summary report, recommendations from which will influence research plans for the second half of FP6. IRFOS news will appear on both partners' websites.
IRFOS will help the European Food Safety Authority to formulate and implement an efficient food safety policy to the benefit of the general health of EU citizens.

Acronym: IRFOS

Full title: integration of European food safety research from producers to consumers

Contract n°: 506261

Project co-ordinator:
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EC Scientific Officer:
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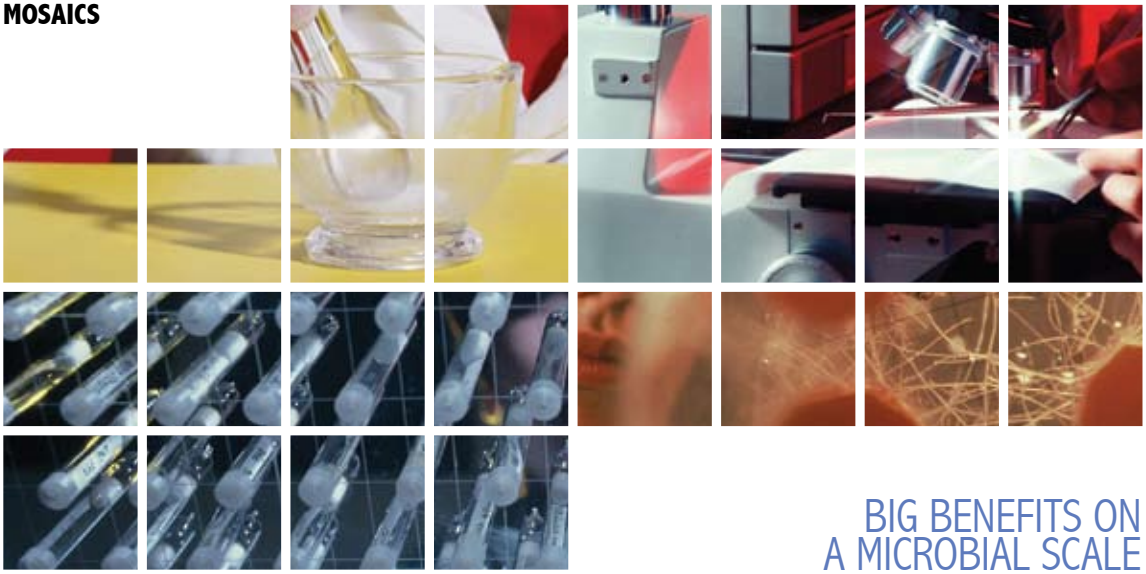
EU contribution:
€ 209,000



BIG BENEFITS ON A MICROBIAL SCALE

LIST OF PARTNERS

- Public Planning Service - Science Policy (Belgium)
- CCABI Bioscience UK Centre (UK)
- Centraalbureau voor Schimmelcultures
- (The Netherlands)
- Centre National de la Recherche Scientifique et Technique (Morocco)
- Catholic University of Peru (Peru)
- Deutsche Sammlung von Mikroorganismen und Zellkulturen (Germany)
- European Federation of Biotechnology (International Union)
- Bioresource Collection & Research Center, Food Industry Research & Development Institute (Republic of China, Taiwan)
- Japan Bioindustry Association (Japan)
- Korean Institute for International Economic Policy (Republic of Korea)
- UNESCO – Microbial Resources Centres Network (International)
- Thailand Institute of Scientific and Technological Research (Thailand)
- University of Ljubljana - Fac. Natural Sciences & Engineering (Slovenia)
- United Nation University (International)
- World Federation for Cultures Collections (International Union)

The huge diversity of Earth's biological resources, from the vast rainforest to the invisible microbe, should be used for the benefit of all. This principle is enshrined in the Convention on Biological Diversity (CBD) issued at the Rio Earth Summit in 1992. The EU has developed guidelines and projects to help achieve this goal, the latest being a Specific Support Action, MOSAICS, to promote the sharing of resources at the small end of the scale microbial resources.

MOSAICS (Micro-Organisms Sustainable use and Access management Integrated Conveyance System) will spend 18 months setting up a system to manage access to, and the transfer of, microbial resources. It will make it easier for scientists to share genetic information about microbes while safeguarding intellectual property rights. There will be a particular focus on the safety and health of Europe's food supplies. Here, microbes are both a resource, for example, for probiotic foods and bio-pesticides, and a potential threat, in terms of plant disease, food spoilage and contamination.

THREE-STAGE PROCESS

Assets cannot be exchanged until their value has been agreed. The vital first stage in freeing up access to microbial resources is to find a reliable way to put an economic value on them. Methods studied in the project will include replacement value, market value, production cost, credit-debit balance, and conservation cost. These will be synthesised in EVa (Economic Valuation) to create a socially, economically and environmentally sound method for pricing microbial resources.

The second requirement concerns the transparent tracking of microbes during transactions. ADaM (Access Distribution and Management) is developing standard documents and procedures to register the point of origin of the resource and track it to its destination.

The last stage, the Integrated Conveyance System (ICS) itself, will combine valuation and trail finding in a full system for the open trading and sharing of the genetic benefits of microbial resources. This is a practical scheme that complements legislative changes and is expected to be used internationally to promote access to microbial resources and to share the benefits they offer.

BUILDING ON THE PAST

The Integrated Conveyance System project is the latest in a range of EU-supported efforts to promote the Rio objectives that apply to biodiversity benefits in general and microbial ones in particular. Its immediate precursor, MOSAICC, developed an International Code of Conduct as a tool for microbiologists to implement the CBD at the microbial level. The Code was compiled by international researchers and refined during workshops and consultations. A further workshop, WIPMICRO-MOSAICC, has disseminated MOSAICC results and information about intellectual property rights associated with sharing knowledge on microbial genetic resources.

MOSAICS will work closely with other initiatives to promote access and benefit sharing, including EU initiatives, the CBD's working group on this subject, the OECD's Biological Information Task Force, and the Global Biological Information Facility. It will liaise with experts in similar biotech fields, and in plant and animal resources.

Project partners include members from several third countries and international organisations. This collaboration should ensure endorsement of the project's Integrated Conveyance System by national and international scientific federations of microbiologists. The data relating to ICS will be exchangeable in electronic form.

Acronym: MOSAICS

Full title: development of a system for appropriate management of access and transfer of microbial resources - micro-organisms sustainable use and access regulation integrated conveyance system

Contract n°: 506436

Website:
www.belspo.be/bccm/mosaics

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EU contribution:
€ 382,000

MREFS

FOOD BIOTECHNOLOGY HITS THE SCREEN

LIST OF PARTNERS

- University of Munich,
- (Germany)
- ProBio (The Netherlands)
- Visions Unlimited Medien (Germany)
- University of Limerick (Ireland)
- DGT (Austria)
- EBU (Belgium)

The European public is wary of biotechnological applications in the agricultural and food sectors. Legitimate concerns have been raised. In order to address them, the EU has funded a major Specific Support Action, the Multi-media Repository on European Food Science (MREFS). The action will enable rational media and public debate on the social, economic and ethical aspects of scientists' work to give Europe safer and healthier food. A similar action is being initiated for the human health sector[1].

The aim of the project is to explain the balance between benefits and risks in food science in a clear and approachable way. MREFS will use a range of resources to bring this discussion into the public forum, but its principal approach will take the form of a series of short concise films on EU-funded food research projects.

ACCESSING THE MATERIAL

Films are the chosen media here as they are easy to watch and can be widely distributed and broadcast. The team will select 16 European-sponsored projects from the areas of health-promoting foods, sustainable agriculture practices, and research into genomics and food metabolism. They will make a four-minute film about each project that will be light but stimulating, aiming to introduce discussions on innovation, exploitation of the knowledge that has been created, benefits and risks, and social and ethical concerns.

A multimedia library accessible through the internet will be set up to house the films for viewing. It will also store selected background material that was shot during preparation of each film. All this material can be viewed by the public, used by makers of other documentaries, and should contribute to the public debate.

COMMUNICATING THE ISSUES

MREFS will target the key stakeholders in society, aiming to narrow the gap between scientists on the one hand and the general public, educators and the media on the other.

The films will be shown by public and private television stations across Europe. They will also be available on video and CD-ROM, screened at schools and colleges and put on the internet. Copies will be sent to target groups suggested by project members and advisors.

Very early in its four-year course, the project will set up a Rapid Response Science Network where the public can hold a continuing dialogue with scientists from the advisory board and the research projects featured in the films. It will give educators, media professionals and the interested public the chance to ask questions interactively. The Network will also support three focus meetings during the term of MREFS. They will involve European-wide organisations in helping to enhance the impact of the repository and in finding other practical ways to bridge the gap between science and the public. Feedback will ensure that science moves forward at the pace demanded by social needs and expectations.

Acronym: MREFS

Full title: a multimedia repository on european food science: production, quality and safety

Contract n°: 506099

Website:
http://food.eusem.com/main/home

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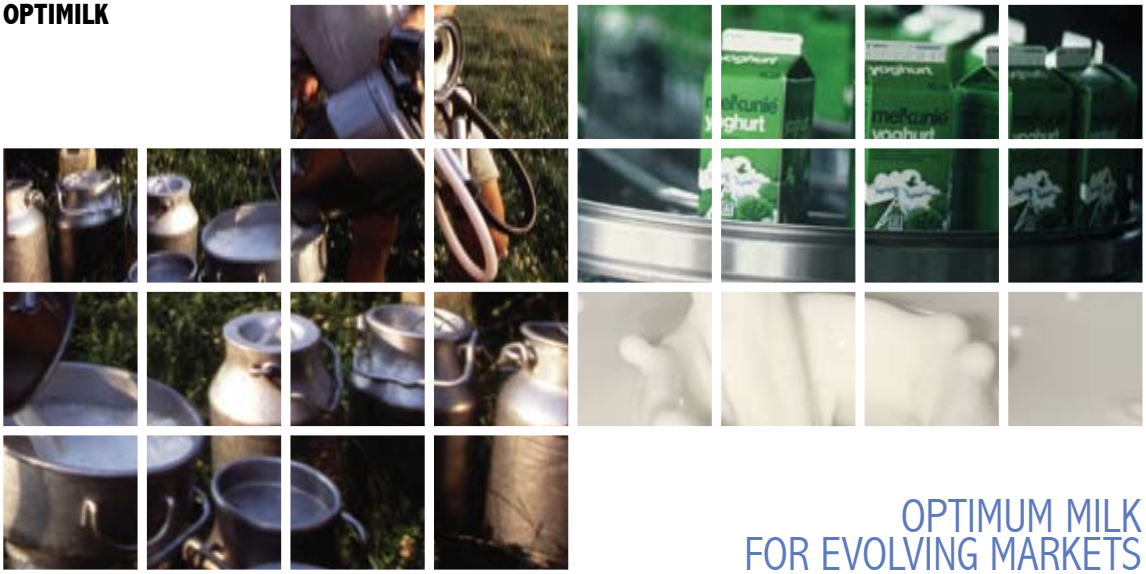
EU contribution:
€ 700,000

[1]. Irene

OPTIMILK



OPTIMUM MILK FOR EVOLVING MARKETS

LIST OF PARTNERS

- Wageningen University (The Netherlands)
- University College Cork (Ireland)
- ENSGSI, Nancy (France)
- Institute of Chemical Technology, Prague (Czech Republic)
- Warsaw Agricultural University (Poland)
- USAMV, Bucharest (Romania)
- Edinburgh Direct Aid, Bihac (Bosnia and Herzegovina)

The supply chain involved in moving milk from the farm to the market has to be managed carefully to ensure that when the milk arrives it is safe and of top quality. The countries of central and eastern Europe are moving from centrally planned to market-led economies as they approach full membership of the Union. This transition affects the milk supply chain among many others. The EU Specific Support Action OPTIMILK will analyse the changes that these countries will need to make in order to create for their milk an internationally competitive supply chain that complies fully with EU health and safety regulations.

The one-year project took a systematic look at four countries where the milk supply chains are at various stages of transition to full market orientation: the Czech Republic, Poland, Romania and Bosnia. The team used the latest methods of designing supply chains and planning resources to formulate recommendations that will help these countries compete with the rest of European milk production in terms of safety, quality and value.

LINKS IN THE CHAIN

The supply chain starts at the farm, where hygienic operation and quality assurance result in safe raw milk. Efficient management and treatment of this milk as it is collected, stored and transported optimise the value of this part of the chain. Other important factors designed to protect public safety include training, setting up safety and quality standards and critical control points, transparent inspection, and being able to track supplies from beginning to end. Value will be affected by payment policies and classification systems. The way the chain is organised and how the various people working in it relate to each other will also play a part in smoothing the transition to a market-led supply chain.

The project will begin with the development of a blueprint for the analysis, then teams will go to each of the four countries to collect data and publicise the project through local workshops. The current state of the four milk supply chains will then be compared with another national chain which is considered to be highly efficient in terms of quality and value, so that recommendations can be made in each case. The study should give a clear picture of the knowledge needed to help rural economies in accession countries to evolve so as to add value and create prosperity.

REPORTING THE RESULTS

The project will publish a series of reports to help central and eastern European and Balkan countries to privatise their rural economies.

Best Practices for Quality and Safety Management in the Milk Supply Chain will survey the mechanism of the supply chain and show how good hygiene and quality principles bring benefits to all parts of the chain. It will also make practical recommendations for the four countries.

Supply Chain Design and Enterprise Resource Planning for Optimising Value in the Milk Supply Chain to Create Wealth in Rural Economies will focus on these aspects for small and medium players in agri-dairy networks.

Traceability for Safety and Consumer Confidence in the Milk Supply Chain will emphasise hazards at source and show how world-class tracking systems could be applied.

Recommendations for Strategies to Optimise the Milk Supply Chain in an Enlarged European Union will give an overview of the results.

These reports will be supported by leaflets and web pages in the appropriate languages to enable widespread dissemination among local enterprise and policymakers.

Acronym: OPTIMILK

Full title: quality, safety and value optimisation of the milk supply chain in rapidity evolving central and eastern european markets

Contract n°: 506349

Website:
www.optimilk.net

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EU contribution:
€ 156,000

POLFOOD

ENCOURAGING AGRI-FOOD IN POLAND

LIST OF PARTNERS

- Poznan Science and Technology Park (Poland)
- Technical University of Szczecin (Poland)
- Institute of Fundamental Technological Research, Warsaw (Poland)
- Krakow University of Technology (Poland)
- Technical University of Wroclaw (Poland)

Agriculture and food make a major contribution to Poland's economy, accounting for 20% of sales and 8% of employment in 2001. Upon joining the European Union, Poland will be able to benefit from access to the research and technology development in the EU's Framework Programmes, but will need to know more about how they operate and their past results to get the most out of them. Therefore, the European Commission is funding a Specific Support Action, POLFOOD, to encourage agri-business firms in Poland and other accession countries in Eastern Europe to join in FP6. Lasting for 17 months, it will organise five carefully structured workshops in different Polish regions and publish brochures on their conclusions.

The EU and Polish research bases have much to offer each other. POLFOOD helped the integration of accession countries into the Union, targeting the many SMEs (small and medium-sized enterprises) in this sector. Encouraging them to use FP5 results helped to fulfil the objectives of the European Research Area as regards food quality and safety.

FOCUSED WORKSHOPS

The regional workshops are aimed at all relevant players in the agri-food sector – universities and research organisations, chambers of commerce, professional associations, public control authorities, and enterprises, large and small. Each event will focus on a specific topic of particular local importance, selected by regional experts. The first will also double up as the POLFOOD conference, giving a general introduction to the series.

To be held in Poznan, the first workshop will present an overview of all the topics to be covered. Within its specialisation – methods of analysis, detection of harmful substances and pathogens, and control of the production process – it will describe the results of completed EU projects. Opportunities to join FP6 projects on these themes will be discussed and the workshop will close with meetings between potential partners.

The other workshops will follow a similar pattern, each having a specific topic:

- Functional food, particularly seafood, and prevention of disease through diet, in Szczecin;
- Hygiene in milk production and processing, in Warsaw;
- The influence on human health of packaging methods and safe food preservative technology; new approaches towards monitoring and preventing chemical contaminants in food, in Krakow; and
- The safety of meat products, in Wroclaw.

This last event also hosted a presentation of the achievements of the whole project and summarised its conclusions.

SPREADING THE NEWS

Each workshop resulted in a brochure, with a common format, distributed amongst Polish enterprises and organisations. They highlighted practical knowledge on quality and safety issues for each topic, and the part it could play in an enlarged European Union. Wider dissemination in other accession countries were expected to have an impact on their food sectors and the practices of their food industries. It should also encourage them to consider similar ways to involve their SMEs in Europe's research programmes.

To give extra help to Polish and other accession countries' SMEs, a further brochure will be published with information most relevant to them. A database of partnering opportunities will be set up, with over 50% of entries relating to SMEs, who will also be offered a practical course on the use of new technologies in their business.

Early in the project a dedicated website (www.polfood.pl) will be set up to give rapid and widespread access to the information.

Acronym: POLFOOD

Full title: research and innovation in food technologies - brokering European partnership and transfer of knowledge to Poland by series of practical workshops

Contract n°: 1669

Website:
www.polfood.pl

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 136,000

SELAMAT

EUROPEAN FOOD SAFETY GOES GLOBAL

LIST OF PARTNERS

- RIKILT Institute of Food Safety (The Netherlands)
- Central Science Laboratory (UK)
- Institute of Experimental and Technological Biology (Portugal)
- Institute of Plant Protection (China)

Within the Sixth Framework Programme (FP6), the EU is putting consumers at the heart of the science of food production. The 'fork-to-farm' philosophy underlines the fact that the quality and safety of food for those who eat it is a major priority for the industry. European research is focused on making food as safe and clean as possible. However, these high standards may not be easy to meet in other parts of the world. There is a fear that food safety will become a trade barrier, preventing imports from countries which cannot offer absolute assurance that their produce is organic, not genetically modified, or is dioxin-free, for example. Asia is one of Europe's largest trade partners. There are moves afoot in Asia now to mirror the exacting standards of food quality to meet the demands of the European market. A Specific Support Action under FP6 is helping the process by creating a network for sharing food safety expertise between Europe and Asia.

SAFETY IN MALAY

The four-year project is called SELAMAT, a Malay word for safety. It was conceived by the Asia-Europe Meeting (ASEM) partners, following a workshop in Malaysia on food safety in 2002. SELAMAT is bringing together scientists and regulators in Europe and Asia in a network to share methodology and policy developments related to food quality. It should lead to scientific partnerships involving Asian food industries in a concerted effort towards the assured, safer and more sustainable production systems that Europe is aiming to achieve.

The initial network comprises a small group of partners: three European food research institutes and a Chinese research institute specialising in pesticides. During the SELAMAT project, partners will introduce other organisations, so that up to 60 could be involved after four years, including core members of relevant large FP6 projects. The idea is that the progress made during FP6 is communicated to network members' counterparts in Asia so that they can incorporate the knowledge into their local industries.

ORIENTAL ASSURANCE

The network has identified three research topics linked to ensuring liberal trade: the impact of food on health, the traceability of food along the whole food chain, and methods of detecting contaminants. If food products can be tested, certified and traced using common methods in both Europe and Asia, then European consumers and regulators will have very few problems with Asian food. A series of annual workshops will address each of the above-mentioned areas in turn. A final workshop, in year four, will consider the agenda for joint Asia-Europe research on food safety. At each three-day workshop, the participants will identify subjects for a training course to be held later in the same year.

SHARED CONCERNS

The project will set up a website and design a database for exchange of analytical methods between network partners, for example. How to test food for the presence of genetically modified components might be included in this. The team will also produce leaflets on new findings under FP6, to be distributed at conferences in Europe and Asia.

SELAMAT is the start of a global cooperation on food safety that is necessary for the success of international trade in an age when food production is becoming increasingly technological, and the health and safety of eating is a major item on the political agenda.

Acronym: SELAMAT

Full title: safety enhancement of edible products, legislation, analysis and management with ASEM countries, by mutual training and research

Contract n°: 506386

Website:
www.selamat.net

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 597,000

TDC-OLIVE

GROWING INTEREST IN OLIVE PRODUCTS

LIST OF PARTNERS

- Consejo Superior de Investigaciones Científicas (Spain)
- Unilever (The Netherlands)
- Asociación Agraria de Jóvenes Agricultores (Spain)
- Instituto Madrileño de Investigación Agraria y Alimentaria (Spain)
- Istituto Sperimentale per l´Elaiotecnica (Italy)
- Sabina-Agricola (Italy)
- Agricultural Association Agio Apostolon Vion (Greece)
- Institute of Technology of Agricultural Products (Greece)
- Technologie-Transfer-Zentrum (Germany)
- Federal Centre for Cereal, Potato and Lipid Research (Germany)
- Alcubilla 2000 S.L. (Spain)
- Improtechnology Limited (UK)
- Biozoon (Germany)

Table olives and olive oil are well known for their beneficial effects on human health, mainly because of the protection they offer the skin and the cardiovascular and skeletal systems. These foods are basic elements in the Mediterranean diet – countries in this area are not only the main producers but are also those with the most consumers.

The underlying idea in this project is that this source of healthy food should not be restricted to those producers located in the Mediterranean region. In fact, it is highly recommended that table olives and olive oil should be part of the regular diet not only in European countries, but also worldwide. To achieve this goal, the producing companies need to be strengthened since the majority of them in Spain, Greece, Italy and Portugal are small and medium-sized enterprises (SMEs), and mainly family firms.

The project will attempt to achieve this by investigating the actual situation of SMEs through surveys and direct contact with enterprises in order to obtain first-hand knowledge of the needs of the sector. It has two main objectives: to develop a modern SME with qualified staff, which employs new information technologies to access information and all the relevant technological innovation systems; and to create an SME, and be seriously committed with the optimisation of product quality, and seriously committed to the treatment, recycling and reuse of all waste products generated during its activities.

ROLES AND ACTIVITIES

The network of TDCs (Technology Dissemination Centres) will give free support to SMEs in the table olive and olive oil sector and act as a bridge linking them with the academic and research community. TDCs will circulate a wide range of regional and international information on innovation, access to funding and subsidies, relevant research, legislation, exhibitions and more. News about methods of quality assessment will help SMEs to raise the standards of the oil and table olives they produce.

The TDCs will involve business associations and other organisations within the sector in its activities in order to establish a long-lasting network able to continue supporting SMEs once the two-year project has come to an end. The network will also disseminate knowledge about olive oil to countries that are currently only small consumers: an 'olive encyclopaedia' of booklets will be produced which will be aimed at businesses, consumers and scientists. In addition, articles will be published in technical journals along with material for the more popular publications market. Promotions will be held at food exhibitions and surveys will be carried out to find out participants' attitudes to consuming olive oil, thereby helping to frame market initiatives. The results will be published on the TDC website.

EDUCATION AND TRAINING

Early in the project, TDC-OLIVE will carry out a survey among the SMEs in the sector to establish their general needs and, specifically, their training requirements. The results of this will determine the training programme that will be organised to help SMEs to modernise and become more competitive. This programme will try to cover a broad scope of subjects and techniques, i.e. environmental aspects, ICT, food quality, quality product regulations, and marketing techniques.

TDCs will also provide online courses to facilitate access to those SMEs and business associations that are unable to attend the training programmes. Those participating online will be monitored by a tutor and will be able to participate in online forums.

Acronym: TDC-OLIVE

Full title: setting-up a network of technology dissemination centres to optimise SMEs in the olive and olive oil sector

Contract n°: 505524

Website:
www.tdcolive.net

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EC Scientific Officer:
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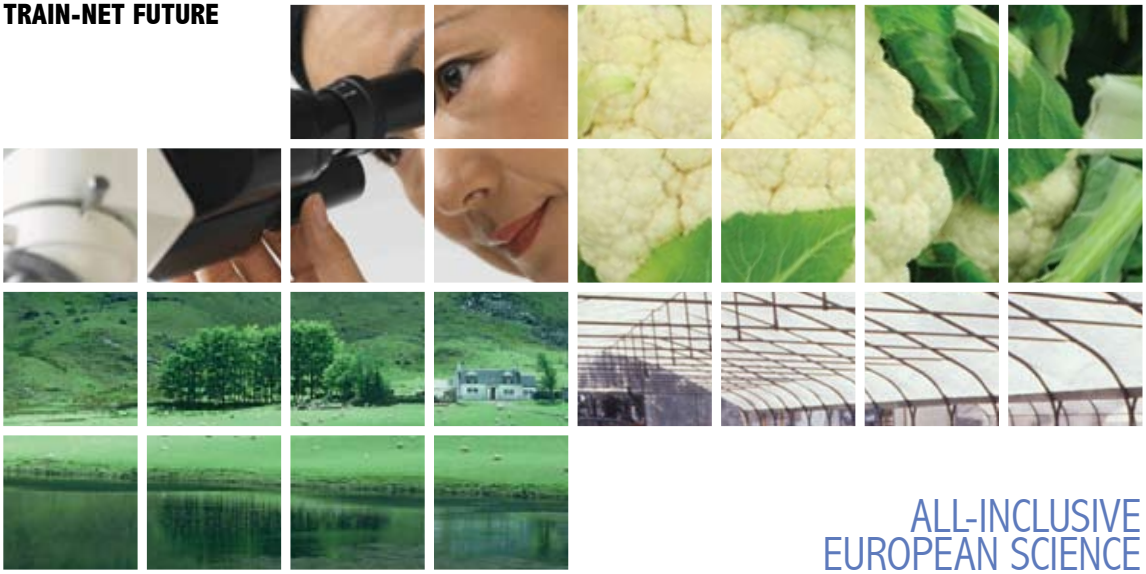
EU contribution:
€ 789,000

TRAIN-NET FUTURE



ALL-INCLUSIVE EUROPEAN SCIENCE

LIST OF PARTNERS

- Hungarian Science and Technology Foundation (Hungary)
- Agency for the Promotion of European Research (Italy)
- Senter – EG Liaison (The Netherlands)
- The Scientific and Technical Research Council of Turkey (Turkey)
- Association de Coordination Technique pour l'Industrie Agroalimentaire (France)
- Associação para a Escola Suprerior de Bio- tecnologia da Universidade Católica (Portugal)
- Beta Technology (UK)
- Institut National de Recherche Agriculture (France)
- The Brussels Enterprise Agency (Belgium)
- Food Industrial Research and Technological Development Company (Greece)
- Bureau for International Research and Technology Cooperation (Austria)
- Israel Europe R&D Directorate for FP6 (Israel)
- The Malta Council for Science and Technology (Malta)
- Institute of Fundamental Technological (France)
- The Swedish EU R&D Council (Sweden)
- University of Agriculture Nitra (Slovakia)
- Danish Agricultural Council (Denmark)
- University of Plovdiv (Bulgaria)
- Agency for International R&D Development Programme (Lithuania)
- Federation of Icelandic Industries (Iceland)
- Archimedes Foundation (Estonia)
- Ministry of Education, Science and Sport Research, Polish Academy of Sciences (Poland)
- SNI-RSI EUresearch (Switzerland)
- Baltic Chapter of SPIE – The International
- Society for Optical Engineering (Latvia)
- Research Promotion Foundation (Cyprus)
- Institute of Food Bioresources (Romania)
- Hitachi Europe (Ireland)

The European Research Area is aiming for equal representation of all nationalities which will work together to share their expertise. At present, the distribution of European funding is biased towards the original 15 Member States with long-standing experience of European science. Candidate countries including those that became new Member States on 1 May 2004 seem to be less successful at winning the funding. TRAIN-NET FUTURE is a Specific Support Action under the Sixth Framework Programme (FP6) working to redress the balance in food quality and safety research. It is providing training and networking facilities targeted at researchers and their advisers in candidate countries.

NOT ENOUGH CANDIDATES

Food quality and safety is a hot topic in European research, and competition for funding in FP6 is intense. Following the launch of the call for expressions of interest, 910 proposals were submitted, less than one-fifth of which came from candidate countries. Similarly, in the FP5 Quality of Life Programme, applications co-ordinated and submitted by candidate countries were dramatically less successful than those from Member States.

Candidate countries fall behind for several reasons. Their scientists are less well connected internationally, and not as experienced at navigating the relatively complex Community R&D funding system as their colleagues in Member States. And they may receive a lower standard of help and advice. Groups of advisers, known as National Contact Points (NCPs), are nominated by national governments to lead scientists through the maze of European funding opportunities. But NCPs are variable – they include a variety of types of institution with different levels of funding. Some from the candidate countries are still new to the game, and are struggling to organise and finance themselves effectively.

TRAINING OPPORTUNITIES

Under FP5, the TRAIN-NET project provided extra training for the NCPs in 13 candidate countries. TRAIN-NET FUTURE, which involves many of the same partners, is focusing on the needs highlighted by TRAIN-NET, particularly for better training of researchers and higher international visibility of candidate country research. The FP6 project involves 12 candidate countries, three Associated States and ten Member States. This time, the project is working directly with researchers in academia and industry, as well as with NCPs.

The three-year programme will provide training for both NCPs and researchers in candidate countries, on topics such as preparation of a proposal, consortium building, project management, and financial issues. TRAIN-NET FUTURE is keen to provide coaching on the new FP6 instruments – Networks of Excellence and Integrated Projects. These large-scale activities are especially dependent on strong international links.

GOING INTERNATIONAL

TRAIN-NET FUTURE will improve international links between researchers in candidate countries. A survey of research activities in food quality and safety will be published on the project website, along with a partner search catalogue. Three brokerage meetings will be organised at which researchers can meet potential partners. The project will involve candidate countries in calls for new partners from pre-existing FP6 projects.

Inexperienced NCPs from candidate countries will be 'twinned' with more experienced ones, for advice and support. Checklists and guidelines for working with researchers will be distributed and a staff exchange system will allow advisers from candidate countries to learn directly from their counterparts in Member States.

TRAIN-NET FUTURE is laying the foundations for ongoing training and networking programmes for NCPs and scientists in candidate countries. Ultimately, it should lead to their greater involvement in the food quality and safety area within FP6.

Acronym: TRAIN-NET FUTURE

Full title: training network for national contact points and support organisations with special focus on candidate countries in the areas of food quality and safety

Contract n°: 506518

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http://trainnetfuture.tetalap.hu

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EU contribution:
€ 1.8M

2E-BCAs IN CROPS

BIOCONTROL FOR PESTS AND WEEDS

LIST OF PARTNERS

- CNR – Institute of Sciences of Food Production (Italy)
- Institut National de la Recherche Agronomique – Microbiologie Geochimie des Sols (France)
- IMaGO (Italy)
- Weizmann Institute of Science – Plant Sciences (Israel)
- University of Naples – Department of Arboriculture, Botany and Plant Pathology (Italy)
- Norwegian Crop Research Institute, Plant Protection Centre (Norway)
- Horticulture Research International (UK)
- Prophyta (Germany)
- All Russian Research Institute of Plant Protection (Russia)

It is becoming harder and unsustainable to control the diseases and weeds that attack Europe's commercial vegetable crops by the use of chemicals alone. Biological control agents seem to be a promising alternative but we need to know more about how they act in the plant, the soil and the environment, and how to make them as effective as possible. A new three-year EU Specific Targeted Research Project (STREP), Enhancement and Exploitation of Soil Biocontrol Agents for Bio-Constraint Management in Crops (2E-BCA), is studying the most promising fungal biocontrol agents, with the aim of promoting their wider use.

The use of chemicals in this sector is declining for several reasons: some are being banned, some no longer work, and organic farmers are not allowed to use any of them. Other control strategies are either unavailable or impracticable. If plant pests and diseases could be controlled by biological methods, Europe would gain important tools for producing safer and healthier vegetables.

BIO-CONSTRAINTS

The study is focusing on cabbage, tomato, carrot and lettuce, all of which suffer from types of rot and wilt caused by phytopathogenic fungi, such as Sclerotinia, Fusarium or Pythium, as well as competition from invasive or perennial weeds. Fungi that occur naturally in the soil can protect plants from these infestations – the aim is to enhance such fungal activity so that it can be widely used without risk of adverse environmental effects.

The first stage is to study ways to make biocontrol agents more effective and reliable, either through genetic engineering or traditional selection procedures. The genetic study will allow for the isolation, characterisation and utilisation of the active genes and gene products associated with disease or weed control, plus the creation of a DNA library of those shown to work. This could enable the engineering of those agents that perform better.

Conventional selection takes the more aggressive strains and enhances these traits by 'old-fashioned' sexual methods. The best new organisms derived using both approaches will be tested for their ecological suitability.

The project will develop methods for mass production of the new active agents along with protocols for employing them.

ENVIRONMENTAL SAFETY

Although public opinion largely favours organic farming, people could be worried about the release into the environment of large amounts of micro-organisms, much more so if they may have been genetically modified. The project will carefully assess all the potential effects on non-target vegetation and other natural microbes, developing markers for the biocontrol organisms so that they can be tracked during use. The environmental impact of any new agents can then be estimated before they are put on the market.

The vegetables being protected will also be tested to ensure that they retain their quality and nutritional value following any application of biocontrol agents.

MICROBES IN THE MARKET PLACE

Biocontrol microbes have a poor image for acting slowly and being too specific. The project will attempt to overcome this perception by investigating combinations of micro-organisms and their metabolic products to enhance their efficacy and achieve a wider spread of disease and weed control. Finally, large-scale field trials on some key European vegetable crops at various locations will demonstrate these properties and will indicate the size of the potential market. Certain agents will be released to growers' associations to help in the trials and disseminate information about them. This will help to support their spread into the market place.

The body of scientific knowledge and methods developed in the project could readily be adapted to different crops and pests in other areas, thereby giving the results considerable long-term potential.

Acronym: 2E-BCAs IN CROPS

Full title: enhancement and exploitation of soil biocontrol agents for bio-constraint management in crops

Contract n°: 001687

Website:
www.2e-bcas.org

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EU contribution:
€ 2.3M

THE REAL RISK OF ANTIBIOTIC RESISTANCE

- LIST OF PARTNERS
- Istituto di Microbiologia, Università Cattolica del Sacro Cuore (Italy)
- Institute of Food Safety and Nutrition (Denmark)
- Instytut Biochemii i Biofizyki PAN (Poland)
- TEAGASC, The National Food Centre (Ireland)
- RIKILT Institute of Food Safety – MCB (The Netherlands)
- Chr. Hansen A/S (Denmark)
- Instituto de Productos Lácteos de Asturias, Consejo Suprerior de Investigaciones Cientificas (Spain)
- VTT Biotechnology (Finland)
- Institute of Applied Biotechnology, University of Kuopio (Finland)
- Department of Dairy Research and Bacteriology, BOKU (Austria)
- Laboratorium voor Microbiologie, Ghent University (Belgium)
- Department of Gastrointestinal and Parasitic Infections, Statens Serum Institut (Denmark)
- Norwegian Food Research Institute (Norway)
- Swedish National Food Administration (Sweden)

The threat of deadly pathogenic antibiotic-resistant bacteria has become very real recently, in some cases with fatal consequences. Food-borne bacteria are known to carry resistance to some antibiotics, and they can transfer their resistance to less genial species. It is estimated that a quarter of food production involves microbial fermentation, and such food can contain several million lactic acid bacteria per gram. By feeding it to animals and eating it ourselves, we may be continually making genes for antibiotic resistance available to pernicious organisms that have potential to kill if we are unable to treat them. Yet the scale of this problem is not known. There are no data on the extent of antibiotic resistance in bacteria used in food and we do not know how easily resistance transfers between different bacteria in natural environments.

A project funded under the Sixth Framework Programme is studying antibiotic resistance in bacteria used in the food chain, with a view to evaluating this risk. Assessment and Critical Evaluation of Antibiotic Resistance Transferability in food chain, or ACE-ART, is a Specific Targeted Research Project involving 14 European institutions. It hopes to improve our understanding of the dynamics of antibiotic resistance amongst bacteria in both the environment andour bodies.

TESTING THE RESISTANCE

The research will be the first to test naturally occurring, non-disease bacteria for their ability to withstand antibiotics. It focuses on species used commercially as starter cultures for probiotic and fermented food: *Lactobacillus, Bifidobacterium, Lactococcus* and *Streptococcus thermophilus*. Strains isolated from natural habitats, including animal and human guts, plants and dairy products, will be assessed for resistance to common antibiotics. In addition, strains isolated before 1950, when antibiotics were introduced, will be compared with post-antibiotic strains to see how much resistance has developed in response to antibiotic use.

To find out how easily antibiotic resistance is transferred, resistant bacteria will be assembled with non-resistant bacteria of different strains, in experimental gut or plant environments. The 'model' human gut comprises a population of laboratory rats carrying human gut flora. The non-resistant strains, including disease organisms such as Listeria and Salmonella, will then be tested for acquired resistance. If the resistance transfers more easily between bacteria when their environment is treated with antibiotics, this may show how widespread antibiotic use in medicine and agriculture promotes the spread of antibiotic resistance.

CRACKING THE CODE

The final thread of the project is to locate the genes or mutations responsible for resistance. Where they are in the bacterial genome reveals a lot about their mobility. If they are in mobile circular pieces of DNA known as plasmids, they are very prone to transfer between bacteria. If they are in the bacterial chromosomes, they may be associated with mobile DNA elements and may also transfer easily. This work will enable the development of DNA tests for antibiotic resistance in food-borne bacteria.

A relevant role will be played by EFFCA, the European association of producers of feed and food starter cultures. A better understanding of antibiotic resistance and the conditions that promote its spread should help companies to minimise the risk of transferring it to the environment via the food chain.

Acronym: ACE-ART

Full title: assessment and critical evaluation of antibiotic resistance transferability in food chain

Contract n°: 506214

Website:
www.aceart.net

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EU contribution:
€ 2.5M

CLEANFRUIT

HEALTHIER ORANGES FOR EUROPE

LIST OF PARTNERS

- Slovak Academy of Sciences (Slovakia)
- InSecta (UK)
- Liaison Committee for Mediterranean Citrus Industry (International)
- I.V.I.A. (Spain)
- Madeira-Med of Madeira (Portugal)
- The Israel Cohen Institute (Israel)
- School of Environmental Management, Imperial College (UK)

The Medfly is a serious pest to European producers of citrus and other fruit, who usually fight it with chemical sprays. The CLEANFRUIT project aims to develop methods to apply an alternative crop-protection system that uses sterile insect technology (SIT). SIT has already proved successful in areas of Central America, California and Florida, where large plantations are common. Trials in Madeira, Spain, and Israel have shown promise, but the technique needs to be adapted to suit the smaller, more scattered plots, and different industrial structure of European production. This EU Specific Targeted Research Project (STREP) will spend three years furthering this aim.

STERILE INSECTS ON THE MOVE

In SIT, very large numbers of sterile male insects are raised and released to mate with wild female flies. These unions do not generate any young, so population levels plummet. Fruit protected by SIT is free from pest damage and pesticide residues are substantially reduced. Growers and consumers will both win if the price of using SIT can be made competitive.

The current SIT method is to raise insects to the pupal stage in central facilities, then transport them to the point of use to hatch into flies. The project will study how the insects are hatched and raised. It will also look at ways of transporting eggs, rather than pupae, to improve economic viability.

OPTIMISING DISPERSAL

Current dispersal methods involve mass releases of sterile males from the air while smaller releases at ground level are achieved using paper bags. It may be more effective in some areas to disperse insects, for example, on a directed plume of air, while high-tech versions of the paper bag, perhaps biodegradable containers, suitable for smaller fields, will also be considered.

CLEANFRUIT will prepare methods of assessing the costs and benefits of using SIT to allow growers, co-operatives and local and national government agencies to assess how many sterile males will be needed in a given locality to suppress pests effectively, based on pest populations and local conditions. Too few steriles and the fruit is damaged; too many and resources are wasted.

GETTING THE MESSAGE ACROSS

The goal is the application of SIT Medfly to 25% of European citrus production by 2010. This can only be achieved through providing information about the new technology, protocols for its application, and by spreading news about it to affected communities.

CLEANFRUIT will conduct an awareness programme aimed at growers, fruit packers, supermarkets, consumer groups and local authorities. It will seek to persuade them to replace chemical insecticides with SIT and give them the tools to introduce it. An important feature of this process will be a manual on how to design and implement SIT programmes in Europe. The project will also produce training materials, hold seminars and introduce guidelines for practical application.

The adoption of SIT in Europe would reduce chemical residue levels in food by replacing chemical insecticides while still cutting back the pest population, thus improving human health and the quality of life. It would also support tourism and alternative land use, and other biological control programme by encouraging biodiversity.

Acronym: CLEANFRUIT

Full title: improving the quality of European citrus and fruit by developing Medfly SIT technology
so it can be widely applied in Europe

Contract n°: 506495

Website:
www.cleanfruitsit.org

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EU contribution:
€ 2.4M

DEVNERTOX

NEUROTOXICANTS: A THREAT TO YOUNG BRAINS

LIST OF PARTNERS

- Karolinska Institutet (Sweden)
- University of Pavia (Italy)
- University of Parma (Italy)
- Fundacion Valenciana de Investigaciones Biomedicas (Spain)
- Catholic University of Leuven (Belgium)
- Uppsala University (Sweden)
- Nofer Institute (Poland)
- University of Bari (Italy)
- Dublin Trinity College (Ireland)

The number of children suffering from learning and behavioural disorders seems to be on the increase and incidence of neurological disease in later life is also rising. Scientists are concerned that exposure of very young or unborn children to chemicals in the environment that damage the nervous system – neurotoxicants – could be responsible for these disorders. Therefore, research into the effects of neurotoxicants is a priority in the Sixth Framework Programme. Mercury and PCBs (polychlorinated biphenyls) are examples that accumulate in both the environment and the food chain. Their impact on people, particularly children, is poorly understood and the result of long-term, low-dose exposure to a combination of such chemicals remains a mystery. A Specific Targeted Research Project, known as DEVNERTOX, is investigating the effects of neurotoxicants on the developing nervous system, and aims to devise standard procedures for assessing neurotoxicity with reduced involvement of live animals.

POWERFUL EFFECTS

PCBs comprise a group of chemicals that have been used in a variety of industrial products, including hydraulic fluids. Mercury from industry and natural sources is converted into organic methyl mercury by bacteria in rivers and seas. It has been suggested that both types of compound can cause memory and language deficits at levels commonly experienced by the general population. In addition, PCBs are hormone disrupters.

DEVNERTOX involves ten groups with expertise in a range of disciplines from cell biology to behavioural neuroscience. Neurotoxicants are a challenge for researchers because the nervous system is so complex. Observable changes in behaviour are far removed from the biochemical responses of cells to toxicants. The project will simultaneously study behavioural effects on live animals, and physiological effects on cultured cells. But how do the cellular changes translate into behaviour? By establishing which types of nervous cell display such effects, and understanding the mechanisms involved, scientists hope to devise a cell-based method for studying neurotoxicity in general.

TESTING TIMES

If the project is successful, future work on neurotoxicants may become less reliant on live animals. Apart from the ethical problems of animal experiments, animals such as rats reflect only in part the complexity of human brain function. Studies on laboratory animals are thought to underestimate the human toxicity of these chemicals by up to four times.

Project group members are breaking new ground by studying the effects of methyl mercury and PCBs in combination. A few studies have suggested that the combined toxicity of these pollutants

Acronym: DEVNERTOX

Full title: toxic threats to the developing nervous system: in vivo and in vitro studies on the effects of mixture of neurotoxic substances potentially contaminating food

Contract n°: 506143

Website:
www.imm.ki.se/devnertox

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EU contribution:
€2.4M

DIEPHY

COPING WITH CARCINOGENS IN FOOD

LIST OF PARTNERS

- Nofer Institute of Occupational Medicine (Poland)
- Stockholm University (Sweden)
- Karolinska Institute (Sweden)
- Czech Academy of Science (Czech Republic)
- University of Tuscia (Italy)
- Biochemisches Institut
- für Umweltcarcinogene
- (Germany)
- Institut za nuklearne nauke "VINČA" (Serbia)

Carcinogens are chemicals that alter the DNA in the cells of the body, sometimes causing irreversible damage, or mutations, that can lead to cancer. Mankind has always been exposed to various carcinogens naturally present in food and drink, and such exposures also include significant amounts of polycyclic aromatic hydrocarbons (PAHs) and other carcinogens that arise from grilling or heating foods to high temperatures. A smaller contribution to the overall exposure of the population to carcinogens can be ascribed to air pollution and man made chemicals.

However, food and drink is not only a source of substances that increase the risk of cancer, but our diet also contains important protective agents. Scientists think that about a quarter of colon cancers and 15% of breast cancers in northern Europe could be prevented if people ate a traditional Mediterranean diet, because of the presence of such protective chemicals in olive oil, red wine, fresh fruit and vegetables. But it is very difficult to identify these protective agents exactly, because people have such varied lifestyles and tumours take a long time to develop. A Specific Targeted Research Project is taking a new approach, measuring DNA damage directly in people's cells from the oral cavity and blood, rather than monitoring the incidence of cancer after an extended period of time. The goal is to determine the role of dietary PAHs in causing such damage, as well as to study the protective effects from natural substances. The research should generate a novel approach for testing the anti-cancer properties of 'functional' foods.

The project Dietary Exposures to Polycyclic Aromatic Hydrocarbons and DNA Damage (DIEPHY) involves seven research groups, and combines expertise in the fields of toxicology, molecular biology, chemistry, genetics, and epidemiology. A major challenge is relating results from studies of cultured cells and experimental animals to effects in humans. While scientists have found that PAHs cause specific lesions in DNA, the use of such damage as a biomarker of exposure has to be validated, and any relevance to human cancer further investigated.

WOMEN AND DIETS

The DIEPHY project will study women living in Poland, Serbia and Italy, populations with widely differing diets and lifestyles. In general, women are more dietary conscious than men, and consequently are more capable of accurately reporting what they have eaten. They are also less likely to smoke – PAHs from cigarettes could mask any effect of PAHs present in food. Samples of mouth and white blood cells will be taken from female non-smokers and tested for DNA damage caused by PAHs. Results will be related to a detailed analysis of their genetic disposition, diet and other lifestyle factors. In addition, the presence in blood of antioxidants, like vitamin E, as well as the presence of substances in urine that come from transformation of PAHs in the body will be determined.

The research teams will also study exposed individuals in the Danube valley in Serbia, where the petrochemical industry was bombed in 1999. Pollution of soil and water by PAHs was extreme throughout this area, and locally grown food and fish from the Danube became contaminated.

Previous work within the group showed that arsenic, rather than directly affecting DNA, probably causes cancer by ruining the cellular mechanisms by which DNA damages are repaired. This could exacerbate the effects of other carcinogenic substances like PAHs. The project will establish if people exposed to drinking water with high levels of arsenic are more susceptible to DNA damage caused by PAHs in grilled food.

GREEN TEA AND RASPBERRIES

Finally, the scientists will test natural chemicals purported to offer protection against cancer. Supplements, such as ellagic acid found in red berries, or epicatechins from green tea, will be fed to volunteers, and subsequently their cells tested for reduction of DNA damage caused by PAHs in grilled food. The human studies will be backed up with experiments with PAHs in mice to discover how well various protective chemicals work.

If the studies successfully link a reduction in DNA damage caused by dietary PAHs to protection by specific substances, the biomarkers employed could test the anti-cancer potential of functional foods, a development with strong commercial promise.

Acronym: DIEPHY

Full title: dietary exposures to polycyclic aromatic hydrocarbons and DNA damage

Contract n°: 505609

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EU contribution:
€ 1.5M

ALTERNATIVE MEDICINE FOR PIGS

LIST OF PARTNERS

- University of Bristol (UK)
- Institut National de la Recherche Agronomique (France)
- Wageningen University (The Netherlands)
- Instituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (Italy)
- DIPROVAL - Bologna (Italy)
- University of Plymouth (UK)
- FBN-Rostock (Germany)
- Institute for Animal Science and Health, Lelystad (The Netherlands)
- Institut de Recerca I Tecnologia Agroalimentàries (Spain)
- Institute of Biology and Animal Nutrition (Romania)
- Università di Bologna (Italy)
- Otto-van-Guericke University, Magdeburg (Germany)
- Archimex (France)
- European Algae Study Centre (CEVA)

The European Commission wants to ban or significantly reduce regular use of antibiotics in animal farming. Such a ban could have serious welfare implications for pigs because the young suffer considerably from bacterial infections, most notably immediately after weaning. Under commercial conditions, pig losses may be as high as 17% and many of these result from gut infections and diarrhoea. Antibiotics are commonly used in an attempt to reduce these losses, but they may not be the best way of tackling the problem as there are good reasons for not using them. One Specific Targeted Research Project under the Sixth Framework Programme is looking at alternative ways of improving the health of young pigs, drawing on 'natural resources' such as Chinese medicine and probiotics.

STRESSFUL WEANING

It is a tough life for a young pig on a modern commercial farm. Taken away from its mother after three to four weeks, it has to learn rapidly to eat new types of food and to fend for itself in a pen full of 'strange' piglets. Scientists know this early weaning is partly responsible for high infection and mortality rates immediately after weaning. The piglet's immune system is not properly de-veloped – in nature, it would receive antibodies and antibacterial compounds from the sow's milk. The community of harmless bacteria has not been properly established in the intestine, opening up the opportunity for organisms such as Escerichia coli and salmonella to take over. Without lactic acid from milk, stomach acid levels are reduced making digestion difficult and enabling pathogenic bacteria to establish themselves more easily. In addition, many piglets are unable to feed themselves properly for several days, and become malnourished.

A team comprising 11 academic institutions and two small companies hopes to improve this situation without using antibiotics. The group combines European expertise on gut health, alternative medicines, and pig husbandry. Antibiotics create problems of their own, adversely affecting natural gut flora and promoting development of antibiotic-resistant bacteria. Four alternatives will be investigated during the three year project: antimicrobial plant extracts, bacterially fermented liquid feed, food to encourage healthy gut bacteria (pre-biotics), and altered husbandry methods. First, novel feeds will be tested in the laboratory for any effects on intestinal cells. Then they will be trialled on piglets to establish whether they are beneficial to gut health and immunity. Finally, promising strategies will be tested under commercial rearing conditions.

HEALTHY SUBSTITUTES

Nearly 40 plant extracts are available that could supplement the benefits of mother's milk in newly weaned pigs. Some offer antimicrobial action, such as thyme, or stimulate the immune system, like Echinacea. Others are less familiar, like the Tibet bitterroot borrowed from Chinese medicine – Chinese scientists are subcontractors in the consortium.

Feed that has been fermented with lactic acid bac-teria may provide some protection for young pigs. Apart from adding healthy bacteria to their guts, the fermented food contains acid which inhibits the growth of salmonella. Salmonella contamination of pork is a big problem in the EU. Pre-biotics added to the feed may encourage the development of an environment within the intestine that promotes the growth of harmless bacteria, thus excluding those with the potential to cause disease.

This project involves the first trials of a range of novel factors that may affect disease susceptibility in young pigs. Its study of the effect of pre- and pro-biotic food on immune capabilities of the gut could greatly inform research on diet and gut health for humans. Results will help pig farmers cut antibiotic use without compromising welfare, and may assist in reducing the pathogen burden of pig meat, adding a double competitive edge to European pork.

Acronym: FEED FOR PIG HEALTH

Full title: development of natural alternatives to anti-microbials for the control of pig health and promotion of performance

Contract n°: 506144

Website:
www.feedforpighealth.org

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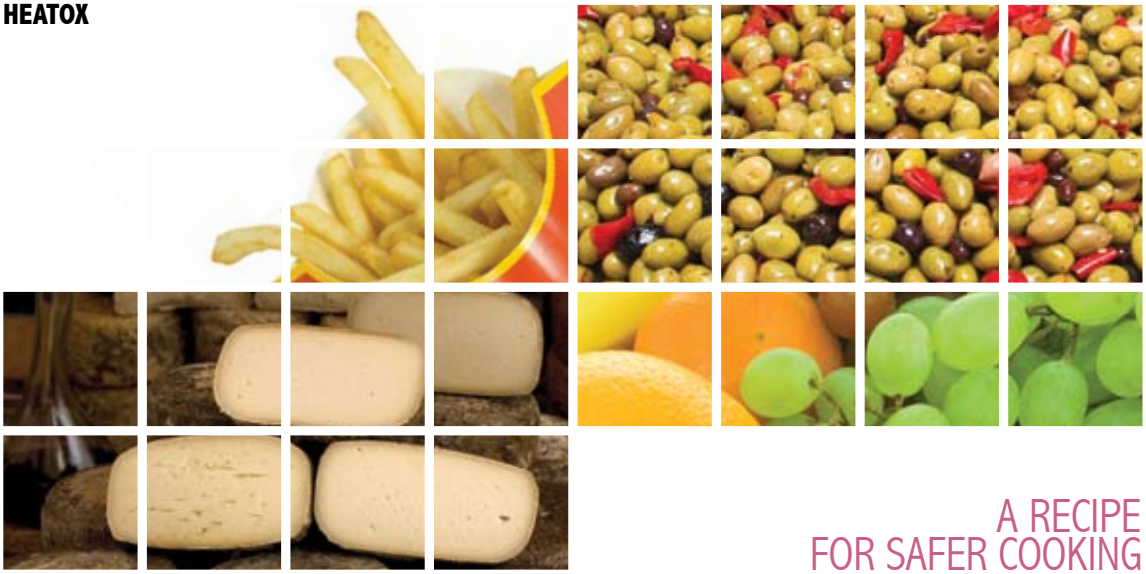
EU contribution:
€ 4.0M



A RECIPE FOR SAFER COOKING

LIST OF PARTNERS

- Lunds Universitet (Sweden)
- Graz University of Technology (Austria)
- Stockholm University (Sweden)
- National Veterinary and Food Administration, Søborg (Denmark)
- University of Reading (UK)
- Swedish University of Agricultural Sciences, Uppsala (Sweden)
- University of Bologna (Italy)
- Swedish Institute for Food and Biotechnology, Gothenburg (Sweden)
- Wageningen University (The Netherlands)
- Central Science Laboratory, York (UK)
- Swedish Food Administration, Uppsala (Sweden)
- Vysoka Skola Chemickotechnologicka v Praze, Prague (Czech Republic)
- Agrotechnological Research Institute ATO B.V., Wageningen (The Netherlands)
- University of Barcelona, (Spain)
- Tübitak-Marmara Research Centre, Kocaeli (Turkey)
- Norwegian Institute of Public Health, Oslo (Norway)
- RIKILT Institute of Food Safety, Wageningen (The Netherlands)
- Deutsches Institut für Ernaehrungsforschung, Postdam-Rehbruecke (Germany)
- University of Leeds (UK)
- Bureau Européen des Unions de Consommateurs, Brussels (Belgium)
- National Veterinary Institute, Oslo (Norway)
- University of Zurich (Switzerland)
- Universidad de Chile, Santiago (Chile)

In April 2002, Swedish scientists found disturbingly high levels of a carcinogen called acrylamide in certain cooked foods, including chips and crisps. Food safety officials around the world were surprised and perplexed. In response to these findings, the European Commission has generated a large database on all research activities, including reduction approaches and toxicology related activities, while the World Health Organisation has developed an international network of researchers. So far, little is known about acrylamide and more knowledge is needed on different aspects of this and other related substances.

The European Commission's Sixth Framework Programme is contributing to this international research effort with a three-year Specific Targeted Research Project known as HEATOX. It involves 14 countries, some outside the European Union. The project aims to contribute towards filling in the gaps in knowledge as regards acrylamide, and to find out about other substances that are formed during the cooking of starchy foods, to establish whether their levels can be reduced by altering cooking practices, and to help in assessing the risk to those consumers who are eating these foods.

SUBSTANCES FORMED DURING HEAT TREATMENT OF FOODS

Acrylamide is a well-known and regulated substance used in various industries, including the manufacture of plastics. It is known to induce cancer in animals, damage nerves and impair male fertility. Until recently, it was not known to occur in starchy food.

The HEATOX project focuses on potato-based foods such as chips and crisps, and cereal products, including breads and crispbreads. Scientists will study the reaction pathways that produce different substances during cooking. Having understood the chemistry, they will test different raw materials and cooking processes to find out whether levels of substances, such as acrylamide and other compounds, can be reduced without changing the quality of the prepared food.

The research will involve industrial and home-cooking food processing methods, and a set of guidelines will be produced. With our increasing dependence on processed food, changes in processing and home-cooking practices could reduce cancer levels, especially since diet is thought to contribute to about 30% of some cancers. In particular, companies that manufacture cooking equipment will be informed of any potential means of improving the design of their products.

CAN EATING GIVE YOU CANCER?

It is essential to put such information in perspective. Some of the foods involved are important components of a healthy diet, and substances formed during the heat treatment of food are clearly not immediately lethal – we have been cooking our food since we invented fire. We need to assess the exposure of consumers through diet, and the toxicity of these substances to humans at specific exposure levels. Information about how dangerous the substances are will include, for example, experiments with different cell cultures. Scientists will examine human and animal cells for subtle changes in cellular chemistry, including gene expression, in response to small amounts of these substances. They will also look for reaction products produced by the human body in response to them, such as altered DNA, or 'breakdown' products. These so-called 'biomarkers' will be used to measure exposure levels in humans.

The project also involves consumer groups and communication specialists who will concentrate on the effective and appropriate communication of the findings of this research. A website has been set up where the stakeholders and the public will be able to see the project results and find out more about how best to prepare food.

Acronym: HEATOX

Full title: heat-generated food toxicants identification, characterisation and risk minimisation

Contract n°: 506820

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www.heatox.org

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EU contribution:
€ 4.2M

NOFORISK

CHECKING OUT NEW FOODS

LIST OF PARTNERS

- Danish Institute for Food and Veterinary Research (Denmark)
- RIKILT, Institute of Food Safety, Wageningen (The Netherlands)
- Scottish Crop Research Institute, Dundee (UK)
- Trinity College Dublin (Ireland)
- Technical University Munich (Germany)
- University of Newcastle upon Tyne (UK)
- Zheijang University, Hangzhou (China)
- MAPP, Aarhus School of Business (Denmark)
- National Institute for Food and Nutrition Research (Italy)
- Raisio Benecol (Finland)
- University of Bonn (Germany)
- National Institute for Public Health and the Environment (The Netherlands)
- University of Ottawa (Canada)

The first generation of novel foods focused primarily on improving agronomic traits for the producer, such as herbicide or pest resistance. The second generation is expected to try to improve food attributes such as nutritional value, colour, texture, flavour or processing properties. Functional foods, in particular, are marketed by using claims of benefits to the consumer. Such claims can be broad, but the efficacy of the benefit and the inherent safety of the product must be demonstrated.

The project will develop new quantitative risk-benefit assessment methodology using three different types of novel foods. The first is a new strain of rice containing a reduced amount of phytic acid, a chemical that blocks the body's adsorption of some vital minerals. It has been made by inducing a mutation leading to a lowered phytic acid content into rice, thereby making the product a second-generation novel foodstuff.

The second is a genetically modified potato with an altered ratio of the inherent, potentially toxic alkaloids. The third is phytosterol which lowers the level of 'bad' cholesterol in blood. Phyto-sterols are currently being produced from soybean or sunflower. A potential new source of phytosterol is rapeseed oil which is used in biofuel production.

ASSESSING THE RISK

A safety protocol for novel foods must guarantee three things: the foods must be safe, of adequate nutritional value and, in the case of functional foods, do what they have been designed to do. These conditions should apply to the normal amounts expected to be consumed.

The project will develop a specific methodology for assessing the safety and claimed benefits of the rice, potatoes and vegetable oil extracts detailed above. These plant products were carefully selected for their potential to pinpoint the effectiveness of the methodology. The procedure goes beyond current methods to create a powerful assessment tool. It will start with a detailed characterisation of the novel foods using genomic and non-targeted profiling techniques. These techniques will enable the determination of 'biomarkers' at an early stage. Such biomarkers can be used in designing the *in vitro* and animal tests. The design procedures chosen for all tests will aim to produce highly sensitive and specific indicators of both toxic and nutritional factors. *In vitro* tests (i.e. on human and animal cell cultures) will be performed so as to develop models that could reduce or even replace animal testing in the future.

CONFIDENT CONSUMERS

The quantitative risk assessment methodology will used a probabilistic approach, linking biological data (results of tests) to exposure data (intake of food) through the use of tailored software. Comparison of the anti-nutritional and beneficial effects will provide a quantitative risk/benefit evaluation.

This approach is designed to take on board public opinion and involve the public actively while strengthening consumer confidence by generating sound scientific data. The project will consequently organised and executed a targeted dissemination of its results, widely and accurately.

Acronym: NOFORISK

Full title: quantitative risk assessment strategies for novel foods

Contract n°: 506387

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EU contribution:
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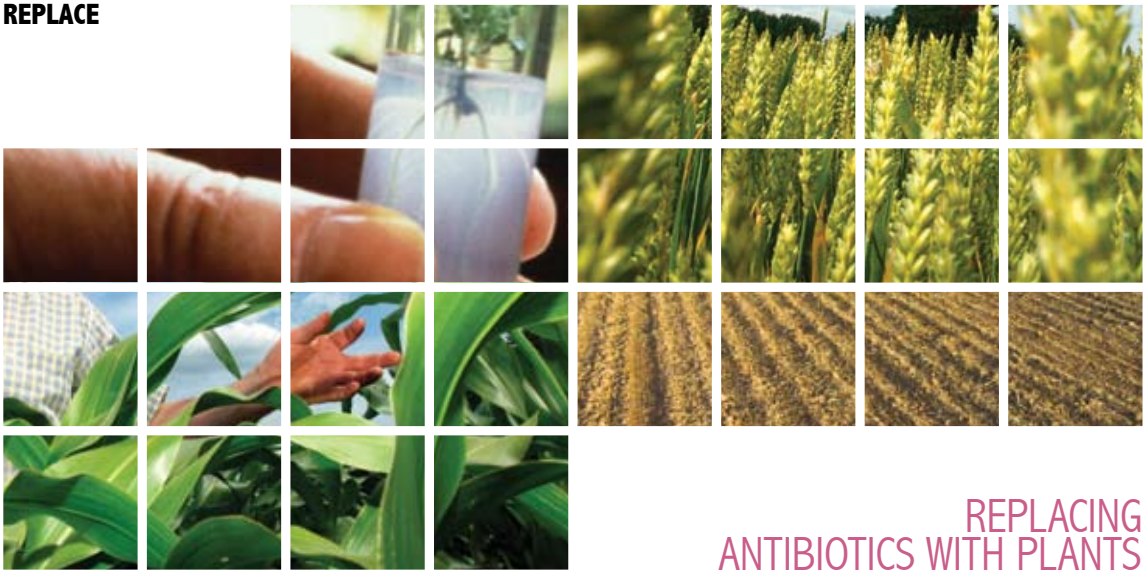

REPLACING ANTIBIOTICS WITH PLANTS

LIST OF PARTNERS

- Rowett Research Institute (UK)
- University of Hohenheim (Germany)
- University of León (Spain)
- University of Reading (UK)
- Moredun Research Institute (UK)
- Research Institute of Veterinary Medicine, University of Veterinary Medicine (Slovak Republic)
- National Veterinary Institute (Norway)
- August Cieszowski Agricultural University (Poland)
- Danish Institute of Agricultural Sciences (Denmark)
- CRINA SA (Switzerland)
- Alltech Ireland (Ireland)

Antibiotics have been widely used in farming, not only to treat or prevent infection in farm animals, but also to help them to gain weight more quickly and hence to supply cheaper food. However, overuse of antibiotics encourages resistance and the production of more virulent strains of pathogens. Consequently, from 2006 the European Union will ban the use of growth promoting antibiotics (GPAs) in farming. Livestock producers will need to identify substitutes for GPAs, which may still be permitted in the US and other food-producing countries, if they are to maintain their productivity and competitive edge.

More natural feedstuffs and supplements taken from plants could replace antibiotics in farming. So, the EU has selected from the first call in FP6 a Specific Targeted Research Project, Plants and their extracts and other natural alternatives to antimicrobials in feeds (REPLACE), to promote safer farming practices in the production of healthier food for the European consumer. The project team will trawl the plant kingdom for safer alternatives to antibiotics in animal feed and link fragmented research already under way in the EU.

DEVELOPING THE DATA

During an earlier project, RUMEN-UP, over 500 samples of plant materials were collected as possible feed supplements for ruminants. These will be the first source for the study as a lot of data are already available on them. Promising plant materials, which are suitable for other farmed animals, will be added, and they will all be tested for their possible impact on human and animal health, food quality, and efficient use of natural resources. The work on ruminants aims to improve the content of conjugated linoleic acids (CLA) in beef, lamb and dairy products. CLAs, which offer a range of health benefits in the human diet, are both formed and broken down again in the rumen of cattle and sheep. One aim in the project will be to alter the biochemistry of ruminant digestion so that more CLAs are able to survive. Finding an additive that helps ruminants to digest the fibre of forage plants, and consequently encourage their use, is another goal of the project. And identifying natural remedies for parasitic worms in cattle is a further target.

DOWN ON THE FARM

Producers of pigs, chickens and fish are those most dependent on GPAs at present, so REPLACE will focus on plantbased substitutes for GPAs. Poultry can be infected with types of *Campylobacter* that are easily transmitted to people and a *Clostridium* which gives chickens gastroenteritis, causing major losses. Plant-based products able to counter these infections and help the absorption of nutrients will be sought, tested in laboratories and screened for safety. The best will go on to full-scale animal trials.
The high population densities in fish farming can cause infections which are currently being countered with antibiotics. The project will seek plant extracts that can target specific pathogens, and natural alternatives to artificial growth promoters. Candidate compounds will be screened on larvae and the successful ones tested on larger fish.

Two significant threats to the profitability of European pig farming are piglets' tendency to diarrhoea soon after weaning, caused by *E. coli*, and failure to thrive, resulting from infection by Lawsonia. In close collaboration with a related project, Feed For Pig Health, REPLACE will look for substances that can inhibit these disease agents at crucial stages in their infection.

REPLACE will strengthen the competitiveness of European biotechnology and food production, give consumers healthier food with fewer artificial addi-tives, and promote a more natural style of farming.

Acronym: REPLACE

Full title: plants and their extracts and other natural alternatives to antimicrobials in feeds

Contract n°: 506487

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EU contribution:
€ 2.9M

SUPASALVAC

BIOLOGICAL CONTROL OF SALMONELLA

LIST OF PARTNERS

- Institute for Animal Health (UK)
- Institut National de la Recherche Agronomique (France)
- Universiteit Gent (Belgium)
- Bundesforshcungsanstalt für Viruskrankheiten (Germany)
- Veterinary Research Institute (Czech Republic)
- Veterinary Medical Research Institute (Hungary)
- Lohmann Animal Health (Germany)
- Institut voor Dierhouderij en Diergezondheid (The Netherlands)
- University of Bristol (UK)
- Exponential Biotherapies (Germany)

You may associate salmonella food poisoning with poorly cooked eggs, but increasing evidence shows the major source of this food-borne infection is broiler meat. Broilers are young chickens slaughtered by the time they are six weeks old. At this age, their immune systems are not well developed and they frequently succumb to infection by pathogenic salmonella, particularly under intensive rearing conditions. Facing stiff competition from Asian and South American producers, the European poultry industry desperately needs a cost-effective way of dealing with salmonella in young broilers so that it can produce assured pathogen-free meat at a competitive price. A consortium of veterinary research institutes and companies is being funded by the Sixth Framework Programme (FP6) to investigate strategies for biological control of salmonella, including the promising avenue of live 'designer' vaccines for newly hatched chicks.

SHORT-TERM ACCOMMODATION

With only weeks to live, the bacterial community in the gut of a broiler does not have long to establish itself. It is possible, under extremely hygienic conditions, to produce pathogen-free broilers, but this method is currently too costly to be commercially viable.

Vaccines are increasingly popular for controlling disease in livestock, but broilers are so immature that ordinary vaccines are not fully effective. In a previous European project, some partners in this Specific Targeted Research or Innovation Project studied the use of live salmonella vaccines in new chicks. Live vaccines are strains of pathogenic bacteria that are weakened and, thus, no longer pathogenic. Unlike dead vaccines, they actually colonise the intestine. The scientists discovered that, in addition to stimulating an immune response, live salmonella vaccines have two additional effects on a young chick. First, they inhibit colonisation by similar bacteria, such as pathogenic salmonella and, secondly, they induce chick immune cells to enter the gut, thereby improving immune protection.

GENETICALLY ENHANCED VACCINES

This project, lasting three and a half years and known as SUPASALVAC, aims to use biotechnology to enhance these effects of live salmonella vaccines. Scientists will test strains of salmonella to see which are best at inhibiting colonisation by similar strains, and find out which genes are involved in the inhibition. They will also identify the genes that draw chick immune cells to the gut in response to the live vaccine. Their results should pave the way to producing a highly effective live vaccine designed for young chicks – based on the best inhibiting strains – with the genes to promote chick immunity.

COMBINED STRATEGIES

The team will investigate other methods of preventing colonisation of chick intestines by salmonella, exploring dietary additives or methods of inhibiting bacterial genes active during colonisation. It may be possible to eliminate bacteria of all kinds from the broiler gut prior to slaughter, using live vaccines genetically programmed to commit suicide. This would help alleviate public concerns about genetically modified micro-organisms in the food chain, an issue the project will address directly through a series of workshops.

Finally, three of the partners, including a Dutch company, have expertise in the evolving science of using bacteria-killing viruses known as bacteriophages to target particular bacteria. They will develop phages to destroy salmonella, both in broilers and in carcasses. Overall, the project will help reduce the burden of salmonella in poultry meat, and enhance Europe's Potential in the fast developing market for biological disease-control agents.

Acronym: SUPASALVAC

Full title: salmonella-free broilers by live vaccine-induced innate resistance to colonisation and invasion and novel methods to eliminate vaccine and field strains

Contract n°: 505523

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EU contribution:
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KEEP TAKING THE ZINC TABLETS?

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- University of Perugia (Italy)
- Centro Nacional de Investigaciones Oncológicas (Spain)
- Harokopio University of Athens (Greece)
- University of Konstanz (Germany)
- Medical University of Lódz (Poland)
- National Hellenic Research Foundation, Institute of Biological Research and Biotechnology (Greece)
- University of Roma Tre (Italy)
- University of Paris VII (France)
- Semmelweis University (Hungary)
- Unilever Research (UK)
- University of Florence (Italy)
- University of Besançon (France)
- Imperial College London (UK)
- Istituti Ortopedici Rizzoli, Bologna (Italy)
- RWTH, Aachen University (Germany)
- Universität Tübingen (Germany)

As we age, our bodies become less able to fight disease. Zinc is a key dietary mineral that seems to be connected with this process. Scientists know that zinc levels in the body decline with age, and that supplementing the diet of the elderly with zinc can have a positive impact on cellular defects associated with age. There is a potential to improve the health of Europe's rapidly ageing population with simple, cheap zinc tablets. However, too much zinc can be toxic, and certain groups of people may have adequate zinc even in old age. A three-year Specific Targeted Research Project called ZINCAGE is studying the behaviour of zinc and its related physiology in the immune cells of Europe's elderly, with a view to generating advice on who could really benefit from zinc supplementation.

ZINC BASICS

In a healthy immune cell, zinc is captured within the structure of a protein called metallothionein and stored. From here, it is released into the cell nucleus when needed, forming a crucial component of enzymes involved in DNA and protein repair, cell division and chromosome maintenance. Such processes, which are vital for an effective immune system, are found to be less efficient in old age.

Metallothionein stops releasing its zinc in old people. There are several theories for why this happens, such as bad folding of the protein itself, or lack of a chemical that liberates zinc inside the nucleus. Without zinc, key proteins become oxidised and function badly. Failed maintenance of the protective sealed end of each chromosome, known as the telomere, is especially implicated in ageing – the telomere generally shortens with age.

OLIVES KEEP YOU YOUNG

Scientists at ZINCAGE will study the activity of zinc in immune cells, called lymphocytes, taken from 800 people aged between 65-85, to find out which parts of the process are not functioning. They will also test whether faults can be corrected by supplementing the diet with zinc. Subjects will come from Germany, Poland, Greece, Italy and France. Scientists will look for differences between men and women, and are also keen to identify any differences between northern and southern Europe. Southern Europeans have longer life expectancy than northerners, which has been linked to the high zinc content of olive oil in the Mediterranean diet.

The project will take samples of DNA from elderly subjects and look at the genes for proteins that interact with zinc. They will investigate whether or not the genes are different in subjects where zinc is not working properly as there may be a genetic tendency in certain groups to zinc deficiency in old age. Partners in the project will develop a DNA microchip to test the activity of all the genes associated with repair of the telomere, and to diagnose problems that may be associated with zinc availability.

THE SECRET OF LONGEVITY

The same tests will be carried out on people who are ageing very well – having reached 90 or 100 – and on people suffering severe age-related degeneration. The researchers hope to find differences among these groups – perhaps nonagenarians retain perfect zinc functions or display discernible genetic differences in how their bodies deal with zinc.

In addition, one of the aims of ZINCAGE is to provide a simple genetic screening method in order to identify people at risk of zinc deficiency and consequently the appearance of age-related diseases. The use of zinc supplements by these subjects may be useful to help them achieve successful ageing.

ZINCAGE will advance our understanding of the role of zinc in the ageing immune system significantly and give European science a competitive edge in the field. The project should provide the basis for advice on who should take zinc supplements to ward off the frailties of old age.

Acronym: ZINCAGE

Full title: nutritional zinc, oxidative stress and immunosenescence: biochemical, genetic and lifestyle implications for healthy ageing

Contract n°: 506850

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EU contribution:
€ 3M

CEAF

COLLABORATION IS FLOWERING IN EUROPE

LIST OF PARTNERS

- Institute of Fundamental Technological Research, Polish Academy of Sciences (Poland)
- Hungarian Science and Technology Foundation (Hungary)
- Department of Food Processing, Tallin Technical University (Estonia)
- Baltic Chapter of SPIE – the International Society for Optical Engineering, Latvian, National Contact Point for FP6 (Latvia)
- Slovak Agricultural University in Nitra, Department of Agrochemistry and Plant Nutrition (Slovakia)
- Research Institute of Pomology and Floriculture in Skierniewice (Poland)
- Agriculture University in Warsaw (Poland)
- Wageningen University and Research Centre (The Netherlands)
- EuropaDesk, Wageningen University (The Netherlands)

The new Member States in central Europe have extensive experience and scientific expertise in cultivating fruit and flowers. Leading-edge skills include biotechnology, plant protection and environmental sustainability. They also have a more traditional know-how about bee-keeping, plant pollination, fruit tree research, and fruit processing. Nevertheless, the pursuit of scientific programmes has been hampered by a shortage of funding. So, collaboration by research institutes in these countries could be mutually beneficial if they were to participate in European research in the Food Quality and Safety priority of the EU's Sixth Framework Programme. However, central European countries have little or no experience of how the European research community works, how to identify available support, and how to submit project proposals.

The answer is to mobilise help from older Member States through a new European Commission Specific Support Action, stimulating participation of central European countries in the Agri-Food Sector in FP6 (CEAF). It involves experts from the European Commission and the Netherlands, and research institutes and SMEs in the flower and fruit sector from Poland, Slovakia, Latvia, Hungary and Estonia.

FRUITFUL WORKSHOPS

The first step is to survey the sector in each country and list the main players and their capabilities. They will then be invited to workshops, one in each of the candidate countries, to help them develop their skills in preparing research proposals that meet the objectives of FP6. Experts from the European Commission and Member States will be available to inform researchers about how the new Framework Programme instruments – Integrated Programmes, Networks of Excellence and other EU research structures – work, and to help them on how to find suitable partners.

About 40 delegates will be carefully selected to attend each workshop, drawn from universities, research institutes, governmental organisations and SMEs in the agri-food sector. The event will cover the details of consortium building, project management, legal and financial issues, and provide information on current and planned research projects. At the end of each workshop, feedback from participants on the training measures will help to refine future programmes. The workshops will provide an opportunity for participants to learn new skills and make fruitful contacts for future cooperation. A second series of more practical workshops on project proposals already under development will also be held. They will be a focus for advice on the research content, intellectual property rights, and suitability for a given programme or network. They will also cover proposal writing and project management.

INFORMATION IS THE KEY

To be successful, CEAF will need to raise awareness of its activities in its target groups in central Europe. It will promote the workshops to them and maintain an interactive network amongst all collaborating partners. A website will be created containing all the relevant information; it will be major platform for the dissemination of project results. This will be supported by promotional publications. A database of central European research capabilities and facilities will be compiled from the first targeting exercise for the workshops, and will be published on a CD-ROM.

The progression over two years from general training, through consultancy on possible projects and partner search, to focused help for securing funding and running projects, should lead to positive participation by central European researchers and SMEs in FP6. The exchange of experience and expertise between partners will help to build bridges and better integrate central Europe into the European Research Area.

Acronym: CEAF

Full title: stimulating participation of central europe in the agri-food sector in FP6

Contract n°: 510409

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EU contribution:
€ 300,000

ORGANIC FARMING GROWING EASTWARDS

LIST OF PARTNERS

- Budapest University of Economic Science and Public Administration (Hungary)
- Central Service for Plant Protection and Soil Conservation (Hungary)
- National Institute for Agricultural Quality Control, Budapest (Hungary)
- Institute for Small Animal Research, Budapest (Hungary)
- Centre for Agricultural Landscape and Land Use Research, Müncheberg (Germany)
- Ludwig Boltzmann Gesellschaft, Vienna (Austria)
- Federal Agricultural Research Centre, Braunschweig (Germany)
- Nikola Poushkarov Institute of Soil Science, Sofia (Bulgaria)
- University of South Bohemia, Ceske Budejovice (Czech Republic)
- Biokontroll Hungaria, Budapest (Hungary)
- Association of Hungarian Small Animal Breeders for Gene Conservation (Hungary)
- Agricultural University of Wroclaw (Poland)
- Institute of Agricultural Research and Development, Fundulea, Calarasi (Romania)
- University of Veterinary Medicine, Kosice (Slovakia)
- Slovak Agricultural University, Nitra (Slovakia)
- University of Maribor (Slovenia)
- Estonian Agricultural University, Tartu (Estonia)
- Institute of Botany, Vilnus (Lithuania)
- Lithuanian Institute of Agriculture, Kedainiai (Lithuania)
- Mediterranean Agronomic Institute of Bari, Valenzano (Italy)
- Univerity di Lecce (Italy)
- Agricultural Research Institute of Cyprus, Nicosia (Cyprus)
- The Genista Foundation, Kalkara (Malta)
- University of Kassel, (Germany)
- Prekuli State Plant Breeding Station (Latvia)
- University of Kassel, (Germany)

European organic production is expected to grow between 5%-20% by 2006, and Eastern countries have the potential to take the lion's share. In Hungary, for example, the area under organic agriculture is growing by 30% a year and 6% of arable land will be organic by 2006. In many cases, companies based in western Europe are managing exports of organic produce from accession states. But there is insufficient information about the state of organic agriculture in these countries – its regulation, its techniques or its supporting research, which is leading to mistrust. A Specific Support Action, coordinated from Hungary and involving ten Accession States and Candidate Countries (including those that became new Member States on 1 May 2004), will create a database of information about organic agriculture in these states with the aim of breaking down barriers to communication, and integrating these central and eastern European countries in the international organic research community.

KEPT IN THE DARK

There are serious barriers to communication with many Accession States. Information technology is underdeveloped, and language can be a problem. Even neighbouring countries that were once a political unit tend not to know what is happening next door. In the 'old' Member States, which generate much of the market for high-premium organic food, there is a lack of information about the state of organic agriculture in the new Member States. Eastern Europe has long been committed to conventional agriculture – maximum production at the expense of the environment. Its rapid conversion from this to small-scale, environmentally aware organic agriculture, in response to a burgeoning market, looks suspicious to many.

DISPELLING SUSPICION

The Specific Support Action, known as CHANNEL, is offering accession states a chance to dispel these fears, to communicate their achievements, and to become involved in international research networks on organic techniques. It will hold meetings and seminars in Accession and Candidate Countries to discuss the state of play and identify research needs. The widest possible range of stakeholders will be invited, from farmers to pressure groups to research institutes. Key issues in organic farming will be covered: soil fertility, weed management, plant protection, seed and propagation material, animal husbandry, and agro-technology. Through these meetings, and other research on the ground, the project will compile a database of organic agriculture activities in each Accession and Candidate Country, which will be made available on the internet.

LOCAL SCIENCE

Organic farming works with the local environment, and as such, requires local research to support it. For example, in conventional farming, soils are made fertile by the standard use of mineral fertilisers, and farmers can neglect good practices to preserve natural soil fertility. Organic farmers must work with their soil to improve it. Much of eastern Europe has low precipitation and dry soils which call for specific, optimised cultivation measures. The production of seed for organic agriculture, which has not been pretreated with pesticides and fertilisers, is completely lacking in many Accession States. Research is needed to recommend varieties and develop technologies to produce suitable seed locally.

The CHANNEL project will promote itself extensively. Hopefully, by the end of its 18-month period, the organic research community in these Accession and Candidate Countries will be sufficiently well connected to increase the possibilities to participate in EU Framework Programmes and thus able to fulfil the research needs which have been highlighted.

Acronym: CHANNEL

Full title: opening channels of communication between associated candidate countries and the EU in ecological farming

Contract n°: 003375

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QUALITYMEAT

QUALITY PORK AND POULTRY MEAT

LIST OF PARTNERS

- Instytut Podstawowych Problemow Techniki Polskiej Akademii Nauk (Poland)
- National Veterinary Research Institute (Poland)
- Hungarian Science and Technology Foundation (Hungary)
- Centuria RIT (Italy)
- Bureau for International Research and Technology Cooperation (Austria)
- EUROQUALITY (France)
- Applied Research and Communications Fund (Bulgaria)
- BIC Bratislava, spol. s.r.o. (Slovakia)
- RTD Talos (Cyprus)
- Agenzia per la Promozione della Ricerca Europea (Italy)
- Mondo Consulting & Training (Romania)

The entry of 10 accession countries to the European Union in May 2004 mean that they have to be able to integrate into EU food standards and the European research community as a whole. The Sixth Framework Programme is focusing on the quality and safety of food throughout the supply chain from farm to fork under one of its seven thematic research priorities.

The safety of meat has been a particular concern in Europe in recent years – in the candidate countries, the main meat products are poultry and pork. So, the EU has set up a two-year Specific Support Action to survey the research landscape in the candidate countries for monitoring and promoting good quality meat production: QUALITYMEAT. It aims to facilitate about 12 new research projects in the safety of poultry and pig meat sector, as regards these countries, and will focus on topics such as disease detection, animal nutrition and breeding.

GENERATING INTEREST IN RESEARCH

The partners in QUALITYMEAT came from the accession countries and the Member States. Initially, they will create a database of those research centres and their qualified staff in the candidate countries who are working in the field of animal health and poultry and pork production. This screening exercise will include profiles of the centres, contact details and specialisations, project ideas and training requirements. It aims to cover about 200 researchers, thereby making their skills available to the food quality and safety projects in FP6.

Data collection will be a paper exercise, although QUALITYMEAT will also use electronic media. There will be a virtual partner search tool based on the data gathered in the survey. The goal here is to generate about 80 partner searches leading to 12 project ideas focusing on quality and safety in the complete food chain, and traceability to increase consumer confidence in meat products. These measures should increase the participation of accession countries in this part of FP6 by about 15%.

The partners will then organise a series of Info Days in candidate countries, in conjunction with conferences on food quality and safety. These will help to promote candidate country research potential in this field. They will consider such topics as the total food chain, traceability along the production chain, animal welfare, methods of analysis, detection and control, and the role of animal feed, all contributing to safer and healthier food production.

The final stage will be an international brokerage event on meat safety. This will be an occasion for researchers and industry to meet, exchange project ideas, and for the promotion of the objectives of QUALITYMEAT. The event will present selected research centres, and reveal important results on the safety of poultry and pig meat from previous research funded under past EU Framework Programmes.

SPREADING THE WORD

A dedicated web portal, set up at the start of the project, will be the major platform for promotional activities in QUALITYMEAT. It will contain information on the aims of the project, its partners and the services they offer to potential participants, access to the partner search mechanism, plus general information on the EU's food safety work, with links to national and transnational networks. It also has a private section where partners can communicate with each other.

These initiatives will help to promote best practice in the poultry and pork sector and cooperation between Member States and institutes from the accession countries. For future reference, the mechanisms it sets up may be transferred to other sectors within the food industry.

Acronym: QUALITYMEAT

Full title: survey on the research landscape in the associated candidate countries for monitoring and promoting good quality meat production – the whole food-chain from farm to fork of poultry and pork meat

Contract n°: 510416

Website:
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CONSENSUS

PROMOTING SUSTAINABLE AQUACULTURE IN EUROPE

LIST OF PARTNERS

- European Aquaculture Society (Belgium)
- Institut National de la Recherche Agronomique (NRA) (France)
- Federation of European Aquaculture Producers (Belgium)
- European Mollusc Producers Association (France)
- The European Feed Manufacturers' Federation (Belgium)
- European Consumers Organisation(Belgium)
- Test Achats/Test Aankoop (Belgium)
- European Bureau for Conservation Development (Belgium)
- Danish Institute for Fisheries Research (Denmark)
- Ghent University (Belgium)
- The National Committee for Research Ethics in Science and Technology (Norway)
- BVD Consultants (Belgium)
- Research Institute for Fisheries, Aquaculture and Irrigation (Hungary)
- Wageningen University and Research (The Netherlands)
- Association of Scottish Shellfish Growers (UK)
- Technical University of Catalonia (Spain)
- Norwegian Institute of Fisheries and Aquaculture Research (Norway)
- Stirling University Institute of Aquaculture (UK)
- University of Glasgow (UK)
- Aquaculture Technology and Training Network (Ireland)
- Marine Institute (Ireland)

As part of its programme for sustainable development, the European Union believes that European aquaculture can supply a variety of nutritious and healthy food products, as well as economic benefits for society, with a minimal adverse environmental impact. However, the industry faces complex challenges, including a somewhat negative image in some European countries, as well as safety and quality questions regarding imports from third countries. With 20 partners from nine countries, the Coordination Action CONSENSUS aims to create a European platform that will help achieve EU plans for an environmentally sound aquaculture industry that can create long-term secure employment, particularly in fishing-dependent areas. It will also help promote aquaculture to consumers.

TESTING THE WATER

High in polyunsaturated fatty acids, trace elements and vitamins, seafood has grown in popularity as an alternative to meat and fast-food diets. Subsequently, demand has substantially outpaced the ability of the wild fisheries to supply it. Although annual European aquaculture production nearly doubled between 1991 and 2000, imports grew apace. Currently, most European aquaculture concerns freshwater fish (mainly trout) and marine molluscs (mussels, oysters and clams), and is often carried out by SMEs situated in rural areas and employing fewer than ten people. Marine fish farming – salmon, sea bass and bream – and other species under development, such as cod, could help the industry to balance the demand. However, aquaculture suffers from consumer perceptions that farmed fish is not as safe or as high quality as fish caught 'in the wild'. Recent media reports of shellfish poisoning from phycotoxins and dioxin contamination in farmed salmon have affected aquaculture's market standing.

CONSENSUS will collect existing knowledge about aquaculture, assembling stakeholders from throughout Europe, including producer associations, non-governmental organisations, consumers and scientists. Experts will analyse each industry segment, evaluating impact, sustainability, and consumer perceptions. The three-year project will identify needs for research, biotechnologies, and other innovative technologies, considering legislation affecting aquaculture, and economic constraints. It will examine aquaculture's environmental effects – for example, its use of coastal resources, the impact of drugs and chemicals used in aquaculture, and biodiversity and animal welfare.

TASTY, HEALTHY AND SAFE SEAFOOD

The Coordination Action will produce sustainability protocols, followed by periods of industry and public consultation, stimulating communication among the scientific community, producers and society. The final protocols will set out practices and sustainability objectives for production systems, with low environmental impact and high competitiveness and ethical responsibility. A key goal is to transfer to SMEs better knowledge and technologies for developing and implementing effective aquaculture production systems.

CONSENSUS will produce an internet portal, bringing together new and existing information, as well as an interactive tour showing how sustainability protocols can be implemented throughout the production process and supply chain. It will produce new codes of conduct for fin-fish and mollusc production, and recommendations for creating a basis for sustainability certification for aquaculture products. The project will also work to improve consumer communication by providing balanced information on the risks and benefits of eating farmed fish and shellfish.

Acronym: CONSENSUS

Full title: multi-stakeholder platform for sustainable aquaculture in Europe

Contract n°: 513998

Website:
www.consensus.eu

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EU contribution:
€ 1.5M

GRUB'S UP

WASTE NOT, WANT NOT

LIST OF PARTNERS

- Rheinische Friedrich-Wilhelms-Universität Bonn (Germany)
- Biozoon (Germany)
- AINIA (Spain)
- INETI-Instituto Nacional de Engenharia, Tecnologia e Inovação, IP (Portugal)
- D&F Associates (UK)
- De Ceuster Meststoffen NV (Belgium)
- Universidade Católica Portuguesa – Escola Superior de Biotecnologia (Portugal)
- Fructex (Romania)
- University of Warwick – Horticultural Research International (UK)
- TTZ Bremerhaven (Germany)
- Technology Codes (Ireland)
- INKA – General Consumers' Association of Greece (Greece)
- Agrotechnology and Food Innovations. (The Netherlands)
- Centre for Soil Studies and Applied Biology in Segura (Spain)
- Organic Resource Agency (UK)
- Praktijkonderzoek Plant & Omgeving (The Netherlands)
- S.C. Proplanta (Romania)
- WBI Technology (Ireland)
- Profikomp (Hungary)
- Campden & Chorleywood Food Research Association (UK)
- Cockburn Smithes (Portugal)
- Archaezyme (Israel)

Europe's fruit and vegetable industries generate around 30 million tonnes of waste annually, most of which either goes into landfill or is used as low-quality compost or animal feed, without any treatment. This puts added strain on overburdened landfill sites and squanders valuable nutrients and biomass. The EU wants to maximise the potential to recycle and upgrade this organic waste for use in the food chain. The Coordination Action (CA) GRUB'S UP has gathered 23 partners from 11 countries including Israel to direct research into processes and technologies to recycle organic waste for value-added uses in the food chain, and encourage use of these processes and sustainable resource management in industry.

COORDINATION IS KEY

Recent EU laws and increased public concern about environmental issues have led to research into alternative uses for food chain waste, including biogas production, alternative building materials, incineration and bioadsorbents. Such waste can also be recycled into food additives, high-value animal feeds, and composts, thereby exploiting the by-products' nutritive properties.

There has been substantial research into these applications but it has been poorly coordinated and has yielded few marketable products. GRUB'S UP aims to organise the effort to find viable recycling processes and technologies.

The CA will also identify the state of the art in academic research and transfer this knowledge to industry. In turn, industry will communicate its needs and the commercial realities of exploiting the new processes and technologies under consideration. The three-year project will undertake a detailed study of six to ten processes under development, investigating their potential impact on food quality and safety, the environment and economy. It will take stock of associated risks, consumer and retailer opinions, and industry needs, and collate a database of its findings. Bringing together researchers, food manufacturers and other specialists, it will encourage cross-fertilisation of ideas among partners, through seminars, expert group meetings, and staff secondments. To hasten adoption of new technologies by industry, the project will conduct technology transfer workshops and create a dedicated website. A layman's guide to research will present detailed case studies.

PROMOTING SUSTAINABILITY

The overall objective of GRUB's UP is to improve food quality and safety while cutting down the environmental impact of waste, in particular by reducing the need for landfill. By enabling coordination and communication between researchers and industry, the CA opens the way for future R&D into sustainable food production systems.

Food wastes will be recycled into food additives using new washing and fermentation techniques, among others. For example, carrot pomace, citrus waste, and potato peel can be processed into dietary fibre to add nutritional value, vitamins and antioxidants. Natural flavourings can sell for as much as 50 times the price of artificial equivalents, but raw materials are expensive. Using solid-state fermentation, sugar beet pulp can yield vanillin while apple and carrot pomace, olive press cake and spent malt can produce other flavourings, as well as pectin, for use as gelling agents in many food products.

In 2003, EU legislation banned the use of animal protein in feed for meat livestock as part of its effort to stem the spread of bovine spongiform encephalitis, or mad cow disease. The resulting shortage of animal feed could be resolved using micro-organisms to convert agro-food wastes into animal feed high in vegetable protein and vitamin content.

Acronym: GRUB'S UP

Full title: recycling and upgrading wastes from food production for use within the food chain

Contract n°: 514049

Website:
www.grubs-up.org

EC Scientific Officer:
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EU contribution:
€ 809,918

RESISTVIR

COORDINATING RESEARCH ON GENETIC RESISTANCE TO PLANT PATHOGENIC VIRUSES

LIST OF PARTNERS

- PI Bioscience (UK)
- Institute of Botany (Lithuania)
- Central Science Laboratory DEFRA (UK)
- University of Sheffield (UK)
- Heinrich Heine University of Düsseldorf (Germany)
- University of Milan (Italy)
- Walloon Centre of Agricultural Research (Belgium)
- Institute of Applied Microbiology-BOKU (Austria)
- Vrije Universiteit Amsterdam (The Netherlands)
- Agriculture Research Organisation, Volcani Centre (Israel)
- Technology Codes (Ireland)
- Istituto Sperimentale Per La Patologia Vegetale (Italy)
- Fred Tyler acting under the name/trading as ACRS (UK)
- Plant Breeding and Acclimatisation Institute (Poland)
- Consiglio Nazionale Delle Ricerche (Italy)
- University of Ankara (Turkey)
- Agricultural Research Institute (Cyprus)
- Rheinische Friedrich-Wilhems-University of Bonn (Germany)
- MTT Agrifood Research Finland (Finland)
- Federal Centre for Breeding Research on Cultivated Plants (Germany)
- Quadrate Digital Media (Ireland)
- Christian-Albrechts-University of Kiel (Germany)
- University of Azores (Portugal)
- NIAB (UK)
- BTL Bio-Test Laboratory Gmbh Sagerheide (Germany)
- Faculté Universitaire des Sciences Agronomiques (Belgium)
- Université Catholique de Louvain (Belgium)
- Institute of Plant Molecular Biology, Academy of Sciences (Czech Republic)
- Justus-Liebig-University of Giessen (Germany)
- Research Institute of Crop Production (Czech Republic)
- Norddeutsche Pflanzenzucht H. G. Lembke (Germany)
- AgroBioInstitute (Bulgaria)
- Plant Protection Institute (Bulgaria)
- Consejo Superior de Investigaciones Científicas (Spain)
- Agriculture Biotechnology Center (Hungary)
- Centrum Grüne Gentechnik (Germany)
- Institut National de la Recherche Agronomique (France)
- John Innes Centre (UK)
- National Agricultural Research Foundation (Greece)
- Scottish Crop Research Institute (UK)
- Tallinn University of Technology (Estonia)
- Universidad Politécnica de Madrid (Spain)
- Università degli Studi di Bari (Italy)
- University of Crete (Greece)
- University of Helsinki (Finland)
- Wageningen University and Research Centre (The Netherlands)
- International Center for Genetic Engineering and Biotechnology (Italy)

Plant pathogenic viruses and their vectors cause serious crop damage and economic losses in Europe and worldwide. Producers often resort to pesticides to control virus-induced diseases and their vector organisms, a method which is harmful to the environment, and to food quality and safety. A very effective way of fighting this growing problem is to develop crop cultivars or varieties genetically resistant to viruses. European research in this field has made strides, but it has mostly been limited to academic participants and needs coordination. The Coordination Action RESISTVIR combines the work of 49 partners from 21 countries, including associated countries, Israel and Turkey. With the aim of pooling resources as regards research on genetic resistance to plant pathogenic viruses and vectors.

THE ROOT OF THE PROBLEM

Intensified agricultural practices, climate changes, and extensive exchange of plant material on the global market have led to increased incidence of plant diseases. Of these, virus-induced diseases are especially unpredictable and difficult to combat. A classic example is the spread throughout Europe during the past century of Plum pox virus, which recently reached Asia and the Americas.

Genetic resistance provides effective, environmentally friendly protection against virus-induced diseases. It does not require additional application of pesticides or action by the producer during the growing season, and it is safe for consumers. Spectacular recent developments in genomics and proteomics offer new opportunities to optimise this kind of genetic resistance.

Identifying new gene sources for resistance and developing biotechnological tools for design and transfer of genes are crucial issues to be tackled. Natural host-derived resistance genes have been found in cultivated and wild species and introduced into commercial cultivars by breeders. However, many new gene sources are not European, and even the most promising virus control strategies based on genetic modification are stalled in the laboratory in Europe, because the public has resisted products containing GM ingredients. Consequently, many complex legal, moral and ethical issues need to be resolved before these genes can be exploited.

The three-year CA project RESISTVIR will facilitate European-scale coordination of research into genetically resistant cultivars, minimising duplicated effort. It will bring together institutions active in the fields of virology, genetics, plant breeding, physiology, biotechnology and vector-transmission, with experts in legislation, ethics, policies, patents and agricultural consulting.

JOINING FORCES TO FIGHT PLANT VIRUSES

RESISTVIR'S chief goal is to improve the range of sources, mechanisms, and applications of durable virus/vector-resistant varieties and cultivars, cutting pesticide use, and thereby contributing to better, safer food. The project will develop guidelines and best-practice recommendations and disseminate these on an online European database linked to existing websites and databases. It will help increase awareness of problems faced by plant breeders, geneticists, consultants and growers, through newsletter advertising, workshops, an international conference, the internet, and by direct dissemination. It will promote exchange of European researchers and collaboration with European industry.

Acronym: RESISTVIR

Full title: coordination of research on genetic resistance to plant pathogenic viruses, and their vectors, in European crops

Contract n°: 006961

EC Scientific Officer:
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EU contribution:
€ 2.3M

BIOCOP

FASTER CHECKS ON CHEMICALS IN FOOD

LIST OF PARTNERS

- Queen's University, Belfast (UK)
- Food Directorate, Health Canada, Ottawa (Canada)
- RIVM (The Netherlands)
- Biacore AB (Sweden)
- University of Santiago de Compostela (Spain)
- University of Zurich (Switzerland)
- Xenosense (UK)
- RIKILT DLO (The Netherlands)
- National Veterinary School (France)
- Laboratoire d'Hormonologie (Belgium)
- Turku University (Finland)
- Institute of Chemical Technology (Czech Republic)
- EU Joint Research Centre (IRMM), Geel (Belgium)
- University of Utrecht (The Netherlands)
- Nestlé Research Centre (Switzerland)
- Central Science Laboratory (UK)
- Fusion Antibodies (UK)
- Institute of Biochemistry (Lithuania)
- Diane McCrea Consulting (UK)
- Eurofins/Wiertz-Eggert-Jörissen (Germany)
- Centre d'Analyse des Residus en Traces (Belgium)
- Clondiag (Germany)
- GeneData AG (Switzerland)
- ANFACO (Fish Confederation) (Spain)
- Community Reference Laboratory for Marine Biotoxins, Vigo (Spain)
- Palmsens (The Netherlands)
- Biopure (Austria)
- AFSSA, EU Community Reference Laboratory (France)
- Swedish University of Agricultural Sciences (Sweden)
- National Food Centre, Dublin (Ireland)
- Università di Roma Tor Vergata (Italy)
- Center for Analytical Chemistry (Austria)
- Health Canada, Ottawa (Canada)

Consumers and regulators both demand that food on sale should be safe to eat. A wide range of natural and man-made substances can get into food on the farm or at any point in the supply chain. They can make it unpalatable or dangerous, so tests for potentially harmful contaminants are essential. At present, such procedures are laborious and expensive, as each unwanted chemical or biological agent has to be tested for separately. Advances in biological technology offer the possibility of much faster and cheaper tests for food contaminants, but these procedures need substantial development to make them practical to use for routine monitoring purposes.b

BioCop is a major five-year Integrated Project to develop novel tools and methods based on emerging biotechnologies to screen food for a range of chemical contaminants. Such an ambitious goal requires cooperation between Europe's food research organisations and expert laboratories. It involves experts and specialists in food sciences from 32 European universities, government agencies, industrial concerns and small and medium-size enterprises (SMEs). Canada will also play a key role in the project. The project participants are focusing on the most damaging chemical contaminants which may be present in cereals, meats, seafood and processed food. The methods developed will be demonstrated to a wide range of potential end-users in government and industry.

POLICING THE FOOD SUPPLY

The foreign substances that can get into foodstuffs are diverse. They include pesticide and hormone residues, heavy metals, illegal growth promoters given to livestock, and toxins that shellfish can accumulate from polluted water. Many of these substances can be found in a wide range of food commodities and a huge amount of time and effort is now invested in monitoring for their presence by regulatory and industrial laboratories. Baby and infant food is of particular concern, as immature systems are especially vulnerable.

The BioCop approach is to develop a range of new tools that can measure the cumulative effect of contaminants rather than analysing each one separately. They will be based on biomarker and fingerprinting concepts, using new technologies. Transcriptomics is being used in assays of phytoestrogens, organochlorines and tricothecenes, especially in baby and infant food. Proteomics is another new technique that uses protein biomarkers to detect hormones administered illegally to promote animal growth. Novel biosensor receptors are being developed for pesticide molecules and shellfish toxins, while electrochemical sensors will assess lead and mercury contamination. The overall objective is high throughput analysis of multiple contaminants at the same time.

Another key development will be new methods for preparing samples for analysis. High-powered extraction using microwaves and pressurised liquid solvents and aptamer techniques are examples of what will be developed.

SECURING FOOD SAFETY

BioCop will help to ensure the safety of European food and safeguard the health of the people who eat it. It will provide methods to reinforce the European Maximum Level Residue targets and other international standards for foods. Overall, the programme will deliver long-term solutions to the complex problems of food analysis for the benefit of regulators, consumers and society in general.

The analytical methods developed will advance knowledge in the field and offer commercial opportunities to a broad range of European companies. The programme contains a substantial element of training in the new techniques, which should result in new employment possibilities as the methods are adopted and widely applied not only in Europe but also worldwide.

Acronym: BIOCOP

Full title: new technologies to screen multiple chemical contaminants in foods

Contract n°: 06988

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EU contribution:
€ 9.6M

BIOEXPLOIT

PLANT BREEDING TO CUT CHEMICAL USE

LIST OF PARTNERS

- Wageningen University (The Netherlands)
- Institut National de la Recherche Agronomique (France)
- Scottish Crop Protection Institute (UK)
- John Innes Centre (UK)
- Sainsbury Laboratory (UK)
- University of Dundee (UK)
- Rothamsted Research (UK)
- Institute of Plant Genetics and Crop Plant Research (Germany)
- Stichting dienst landbouwkundig onderzoek (The Netherlands)
- Max-Planck Institute for Plant-Breeding Research (Germany)
- Royal Veterinary and Agricultural University (Denmark)
- Instituto Nacional de Investigaciones Forestales Agricolas y Pecuarias (Mexico)
- Swiss Federal Institute of Technology Zurich (Switzerland)
- University of Zurich (Switzerland)
- Agricult. Research Institute Hungarian Academy of Sciences (Hungary)
- RISØ National Laboratory (Denmark)
- European Association for Plant Breeding (Europe)
- European Association for Potato Research (Europe)
- Keygene N.V. (The Netherlands)
- National Institute of Agricultural Botany (UK)
- Società Produttori Sementi Bologna (Italy)
- Stichting Stimulering van Aardappelonderzoek (The Netherlands)
- Danish Institute of Agricultural Sciences (Denmark)
- University of Helsinki (Finland)
- Plant Research International (The Netherlands)
- Plant Breeding and Acclimatization Institute (Poland)
- Institute of Field and Garden Crops (Israel)
- University of Haifa (Israel)
- University of Bologna (Italy)
- Basque Institute for Agricultural Research and Development (Spain)
- Romanian Academy Institute for Biochemistry (Romania)
- University of Amsterdam (The Netherlands)
- FNPPPT (France)
- BioPlante (France)
- AgroVegetale SA (Spain)
- Zamarte Breeding Company (Poland)
- SZELEJEWO Breeding Company (Poland)
- APPACALE (Spain)
- Saaten-Union Resistenzlabor (Germany)
- SaKa Forschung (Germany)
- ARC Seibersdorf Research (Austria)
- Lochow-Petkus (Germany)

Europe's two main staple carbohydrate foods, wheat and potatoes, are sprayed with 70% of the total amount of pesticides used by farmers. If plant breeders could enhance natural disease resistance to the fungal infections that cause the most damage to these crops, there would be many benefits for food safety and health, and for farming. However, public resistance in Europe to genetically modified organisms has meant that, unlike elsewhere in the world, most firms have been reluctant to invest in plant biotechnology for the European market.

This EU funded five-year Integrated Project aims at developing new strains of wheat and potatoes with in-built resistance to fungal diseases. It has 42 participants representing 67 research groups in Europe and beyond. As well as a considerable investigative input, the project also contains the necessary public information and dissemination elements.

APPROACHES TO BREEDING

BIOEXPLOIT aims to force a breakthrough by developing efficient and rational breeding strategies using genomic and post-genomic tools to exploit the host natural resistance to fungal diseases. It will go down two separate paths: marker-assisted breeding and full genetic engineering. While genetic engineering has received most publicity in recent years, there has been a quiet revolution in marker-assisted breeding. The project will develop high-throughput diagnostics methods using genetic markers for selecting seedlings in an offspring from crosses that will shorten the time needed to produce these new varieties. It is expected that, with the continuous advances in high-throughput DNA technologies, marker-assisted breeding of disease resistance will become more efficient than genetic engineering.

The first stage will be to find the genes in wild relatives of wheat and potato which confer resistance to those fungal diseases causing such high crop losses. Biodiversity offers a huge pool of potential disease resistance, but only 0.1% of it has been exploited. BIOEXPLOIT has set its target much higher. It will explore the molecular components involved in conferring lasting resistance to the target species and put them into integrated databases for wheat and potato phenotype and genotype samples. The database will then be used to combine multiple disease resistance in a single crop. The project will give high priority to marker-assisted breeding for the exploration of natural disease resistance. Genetic engineering will be deployed to produce naturally resistant varieties in case insurmountable obstacles appear in attempts to combine several resistance traits into a single crop by controlled crosses.

The main target pathogens most harmful to crops are potato late blight, one of the world's most destructive plant diseases, and four fungal pathogens of wheat. Fusarium species will also be covered because their toxins make cereals dangerous to human health.

HARVESTING PUBLIC TRUST

All the material used for the genetic engineering comes from naturally occurring wild species and their close relatives, there will be no suggestion of transgenic manipulation. SMEs, which make up the bulk of plant breeders, will play a pivotal role in BIOEXPLOIT. Marker assisted breeding will result in varieties with in built natural resistance which will make these varieties highly suitable for both conventional and organic farming.

Acronym: BIOEXPLOIT

Full title: exploitation of natural plant biodiversity for the pesticide-free production of food

Contract n°: 513949

Website:
www.bioexploit.net/

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EU contribution:
€ 15.8M

KEEPING TRACK OF GMOs

LIST OF PARTNERS

- Institut National de la Recherche Agronomique (France)
- Federal Biological Research Centre for Agriculture and Forestry (Germany)
- Centre Wallon de Recherches Agronomiques (Belgium)
- Laboratoire de la Direction Générale de la Concurrence, de la Consommation et de la Répression des Fraudes de Strasbourg (France)
- The Danish Research Institute of Food Economics (Denmark)
- The University of Sheffield (UK)
- Joint Research Centre (EC, Italy/Belgium)
- National Institute of Biology (Slovenia)
- National Veterinary Institute (Norway)
- AgroBioInstitute (Bulgaria)
- RIKILT Institute of Food Safety (The Netherlands)
- Genius Biotechnologie GmbH (Germany)
- Bundesinstitut für Risikobewertung (Germany)
- NIAB (UK)
- Institut Scientifique de Santé Publique (Belgium)
- Flanders Interuniversity Institute for Biotechnology (Belgium)
- University of Applied Sciences of Weihenstephan (Germany)
- Forschungsinstitut für Biologischen Landbau (Switzerland)
- Hogeschool Gent (Belgium)
- Centro de Investigacion en Economia y Desarrollo Agroalimentarios – UPC-IRTA (Spain)
- The University of Reading (UK)
- Szkola Glowna Gospodarstwa Wiejskiego/Warsaw Agricultural University (Poland)
- Consejo Superior de Investigaciones Científicas (Spain)
- Agricultural Research Centre - Gent (Belgium)
- Biolytix AG (Switzerland)
- GeneScan Analytics GmbH (Germany)
- Central Science Laboratory. Defra (UK)
- LUMORA (UK)
- Matforsk (Norway)
- Geves (France)
- Eppendorf Array Technology (Belgium)
- NHRF Institute of Biological Research & Biotechnology (Greece)
- Vitalia Consulting (Spain)
- Schuttelaar & Partners (The Netherlands)
- CETIOM (France)
- ARVALIS (France)
- Swiss Federal Institute of Technology, Zurich (Switzerland)
- Delley Samen und Pflanzen AG (Switzerland)
- Agro-Projektmanagement (Switzerland)
- Max Planck Society for the Advancement of Science (Germany)
- UMR CNRS Université Paris1 (France)
- LGC Limited (UK)
- University of Parma (Italy)
- Istituto Superiore Di Sanita (Italy)
- Agricultural Institute of Slovenia (Slovenia)
- INRA Transfert (France)
- Fraunhofer Gesellschaft zur Angewandten Forschung (Germany)
- Centro Ricerche Produzioni Animali CRPA SpA (Italy)
- ADRIANT (France)
- BioEngineering RAS (Russia)
- INTA (Argentina)
- Tecpar (Brazil)

The EU must satisfy consumer demands that transgenic products be clearly and reliably labelled and controlled, but it must also comply with international trade laws. A major Integrated Project (IP) – Co-Extra which has 52 partners from 18 countries – has been set up to help accomplish this two-pronged task.

A MIXED RECEPTION

Following major discoveries in molecular biology during the 1970s, transgenic plants were first grown in 1984 and marketed in 1994. Large-scale cultivation began two years later. As the acreage of GMOs expands worldwide, transgenic products have been mostly accepted in the USA and some other countries, but not in Europe.

Although safety assessments have uncovered no adverse health effects, European public objections revolve around the uncertain long-term health and environmental effects of gene manipulation. Additionally, some consumer reluctance stems from a perceived lack of direct benefits. Whatever their opinions and attitudes, most consumers demand reliable labelling and coexistence regimes.

In 2004, in addition to the general traceability 'food law' (regulation 178/02/EC), tough new Union legislation (1829/03/EC and 1830/03/EC) on the labelling and traceability of GMOs entered into force. The rules mean that any food containing more than 0.9% EU-approved GMOs or 0.5% of EU-unapproved GMOs, but with a positive safety assessment, has to be clearly labelled as such. For the first time, the new regime also covers animal feed.

The new rules state that GMOs must be traceable throughout the entire production and distribution process. This obliges each stakeholder to inform any purchaser of the presence of GMOs. The EU-backed European Network of Genetically Modified Organisms Laboratories (ENGL) helps to provide the analytical tools of underwrite coexistence.

COEXISTENCE TOOLS

Co-Extra is studying and validating biological containment methods and model supply chain organisations. It will identify and share existing best practices and provide new tools and methods that can be integrated with existing ones as part of a broad decision-support system.

It will enable the tracing of transgenic products along the food and feed chains. The project will survey practices and legal regimes within and outside the Union. It will collect data on the costs and benefits of the implementation of traceability and coexistence systems.

The IP will study consumer attitudes and their propensity to buy transgenic products. It will create guidelines to help farmers choose cultivars and culture practices that will decrease cross-contamination. If admixtures do occur, there will be guidelines on the best ways to deal with them and determine liability. Co-Extra will exchange findings with all the stakeholders – producers, intermediaries, retailers and politicians.

INNOVATIVE EUROPEAN APPROACH

The IP will produce innovative techniques and guidelines to overcome the limits of current methodologies, for example, for reliable multiplex PCR detection. It will develop and validate cost-effective, fit-for-purpose methods for sampling and detecting GMO. It will produce proposals for reliable, complete and cost-effective traceability information management throughout the food and feed chains, with a long-term goal of standardisation.

Co-Extra will assess the reliability of some bio-confinement methods in real conditions and the effects of culture practices on a large scale. It will develop mathematical models of pollen emission and long-distance dissemination. Generic and case-study-based models of supply chain organisations will take into account economic and other critical factors.

Acronym: CO-EXTRA

Full title: gm and non-gm supply chains; their co-existence and traceability

Contract n°: 7158

Website:
http://www.coextra.org/

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EU contribution:
€ 13M

DIOGENES

UNDERSTANDING THE GENETICS OF FAT

LIST OF PARTNERS

- Maastricht University (The Netherlands)
- The Royal Veterinary and Agricultural University (Denmark)
- Medical Research Council, Human Nutrition Research (UK)
- University of Crete (Greece)
- German Institute of Human Nutrition (Germany)
- University of Navarra (Spain)
- National Medical Transport (Bulgaria)
- Nestec S.A (Switzerland)
- Charles University (Prague, Czech Republic)
- Institut National de la Santé et de la Recherche Médicale (France)
- IntegraGen (France)
- BioVisioN AG (Germany)
- Copenhagen Hospital Corporation, Bispebjerg Hospital (Denmark)
- Budapest University of Technology and Economics (Hungary)
- National Institute of Public Health and the Environment (The Netherlands)
- Centro per lo Studio e la Prevenzione Oncologica (Italy)
- University of Helsinki (Finland)
- Medical Research Council, Epidemiology Unit, Cambridge (UK)
- Rowett Research Institute, Bucksburn (UK)
- University of Leeds (UK)
- University of Surrey (UK)
- Hochschule für Angewandte Wissenschaften, Hamburg (Germany)
- Stichting Technologisch Topinstituut Voedselwetenschappen (The Netherlands)
- NIZO Food Research (The Netherlands)
- Matforsk AS, The Norwegian Food Research Institute (Norway)
- Unilever Nederland BV (The Netherlands)
- Hill Consulting (UK)
- NetUnion (Switzerland)
- CortecNet (France)

Obesity used to be a problem mainly of maturity, but more and more children are now seriously overweight, too. This entails many health and social problems: a tendency to heart disease, diabetes, impaired joint and skeletal function, as well as reduced mobility and limitation of lifestyle choices. In Europe, obesity now uses up about 5% of total healthcare budgets. Dieting is rarely an answer, as dieters tend to put more weight back on when they stop dieting than they lost during their regime. Susceptibility to weight gain is largely genetic, but more sedentary lifestyles and poor eating habits also contribute.

To try and turn the tide of obesity, the EU has launched a major five-year Integrated Project, DiOGenes (Diet, Obesity and Genes), bringing together experts in genetics, nutrition, public health and behaviour from 14 European countries. They aim to shed light on how genetic make-up and diet interact to encourage weight gain and develop a better understanding of what measures could be undertaken to reverse the trend. It has the potential to make significant improvements to the overall health of Europeans.

ARE YOU WHAT YOU EAT?

One strand in the project is to try and define what major components of diet could influence weight gain and regain. Of particular interest are the glycaemic index (GI) of carbohydrates, which reflects how quickly they are converted into glucose in the bloodstream, and high protein diets, which make people feel full more quickly. A diet chosen to maintain weight loss will be tried out for up to a year on 350 families across Europe, each with at least one adult and one child who are overweight.

These family trials run in parallel with large-scale studies at population level. Data from no fewer than 145 000 adults from five countries will be collected to see whether the GI index and protein content of their diet affects their weight and general health. Molecular genetics studies will be carried out on a significant proportion and an equal number of controls. Existing data from 6 000 pairs of genetically identical twins will be analysed, based on intensive clinical tests for 1 000 and detailed surveys for the rest. The aim is to relate genetic, shared and non-shared environmental influences and key dietary habits to the development of obesity.

The field trials will be complemented by laboratory work to identify gene-nutrient interactions associated with changes in body weight and to study genetic variation in candidate genes. Researchers will look for biomarkers of dietary intervention and predictors of weight and metabolic variation.

FIGHT THE FLAB PARTNERSHIP

Food technology will play an important role in the fight against obesity. One goal is to develop foods that consumers will like and choose to eat but that also contain ingredients that prompt them to feel full and stop eating at a reasonable point. New food products will also have to meet the criteria determined in a study of the key psychological/behavioural predictors of weight gain. Lifestyle and psychosocial attitudes contribute to consumers' decisions about what to buy and eat. The strategy for producing new foods will have to take into account the project's findings about these attitudes.

A software-based screening tool will be developed to assess individual risk of obesity and give advice on a personal diet programme. Finally, the weight management software will be put through a broad demonstration and the results of the project given wide publicity to consumers, policy-makers and food producers.

Acronym: DIOGENES

Full title: diet, obesity and genes

Contract n°: 513946

Website:
www.diogenes-eu.org

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EU contribution:
€ 14.5M

EARNEST

DETERMINING HOW YOU BECOME WHAT YOU EAT

LIST OF PARTNERS

- University of Munich (Germany)
- Medical Research Council, Institute of Child Health (UK)
- University of Pécs (Hungary)
- Research Institute for the Biology of Farm Animals (Germany)
- Centre National de la Recherche Scientifique (France)
- University of Granada (Spain)
- Medical Research Council (UK)
- Kings College London (UK)
- Danish Epidemiology Science Centre at Statens Serum Institut (Denmark)
- Aarhus University (Denmark)
- Municipal Institute of Medical Research (Spain)
- Institute of Public Health (Norway)
- University of Bristol (UK)
- The Children's Memorial Health Institute (Poland)
- National Research Centre for Environment and Health (Germany)
- University Medical Centre Groningen, University of Groningen (The Netherlands)
- Turku University Central Hospital (Finland)
- University of Nottingham (UK)
- Université catholique de Louvain (Belgium)
- Katholieke Universiteit Leuven (Belgium)
- Rowett Research Institute (UK)
- University of Cambridge (UK)
- INSERM (France)
- National Institute for Public Health and the Environmen (The Netherlands)
- Institute of Physiology (Czech Republic)
- University Medical Centre, Utrecht (The Netherlands)
- University of Surrey (UK)
- Schothorst Feed Research (The Netherlands)
- Ashwell Associates (UK)
- Arexis (Sweden)
- Numico (Germany)
- Ordesa (Spain)
- Orafti (Belgium)
- Universita Rovira I Virgili (Spain)
- Universita degli Studi di Milano (Italy)
- Université Libre de Bruxelles (Belgium)
- University Val d'Hebron (Spain)
- National Research and Applied Medicine Center 'Mother and Child' (Belarus)
- Nestlé (Switzerland)
- Minerva MIN (UK)

How many mothers know that what they eat during pregnancy and what they feed their babies might influence their children's health and capabilities as adults? Recent data indicate that the connection between perinatal nutrition and adult health is significant and measurable. In one study, improved early nutrition and infant weight led to a sharp reduction in adult diastolic blood pressure and the attendant risks of heart disease and stroke. It also doubled the beneficial effect of non-pharmacological means of reducing blood pressure, for example weight loss, salt restriction or exercise. In another study, male pre-term babies fed enriched formula for just one month had a 13-point advantage in verbal IQ tests seven to eight years later compared with similar babies fed a standard formula. Based on this compelling evidence, the European Union's large Integrated Project EARNEST has gathered a multidisciplinary team of scientists from 16 countries to find ways that public health practice can manipulate foetal and infant nutrition to reduce the prevalence of major adult diseases and to improve infantile development.

RECIPES FOR HEALTHIER DIETS

In animal studies, and prospective human observational and experimental studies, perinatal nutrition has been shown to determine or 'programme' adult disposition to obesity, diabetes, vascular, bone and immune diseases, and cancer, as well as to affect brain development. However, many questions remain about the health and social impacts of whole diets and individual nutrients in pregnancy and infancy in both healthy and high-risk populations.

The five-year EARNEST project will collect the best possible data from large randomised, controlled human and animal trials, as well as prospective studies to examine the extent to which early nutrition programmes affect long-term adult health. For example, studies will measure how iron, zinc and long-chain polyunsaturated fatty acids affect cognitive, neuro-motor and behavioural health. One study will focus on which periods of a child's development are critical to particular health outcomes.

NOURISHING EUROPEAN HEALTH AND WEALTH

EARNEST will also assess the socioeconomic costs of poor nutrition and analyse consumer knowledge and attitudes about nutritional programming. It will establish the potential of public health interventions to prevent and reverse harmful programming. It will also provide quantitative estimates of how European wealth creation would be enhanced by improved early nutrition.

This will furnish a strong scientific basis for promoting health across the board, helping to correct social inequalities in healthcare, education and economic development. Large animal studies, as opposed to just rats and mice, give EARNEST farm-to-fork significance in terms of its potential to improve meat and dairy production, creating added value for EU competitiveness. The project will team with industry to refine European standards for making and testing infant formula and food products for pregnant mothers.

As the economic burden of adult ill health eases, so should the drain on public healthcare resources. Work capacity should increase, and the number of sick days taken off by workers should decline. In addition to the economic benefits, the quality of life will improve in large population groups. The EARNEST consortium will act as a virtual institute of nutritional programming. This will create a pan-European critical mass of expertise, fostering nutritional standards, influencing education, helping shape EU policy and transferring technology to industry. This will help promote commercial competitiveness and nurture a new generation of internationally respected scientists.

Acronym: EARNEST

Full title: early nutrition programming - long-term follow-up of efficacy and safety trials and integrated epidemiological, genetic, animal, consumer and economic research

Contract n°: 007036

Website:
www.metabolic-programming.org

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EU contribution:
€ 13.4M

EUROPREVALL

UNDERSTANDING FOOD ALLERGIES

LIST OF PARTNERS

- Institute of Food Research (UK)
- Sanquin Blood Supply (UK)
- King's College London (UK)
- Wageningen University (The Netherlands)
- Charité Universitätsmedizin, Berlin (Germany)
- University Hospital Zurich (Switzerland)
- Institut National de la Recherche (France)
- Danish Institute for Food and Veterinary Research (Denmark)
- Consorzio Interuniversitario Risonanze Magnetiche e Metalloproteine (Italy)
- Agricultural University of Athens (Greece)
- Consiglio Nazionale delle Recerche – Istituto di Scienze delle Produzioni Alimentari (Italy)
- Medical University of Lodz (Poland)
- Central Manchester and Manchester Children's University Hospital NHS Trust (UK)
- Agrotechnology and Food Innovations (The Netherlands)
- Paul-Erlich-Institut (Denmark)
- Rothamsted Research (UK)
- Unilever UK Central Resources (UK)
- Fundación para la Investigación Biomédica del Hospital Clínico San Carlos (Spain)
- Nestlé Research Centre (Switzerland)
- Kraft Foods R&D Inc. (Denmark)
- Medical University of Vienna (Austria)
- National & Kapodistrian University of Athens (Greece)
- University of Southampton (UK)
- EFA European Federation of Asthma and Allergy Associations (Belgium)
- University Medical Centre, Utrecht (The Netherlands)
- EHI-EuroHandelinstitut GmbH (Germany)
- Tepnel BioSystems (UK)
- BIOMAY Produktions- und Handelsaktiengesellschaft (Austria)
- Institute of Animal Reproduction and Food Research, Polish Academy of Sciences (Poland)
- Aarhus School of Business (Denmark)
- VBC-Genomics Bioscience Research (Austria)
- University of East Anglia (UK)
- University Hospital Groningen (The Netherlands)
- Pharmacia Diagnostics AB (Sweden)
- RefLab ApS (Denmark)
- Anaphylaxis Campaign (UK)
- Medical University, Sofia (Bulgaria)
- Faculty Hospital in Hradec Králové, Charles University Prague, (Czech Republic)
- Vilnius University (Lithuania)
- IP Pragmatics (UK)
- Stichting het Nederlands Anafylaxis Netwerk (The Netherlands)
- Leiden University Medical Centre (The Netherlands)
- Technical University of Denmark (Denmark)
- Istituto Clinico San Carlo (Italy)
- University of Maastricht (The Netherlands)
- Hôpitaux Universitaires de Strasbourg (France)
- Department of Allergy, Respiratory Medicine and Sleep, University Hospital Rekjyavik, (Iceland)
- Hospital Universitario La Paz, Universidad Autonoma de Madrid (Spain)
- GSF National Research Centre for Environment and Health (Denmark)
- Noguchi Memorial Institute for Medical Research (Ghana)
- Hospitality and Leisure Manpower (UK)
- Hospital of the Hospitasller Brothers of St. John of God (Hungary)

Developed countries have seen a marked increase in the numbers of people of all ages, but especially children, who suffer from food allergies. Allergies to foods, such as cereals, eggs, dairy products, nuts and fish cause symptoms ranging from mild shortness of breath to life-threatening anaphylactic shock. Yet the underlying reasons for the apparent growth in the prevalence of the condition are not really understood, nor do we know why some people develop allergies and others do not. We do not even have reliable figures about the incidence and growth of allergies.

The EU has started a major four-year integrated project, EUROPREVALL, which will increase our understanding of the demographic patterns of allergies and their impact, and seek a holistic management of its symptoms for sufferers. It involves over fifty food, medical and agricultural research organisations throughout the EU, including some from new Member States.

GAUGING ALLERGIES

The project will investigate the patterns and prevalence of food allergies throughout Europe, by surveying a large number of newborn children in five centres, and cross-sectional groups of adults and children in at least nine and possibly ten other centres. This will reveal any regional variations and determine which children 'grow out' of allergies and which do not. These broad studies will be complemented by more detailed investigations of referrals to 12 allergy clinics. All the information obtained will be analysed to try and identify risk factors for food allergy. They could be environmental, resulting from food eaten, infections or pollen in the air. Genetic or microbial sources are other possible triggers, as is exposure as a foetus to some sensitising influence.

The project is looking for new biochemical or genetic predictive markers for allergies. These would make it easier to adopt preventative measures, for example, during pregnancy. Current procedures for diagnosing allergies are cumbersome and unreliable. EUROPEVALL is investigating better tests to replace 'challenge' tests in which sufferers or samples of their tissue are exposed to allergenic material. The candidate tests are serological, using purified food allergens and novel detection with peptide or protein chips, as well as more conventional methods. Detection will also depend on a library of well-analysed allergens, ranked according to the severity of the reactions they induce. The new tests will improve diagnosis and reduce the impact of allergies.

REAPING THE SOCIAL REWARDS

Another question is whether increasing consumption of more highly processed foods has played a part in the growth of allergic response or the severity of reactions. The whole food matrix will be investigated and the possibility of harnessing food processing to reduce allergenicity will be considered. This work will be linked to international studies of whether threshold values can be established for allergenic foods. One effect would be to improve food labelling and help the food industry, which now incurs high costs in implementing strategies to manage food allergies.

All in all, food allergies impose a high cost on individuals and society, in terms of reduced quality of life and economic losses due to symptoms and the stress of living with the condition. The improved management and control of food allergies that will result when EUROPREVALL results are gathered in should hep to reduce this impact. The consensus position on the best way to reduce the incidence and effect of food allergy offers the hope of reversing the trend of increasing food allergies. The results will be published widely and training materials will be prepared for patients, health professionals and the food industry.

Acronym: EUROPREVALL

Full title: the prevalence, cost and basis of food allergies across Europe

Contract n°: 514174

Website:
www.europrevall.org

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EU contribution:
€ 14.3M

HEALTHGRAIN

EXTRACTING EVERY GRAIN OF GOODNESS

LIST OF PARTNERS

- VTT Technical Research Centre of Finland (Finland)
- AgroBioInstitute (Bulgaria)
- Tate & Lyle (Belgium)
- ANET – New Media Solutions (Austria)
- Barilla SpA (Italy)
- Katholieke Universiteit Leuven (Belgium)
- Lunds Universitet (Sweden)
- Université de Droit, d'Economie et des Sciences d'Aix-Marseille III (France)
- Agricultural Research Institute of the Hungarian Academy of Sciences (Hungary)
- Federal Research Centre for Nutrition and Food (Germany)
- BOKU University of Natural Resources and Applied Life Sciences (Austria)
- Branscan Limited (UK)
- Budapest University of Technology and Economics (Hungary)
- BÜHLER AG (Switzerland)
- Cereal Chemistry Equipment CVBA (Belgium)
- University of Aarhus (Denmark)
- DPRNUTRITION (UK)
- The Technical University of Denmark (Denmark)
- International Association for Cereal Science and Technology (Austria)
- Institute of Food Research (UK)
- IGV Institut für Getreideverarbeitung GmbH (Germany)
- Institute of Plant Breeding and Acclimatization (Poland)
- Institut National de la Recherche Agronomique (France)
- Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (Italy)
- University of Copenhagen (Denmark)
- Puracor NV (Belgium)
- Raisio Nutrition (Finland)
- Rothamsted Research (UK)
- Swedish University of Agricultural Sciences (Sweden)
- SNF Swedish Nutrition Foundation (Sweden)
- Tecnoalimenti S.C.p.A. (Italy)
- Netherlands Organisation for Applied Scientific Research (TNO) (The Netherlands)
- University College Cork-National University of Ireland (Ireland)
- University of Helsinki (Finland)
- University of Kuopio (Finland)
- Maastricht University (The Netherlands)
- Federico II, University of Naples (Italy)
- University of Surrey (UK)
- Università degli Studi della Tuscia (Italy)
- University of Ulster (UK)
- Wageningen University (The Netherlands)
- Öresund Diabetes Team AB (Sweden)
- Productschap Granen, Zaden en Peulvruchten (The Netherlands)

Cereal grains are an essential component of daily diet and a major source of dietary fibre, which is important for gut health and provides protection against colon cancer. Recent studies have shown that bioactive compounds in whole grains also provide significant protection against several 'Western' diseases, including a rapidly expanding epidemic of type 2 diabetes. European diets generally do not include adequate quantities of cereal grains, and cereal grain in European foods is usually in a refined form that greatly diminishes its nutritional qualities. As part of its overall plan to improve food safety and quality, the European Union wants the food industry to develop new healthy foods based on European cereal grains. The Integrated Project HEALTHGRAIN joins 43 partners from 15 countries working to increase availability of high-quality, health-promoting cereal-based foods, with the goal of increasing the average European citizen's intake of protective whole grains.

WHOLE GRAIN FOR MAXIMUM GAIN

Wheat makes up most of Europe's cereal consumption, but usually only in the form of refined white wheat flour in such foods as baked goods, pasta, and breakfast cereals. Wheat milling focuses on flour extraction and, for durum wheat, on semolina, from the endosperm, discarding about 25% of the kernel for use as animal feed. These discarded outer kernel layers (bran and aleuron) and the germ contain dietary fibre and a range of bioactive nutrients such as vitamins, phytochemicals (folate, choline, sterols, tocols, alkylresorcinols and phenolics) and oligosaccharides. Rye grain in whole meal or whole-grain bread has high nutritional value but its taste does not appeal to most Europeans.

The 60-month HEALTHGRAIN project aims to produce new wheat varieties with optimal bioactive content, used in foods that are appetising to Europeans. It will start by conducting studies of consumer expectations in four European countries. The project's interdisciplinary research team will then employ plant biotechnology, including 'omics' technologies, and nutrition science, to reveal the physiological mechanisms behind whole grain's benefits. They will determine the bioavailability of bioactive compounds, for example, establishing how cereal foods' glycemic properties reduce risk factors for diabetes. The project will create a toolkit of molecular markers, as well as kits and calibrations for use by plant breeders. New fractionation and bioprocessing (enzyme and fermentation) technologies will help concoct grain foods combining good taste and nutritional benefits.

A LA CARTE GRAIN

HEALTHGRAIN will provide health professionals with new nutritional tools to combat such diseases as obesity, type 2 diabetes and heart disease, as well as certain cancers. This will help reduce healthcare expenditures linked to Western lifestyles and ageing populations. Europe produces about 36% of the world's wheat and 94% of its rye, but at a higher cost than many of its competitors. The project will give European grain producers new technologies to develop globally competitive, healthier grain traits, and for the processing industry, including a large number of small and medium-sized enterprises, to develop new, competitive, grain foods that are good for health. These will include foods for individuals sensitive to particular cereal constituents, for example, gluten-free products.

Acronym: HEALTHGRAIN

Full title: exploiting bioactivity of European cereal grains for improved nutrition and health benefits

Contract n°: 514008

Website:
www.healthgrain.org

Project co-ordinator:
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EU contribution:
€ 10.8M

IMAQUANIM

FISHING FOR NEW SOLUTIONS FOR IMPROVED HEALTH IN THE AQUACULTURE SECTOR

LIST OF PARTNERS

- Danish Institute for Food and Veterinary Research (Denmark)
- University of Padova (Italy)
- Istituto Zooprofilattico Sperimentale delle Venezie (Italy)
- Norwegian School of Veterinary Science (Norway)
- University of Tromsø (Norway)
- Fisheries Research Services (UK)
- Friedrich-Loeffler-Institute (Germany)
- Università della Tuscia (Italy)
- Málaga University (Spain)
- Scottish Fish Immunology Research Centre (UK)
- Department of Animal Sciences, Wageningen University (The Netherlands)
- Veterinary Research Institute (Czech Republic)
- Royal Veterinary & Agricultural University (Denmark)
- Laboratory of Fish Immunology at the University of Murcia (Spain)
- Universitat Autonoma de Barcelona (Spain)
- Instituto de Investigaciones Marinas (Spain)
- Centre National de la Recherche Scientifique (France)
- Alpharma, Aquatic Animal Health (Norway)
- Bionostra (Spain)
- GeneCare, Technical University (Denmark)
- Aquaculture Diagnostics (UK)
- BioMar A/S (Denmark)

The use of antibiotics, drugs, and chemical disinfectants in the fish-farming industry can leave residues in food products and the environment. These can have harmful health effects on humans. In particular, released antibiotics can promote human disease causing agents to acquire resistance to anti-microbial drugs. More efficient vaccines, better diagnosis of diseases that affect fish, and improved sanitary controls have helped to significantly reduce antibiotic use in aquaculture, particularly for Atlantic salmon. This has led to better acceptance of fish farming among Europeans, boosting growth in this industry.

However, use of antibiotics continues. In order to curtail this practice, IMAQUANIM has brought together 17 universities and governmental research institutes, as well as five small and medium-sized enterprises (SMEs) working to develop technology to improve the disease immunity of Europe's major aquacultured species.

OVERCOMING IMMUNITY KNOWLEDGE GAPS

The immune system is not as well understood for finfish and shellfish as it is for mammals and other higher vertebrates. Successful bacterial vaccines were developed for salmon based mostly on trial and error. However, despite years of research, just a few vaccines have recently emerged against fish viruses, while none currently exist against fish parasites.

One of IMAQUANIM's priorities is to improve basic knowledge of how fish acquire immunity to diseases. The research team will develop tools, such as gene arrays and antibodies , as well as assays for monitoring immune-relevant molecules and cell populations. The team will use these tools to characterise fish immune systems, to determine how efficient protection against disease can be induced by vaccination, and to identify immuno-competent individuals for selective breeding.

For finfish, the work will include trials with commercial and experimental vaccines. Infection trials with each major finfish and shellfish species with selected viral, bacterial or parasitic pathogens known to cause severe problems for European aquaculture will also be included.

Scientists already know that invertebrates, such as shellfish, lack adaptive mechanisms and, thus, cannot be vaccinated in the sense of activating a memory-based immunity. Nevertheless, although shellfish immunity is strictly based on innate mechanisms, recent findings indicate that it can be bolstered by 'priming' these mechanisms. Since, at low temperatures, this is also true for finfish, IMAQUANIM will employ an integrated approach in its research to maximise the data's scientific and commercial potential.

HEALTHIER FISH FOR HEALTHIER HUMANS

IMAQUANIM'S data will provide a strong technological basis for qualified strategies to counteract rapidly known or new diseases in aquacultured fish. The resulting gene arrays and immune-response assays will be employed to develop efficient vaccines and feed-based immunostimulants for finfish species.

They will also be used for genetic typing, immuno-competence monitoring and diagnostic surveillance for both finfish and shellfish. The project results will create a basis for the breeding of aquacultured animals that are immune to devastating infectious diseases. By contributing to improved animal health, IMAQUANIM will lead to higher quality food products, free of residuals of antibiotics or other chemicals, and to more environmentally friendly and cost-efficient fish farming. This will have a positive influence on consumer perceptions of aquaculture and encourage people to include more fish and shellfish in their diets.

Acronym: IMAQUANIM

Full title: improved immunity of aquacultured animals

Contract n°: 007103

Website:
www.imaquanim.dfvf.dk

Project co-ordinator:
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EU contribution:
€ 8M

PATHOGENCOMBAT

FIGHTING NEW PATHOGENS IN THE FOOD CHAIN

LIST OF PARTNERS

- The Royal Veterinary and Agricultural University (Denmark)
- University of Copenhagen (Denmark)
- Biomax Informatics (Germany)
- Technical University of Denmark (Denmark)
- The Manchester Metropolitan University (UK)
- Cocker Consulting (The Netherlands)
- Bactoforce A/S (Denmark)
- Institut National de la Recherche Agronomique (France)
- Federal Research Centre for Nutrition and Food (Germany)
- Danisco A/S (Denmark)
- University of Maribor (Slovenia)
- University of Udine (Italy)
- Swedish University of Agriculture (Sweden)
- Veterinary Research Institute (Czech Republic)
- Vermicon (Germany)
- Congen (Germany)
- University of Ghent (Belgium)
- Profos (Germany)
- Corvinus University of Budapest (Hungary)
- Universidad de Burgos (Spain)
- Agricultural University of Athens (Greece)
- Universitá di Bologna (Italy)
- University of Ljubljana, Medical Faculty and Biotechnical Faculty (Slovenia)
- Agence Française de Sécurité Sanitaire des Aliments (France)
- Anidral (Italy)
- Granarolo (Italy)
- Pittas Dairy Industries (Cyprus)
- Cooperativa Avicola y Ganadera de Burgos (Spain)
- Institut Technique Français des Fromages (France)
- Bergpracht-Milchwerk GmbH & Co (Germany)
- Wegerer Gerold Geflügelzucht (Germany)
- Geflügelspezialitäten Ziegler (Germany)
- Jamones Segovia (Spain)
- Somas (Hungary)
- The Australian Food Safety Centre of Excellence (Australia)
- Wageningen University (The Netherlands)
- Warsaw Agricultural University (Poland)
- University of Stuttgart (Germany)
- EBTE Consultants (Greece)
- Scottish Agricultural College (UK)
- University of Lund (Sweden)
- Colear Castilla Sociedad Cooperativa (Spain)
- Martinez Loriente (Spain)
- Forschungszentrum Karlsruhe GmbH (Germany)

The Integrated Project (IP) PathogenCombat is taking a holistic, multidisciplinary approach to threats from new and emerging pathogens across the entire food chain. Seventeen small and medium-sized enterprises (SMEs), three industrial partners and 24 research partners from 17 countries will work to substantially revise and improve Europe's food safety control systems and strategies.

MOLECULAR-BASED APPROACH TO FOOD SAFETY

PathogenCombat will develop new molecular-based methods to detect, predict and characterise pathogens along the food chain, and at the time of consumption.

The IP's large number of partners offering diverse expertise will allow it to take a multidisciplinary approach to studying eight new and emerging pathogens. The project will begin by obtaining an understanding at the molecular level and end by contributing to the production of safe foods. The studied pathogens include gram-negative and gram-positive bacteria, a yeast, a filamentous fungus and two viruses. This profile is highly versatile in terms of origin, pathogenicity, physicochemical resistance, physiology and growth and survival requirements.

NEW WEAPONS

The IP's overall objective is to provide essential new information and methods to the food industry and public authorities on how to reduce food-borne pathogens. It will develop advanced platforms allowing real-time, in situ investigation of pathogens – how they get into food and feed and survive, and how they remain viable on contact surfaces and in farm animals' intestinal tracts. Studies will target milk and dairy products, ruminants, poultry and pigs and their meat products.

The platforms, several of which will be used for the first time in food safety studies, include bio-imaging, laser tweezers, phage display and convergent evolution, functional mammalian cell models, functional genomics and DNA-microarrays. PathogenCombat will also develop new processing technologies and new hygienic designs to prevent pathogen transmission along the food chain. To enable a truly preventive approach, the new information obtained will be applied to develop a food safety management system where process-environment control is emphasised over end-product testing. This will allow proactive responses to new and emerging pathogens.

The IP's new data and methods will contribute to a strong European standard of food safety management, improving the health and well-being of EU citizens and the competitiveness of its food industry. For consumers, the goal is a European-wide attitude change regarding food safety, and a better insight into hygienic food handling at home. Increased availability of safe food and fewer reservations about processed food will boost the EU agro-

Acronym: PATHOGENCOMBAT

Full title: control and prevention of emerging and future pathogens at cellular and molecular level throughout the food chain

Contract n°: 007081

Website:
www.pathogencombat.com

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EU contribution:
€ 11.3M

TRACE

FROM FORK BACK TO FARM

LIST OF PARTNERS

- Central Science Laboratory, York (UK)
- Eurofins Scientific Analytics, Nantes (France)
- Joint Research Centre of the European Commission
- Bundesinstitut für Risikobewertung (Germany)
- Institut National de la Recherche Agronomique (France)
- LGL Bayern Oberschleißheim (Germany)
- Austrian Research Centre, Seibersdorf (Austria)
- EKPIZO, Athens (BEUC Designatefd Representative) (Greece)
- Institute of Food Research, Norwich (UK)
- Walloon Agricultural Research Centre (Belgium)
- Agricultural University of Athens (Greece)
- Free University of Brussels (Belgium)
- RIKILT Institute of Food Safety, Wageningen (the Netherlands)
- Institute of Chemical Technology Prague (Czech Republic)
- Instituto Agrario di San Michele all'Adige (Italy)
- Bavarian State Collection for Palaeontology and Geology, Geology Section (Germany)
- Institute of Chemical Methodologies of CNR, Rome (Italy)
- National Institute of Chemistry (Slovenia)
- Department of Food Science, National University of Ireland, Dublin (Ireland)
- TEAGASC, The National Food Centre, Dublin (Ireland)
- The Norwegian Institute of Fisheries and Aquaculture, Tromsoe (Norway)
- Maritech, Kopavogur (Iceland)
- Catholic University of S. Cuore, Institute of Zootechnics, Laboratory of Animal Genetics (Italy)
- Universitat Rovira I Virgili, Dept. of Analytical and Organic Chemistry, Tarragona (Spain)
- Institute of Quality Standards and Testing Technology for Agricultural Products CAAS (China)
- Radboud Universiteit Nijmegen (The Netherlands)
- Università di Genova, Dipartimento di Chimica e Tecnologie Farmaceutiche ed Alimentari (Italy)
- TraceTracker Innovation AS, Oslo (Norway)
- SINTEF Fisheries and Aquaculture, Trondheim (Norway)
- Biolytix AG, Witterswil (Switzerland)
- Geochem Research BV, Utrecht (The Netherlands)
- Kenneth Pye Associates (UK)
- WPA Beratende Ingenieure GmbH, Vienna (Austria)
- Geschäftsstelle BATS, (Switzerland)
- Ecole Nationale d'Ingenieurs des Techniques Agricoles de Clermont-Ferrand, Lempdes (France)
- e-Blana Enterprise Group (Ireland)
- Qiagen GmbH, Hilden (Germany)
- Wageningen Agricultural University Marketing and Consumer Behaviour Group (The Netherlands)
- Universidad Politecnica de Madrid (Spain)
- The Hellenic Research House, Athens (Greece)
- University of Utrecht (the Netherlands)
- Isolab GmbH, Schweitenkirchen (Germany)
- University of Silesia, Katowice (Poland)
- Hydroisotop GmbH, Schweitenkirchen (Germany)
- Famille Michaud Apiculteur, (France)
- Agua Insalus (Spain)
- University of Parma, (Italy)

Consumers increasingly want to have confidence in the labelling of their food and, in particular, to be certain where their food comes from. Producers of regional specialities like Parma ham also want to be sure that imitators cannot make false claims of origin. There is no coherent Europe-wide infrastructure for tracing food at present. Developments in logistical information systems are being made in isolation of the methods that can verify the origin of food. To date, new scientific techniques that could provide methods for confirming where food has come from remain largely unexploited. Europe plans to employ the latest methods and traceability systems in the major long-term Integrated Project 'Tracing the origin of food' (TRACE) in order to provide complete traceability of a range of foods from source to shop and back again. TRACE is a five-year project involving more than 50 institutions and organisations.

NATURAL TRACERS IN FOODS

TRACE aims to develop generic and sector-specific traceability systems for use in the food industry. The systems will include specifications relating to origin that can be checked using methodology developed in the project. Good traceability guides will be produced and global traceability language and architecture will be tested by industry in five sectors: meat, chicken, cereal, honey and mineral water. It will focus on products which are marketed on the basis of where or how they are produced. Technology transfer will be assured through dissemination activities, workshops and intensive training so that the methods and systems can be widely adopted.

Most foods contain the 'fingerprints' of the environment where they were produced. The isotopic ratios of heavy elements from the soil or lighter elements from plant materials depend very much on regional geological and climatic patterns. So, one strand of TRACE is correlating regional geochemical and bioclimatic factors with the properties of locally produced food. This mapping of local characteristics will reduce the need for a different set of data for each commodity, making tracing faster and cheaper.

Advances made in molecular biology technology will be used to create rapid, sensitive methods of identifying species, races or breeds of animal or varieties of plants. Genetic markers and microarray technology will broaden these techniques and speed them up.

TRACE will exploit recent advances in metabolite profiling methods to produce generic techniques for verifying food. Statistical techniques will be used to produce specifications that can be easily incorporated into supply chain management systems, providing a cost-effective mechanism to monitor product integrity.

CONSUMER BEHAVIOUR

A study will be conducted on consumer attitudes to and perceptions of traceability and food fraud. In particular, it will address the potentially contentious issue of "What information do consumers think they should be able to access from a traceability system?" Further input will be provided by a network of consumer groups throughout Europe.

HEALTH AND ECONOMIC BENEFITS

The successful completion of TRACE will have major benefits for many sectors of the European community. It will benefit the consumer by ensuring the origin and safety of food on sale. Fake or unsafe products will be quickly traced and removed from the market, reducing the considerable costs of fraud to society and business. This transparency will result in European food being viewed as of superior quality, since its characteristics can easily be checked. Increased consumer confidence in European food will be of benefit to the European food industry and will also help promote sustainable agriculture.

Acronym: TRACE

Full title: tracing the origin of food

Contract n°: 006942

Website:
www.trace.eu.org

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EU contribution:
€ 12.2M

ECNIS

DIETARY IMPACTS ON THE RISK OF CANCER

LIST OF PARTNERS

- EPIMOL Centre, Nofer Institute for Occupational Health (Poland)
- Finnish Institute of Occupational Health (Finland)
- German Cancer Research Center (Germany)
- University of Copenhagen (Denmark)
- Karolinska Institute (Sweden)
- Institute for Scientific Interchange Foundation (Italy)
- The National Hellenic Research Foundation (Greece)
- University of Leicester (UK)
- József Fodor National Center for Public Health (Hungary)
- Nicolaus Copernicus University, Collegium Medicum in Bydgoszcz (Poland)
- Istituto di Ricerca Genetica dell´Ospedale Policlinico (Italy)
- University of Mainz (Germany)
- Lund University (Sweden)
- Catholic University of Leuven (Belgium)
- Institute of Cancer Research (UK)
- University of Maastricht (The Netherlands)
- Biochemical Institute for Environmental Carcinogens, Prof. Dr Gernot Grimmer Foundation (Germany)
- Catalan Institute of Oncology (Spain)
- Utrecht University, Institute for Risk Assessment Sciences (The Netherlands)
- University of Dundee, Biomedical Research Centre (UK)
- International Agency for Research on Cancer (France)
- NETIX Skrzypczynski, Krzysztofowicz Sp. J. (Poland)
- Free University of Brussels (Belgium)
- Leocordia AB (Sweden)
- Imperial College, London (UK)

Several major studies identify smoking, diet, sunbathing and alcohol abuse as the leading avoidable causes of cancer among the general European population. The ability of certain diets to protect against cancer has been well documented. However, the long latency periods and confounding factors, associated with this disease make it extremely difficult to demonstrate beneficial effects attributable to specific nutrients. As even a modest reduction in the occurrence of cancer would generate huge social and economic savings, the European Union is keen to develop foods that could help either prevent or fight the disease. With 24 partners from 13 Member States, the ECNIS Network of Excellence will use exposure biomarkers and disease bioindicators to study how diet and hereditary factors can influence the risk of cancer from environmental factors.

PUTTING DOWN MARKERS

Diet can contribute to overall human exposure to environmental carcinogens and carcinogens generated during food processing, such as polycyclic aromatic hydrocarbons, heterocyclic amines and dioxins. Nutrition can also modulate endogenous formation of carcinogens or genotoxins, the function of metabolic enzymes, and the growth of neoplasia. Since most types of exposure are lifestyle-related and low-impact, it is difficult to assess them using traditional epidemiological methods. Moreover, as hereditary and dietary factors can modulate the effects of exposure, large human cohorts – comprising thousands of individuals and long-term follow-up – are required to identify key carcinogenic or modulating agents.

Biomarkers measure quantitative changes in a biological system caused by exposure to xenobiotic substances, at the cellular, tissue, fluid or organ level. Bioindicators measure changes at the organism, cohort or population level. Molecular epidemiology, using exposure biomarkers, may considerably improve conventional techniques by reducing misclassification and decreasing the time between exposure and the appearance of an observable effect.

In studies carried out in Africa and Asia in the 1990s on the role of aflatoxin in liver carcinogenesis, biomarker methodology greatly improved understanding of the disease's aetiology and human-exposure sources. The five-year ECNIS NoE will develop and validate biomarkers and bioindicators for use as short cuts in epidemiological studies on the modulation of cancer risk by diet, and the influence of genetic variation on cellular, tissue and organism susceptibility to carcinogens. These studies will provide support for the development of functional foods that protect against DNA damage and cancer.

A WEALTH OF INFORMATION

ECNIS will study populations from different European regions and climates, pollution levels and dietary habits, allowing for assessment of exposure-response relationships over a wide range of environmental scenarios. An important objective is to optimise use of the large number of human tissue-sample banks which exist in the Community. The project aims to develop and standardise procedures for cancer risk assessment, while identifying significant data gaps and providing directions for future development. Another goal is to use biomarker data to refine and validate pharmacokinetic and pharmacodynamic models and their potential application in risk-assessment protocols.

Driven by a high degree of specialisation, there has been insufficient interaction between epidemiologists, molecular geneticists, biochemists and molecular biologists. The ECNIS network will promote high-quality research by making use of its partners' multidisciplinary expertise and infrastructure, as well as providing the opportunity to conduct molecular epidemiology research on a Europe-wide scale. Its work programme will include scientific meetings, exchange of researchers and shared laboratory facilities, as well as joint training activities. This, in turn, will lower the cost of research and improve funding opportunities, while providing unbiased expertise and raising the level of general knowledge about cancer risk.

Acronym: ECNIS

Full title: environmental cancer risk, nutrition and individual susceptibility

Website:
www.ecnis.org

Contract n°: 513943

Project co-ordinator:
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EU contribution:
€ 11M

INFORMATION FOR ALL: A RECIPE FOR SUCCESS

LIST OF PARTNERS

- Institute of Food Research (UK)
- Graz University of Technology (Austria)
- Ghent University (Belgium)
- Nutrienten België (Belgium)
- Institute of Reference Materials and Measurements (Belgium)
- National Centre of Hygiene, Medical Ecology and Nutrition (Bulgaria)
- Danish Institute for Food and Veterinary Research (Denmark)
- National Public Health Institute (Finland)
- University of Helsinki (Finland)
- Agence Française de Sécurité Sanitaire des Aliments (France)
- Technological Institute of Iceland (Iceland)
- Federal Research Centre for Nutrition (Germany)
- International Life Sciences Institute, European Branch (Belgium)
- Verein zur Förderung Technologietransfers an der Hochschule Bremerhaven e.V (Germany)
- National and Kapodistrian University of Athens (Greece)
- Agricultural University of Athens (Greece)
- Wageningen University (The Netherlands)
- University of Oslo (Norway)
- National Food and Nutrition Institute (Poland)
- National Institute of Health (Portugal)
- University of Vienna (Austria)
- Centre for Superior Studies on Nutrition and Dietetics (Spain)
- Institute of Nutrition and Food Technology, University of Granada (Spain)
- Food Research Institute (Slovenia)
- Swedish National Food Administration (Sweden)
- Swedish University of Agricultural Sciences (Sweden)
- Tübitak Marmara Research Centre, Food Science and Technology Research Institute (Turkey)
- British Nutrition Foundation (UK)
- European Molecular Biology Laboratory European Bioinformatics Institute (UK)
- Central Science Laboratory (UK)
- University of Leeds (UK)
- University of Surrey (UK)
- University College Cork (Ireland)
- Ben-Gurion University of the Negev (Israel)
- National Institute for Food and Nutrition Research (Italy)
- Centro per lo Studio e la Prevenzione Oncologia (Italy)
- Baigent (UK)
- RIKILT - Institute of Food Safety (The Netherlands)
- Polytec (Denmark)
- Food Information Consultancy (UK)

The growing recognition of the significance of diet in maintaining human health has generated considerable amounts of research throughout Europe. Food components have been shown to help prevent a range of diseases and to prolong active life, and the search continues to unravel the various effects of different nutrients. Much of the information uncovered by this work is hard to access, although the European Commission has actively encouraged collaboration in several programmes. The establishment of EuroFIR (the European Food Information Resource Network) will help to create a comprehensive and authoritative European databank containing information on nutrient ingredients and newly emerging bioactive compounds with putative health benefits.

EXCELLENCE IN FOOD AND INFORMATION

EuroFIR will be the first port of call for pan-European information about the composition of food. It is needed primarily to help scientists collaborate in validating the relationships between dietary habits and chronic disease, and to exploit the findings to reduce the medical and social costs of ill health. It will also help the wider community to gain access to nutritional research results and understand their implications for public health nutrition. The database will be accessible to a wide range of stakeholders – policymakers, the food industry, health professionals and concerned consumers.

The NoE unites many national database compilers with both analytical laboratories that generate the data, and end-users of the data from universities and research institutes (including two from Israel and Turkey) specialising in nutrition from all over Europe in a major five-year project. They are joined by four SMEs with expertise in IT databases and software development, and disseminating and communicating the results and findings across Europe. More national compilers and industry SMEs are expected to join.

FOOD QUALITY AND SAFETY

The food information will be structured to meet the main aims of EuroFIR. An essential step will be the standardisation of data collection methods, food composition tables and analytical techniques so that all results can be compared. This will provide an effective nutrition-monitoring system at European level, to collate information on food consumption as input for the initiative to improve the safety and quality of European food. The second main objective is to support Europe's aim to make its food and biotechnology sectors more competitive in world markets.

Analysis of the data collected will reveal areas where new research could yield most benefit. The project will propose joint research activities to meet the needs of users and stakeholders. It also focuses on key food areas, in particular: composite, processed and novel foods; traditional foods and ethnic foods (that have received little attention); and bioactive compounds with functional benefits.

Innovative software tools will be developed to handle the information, along with new facilities for electronic communication. They are being designed with the needs of end-users foremost in mind, with the work being monitored by an expert group. A public website will offer food composition information and the project partners will communicate through a private intranet.

EuroFIR will aim to spread excellence and extend the impact of the NoE beyond those actively involved in its work. It will do this through training schemes for young scientists and sharing its methods and facilities. There will be a strong dissemination element to spread awareness of the network and its information potential. Feedback will ensure that the database continues to meet the needs identified by its users, the long-term aim being that it will go on providing this service when the EuroFIR project reaches the end of its five-year term.

Acronym: EUROFIR

Full title: European food information resource network

Contract n°: 513944

Website:
www.eurofir.net

Project co-ordinator:
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EU contribution:
€12M

ALCUE-FOOD

SAFE FOOD WITH A LATIN AMERICAN FLAVOUR

LIST OF PARTNERS

- Centre de Coopération Internationale en Recherche Agronomique pour le Développement (France)
- Instituto Nacional de Investigacion y Tecnologia Agraria y Alimentaria (Spain)
- Instituto Nacional de Investigação Agrária e Pescas (Portugal)
- Instituto de Biologia Experimental e Tecnológica (Portugal)
- Secretariat for Science, Technology and Productive Innovation (Argentina)
- Instituto Nacional de Tecnologia Agropecuaria (Argentina)
- Universiteit Gent (Belgium)
- Coordinadora de las Industrias de Productos Alimenticios (Argentina)
- Empresa Brasileira de Pesquisa Agropecuaria - Centro Nacional de Pesquisa de Tecnologia Agroindustrial de Alimentos (Brazil)
- Camara de Comercio França-Brasil (Brazil)
- Fundacion Chile (Chile)
- Consumers International. Regional Office for Latin America and Caribbean (Colombia)
- Asociacion de las Universidades del Grupo de Montevideo (Uruguay)

One outcome of the 1992 Rio Earth summit was a closer dialogue between Europe and the countries of Latin America and the Caribbean (LAC). The agrifood sector is an important plank for collaboration between the two regions, with the EU constituting a significant market for Latin American food products. A new networking platform, ALCUE-FOOD, has been set up between four Member States and four Latin American countries from the Mercosur (Southern Cone Common Market) region. By promoting cooperation in science and technology for agriculture and food, it will help to spread knowledge about good practice and environmental protection and to reinforce the already strong trade links.

OPPORTUNITIES FOR COOPERATION

The EU is already the second largest trading partner for Latin America. The ALCUE-FOOD action will contribute to strengthening the trade in the food sector by promoting a total food chain approach that will ensure that food exports from Latin America comply fully with European safety and quality regulations. The aim is to enable products to be traced back 'from European fork to Latin American farm' by developing EU-LAC partnerships in food quality and safety.

In this three-year action, the network will share information on regulations and safety issues, and act as a platform for a dialogue between all the stakeholders—policy-makers, producers, food processors, regulators and consumer organisations. It will encourage the competitiveness of LAC countries by giving them real advantages on the global market. It will also enable them to keep up with developments in consumer requirements for food safety, high-quality products and the latest risk-assessment procedures.

The other important strand is scientific and technical cooperation on all aspects relevant to agribusiness. Research results from European Framework Programmes will be shared with Latin American partners. Cooperation could cover topics connected with developing or improving the safety of the food and feed production chains. It will also look for novel functional ingredients that could be produced in LAC countries, and find niche markets in Europe. It will promote clear food labelling for the fork-to-farm initiative and quality management tools to estimate food safety and assure its quality.

The environmental impact of agricultural practices and food processing will be also emphasised.

Partners will work together to propose new joint R&D projects after analysis of social demands and the needs of the prodution sectors.

INFORMATION PLATFORM

Effective communication is essential to the success of ALCUE-FOOD, realised through an innovative global information system. A dedicated website contains data on food quality and safety issues, existing and evolving food standards, research results and market intelligence. It also forms the platform for dialogue between expert groups and organisations in the agri-chain, and provides news about technology transfer opportunities.

Workshops and seminars in both regions will provide a face-to-face transfer of results, information and methods to national and regional food and agriculture associations. The end results of all this communication will be made available to all LAC countries.

Through this exchange of information, LAC countries will gain a deeper understanding of the requirements of EU research programmes and of the European food market. ALCUE-FOOD will further encourage the flow of investment between the regions and help the EU to get more value from its research.

Acronym: ALCUE-FOOD

Full title: from European fork to Latin American farm: an innovative networking platform for EU-LAC partnerships in food quality and safety R&D

Contract n°: 007176

Website:
http://www.alcuefood.org/online/site/

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EU contribution:
€ 737,000

BIOPOLIS

DOES SCIENCE POLICY DELIVER INNOVATION?

LIST OF PARTNERS

- TNO Strategy, Technology and Policy (The Netherlands)
- Fraunhofer Institute Systems and Innovation Research (Germany)
- Science and Technology Policy Research, University of Sussex (UK)

Life sciences and biotechnology are both advancing very fast and offer huge potential to create new opportunities for society and the economy. The constant stream of new knowledge they generate covers food quality and safety, health and medicine. It can lead to new industries, products and processes, as well as improve the quality of life for people and farm animals.

Therefore, it is important to know how effective research policies and funding in life sciences and more specifically biotech are. How successful are they at generating economic and social improvements? Have countries improved their performance over time ? A comparison of inputs and outputs would show which policies were the most effective at producing viable innovation.

BIRD'S EYE VIEW OF EUROPE

The BIOPOLIS Specific Support Action set out to provide answers through in-depth surveys relating science policy and funding to their outcomes. The 26-month project should then be able to draw conclusions about best practice for maximising benefits. It covers a broad area of the European continent: the 25 members of the enlarged Union plus four candidate countries. In addition, Iceland, Norway and Switzerland will be included.

BIOPOLIS surveys all European countries with advanced biotechnology and life science programmes, or relevant activities, and covers others in brief where research in these areas is less organised at present. The project covers the period 2002-2005, but will also take into account the findings of other surveys in the field carried out for the EU from 1994 to 2001.

The detailed and reliable data will cover specific policies and instruments for supporting life science and biotechnology R&D in all these countries, whether sectoral, horizontal, regional, national or supranational. The considerable contributions made by charities will also be taken into account. BIOPOLIS will then analyse how well each country has performed on a European level in creating a knowledge base in these fields and reaping the ensuing benefits.

BIOPOLIS will benefit from the results of three previous projects: the INVENTORY project collected data on public biotech R&D spending (1994-1998), while EPOPHITE focused on assessing national biotech policy performance. BIOPOLYBENCH developed indicators of success for biotechnology innovation measures. BIOPOLIS will also use the Biotechnology Innovation Scoreboard, which has already developed indicators for successful innovation in this area.

A NEW TOOL FOR CRAFTING POLICY

One outcome of the action will be a comprehensive overview of national policy in the form of 32 national reports. These will be integrated into an overall European analysis of how policy-making systems are ordered, how funding is directed, whether as a result of policy or otherwise, and what the trends are in these factors. The analysis will link performance in life sciences and biotechnology to the policies in operation, benchmarking the policy instruments against performance.

The result will be a powerful tool for assessing the effectiveness of different policies and implementing new ones that are able to deliver the required innovation results. It will help European and national policies to be more coherent and set up best practice models. BIOPOLIS will also be used as an input to the OECD's Ad Hoc Working Group on harmonising international biotechnology statistics, which will also consider statistics for public biotechnology R&D.

Acronym: BIOPOLIS

Full title: inventory and analysis of national public policies that stimulate research in life sciences and biotechnology, its exploitation and commercialisation by industry in Europe in the period 2002-2005

Contract n°: 514174

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EU contribution:
€ 532,535

BIOPOP

BIOTECHNOLOGY THAT GOES POP

LIST OF PARTNERS

- Association of Italian Biotechnologists, University of Bologna (Italy)
- AETHIA Power Computing Solutions (Italy)
- Observa Science and Society (Italy)
- Biotechnologische Studentinitiative (Germany)
- Technical University of Lodz – Student Association 'Ferment' (Poland)
- Genomic Network of Young Scientists (The Netherlands)
- Amicale des Elèves Ingénieurs de l'Ecole Supérieure de Biotechnologie de Strasbourg (France)

Effective public science communication is key to making the European Research Area more competitive, particularly as it grapples with the public debate surrounding genetically modified organisms (GMOs), biodiversity, cloning, and ethics. Young biotechnology researchers and students are important constituents for building a better future European science effort. Although significant attention is focused on educating these young people, they often play a passive role in the communication process.

The EU wants to tap the potential and enthusiasm of young people studying life sciences or already working in the field. With seven participants from five countries, the Specific Support Action BIOPOP studied the impact of science communication with young scientists on the front line, organising popular open-lab style events in two European cities.

THE POWER OF YOUTH

The 24-month BIOPOP project took advantage of a major energy resource for life science communication: drawing on associations of young scientists and students from several European countries (Italy, the Netherlands, France, Germany and Poland). The Italian-led project started by studying similar past efforts, for example, the 'Biotech-bus' in Germany, the 'DNA Train' in France and the 'Science Festival' initiatives in Poland and Italy. In particular, the project studied how scientists and communicators at these popular events used interactive approaches to address scientific issues. BIOPOP drew on the expertise of leading science organisations, such as the European Molecular Biology Organisation (EMBO) and the European Federation of Biotechnology (EFB). The EFB Task Group on Public Perception helped organise an intensive training workshop for the young people who will lead BIOPOP's local events, focusing on two-way communication techniques.

The project organised popular events in the main squares of Bologna (IT) and of Delft (NL). In specially was designed tents, the events created the atmosphere of a 'science agora', where the laboratory was open to the public to participate in and comment on. There were music, games, and animation, and 'genetic toys' for young children. Participants discussed and made their proposals on issues such as food safety, GMOs and bioethics in a two-way communication model, designed not to teach but to collect feedback and stimulate participatory approaches. The project worked closely with the media to ensure an exchange of views and experiences with the young scientists and improve both reciprocal understanding and dialogue with the public.

The project set up a website featuring a virtual city square to promote further public participation in science. The website also published reports and analyses about the popular events, in particular about the impact of the participatory approach.

INNOVATIVE CHANNELS

BIOPOP contributed to promoting a new model for public communication in which students and young scientists, not faceless institutions, answer the public's questions about science and listen to their concerns. It helped establish a platform for national and international institutions to share documentation and experiences. An important goal was to establish better contacts between young people in science and the media, in order to improve communication, interaction and public participation.

Acronym: BIOPOP

Full title: pilot study on innovative approaches to public communication of life sciences and biotechnology by students and young researchers

Acronym: BIOPOP

Contract n°: 007086

Website:
www.biopop-eu.org

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EU contribution:
€ 354,500

CLONING IN PUBLIC

STIMULATING DEBATE ON FARM ANIMAL CLONING

LIST OF PARTNERS

- Royal Veterinary and Agricultural University (Denmark)
- Institute of Animal Physiology and Genetics (Denmark*)
- Danish Institute of Agricultural Sciences (Denmark*)
- Institute for Molecular and Cell Biology (Portugal)
- Cardiff Law School, University of Wales (UK)
- University of Copenhagen (Denmark*)

Unlike the genetic modification of animals, the EU does not directly regulate animal cloning and only a few Member States have national legislation that specifically covers it. As part of the Union's initiatives on consumer health and food safety, CLONING IN PUBLIC joined six European partners working to stimulate informed public debate on farm animal cloning. The Danish-led project also aimed to make recommendations on regulation and on guidelines for research and applications of farm animal cloning.

* The three Danish partners are co-operating on the project through the Danish Centre for Bioethics and Risk Assessment.

TAKING STOCK OF ANIMAL CLONING

Despite enormous scientific significance, the first report of a mammal born after nuclear transfer cloning, by Steen Willadsen in 1986, caused little public concern, possibly because donor cells came from pre-implantation-stage embryos. In 1997, the researcher Ian Wilmut and colleagues presented Dolly, the sheep, to the world. She was produced through the same method, but the cell nuclei used was from a somatic cell from an adult animal. It had theoretically become possible to clone unlimited numbers of virtually identical animals from an adult animal or post-implantation foetus – which did generate serious concern.

Since 1989, the European Commission has tracked public views on biotechnology through the so-called Eurobarometer surveys. The 1999 survey found three distinctions within public attitudes to biotechnology that are of direct relevance to the question of farm animal cloning. Firstly, it was clear that the interviewees regarded biotechnology much more favourably when used for human medicine than when used for agricultural purposes. Secondly, it was very clear that using the technology on animals was much less acceptable than on plants. Finally, many people were concerned that research into animal cloning would eventually lead to the cloning of humans.

New biotechnologies carry both potential risks (e.g. to human health, compromised animal welfare or environmental damage) and potential benefits (e.g. future treatment of human disease). However, recent studies indicate that scientists and the public may view such concepts as risk and benefit differently. Consequently, science and industry must be prepared to discuss farm animal cloning with the public, both in ethical as well as scientific terms, just as the public need access to relevant information about the underlying technology and possible applications.

CLONING IN PUBLIC sought to facilitate discussion by gathering and synthesising information on farm animal cloning to present a broad view of the technology. Literature reviews and interviews were conducted, and two workshops were organised on the scientific, legal and ethical aspects. Regulation and public attitudes, as well as motivations for the research, were studied and potential applications looked into. At a final participatory conference in Brussels, specialists on animal cloning engaged with representatives of industry and NGOs, as well as students and citizens from across Europe.

MORE INFORMATION

The project disseminated its results through a website, reports, and press releases. It also sought to publish articles in major newspapers and magazines in several languages throughout Europe. It will delivered recommendations on European regulations and guidelines covering research on farm-animal cloning and its subsequent applications.

Acronym: CLONING IN PUBLIC

Full title: farm animal cloning and the public – a project to facilitate a European public debate and to make recommendations for the cloning of farm animals

Contract n°: 514059

Website:
www.sl.kvl.dk/cloninginpublic/

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EU contribution:
€ 514,560

EAGLES-Food

NUTRITION TOPS FOOD FORUM MENU

LIST OF PARTNERS

- European Federation of Biotechnology (Belgium)
- International Rice Research Institute (Philippines)
- National Research Foundation (South Africa)
- Beijing Genome Institute (China)
- Bibliotheca Alexandria (Egypt)
- Catalan Foundation for Research and Innovation (Spain)

Starvation and malnutrition in some developing and emerging countries pose a humanitarian challenge to the whole world. Much of the natural habitat in these countries may also be under threat from their need to grow more crops and from the adverse effects of intensive agriculture. A concerted effort by practitioners of life sciences worldwide would help to address these problems and offer hope for solutions.

One way that such help can be provided is through EAGLES (European Action on Global Life Sciences). This high-level network of experts in life sciences and various disciplines in the humanities aims to bring together Europeans and their counterparts in the developing world for scientific, public and political discussions. Through these debates, Europeans will become better informed about the needs and competencies of developing and emerging countries (DEC), and hence be able to suggest ways that European life sciences can contribute to meeting these demands. The Forum will also reflect on joint research strategies that will contribute to the achievement of the UN Millennium Development goals of eradicating extreme poverty and hunger and ensuring environmental sustainability.

INGREDIENTS FOR SUCCESS

Within this Specific Support Action, EAGLES has set up a food forum to focus on problems of malnutrition and environmental degradation in developing and emerging countries. It is working closely with other EAGLES groups which are studying health, the environment, water and energy. The main aim is to use review processes and improved communications to foster those EU policies and programmes in the life sciences sector that are most effective in meeting DEC needs.

The EAGLES Food Forum operates through a communications office that coordinates its programme. It directs and stimulates the flow of information and dialogue among the key players in the development of food, agriculture and biotechnology research programmes and policies in Europe and worldwide. In this way, it will also provide strategic input to the forthcoming Seventh Framework Programme.

DEC and EU experts will present the needs of developing countries and their achievements in the field in a lecture programme in Europe and elsewhere, if appropriate.

EAGLES will also publish food reports on European and international policies and programmes relating to food supply and habitat in DEC. They will assess the scale and effectiveness of these efforts, for example looking at the potential role of biotechnology and techniques such as phyto-bioremediation in solving problems. Priority will be given to major cereal and commodity crops, imports and exports, and livestock and fish farming. The results of these studies will be discussed in annual food symposia held throughout the three-year action.

Workshops will be held in DECs to address a set of relevant topics, such as ICT and food security in sub-Saharan Africa, challenges presented by the industrialisation of livestock production, and rice as a model to improve drought tolerance in cereals. Other topics are expected to emerge during the course of the EAGLES Food Forum.

TOP TABLE

Membership of the Food Forum includes experts in life sciences from Europe and developing countries. Europe and the USA are providing communications specialists to ensure that the objectives and findings are widely disseminated, and ethicists will ensure moral underpinning. Also represented are European organisations that regulate biotechnology development – the Forum is supported by European and international groups for biotechnology and agriculture.

The EAGLES Food Forum will foster dialogue between scientists in more- and less-developed countries and promote the responsible use of new knowledge to support food production and preserve important habitats in developing and emerging countries.

Acronym: EAGLES-FOOD

Full title: food forum of the European action on global life sciences

Contract n°: 514071

Project co-ordinator:
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EC Scientific Officer:
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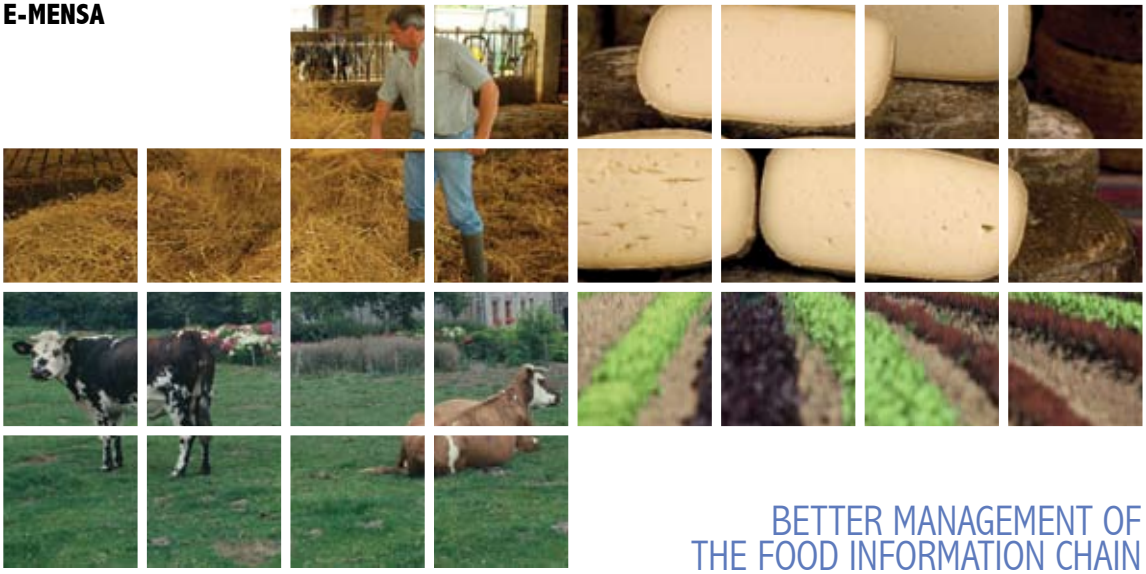
EU funding:
€ 646,040

E-MENSA



BETTER MANAGEMENT OF THE FOOD INFORMATION CHAIN

LIST OF PARTNERS

- Tecnoalimenti SCpA (Italy)
- Asociación para la Investigación de la Industria Agroalimentaria (Spain)
- Federazione Italiana dell'Industria Alimentare (Italy)
- Teagasc – The Agriculture and Food Authority (Ireland)
- Imperial College of Science – Department of Agricultural Sciences, Centre for Food Chain Research,Technology and Medicine – University of London (UK)
- Ente per le Nuove Tecnologie, l'Energia e l'Ambiente (Italy)
- Institute of Logistics and Warehousing (Poland)
- AGER (Italy)
- Technische Universität Berlin, Department of Food Biotechnology and Food Process Engineering (Germany)
- Mediterranean Agronomic Institute of Bari (International Organisation)

In the last decade, a series of major tainted-food emergencies and accidents have destabilised Europe's agro-food industry and damaged consumer confidence in the food supply. The European Union and many businesses have realised that the current agro-food supply chain is hard to manage on a European scale, and that safety and quality suffer as a result. To help solve this problem, the EU's Specific Support Action (SSA) e-MENSA gathered ten partners from six European countries and one international organisation. It aimed to constitute a knowledge-exchange platform that will help create a food supply chain management infrastructure based on information and communication technology (ICT).

WEAK LINKS

The food supply chain is the channel a product follows from source to end-consumer. In Europe, weak points are cooperation and communication among players, who often have clashing policies, objectives and responses to changes in the industry. This confusion can allow safety and quality problems to travel downstream uncorrected. e-MENSA assumed that recent advances in food processing, auditing and ICT, and supply chain management, offer the potential to improve food quality and safety. In practical terms, supply chain players benefit by having the right amount of product at the right location and time, cuts in transaction costs and improvement in other areas, such as information searches, contract negotiation and contract monitoring.

Since the only workable approach to the EU food supply chain should have a pan-European dimension, the Union's support for e-MENSA was essential. The SSA participants conducted preliminary studies of technological, economic and organisational factors for transnational discussions among academic experts and food-chain players. These discussions will identify shared technological approaches and evaluate proposed new ones.

IMPROVED CONSENSUS

e-MENSA, whose name comes from the Latin for dining table, created a pan-European technology platform of academia, industry and consumers, for a continuous, knowledge-based exchange of technological strategies, research agendas and data. The goal was the assessment of the implementation in the food chain of a new system to collect, manage and store data for validating and verifying food safety and quality downstream from the farm. This secure electronic platform (e-platform) connected stakeholders via computer interfaces and coordinate communication within agro-food supply communities, providing a framework for harmonising quality assurance along the entire chain and promoting active participation and co-responsibility of all players.

e-MENSA published its technological findings in scientific journals and released an readily accessible brochure for the dissemination of results. It held a workshop demonstrating the e-platform's advantages for the business community, created a website, and hold a half-day presentation for European Parliament members. Dissemination was facilitated through the European food umbrella organisations, such as the Committee of Agricultural Organisations in the EU (COPA) and the General Committee for Agricultural Cooperation in the European Union (COGECA).

Food chain monitoring through an e-platform will make it possible to manage emergencies, preventing market disturbances from amplifying downstream to the consumer. Coordination of all the food chain's component processes will ensure that quality and safety standards are applied at the lowest possible cost to all players. Increased time efficiency and precise commodity flows will expand product choice at the point of sale and improve freshness, boosting consumer satisfaction and confidence. This will help increase employment in the agro-food industry, particularly in rural areas.

Acronym: E-MENSA

Full title: E-platform technologies for the European agro-food supply chain

Contract n°: 007124

Website:
www.tecnoalimenti.com/ eMENSA.htm

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EU contribution:
€ 500,000

ENVIRFOOD

BOOST FOR ORGANIC FARMING IN THE BALTIC STATES

LIST OF PARTNERS

- State Stende Plant Breeding Station (Latvia)

As part of its campaign to improve food safety and quality, the European Union has set a target for organic farming to reach 5% of the Union's total agricultural area by 2005-2006. The new Baltic Member States (Latvia, Lithuania and Estonia) have produced little research on organic farming. On-farm research, in particular, is necessary to determine appropriate crop rotation and plant varieties. To help these countries implement EU regulations on organic agriculture, the Specific Support Action ENVIRFOOD will organise a four-day workshop to bring together plant breeders, specialists in variety testing, seed producers, growers and researchers from the Baltic States and organic agriculture experts from the EU. The gathering will facilitate the exchange of knowledge and expertise between conventional and organic plant breeding, variety testing, seed production and food processing.

EXCHANGING EXPERTISE

EU Directive 2092/91 defines organic farming as the most rigorous type of low-input agriculture, in which pesticides and synthetic fertilisers are generally prohibited and the cropping system itself must ensure yield stability and quality. However, most modern cereal varieties have been developed to achieve high productivity and uniform product quality under high-input conditions, using pesticides, synthetic fertilisers and growth regulators. By contrast, low-input systems like organic farming often have highly variable yields and quality, partly because the plant varieties grown were not developed for organic farming.

As of 1 January 2004, EU Regulation 1452/2003 requires all Member States to establish databases for organic seeds. Organic farmers and growers must use organic seed and vegetative propagated material if the official database shows that a relevant or comparable variety is available. Consequently, there is a need for breeding cultivars specifically adapted to agronomic conditions on organic farms.

These seed varieties should multiply and grow under a low input of organic fertilisers, have a good root system, the ability to interact with beneficial soil micro-organisms and to suppress weeds, and they must produce healthy crops and food products.

ENVIRFOOD's chief goal is to help the Baltic States implement EU regulations on organic farming. During the workshop, Baltic State plant breeders, agronomists and seed producers will meet with experts in both organic and conventional plant breeding and seed production from Denmark, Germany, the Netherlands and Italy. In formal lectures and round-table discussions, they will exchange knowledge about farming systems. They will discuss capacity building and how to establish a critical mass of human resources for the production of environment-friendly food. There will be an exhibition of organic food products and the SSA will produce a book and CD-ROM for the workshop.

CO-OPERATING ON SUSTAINABLE FOOD

The International Trade Centre (ITC) forecasts that sales of organic food products for all European countries will rise from a current average of about 2% to 15% in 10 years. Better acquaintance with European experience should help Latvia, Lithuania and Estonia to establish their national organic breeding programmes. ENVIRFOOD will set up a network of breeders, researchers, seed and food producers in the Baltic States, to exchange national results and achievements and to develop scientific concepts for breeding for organic agriculture. This network will also bring expert knowledge into the European Research Area, which corresponds with the Union's objective of promoting sustainable use of genetic resources for food and agriculture, as it develops lower input farming systems such as organic agriculture.

Acronym: ENVIRFOOD

Full title: environment-friendly food production system: requirements for plant breeding and seed production

Contract n°: 007003

Website:
www.stendeselekcija.lv

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EC Scientific Officer:
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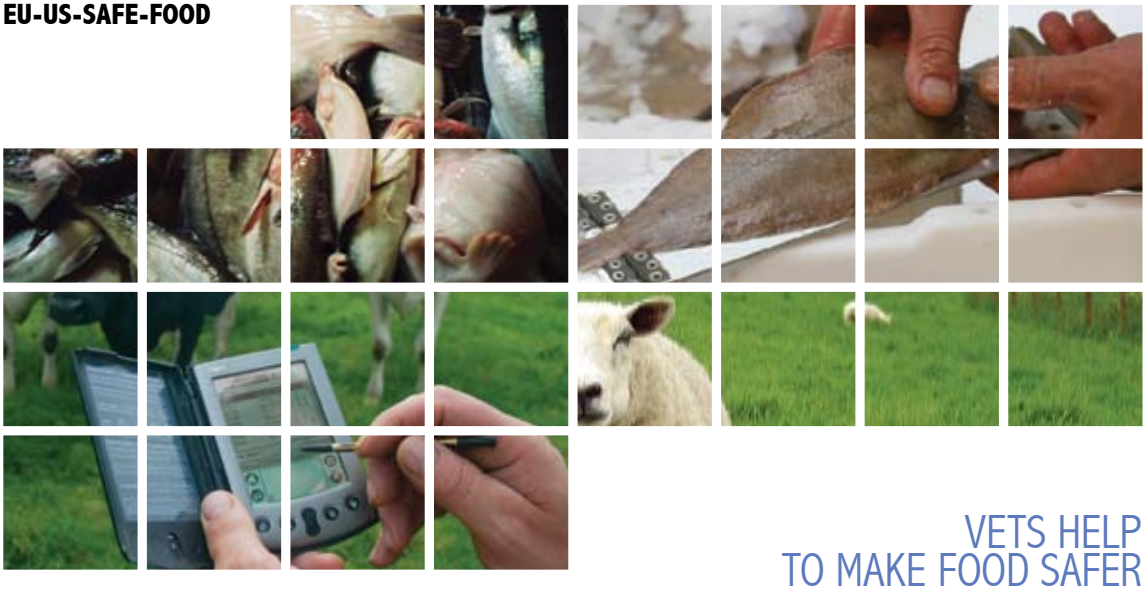
EU contribution:
€ 80,000

EU-US-SAFE-FOOD



VETS HELP TO MAKE FOOD SAFER

LIST OF PARTNERS

- Veterinary Laboratories Agency (UK)
- Animal Sciences Group (The Netherlands)
- Danish Institute for Food and Veterinary Research (Denmark)
- Veterinary Research Institute (Czech Republic)
- Society for Applied Microbiology (UK)
- AFSSA (France)
- Veterinary School, Complutense University (Spain)

The recent outbreak of bird 'flu' has highlighted the possibility of diseases carried by animals and birds being passed to humans. The greatest risk comes from transferable diseases that are widespread amongst farmed species like pigs and chickens and can be picked up by people. *Salmonella* and *Campylobacter*, for example, are easily transmitted along the food chain. The potential risk is growing now that food is often transported across very large distances while people also travel much further and more frequently than they used to. Much of the food eaten in countries with exacting safety standards may now be produced in places where supervision is less strict. Under these conditions, an international approach to reducing the risk of human infection from animal sources is likely to be most effective.

AN UNTAPPED RESOURCE

Rapid international communication about health risks has, until now, focused mainly on human health. Veterinarians also have a significant contribution to make and a new international network, EU-US-SAFE-FOOD, has been set up between research networks in Europe and the US to work on animal diseases (zoonoses) transmitted through food. The two contributing networks are the European MED-VET-NET, a new 'virtual' research institute on zoonoses and food-borne disease, and the US FS-CAP, which has a multidisciplinary remit to advise on agricultural policy and food safety. Both networks undertake to use their knowledge and fast response capacity to support and advise government policy-makers. The partners in this European Specific Support Action include four European veterinary institutes and the European Zoonoses Reference Centre.

Importantly, this transatlantic strategic alliance has the long-term aim of improving scientific understanding of the problem, so that authorities can respond quickly in an agreed way to international incidents.

GETTING TOGETHER ON ZOONOSES

As well as setting up a virtual network, EU-US-SAFE- FOOD will hold a series of workshops where researchers can get together 'face to face'. There will be four such events over three years, two in the United States and two in Europe, with equal numbers of scientists attending from both continents. The subjects for the four workshops will be chosen during the course of the study, to deal with new and emerging food-borne pathogens, and to keep veterinarians up to date with the latest research and information.

A scientist exchange programme enabling European researchers to go individually to different research centres in the US is also part of the programme. Here they will share expertise, learn about the latest facilities and make less formal contacts that will encourage professional development and the sharing of information. Up to 20 scientists will get grants for short visits.

The knowledge on food-borne zoonoses generated within EU-US-SAFE-FOOD will also be shared more widely with all stakeholders in the area of food safety. A website will be set up to publish reports on the workshops, details of experts in the field, and links to other relevant sites. The achievements of the network will be presented at international microbiology meetings, thereby contributing to food safety and health knowledge throughout the world.

Acronym: EU-US-SAFE-FOOD

Full title: developing a strategic transatlantic approach to food safety

Contract n°: 007080

Project co-ordinator:
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EU contribution:
€ 380,000

GMO-COMPASS

PROVIDING INFORMATION ON GMOS

LIST OF PARTNERS

- Genius - Science + Communication (Germany)
- Transgen (Germany)
- TÜVNORD Ensys Hannover & Co (Germany)
- Several subcontractors in different EU countries Great Britain, Belgium, The Netherlands, Austria, Denmark

Now the European Union has new regulations on genetically modified organisms (GMOs), GM plants will be grown, harvested, and processed in Member States. The Union has already decided on a new legal framework for the labelling of GMOs and GMO food and feed products. Confronted with these labels, European consumers will have questions, especially regarding product safety. With 14 participants from six countries and an international group of local correspondents, the Specific Support Action GMO-COMPASS aims to establish a European consumer-oriented website (www.gmo-compass.org) providing easy-to-understand information on the safety of GMOs and GMO products.

PLUGGING THE INFORMATION GAP

European consumers expect safe, high-quality foods. However, they seem to doubt that GMO products can fulfil this requirement. Although important research findings and safety-assessment summaries about GMOs are publicly available, they are written by and for experts and so tend to be poorly understood outside the scientific community. In the lay public, safety concerns evoke a much larger reaction than science-based explanations. This can intensify a feeling of uncertainty. Information about GMOs needs to be better adapted to consumers' expectations, needs, interests, and knowledge. That is where GMO-COMPASS comes into play. The 24-month project will present science-based information for public discussion on the safety of GMO products and how they are approved within the Community.

TRUST THROUGH TRANSPARENCY

One of the tenets of the EU's food policy is that the consumer should be able to make buying decisions which are based on adequate information. For scientific knowledge to contribute to these decisions, it has to be easily comprehensible and traceable – to enable informed decisions. GMO-COMPASS will create an internet-based platform providing a venue for a broad and open discussion of these questions. The group of local correspondents will also transfer contents of the website in their native languages and integrate them into local websites to insure an EU-wide spread.

The project will develop, implement and test communication and marketing strategies (off-line and online), such as content cooperation with consumer and commercial food-related websites and consumer websites on the national level. The website will offer news, interviews, fact sheets, and a question-and-answer forum, combined with a virtual platform for open dialogue. Moderated online discussions among consumers, scientific experts and stakeholders will address risk perception and consumer expectations on food quality and the safety of GMOs. Discussion will be closely linked to information on the website.

There will be an advisory board of experts from diverse disciplines and nationalities and a network of local correspondents who will report about the GMO debate in their own countries. By incorporating the views of non-scientists and groups with counter-expertise should enable the project team to guarantee balanced reporting and debate.

INCREASING PUBLIC DIALOGUE

GMO-COMPASS answers a demand – no comparable websites are available in Europe – by complementing EU institutions' communication efforts as well as the websites of lobby groups, scientific institutions and consumer organisations. The project supports important goals in the European Commission's strategy for consumer information – transparency regarding safety evaluations of GMOs, respect for the precautionary principle, and gaining public trust. It will provide a stronger presence and awareness of scientific knowledge in the public debate about GMO-food safety and will facilitate dialogue between consumers, scientific experts and stakeholders.

Acronym: GMO-COMPASS

Full title: GMO communication and safety evaluation platform

Contract n°: 6914

Website:
www.gmo-compass.org

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EC Scientific Officer:
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EU contribution:
€ 460,020

MYCO-GLOBE

FIGHTING THE FUNGI THAT SPOIL FOOD

LIST OF PARTNERS

- Institute of Sciences of Food Production CNR (Italy)
- Cranfield University (UK)
- Royal Botanic Garden and Domain Trust (Australia)
- The National University of Rio Cuarto (Argentina)
- International Institute of Tropical Agriculture (Nigeria)
- United States Department of Agriculture (USA)
- Kansas State University (USA)
- International Crops Research Institute for the Semi-Arid Tropics (India)

Huge quantities of food are wasted every year because they are invaded by toxic fungi or fungal products. This is most likely to occur in hotter countries where food shortages may already be a problem. One estimate is that mycotoxins affect a quarter of the world's food crops, including many basic foodstuffs and animal feed, as well as cash crops like coffee which have high economic value. When eaten, mycotoxins have a cumulative effect and are a major health threat to both humans and livestock.

Because of the scale of this problem, which also affects European crops, EC Framework Programmes have included several projects to investigate toxic fungi in food crops. The MYCO-GLOBE Specific Support Action was set up to share the results with other countries with bilateral science and technology agreements with the EU, in the wider framework of a global information system on mycotoxins and toxigenic fungi. The consortium of acknowledged world experts acted as a steering committee, and operated through an international network.

CLUSTER FOR MYCOTOXIN PREVENTION

Ten of the completed EU projects formed a natural group of research into mycotoxins and have been consolidated into the Mycotoxin Prevention Cluster. They covered topics like detection techniques, hazard and risk assessment, prevention of some fungal infections, biological control agents, novel test kits and advanced genomic tools for breeding resistant species. They involved more than 60 research groups in the Member States. Work included food safety and quality monitoring systems, and improvement of soil biocontrol agents. MYCO-GLOBE ensured that their findings reached the people who need them urgently.

SPREADING THE WORD

One aim of MYCO-GLOBE was to share the technology developed by EU research on the control of mycotoxins and toxigenic fungi. The Myco-Globe launch conference, together with Mycotoxin Prevention Cluster Dissemination Day, was held on 21-22 October 2004 in Brussels, and presented the results of the Mycotoxin Prevention Cluster and an overview on mycotoxins and toxigenic fungi in other continents. This was followed by a longer conference in Africa, 'Learning from the EU: reducing impact of mycotoxins in tropical agriculture with emphasis on health and trade', held in September 2005, in Ghana, focusing on those mycotoxins representing the greatest challenge to the main crops of tropical Africa, and bringing together key experts from the EU and Africa.

MYCO-GLOBE concluded with a conference on 27- 30 September 2006, in Bari (Italy), on 'Advances in genomics, biodiversity and rapid systems for detection of toxigenic fungi and mycotoxins'. The agenda covered the main toxigenic species including Fusarium, Aspergillus and Penicillium, and presented emerging technologies for the rapid detection of toxigenic fungi and their toxins in plants and food products. The conference was allied to a workshop/training course on these detection techniques with free attendance for 10 delegates from developing countries. The EU held two further bilateral workshops, with Australia on food safety and with the USA on genomics of fungal species. Some European researchers attended as a learning experience.

The USA bilateral workshop was held on 5-7 July 2005 in New Orleans (LA) and the Australian event on 15-17 February 2006 in Sydney. The steering committee determined the content of these meetings and arranged for the production of a book at the end of the MYCO-GLOBE action to make its findings widely available. The outcomes of the research help to reduce both the crop losses and health hazards of fungi in food.

Acronym: MYCO-GLOBE

Full title: integration of mycotoxin

Contract n°: 007174

Website:
http://mycoglobe.ispa.cnr.it

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EU contribution:
€ 300,000

WIDENING THE FOOD SAFETY NET

LIST OF PARTNERS

- International Centre for Pesticides and Health Risk Prevention (Italy)
- Department of Environmental Medicine and Public Health, University of Padova (Italy)
- Istituto Mario Negri (Italy)
- The Danish Institute for Food and Veterinary Research (Denmark)
- Institute of Outpatient Clinic of Occupational, Social and Environmental Medicine, (Germany)
- National Centre of Public Health Protection (Bulgaria)
- Godollo Agribusiness Centre (Hungary)
- Institute of Agricultural and Food Information (Czech Republic)
- Iuliu Moldovan Institute of Public Health, Cluj-Napoca (Romania)
- Food Research Institute Bratislava (Slovakia)
- National Food and Nutrition Institute (Poland)
- Latvia University of Agriculture (Latvia)
- Ministry of Agriculture and Rural Affairs, Ankara Province Control Laboratory Directorate (Turkey)
- Estonian Environmental Research Centre (Estonia)
- Research and Consultancy Institute (Cyprus)
- Agricultural Research Institute (Cyprus)
- Kaunas University of Technology (Lithuania)
- University of Ljubljana, Faculty of Social Science (Slovenia)
- Food Safety Commission (Malta)
- International Life Science Institute (Belgium)

Harmonising food safety standards and practice across the enlarged European Union will need a concerted effort from old Member States (MS), New Member States (NMS) and Associated Candidate Countries (ACC). Past EU research projects have yielded a lot of information on potential food contaminants and how to control them. SAFEFOODNET, a new two-year Specific Support Action, will bring NMS and ACC research groups and experts on food safety into the information network. Its consortium, with 20 partners, from four MS, ten NMS and three ACC, will focus on chemical food safety. Old and new member states both stand to benefit: the first from access to skills and experience in the NMS and ACC, the last from integration into the European Research Area as it applies to food safety.

NEW EUROPEAN BODY

A European Food Safety Authority (EFSA) has just been set up to coordinate and integrate all food safety research and promotion that takes place in Member States. Such activities have been going on for a long time in some MS, but they need unification into overall European policy and practice. The NMS, and the ACC that are preparing to join the EU, need to address food safety issues in a unified way and contribute to a Europe-wide approach under EFSA. SAFEFOODNET will be the vehicle for this preparation.

The first step in SAFEFOODNET will be to set up a protocol for collecting information from each country so that it can all be compared with validity. Data are being collected on chemical food safety issues in each country, covering analytical capabilities, expert institutions and the people who work in them. Another aspect will be to assess whether a standard national diet could be defined for each country, together with patterns of consumption. It might then be possible to use the WHO's GEMS/FOOD methods to calculate exposure to chemical contaminants, either through an acute outbreak of unusual contamination, or the long-term, gradual intake of such substances as pesticides.

All these data will be used to assemble a profile of each NMS and ACC in the project, revealing its strengths and weaknesses, training needs and potential for new research collaboration. Workshops will be held with the relevant authorities in each country and experts in relevant fields: analytical chemistry, exposure assessment, the management of food contamination, and dietary assessment. Scientists or other delegates from MS will also attend these workshops, helping to build up a European network for chemical food safety. A website will be started and maintained throughout the two-year project, with all national researchers and institutions profiled on it and public access to many areas.

These measures will go a long way towards integrating all potential and actual EU members into the EFSA. The SAFEFOODNET national coordinators will be the link for cooperation with the fledgling authority.

CASCADING RESEARCH WEBS

The Sixth Framework Programme contains a number of projects on chemical food safety. Researchers from NMS and ACC will be encouraged to prepare proposals, together with other MS, as well as join in relevant Networks of Excellence and existing research programmes. Examples are THE CASCADE NoE (Chemicals as Contaminants in the Food Chain) and HAIR (Harmonised environmental indicators for Pesticide Risks). Ultimately, the project partners will be able to formulate and propose new joint research projects.

Acronym: SAFEFOODNET

Full title: chemical food safety network for the enlarging Europe

Contract n°: 513988

Website:
www.safefoodnet.net

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EU contribution:
€ 557,000

SMEs-NET

LAYING THE ROOTS OF AN SME COMMUNICATIONS GRAPEVINE

LIST OF PARTNERS

- Spread European Safety (Italy)
- Confederation of the Food and Drink Industries of the EU (Belgium)
- Federalimentare Servizi (Italy)
- Agriconsulting (Italy)
- Progetto Europa Regions (Italy)
- Tecnoalimenti SCpA (Italy)

Major research efforts into improving food technology often have priorities and objectives that do not address the concerns and needs of consumers and industry. This is because there is inadequate communication among food and beverage processors, consumers and researchers. Consequently, a large part of this research never actually ends up improving the products that people eat and drink. Other examples exist.

With six participants from ten European countries, the Specific Support Action SMEs-NET will work to establish the roots of a permanent European network linking small-and-medium size enterprises (SMEs) in the food and beverage industry with research institutions and with consumers and nutritionists. The objective is to provide consumers with better and healthier food and beverages through more demand-driven scientific research on food safety innovation, nutritional value and raw materials and technology.

THE FOOD INDUSTRY'S SME BACK-BONE

The food and drink industry is the European Union's largest manufacturing sector, with a turnover of €810 billion (EU-25), 90% of which is generated by SMEs. Since SMEs account for 98% of the sector's 35 000 businesses, they are the backbone of the overall food chain, with solid relationships with all the other actors operating from farm to fork and vice-versa. Consequently, they are ideally placed to help bridge the communication gap separating the stakeholders in food quality and safety, namely, primary food producers, consumers, scientists and processing SMEs.

SMEs-NET intends to reach at least 20% (7 000) of the most representative SMEs, either by branch or by geographical area. Coordinated by SPES GEIE, of Italy, the project has six participants. In addition, eleven national food and drink federations are members of SPES GEIE and will participate through it. The 14-month project will lay the foundations for SME participation in future EU-sponsored R&D, in the form of a permanent consultative network of all stakeholders, as well as policy-makers and relevant public administration bodies. It will also contribute to establishing a strategic research agenda for the European Technology Platform 'Food for Life', targeting the needs of food SMEs.

Sectorial working groups will study local industry RTD needs, identifying the most urgent technological and nutritional issues, and consumer expectations. The goal is for each group to understand the other groups' concerns, needs and interests. Stakeholders will discuss findings in a series of regional meetings in Spain, Belgium and the Czech Republic. The project will disseminate findings and other materials throughout the networks and at the EU level.

BETTER COMMUNICATION FOR BETTER RESEARCH

SMEs-NET will boost SME participation in food research, while bringing into clear focus the socio-economic and cultural aspects of such research. The project aims to help break a vicious cycle in which new food technology is prohibitively expensive for SMEs to adopt due to the high cost of learning complex new tasks, training personnel, and communicating with consumers. It targets improving the low adoption rates for innovative food processing methods and technologies among SMEs.

Acronym: SMEs-NET

Full title: SMEs networking European food quality and safety stakeholders

Contract n°:514050

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 700,000

TESTMETEDECO

TESTING TIME FOR ENDOCRINE DISRUPTORS

LIST OF PARTNERS

- Organisation for Economic Cooperation and Development Environment Health and Safety Division (France)
- Various laboratories in OECD member countries to be nominated by OECD

Chemicals in the environment can alter the endocrine systems of animals and prevent them from growing or breeding successfully. One example is the feminisation of fish, but invertebrates at the bottom of the food chain and crustaceans of economic importance may be more significant. There is also a risk that higher vertebrates could be affected, too. A number of manufactured chemicals that escape into the environment are suspected as possible endocrine disrupters (ED), but we need reliable methods to identify them and understand how they work in animal organisms. We also require reliable methods to assess the scale of the threat posed to human health and to the environment by existing and new compounds, while minimising the amount of animal testing.

COLLABORATING ON TEST METHODS

The United States, Japan and many EU Member States that belong to the OECD (Organisation for Economic Cooperation and Development) currently have research programmes on ED and a regulatory system waiting for reliable methods (OECD Test Guidelines) to evaluate the potential hazard. There is a need to coordinate the work and develop and validate harmonised test methods which can be used by any regulatory authority to screen chemicals for their potential hazard. The OECD has set up the TESTMETEDECO project to assist member countries in assessing the performance of ED methods. The EU's role here is to support the statistical analysis and reporting, before member countries decide on the development of OECD Test Guidelines. The action will enhance collaboration between laboratories in EU Member States and the USA and Japan, and contribute to the Union's policy objective of reducing environmental health risks.

The aim of the OECD activity, beyond the TESTMETEDECO project, is to provide a battery of reliable and harmonised test methods to meet regulatory needs. In vitro methods, which usually cover receptor-binding modes of action, are suitable for many chemicals. They enable prioritisation of further testing and are preferred, where possible, to reduce the use of animals in experimentation. Nevertheless, in vivo tests may still be needed to study the chronic effects of chemicals on individual organisms and populations.

WIDE SPECTRUM

The test methods performance assessment is one of the prime aims of this support action. More broadly, three validation management groups of specialists have been set up to establish the relevance and reliability of methods developed. The first group oversees mammalian screening and testing for endocrine disrupters of human health (sex hormones or thyroid activity). The second covers ecotoxicity testing. Tests on fish, amphibian and invertebrates species are discussed. In fish, the use of biomarker proteins appears to be a reliable way to discriminate endocrine active substances from other chemicals. Amphibians represent a useful model for detecting chemicals active on the thyroid system which regulate growth. Chronic tests on invertebrates are being standardised to evaluate adverse consequences of potential ED on the primary providers in the food chain. The third group supervises all non-animal tests, which is a theme in several other EU programmes. This group, like the first two, will seek to avoid duplication of such tests being developed in OECD member countries.

To spread information about the action's validated methods and other results, review papers will be published during the work and the final report will include a review of the results obtained during validation studies for each of the methods considered. Finally, the best tools developed will be consolidated into a strategy for testing endocrine disrupters, which will be widely publicised. It will help to assess hazards to the environment and human health, and provide instruments for regulators.

Acronym: TESTMETEDECO

Full title: development of test methods for the detection and characterisation of endocrine-disrupting chemicals in environmental species

Contract n°: 006936

Website:
www.oecd.org/

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EU funding:
€ 226,000

BIOTOX

DEVELOPING A SCIENTIFIC SAFETY SHELL

LIST OF PARTNERS

- The Netherlands Institute for Fisheries Research (The Netherlands)
- Marine Institute (Ireland)
- RIKILT Institute for Food Safety (The Netherlands)
- The Norwegian School of Veterinary Science (Norway)
- National Veterinary Institute (Norway)
- National University of Ireland (Ireland)
- University of Modena (Italy)
- Food Safety Authority of Ireland (Ireland)
- Scientific Institute of Public Health (Belgium)
- Oyster Creek Seafoods Limited (Ireland)
- Biosense Laboratories AS (Norway)
- Institut Français de Recherche pour l'Exploitation de la Mer (France)

The production of shellfish is an important economic activity in the European Union with considerable net value for the economy. The presence of marine toxins in oysters, mussels and other shellfish can affect human health and cause serious financial losses to the aquaculture industry. Shellfish can take in toxins from polluted water or if an algal bloom develops in certain weather conditions. Accurate and fast testing methods for the presence of biotoxins in shellfish, are therefore important for Europe's economy and the health of its citizens.

Some test methods do exist but some classes of toxin are hard to estimate using these available methods. Moreover, many methods use tests on mice or rats and it is EU policy to phase out animal testing. A more systematic approach to develop fast and reliable methods is being sought in a new three-year Specific Targeted Research Project, BIOTOX. It includes the main marine laboratories in Europe, and will be overseen by a panel of experts.

QUEST FOR BETTER TESTS

The class of lipophilic (lipid soluble) toxins is to assay accurately using current techniques – some methods work for some of them, but many remain hard to quantify, or even to detect. BIOTOX aims to develop and validate new methods to confirm the presence of lipophilic toxins in shellfish, using separation methods based on liquid chromatography and mass spectrometry (LC-MS), and preferably, alternative, rapid assays. Some of these methods can already be used to detect certain shellfish toxins.

Methodologies need to be made more reliable, more widely applicable and faster, so that large batches of samples can be tested quickly. Standardised methods to extract test material from suspect shellfish will be developed, together with confirmatory analyses that can cover a range of possible toxins, including those that have not yet been completely characterised. They will form the basis of a universal test procedure for use by the industry and by the control laboratories. Tests developed will require validation and comparison against the current procedures that use mouse samples. A range of certified reference materials will be produced.

TRAWLING THE SEAFOOD MARKET

BIOTOX is also looking at the problem of knowing when algal blooms become a hazard. Early warning tools for detecting the presence of toxins will use advanced methods based on gene expression. A functional approach will determine suitable genes that will bind to microarrays of commercial chips, leading to a high-capacity, high-speed identification system. A traceability system for affected shellfish that may be on their way to market will be developed.

Another line of enquiry is to clean up contaminated shellfish so that they are fit to eat. The chosen example is the DSP lipophilic toxin that can infect farmed mussels. The aim is to purify such shellfish in a few days, taking into account the effects of temperature and the food they are given.

The detection and depuration methods that BIOTOX develops will be incorporated into HACCP (Hazard Analysis and Critical Control Point System) for standardised monitoring of biotoxins in shellfish. The European Community Reference laboratory and several national equivalents will ensure that the methods percolate through to all relevant labs. Publicity will also ensure that consumers have confidence in the safety of shellfish.

Taken together, these results will help to ensure that European food is of consistently high quality and that the producers of shellfish can deliver a safe product and make a reasonable profit.

Acronym: BIOTOX

Full title: development of cost-effective tools for risk management and traceability systems for marine biotoxins in seafood

Contract n°: 514074

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EU contribution:
€ 3M

BIOTOXMARIN

FINDING NEW TOOLS TO DETECT TOXINS IN SEAFOOD

LIST OF PARTNERS

- Johannes Gutenberg Universität Mainz (Germany)
- Università degli Studi di Napoli, Federico II (Italy)
- instrAction GmbH (Germany)
- Diagnostic Science and Technology GmbH (Germany)
- Université de Bretagne Occidentale (France)
- BIOTECmarin GmbH (Germany)
- INTEGRIN Advanced Biosystems (UK)
- Micro Vacuum (Hungary)

In recent years, as toxic algal blooms have increased in incidence, strength and duration worldwide, poisoning outbreaks linked to contaminated seafood have inflicted enormous economic damage. The exact causes of the blooms are unknown, though coastal water pollution is a major suspect. The biotoxins they produce can cause severe neuronal and gastrointestinal disorders and allergies. As part of its effort to protect the food chain, the European Union is seeking new cost-effective, fast and sensitive tests to detect toxins in seafood, as well as in human sera. The BIOTOXmarin STREP has brought together eight partners from five EU countries to develop such tools, which could be used on ships, in harbour or market, or in clinics.

SICKENING SUBSTANCES

Contaminated seafood causes four main types of poisoning. Paralytic shellfish poisoning (PSP) is life-threatening, with neurological symptoms and rapid onset. Neurotoxic shellfish poisoning (NSP) has neurological, gastrointestinal and asthma-like symptoms. The potentially life-threatening effects of amnesic shellfish poisoning (ASP) include nausea, vomiting, abdominal cramps and diarrhea, as well as neurological symptoms. Diarrhetic shellfish poisoning (DSP) induces severe diarrhea, nausea, vomiting, abdominal cramps and shivers, but is usually not fatal.

The toxins causing ASP, DSP and PSP are found in European waters, while NSP toxins are found in imported shellfish. Scientists have isolated several substances from unicellular dinoflagellates responsible for toxic algal blooms and determined their chemical structures. For example, saxitoxin and its 18 derivatives, responsible for PSP, have been found in various dinoflagellates. The DSP toxin okadaic acid, produced by the marine dinoflagellate *Prorocentrum lima*, can induce apoptosis in human cells. Ciguatera fish poisoning (CFP) toxins are found in tropical fish meat and are only partly understood.

TOXIN DETECTORS

Toxins in seafood are usually detected by mouse bioassay, a method hampered by low reproducibility and sensitivity. During its three-year programme, the BIOTOXmarin team will develop detection tools based on 'PolymerInstruction' technology and highly sensitive integrated optical grating coupler (IOGC) biosensor technology. It will employ high-affinity capture antibodies and novel artificial receptor mimics for sensitive ELISA and Western blotting techniques based on infrared-fluorescence imaging.

Some participants have already raised antibodies against okadaic acid, and this promising strategy will be extended to toxins causing PSP, NSP, or ASP. The team will develop easy-to-use point-of-care (POCT) chip and dip-stick/card test assay methods, as well as bioassays based on an interaction of okadaic acid with phosphoprotein phosphatase 2A or the activation/phosphorylation of MAP kinase p38. The scientists will validate test kits using samples from contaminated shellfish or sera from human patients. The tools will be integrated in a traceability system. Finally, BIOTOXmarin's SME partners will manufacture prototype chips, sensor devices and test stripes, and establish a marketing strategy.

SAFER SEAFOOD

BIOTOXmarin's chief accomplishment will be new tools to ensure high-quality and safe seafood. The project will help identify potential human causes of toxic algal blooms, providing data and tools to support Union legislation and other EU research projects aimed at protecting the food chain and environment. The new tools will permit the replacement of animal-based tests with non-animal tests. The availability of easy-to-use, fast and sensitive methods for detecting marine biotoxins will strengthen the EU's competitiveness in the rapidly growing area of aquaculture of mussels, oysters and other shellfish.

Acronym: BIOTOXMARIN

Full title: development of novel analytic tools for the detection of marine biotoxins

Contract n°: 513967

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EU contribution:
€ 1.3M

DETECTOX

FISHING FOR PHYCOTOXINS IN SHELLFISH

LIST OF PARTNERS

- Universidade de Santiago de Compostela (Spain)
- Xenosense (UK)
- Centre National de la Recherche Scientifique (France)
- Queen's University Belfast (UK)
- Asociación Nacional de Fabricantes de Conservas de Pescados y Mariscos (Anfaco) (Spain)
- Ege University (Turkey)
- National Reference Laboratory on Marine Biotoxins (Greece)
- European Community Reference Laboratory of Marine Biotoxins (Spain)

Toxic contamination is the main reason for health authorities to ban harvesting and sale of aquacultured shellfish. As it can cause major economic damage to this industry, adequate testing for shellfish toxins is crucial. In Europe, the broad spectrum mouse or rat bioassay is the only official detection method for such toxins. This method is expensive and occasionally produces false positive and false negative results. It requires killing animals and is simply unable to cope with the number of toxin groups that must be detected according to new European Union regulations. The nine partners of the Specific Targeted Research Project DETECTOX aim to develop a fast, versatile biosensor employing surface plasmon resonance (SPR) technology. This new tool will detect shellfish toxins with better accuracy, greater ease and lower cost, helping to protect human health and safeguard the shellfish industry.

DANGERS OF THE DEEP

Shellfish poisoning is caused by phycotoxins produced by certain naturally occurring marine phytoplankton. These microalgae have been increasing in abundance worldwide and several new toxins have been identified in European seas, possibly carried by ballast waters in ships or due to shellfish farming, nutrient enrichment, climate change, or a decrease in algae predators. Meanwhile, many new toxin derivatives have been identified, but only a few of their structures are known. These bioactive toxins are thermo-resistant, so normal cooking, freezing or smoking cannot destroy them. It is virtually impossible to prevent their occurrence in the aquatic environment.

Several acceptable alternatives to the current bioassay exist to detect shellfish toxins, including enzyme-linked immunosorbent assay (ELISA) and HPLC followed by photometric detection. DETECTOX will develop an SPR-based biosensor, which offers advantages in terms of accuracy, rapidity, and robustness. The three-year STREP focuses on five main types of lipophilic phycotoxins that pose a serious health hazard to humans when present above certain limits in bivalve molluscs, echinoderms, tunicates or marine gastropods. It will acquire and purify them for use as reference standards in calibrating the biosensor. It will then produce polyclonal antibodies for the toxins by immunisation of sheep, rabbits and mice, for use as binding molecules in the assay. Having produced an optimised biosensor chip, it will be compared with accepted methods.

ADAPTABLE TECHNIQUE

The new multi-channel SPR biosensor will feature a simplified sample preparation technique able to deal with larger batch sizes and ready to reuse immediately after previous usage. It will be capable of quickly detecting a range of toxins in the same extract, calculating concentrations immediately after the analytical cycle ends. It will be usable in laboratories and at on-site locations, such as on ships or in markets, and will not necessitate the killing of animals.

Throughout the project, DETECTOX will disseminate its findings to the scientific community, forming links with other related Commission food safety projects, and to end-users and regulatory and industrial decision-makers. It will create an online database for marine phycotoxins. The new test could be adapted for use in detecting other, more lethal, but less prevalent, shellfish toxins. In addition to the improved quality and safety of aquacultured seafood, better toxin detection will contribute to the wider knowledge required to enhance problem-management strategies.

Acronym: DETECTOX

Full title: development of an SPR-based biosensor for the detection of lipophilic phycotoxins in shellfish residues

Contract n°: 514055

Websites:
www.detectox.org
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EU contribution:
€ 802,847

F&F

LINKING PHARMACEUTICALS IN THE ENVIRONMENT TO HUMAN FERTILITY

LIST OF PARTNERS

- Analyst Research Laboratories (Israel)
- The Volcani Center, ARO (Israel)
- The National Institute for Public Health (The Netherlands)
- Aarhus University Hospital (Denmark)
- INRA-CNRS - Physiologie de la Reproduction et des Comportements (France)
- Centre Universitaire-UFR Biomédicale, Paris (France)
- Factline Webservices GmbH (Austria)
- Wessex Institute of Technology (UK)
- OSM-DAN (Israel)

Scientific interest has grown recently in a reported decline in human fertility that could be linked to exposure to environmental chemicals. During the past three decades, studies have shown that pesticides, heavy metals and other industrial toxins in the environment can mimic reproductive hormones and disrupt the endocrine system. However, little research has been done on the presence of pharmaceutical products (PPs) in the environment, if and how they enter the food chain, and their effects on human fertility. There is no information available on the transmission, fate, bio-transformation and photo-transformation of pharmaceutical products, which are used worldwide in large quantities (compared to agrochemicals). As part of the European Union's drive to ensure food safety and quality, the nine partners of the Specific Targeted Research Project known as F&F will work to determine whether pharmaceutical products are present in food and whether they affect human fertility.

AN INTEGRATED APPROACH

Only about 50 out of thousands of commercially used pharmaceutical products have been studied for their effects on human fertility. Few methods are available for simple, efficient acquisition and pre-concentration of these substances from environmental and food samples for analysis. To improve knowledge, the three-year STREP F&F will integrate research from its six partners from the European Union and three from Israel. Participants include risk assessors, managers, clinical epidemiologists, endocrinologists, biochemists, as well as experts in biochemical and chemical diagnostics. They will develop and validate highly specific, sensitive and reproducible diagnostic assays (at the parts per trillion level) able to handle large numbers of samples at high rates and low cost.

Using new and existing analysis tools, researchers will screen pharmaceutical products – mainly estrogens, androgens and progestogen-like compounds commonly used for birth control, menopause relief, menstruation regulators, anti-inflammatory drugs and chemotherapeutic drugs – and their metabolites. They will determine how they get into food and what effects they have on the brain-gonad reproductive axis. Blood, milk and urine samples will be monitored for PP residues and the possible correlation between the occurrence of the drug residues, fertility problems and dietary habits will be examined on a gender basis. They will study the mechanisms of action and clinical epidemiology of these substances, and their effects on food safety, with emphasis on cumulative health risks posed by a wide range of environmental pollutants. This should make it possible to identify and characterise pharmaceutical products' endocrine-disrupting activity and their risks for fertility, based on regional and socio economic factors and gender. F&F will establish exposure scenarios in Europe, identifying vulnerable groups such as pregnant women and children.

PRIORITY PRODUCT LIST

F&F will produce a scenario-specific prioritisation list of pharmaceutical products with high potential to affect human fertility, and information on their action mechanisms, transmission routes and long-term effects. It will produce diagnostic, clean-up and purification methods for these PPs in food, and a set of standard operating protocols describing analytical methods used for the validation process. It will help determine methods to prevent or minimise the effects and risks of food-borne pharmaceutical products.

The project will present findings to the public via knowledge pools and a website, and it will conduct a final-year workshop for the European scientific and clinical community and the pharmaceutical industry.

Acronym: F&F

Full title: pharmaceutical products in the environment: development and employment of novel methods for assessing their origin, fate and effects on human fecundity

Contract n°: 513953

Website:
www.foodandfecundity.factlink.net

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EU contribution:
€ 1.7M

FEEDING FATS SAFETY

FATS ON THE ANIMAL FEED MENU

LIST OF PARTNERS

- University of Barcelona (Spain)
- Institut d'Investigacions Químiques i Ambientals, CSIC (Spain)
- Stazione Sperimentale d'Oli e Grassi (Italy)
- Swedish University of Agricultural Science (Sweden)
- University Autònoma de Barcelona (Spain)
- University Politècnica de Valencia (Spain)
- University of Bologna (Italy)
- University of Bordeaux 1 (France)
- SILO (Italy)

Fat by- and co-products from the food chain are a cost-effective ingredient for animal feed producers, as well as a source of environmentally sustainable growth. However, poor regulation of both origin and quality of these materials allows toxic and undesirable compounds to enter the food chain. In its effort to assure food chain integrity, the European Union has taken steps to reduce chemical contamination of fats used in animal feeds, but many knowledge gaps remain. The nine partners of the Specific Targeted Research Project (STREP) Feeding Fats Safety will assess the risks of using recycled fats in animal feeds. They will identify and quantify these harmful compounds and propose ways to use fats safely.

Europeans' exposure to dietary PCBs, dioxins and dioxin-like compounds widely exceeds maximum values set by the World Health Organisation. These contaminantss are fat-soluble carcinogens and are linked to many serious illnesses. Since they are fat-soluble, they bio-accumulate in adipose tissue over a lifetime.

Maximum levels have been established in feeds for dioxins and furans but not for dioxin-like PCBs. Other liposoluble toxic compounds in foods are polycyclic aromatic hydrocarbons (PAHs), and some flame retardant compounds (PBDE), which are not well understood and for which maximum dietary levels have not been determined.

Foods of animal origin contribute 80% to the total dioxin human exposure, and feedstuffs are the primary path dioxins take to enter meat. Fish oils and fish meals are the most heavily dioxin-contaminated feedstuffs, followed by animal fats. Frying and cooking, and particularly some industrial processes such refining and hydrogenation, can provoke some alteration of fats, increasing the presence of trans fatty acids and oxidising lipids.

REVERSE ENGINEERING

FEEDING FATS SAFETY's nine teams have expertise in veterinary science, chemistry, biochemistry, analysis and quality control, environment, and nutrition. They will take an inverse approach to the food chain, 'from fork to farm', to generate data about animal production. Starting with fat production and feed manufacture, they will follow feed throughout the production of meat for human consumption.

The teams will characterise the chemical composition, degradation and contamination levels of a wide array of feeding fats constituting by-products or co-products from the food chain. They will study the effects of fat-enriched feed on animal health and on meat's lipid composition, oxidation, nutritional quality and safety, and determine how contaminants get from fats into meat and other animal tissues and fluids.

BETTER REGULATION

The EU Directive EC Nº 178/2002 established general principles and requirements of food safety and law, including the safety of animal-feed ingredients. EU Regulation 1774/2002 introduced strict controls to prevent undesirable compounds entering the food chain via some but not all fat materials.

FEEDING FATS SAFETY will generate more complete knowledge about composition, degradation and contamination characteristics of fatty by- and co-products. This will help improve standardisation, achieve strict quality regulation, and set maximum contaminant levels for more types of these feed fats.

For industry, better reference standards, guidelines and quick, easy analysis methods will enable companies to assess quality and safety on-site, to ensure traceability in feed and meat production. Meat production based on food-chain co- and by-products will enable environmentally sustainable farming systems for safe, nutritional and appetising meat.

The project will promote collaboration between scientific institutions and companies across the EU and disseminate knowledge on feed fats to producers. It will also conduct an information campaign to educate consumers and improve confidence in the food chain.

Acronym: FEEDING FATS SAFETY

Full title: quality and safety of feeding fats obtained from coproducts or by-products from the food chain

Contract nº: 007020

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www.ub.edu/feedfat/

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EU contribution:
€ 1.4M

FOCUS ON FLAVONOIDS IN FOOD QUALITY AND HEALTH

LIST OF PARTNERS

- Institut National de la Recherche Agronomique (France)
  - Laboratoire de Biologie des Semences, Versailles
  - Unité mixte de Recherches Sciences Pour L'Oenologie, Montpellier
  - Unité de Recherche Cidricole, Rennes
  - Métaboliques et Micronutriments, Clermont-Ferrand
- Plant Research International BV, Wageningen (The Netherlands)
- Stichting Dienst Landbouwkundig Onderzoek, RIKILT - Food Bioactives Group, Wageningen (The Netherlands)
- Università di Firenze, Dipartimento di Farmacologia (Italy)
- Wageningen Universiteit META, Centrum voor Methodische Ethiek & Technology Assessment (The Netherlands)
- Nestec S.A. – Lausanne (Switzerland)
- Institute of Food Research – Nutrition Division, Norwich (UK)
- VTT Technical Research Centre, Espoo (Finland)
  - Consumer and Sensory Studies - Plant Biotechnology
- Philipps Universität Marburg, Institut für Pharmazeutische Biologie (Germany)
- Akademia Rolnicza Wroclaw – Fruit, Vegetable and Cereal Technology Department (Poland)
- Consejo Superior de Investigaciones Científicas – CEBAS Espinardo (Spain)
- INTER-RHONE/Avignon (France)
- Universität Bielefeld – Lehrstuhl für Genomforschung (Germany)
- Ente per le Nuove Tecnologie, l'Energia e l'Ambiente, Trisaia (Italy)

The EU faces growing challenges linked to its ageing population, including an increasing prevalence of cardiovascular diseases (CVD) and cancer. Consequently, the Union wants to exploit the preventative potential of food, which, in turn, could help improve social well-being and cut health costs. One way to do this is to improve the flavonoid content of fruits, vegetables and derived foods. Flavonoids are a group of natural, plant-derived compounds with antioxidant properties.

Many studies point to the potential flavonoids have to prevent chronic diseases, as well as inflammatory, arthritic, and allergic and immune responses. However, there are many gaps in our scientific knowledge. FLAVO brings together 18 research teams (public and private) from nine European countries, which will work to improve knowledge about flavonoids. In particular, it will develop advanced methods of improving the flavonoid content and composition of various foodstuffs.

TWEAKING THE CONTENT

Data from *in vitro* studies indicate that flavonoids are potentially biologically active, impeding oxidative damage to biomolecules, such as DNA, lipids and proteins by scavenging various oxidising species. Many flavonoids outperform vitamins C and E in antioxidant assays. They can inhibit enzyme activities, or viral, and bacterial proliferation. Numerous flavonoids reduce proliferation or induce apoptosis in a variety of cell lines in vitro, some of which originate from the gastrointestinal lining.

However, available nutritional data only provide correlations between health benefits and different classes of dietary flavonoids. The validity of epidemiological studies is still limited by the paucity of available data on the composition of flavonoids in food. Furthermore, little information is available on their targets and mechanisms, and there have been no studies involving human-grade food rich in specific flavonoids.

The project will focus on flavan-3-ols and proanthocyanidins (PAs or condensed tannins), as there is clinical evidence that they maintain cardiovascular function and decrease CVD risk. Previous trials have used PA-rich extracts including pine bark, grape seed, cocoa and fruit juices, such as cranberry, blueberry and purple grape. Since these are sold in low volumes in Europe, FLAVO will use European plant-based foods like grape, apple and strawberry juices, as well as wine and cider. In addition, a model plant (*Arabidopsis thaliana*) will be used to better understand the flavonoid metabolism in plants. FLAVO will develop approaches for selecting and processing plant raw materials to optimise flavonoid composition and quality. FLAVO will conduct surveys in three countries in northern, central and southern Europe to ascertain whether accumulating flavonoids in fruit and vegetable products will increase their acceptability and perceived healthiness, how different production and processing methods can influence willingness to use these products, and what kind of products are most appropriate for enhanced flavonoid content.

HEALTH BOOST

FLAVO will produce regularly updated websites to disseminate public information about project results, as well as flavonoids and health. The project will help increase the competitiveness of the European agri-food sector by identifying foods with health-promoting activity. SMEs will find new opportunities to market healthy natural products based on European agriculture.

Acronym: FLAVO

Full title: flavonoids in fruits and vegetables: their impact on food quality, nutrition and human health

Contract n°: 513960

Website:
www.flavo.info
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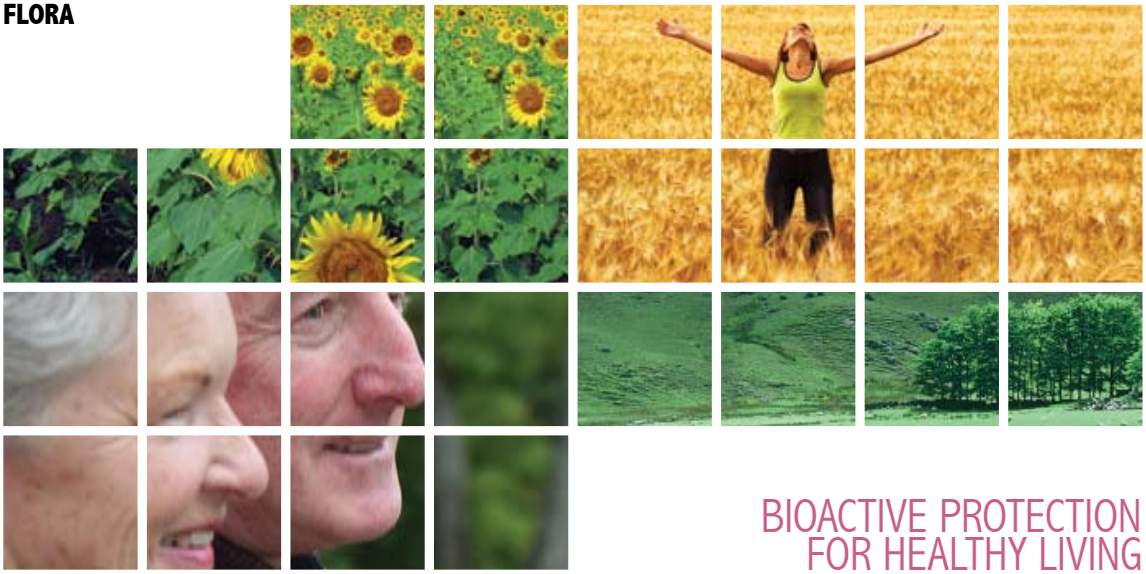
EU contribution:
€ 4M

FLORA



BIOACTIVE PROTECTION FOR HEALTHY LIVING

LIST OF PARTNERS

- John Innes Centre (UK)
- University of Milan (Italy)
- Institute of Plant Genetics and Crop Plant Research (Germany)
- Università Cattolica del Sacro Cuore (Italy)
- Plant Research International (The Netherlands)
- Université Joseph Fourier (France)
- Istanbul Technical University (Turkey)
- Congenia (Italy)
- Ortogel (Italy)
- Biopolo c/o IFOM (Italy)
- Istituto Sperimentale per l'Agrumicoltura (Italy)

Scientific studies have shown that dietary intake of flavonoids and related phenolics can reduce incidence of cardiovascular disease (Europe's leading cause of death), certain types of cancer, stroke, allergies, hepatic disease and inflammation. However, no one knows exactly which phenolics promote health (some have harmful effects), or what quantities are bio-available from dietary sources. The Specific Targeted Research Project FLORA brings together 11 participants from six countries, including Turkey, to improve scientific understanding of how flavonoids and related phenolics affect human health having been absorbed from the intestines. As part of the European Union's broad-based food safety initiatives, the four-year project, which complements the work of another STREP – FLAVO – will examine the beneficial health effects of these bioactive nutrients and provide European recommendations for daily intake.

A LOST NATURAL PROTECTION AGAINST DISEASE

Flavonoids and related phenolics are historically part of the basic human diet. The loss of such protective bio active nutrients due to reduced fruit and vegetable intake may have contributed to the current high incidence of age-related diseases. Lack of understanding of these differences in bio-availability of these nutrients and their levels in different foods has stymied progress in determining their health effects. In addition, much of the research in this area is sponsored by food companies looking to promote their products, so it sometimes lacks critical evaluation. FLORA has assembled an interdisciplinary team of nutritionists, medical researchers and plant geneticists to analyse systematically the health-promoting effects of plant flavonoids and related phenolics.

BLUEPRINT FOR BETTER FOODS

Major advances in genetics, molecular science and genomic projects in the last ten years have made it possible to produce plants that are isogenic except for variations in the quantity and type of phenolics they accumulate. Taking advantage of this new technology, FLORA will develop three foods – corn, tomato and *Arabidopsis* – for use in controlled studies to assess the impact of dietary flavonoids and related bioactive nutrients in mice that model specific human diseases. It will use oranges with varying flavonoid contents for parallel human intervention trials, to determine the ability of these bio active nutrients to protect against cardiovascular disease and stroke. A key goal is to identify the mechanisms by which bioactive nutrients protect against disease, at the cellular level. FLORA will also evaluate the impact of post-harvest treatment and food processing on bio-availability of flavonoids and related phenolics.

The project will make a significant contribution to improving the health of European consumers. It will promote consumption of foods with beneficial health effects, emphasising traditional production methods and agriculture. It will provide a directory of foods that are dependable sources of flavonoids. FLORA will disseminate results through scientific publications, posters, conferences, and a dedicated website. It will establish contacts with food producers and the food industry through the Plant Industrial Platform (PIP), which includes many members with strong interests in bio active nutrients. Since several members of FLORA are active in teaching, throughout the project their students will be exposed to cutting-edge research of applied relevance. This, in turn, will contribute to making Europe a knowledge-based society.

Acronym: FLORA

Full title: flavonoids and related phenolics for healthy living using orally recommended antioxidants

Contract n°:007130

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www.biopolo.it

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HELENA

HEALTHIER ADOLESCENTS MAKE HEALTHIER ADULTS

- LIST OF PARTNERS
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- Université de Lille 2 (France)
- Research Institute of Child Nutrition Dortmund (Germany)
- Harokopio University (Greece)
- Institut Pasteur de Lille (France)
- Karolinska Institutet (Sweden)
- Asociación de Investigación de la Industria Agroalimentaria (Spain)
- Campden & Chorleywood Food Research Association (UK)
- Pécsi Tudományegyetem (Hungary)
- University of Crete (Greece)
- Institut für Ernährungs- und Lebensmittel- wissenschaften-Humanernährung, Rheinische Friedrich Wilhelms Universität, Bonn (Germany)
- University of Granada (Spain)
- SIK – Institutet för livsmedel och bioteknik (Sweden)
- Meurice Recherche & Developpement asbl (Belgium)
- Campden & Chorleywood Food Development Institute, (Hungary)
- Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (Italy)
- University of Napoli "Federico II", Department of Food Science (Italy)
- Ghent University (Belgium)
- University of Vienna (Austria)
- Productos Aditivos (Spain)
- Carnicas Serrano (Spain)
- Cederroth International AB (Sweden)
- Cerealia R&D (Sweden)
- European Food Information Council (Belgium)

It is widely recognised that teenagers across Europe often resist adopting healthy lifestyles and healthy eating habits. This phenomenon jeopardises the future health and life expectancy of this new generation.

In the population at large, chronic diseases, such as type 2 diabetes, cardiovascular diseases, allergies and cancer remain the most common causes of morbidity and mortality. Many of these chronic diseases are known to be diet-related.

Other well-documented risk factors include obesity, sedentary lifestyle, elevated blood pressure, and smoking. Yet despite these risk factors receiving wide public attention, significant changes to people's behaviour have not been achieved.

Unhealthy habits often have their origin in childhood and adolescence. If young people adopted healthier lifestyles, there would be good prospects for long-term and sustainable improvements in the overall quality of life and health in Europe.

WHAT DO YOUNG PEOPLE REALLY EAT?

In order to establish the policies and environments that will support positive behaviour, we first need much more information about how teenagers behave today. The three-year EU-supported HELENA project (Healthy Lifestyle in Europe by Nutrition in Adolescence) aims to tackle the problem by supplying verified data on a whole range of adolescent habits, genetic make-up and nutrition. A team of experts from different scientific fields across Europe is conducting a cross-sectional survey of a large sample of 13 to 16-year-old boys and girls in ten European cities that represent different genetic backgrounds, eating patterns and socio economic status. For the first time, a standard methodology is being used across the whole survey to make the results comparable. Information is being collected on young people's knowledge about nutrition and attitudes to eating, in relation to the foods they prefer and those that they actually eat. Their physical fitness and physical activity patterns will be assessed. These data will be correlated with scientific measurements of body composition, plasma lipids and metabolic profiles, vitamin status and immune function. Their genotype will be determined so that gene-nutrient and gene-environment interactions can be analysed. The results will be put into European databases from which regional patterns can then be extracted.

We know that an environment with a poor diet and inactivity is the main risk factor for obesity and many chronic diseases. This new data will help quantify the relationship between food intake and various metabolic factors that can promote ill health. In relation to diabetes, these include glucose homeostasis and insulin resistance. Risk factors for eating disorders, dislipaemia and obesity will also be measured. This will help to identify individuals most at risk and give them a better chance of prevention.

NEW FOODS THAT KIDS WILL LIKE

Analysis of HELENA results will indicate adolescent food preferences in various types of environments. They can be related to foods that they need but may not get. The project will develop three novel and healthy foods designed to appeal to this age group. To make them appealing to the target consumers, a marketing strategy will be devised and tested.

An education programme on healthy eating and lifestyle will also be developed, aimed at young people. Together all these measures will put the understanding of adolescent nutrition on a sound scientific footing, and help to reduce risk factors for non-communicable disease initiated at this age. HELENA should make a major contribution towards improving the health of all European citizens.

Acronym: HELENA

Full title: healthy lifestyle in Europe by nutrition in adolescence

Contract n°: 007034

Website:
www.helenastudy.com

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EU contribution:
€ 5M

HEALTHY PIGS KEEP FARMERS AND CONSUMERS HAPPY

LIST OF PARTNERS

- Queens University Belfast (UK)
- Swedish University of Agricultural Sciences (Sweden)
- Merial, SAS (France)
- Université de Gand (Belgium)
- Danish Institute for Food and Veterinary Research (Denmark)
- Institut für Viruskrankheiten und Immunprophylaxe (Switzerland)
- Wageningen UR (The Netherlands)
- Devenish Nutrition (UK)
- Centre de Recerca en Sanitat Animal (Spain)
- Meat and Livestock Commission (UK)
- Agence Française de Sécurité Sanitaire des Aliments (France)
- University of Saskatchewan (Canada)
- Robert Koch-Institut (Germany)
- Royal Veterinary and Agricultural University (Denmark)
- Danish Bacon and Meat Council (Denmark)

In recent years, the health and welfare of European domestic pigs has been threatened by the spread of a spectrum of new diseases associated with the infection of pigs with a newly recognised virus called porcine circovirus type 2. These diseases have been named porcine circovirus diseases (PCVDs), of which post-weaning multisystemic wasting syndrome (PMWS) is perhaps the most serious. Affected animals fail to thrive, often get secondary bacterial infections and may suffer pain. Farmers use far more antibiotics but still lose a proportion of their stock. The animals have to be kept longer before they are ready for market and slower growth affects the quality of the meat – which is tougher – while more mature animals may acquire a 'boar taint'. Better information and control of PCVD would safeguard the producers and sellers of European pork and its products, and improve the quality of food for European citizens.

CONCERTED ATTACK ON PCVD

Two research projects in FP5 discovered a great deal about the pathogenesis, epidemiology and replication of the PCV2 virus that causes PCVD. The current Specific Targeted Research Project combines the expertise of the two groups that were responsible into a world-class consortium that will maintain and strengthen the EU's position as an authority on PCVD. It includes epidemiologists, veterinarians, immunologists, animal pathologists, virologists and molecular biologists. Their objectives are to consolidate all the information on PCVDs, to produce a control system that will enhance food safety and animal welfare, and spread information about it to all concerned.

The project has a range of scientific objectives. A better understanding of how PCVDs develop and spread will be essential to produce viable control measures. The virus appears to be air borne but requires other triggers to develop full-blown expression, which could explain why it has changed from a sporadic disease to one that has recently reached epizootic proportions. A genetic pre-disposition amongst certain animals could be one factor that leads to full expression. The project will also look for common co-factors and infectious or other triggers, and examine the role of nutrition and other environmental factors.

There will be a detailed study of the PCV2 virus, how it reacts with the porcine immune system and where it first replicates. Molecular mechanisms of viral replication will also be investigated. A standardised reagent bank for studying PCVD will harmonise the various studies. The production of a vaccine would be one possible control measure. An information dissemination system throughout the project will ensure that everyone involved in the production of pig meat in all its forms is up to date with the best ways to control PCVD. Consumers and policy-makers will also be in the information loop.

BRINGING HOME THE BACON

The aim of reducing the incidence of PCVD contributes to the EU objective of improving the safety and quality of European food, as expressed in its 'fork to farm' policy approach. Farm pigs will be freed from the pain of the disease itself and the stress of overcrowding resulting from the slower maturation caused by the disease. The profits of farmers will be protected and some will undoubtedly be saved from going out of business. Their competitiveness in a market, which includes producers from countries where there is no PCVD, will be preserved. Rural jobs will be safeguarded in regions where there are few alternatives. Control measures will generate further employment, and young postgraduate and postdoctoral researchers will receive training during the course of the project.

Acronym: PCVD

Full title: control of porcine circovirus diseases (PCVDs): towards improved food quality and safety

Contract n°: 513928

Website:
www.PCVD.org

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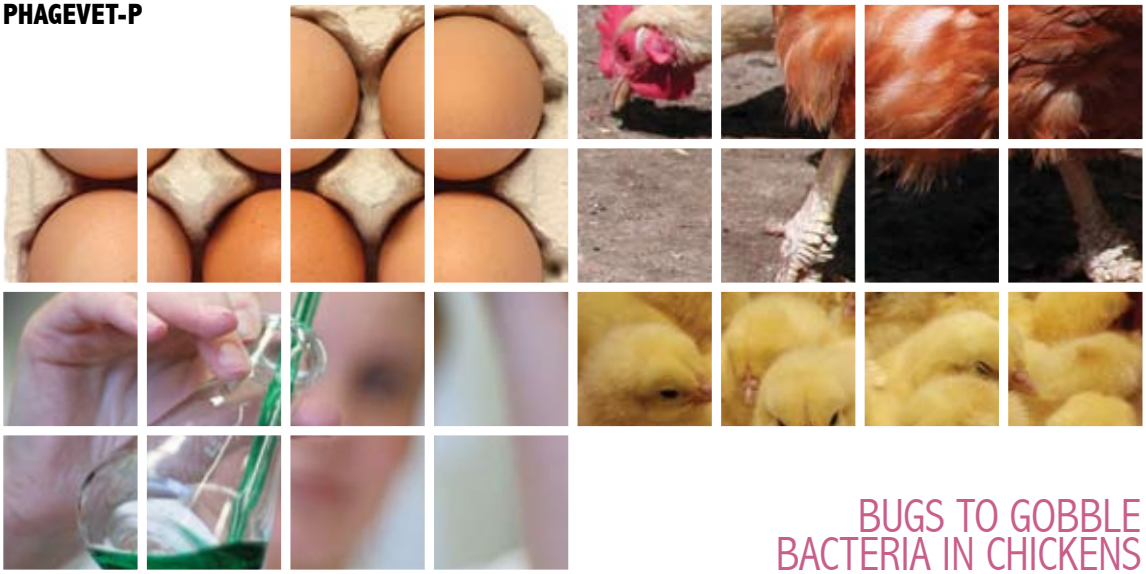
EU contribution:
€ 3.5M

PHAGEVET-P



BUGS TO GOBBLE BACTERIA IN CHICKENS

LIST OF PARTNERS

- Universidade do Minho, Departamento de Engenharia Biológica (Portugal)
- School of Veterinary Science, Bristol University (UK)
- Universidad de Santiago de Compostela, Faculdad de Farmacia (Spain)
- Leatherhead Food International (UK)
- Universidade Católica Portuguesa, Escola Superior de Biotecnologia (Portugal)
- State Institute for Genetics and Selection of Industrial Microorganisms (Russia)

Despite great improvements in food safety, food poisoning remains a problem in Europe, with over 1 000 deaths each year caused by bacteria carried by food. An experimental technique shows promise in combating two of the most severe infective bacteria, *Salmonella* and *Cambylobacter*, which cause a high proportion of cases of serious illness and fatalities. Flocks of chickens are frequently infected with these bacteria, especially when intensively raised for food. The bacteria can survive in chicken meat or eggs, transmitting the diseases to the people who eat them.

Chicken feed has been routinely dosed with antibiotics to try and control infections, but this has not provided a lasting solution. Bacteria readily mutate to acquire resistance to antibiotics. The faster new antibiotics are developed, the more quickly new resistant strains emerge, so all developed countries are now trying to limit the use of antibiotics in animal feed. This should ensure that antibiotics still remain effective for treating human infections.

FINDING AN ALTERNATIVE

It is therefore a matter of urgency to find alternative ways of preventing and treating the chicken infections that are also a risk to humans. Of the present possibilities, bacteriophage (phage) therapy shows promise. Phages are highly specific in killing certain strains of bacteria, just like antibiotics, but with the added benefit of multiplying as they consume the host, so they spread rapidly. Recent work has shown that phages are highly effective at clearing pathogens from poultry carcases and at killing them in the intestines of live birds and in their eggs.

The method requires investigation and development before it can be used on a large scale, and the PHAGEvet-P project has been designed to set this on course. It will evaluate the use of phages as alternatives to antibiotics in poultry production, and assess whether they can play an effective part in the EU's fork-to-farm policy for ensuring the safety of Europe's food. During its three-year course, two groups in Portugal and the UK and a group in Spain are doing comparable tests on live poultry, using expert advice from a Russian group.

PROOF OF PRINCIPLE

The project builds on exploratory work in Europe and the US. Its first aim is to establish that phages can reduce or eliminate *Salmonella* and *Cambylobacter* from small flocks of live chickens. The other significant aim is to ensure that such birds then provide poultry products that are fit for human consumption and have greatly reduced levels of contamination by these two pathogens.

Small batches of birds will be studied to demonstrate that, in principle, phages are suitable for controlling the two bacteria. Initially, the project will isolate and produce highly lytic phages specific to the two species and establish the most effective way to use them to treat birds. It will work out methods for sampling and detection in a protocol to be used by all research centres. If these trials demonstrate significant reductions in bacteria in the birds and their products, the stage will be set for larger trials involving several hundred birds. The possibility of phage-resistant strains emerging will also be investigated.

The PHAGEvet-P project will have an important impact on the poultry sector, helping to guarantee the safety and economic viability of its products. New poultry feeds could be developed as well as alternative treatments to antibiotics. Controlling the spread of resistance to antibiotics will benefit human health as well as animal welfare. This innovative technique could provide new research knowledge and techniques, as well as new business opportunities.

Acronym: PHAGEVET-P

Full title: veterinary phage therapies as alternatives to antibiotics in poultry production

Contract n°:007224

Website:
www.ceb.uminho.pt/ projectos/PhageVet-P

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EU contribution:
€ 674,000

PIONEER

CHILDREN WHO GROW UP TOO FAST

- LIST OF PARTNERS
- University of Turku (Finland)
- Karolinska Institute (Sweden)
- University of Rome (Italy)
- The AGA Khan University (Pakistan)
- CNRS (France)
- Kuopio University Hospital (Finland)
- University of Helsinki (Finland)
- Hungarian Academy of Sciences and Semmelweis University (Hungary)
- Imperial College London (UK)
- University of Leipzig (Germany)
- Charite-University-Medicin, Berlin (Germany)

The average age when European children reach puberty is declining – for some girls it can now be as low as eight years. Early maturity makes life more difficult. Children may be subjected to teasing or bullying from their social group and also run the risk of future health problems, ranging from early pregnancy to increased rates of some cancers. Many factors are implicated in this early maturation: the increase in childhood obesity, genetic make-up, the type of food eaten, and chemicals in the environment are the most suspect. But work is needed to evaluate and quantify their effects and the interactions between them. The main aims of the PIONEER Specific Targeted Research Project are to provide the evidence to assess the extent and causes of the trend and to see if measures are needed to counter it.

MATURE APPROACH

A team of experts in clinical and experimental sciences is carrying out the three-year project. They will collect extensive data from many regions across Europe about the age at which puberty starts in children. The next stage will be to develop genetic information about maturation, starting with the strong evidence that already exists for a constitutional tendency towards delayed maturation. Large population studies including identical twins, obese children and controls, will pinpoint candidate genetic traits that may control the onset of puberty.

Childhood obesity, an increasing problem in developed countries, is also linked to maturation – plump girls often reach puberty early, while overweight boys tend to mature late. Obesity appears to run in families, so PIONEER is also looking for a potential genetic link between the predisposition for obesity and the onset of puberty. Children may be at risk through genetic factors that control appetite, too.

HEREDITY VERSUS ENVIRONMENT

There is no doubt that genes influence the timing of growing up, but physiological and environmental factors also play their part. The food children eat can simply make them overweight but the effects of chemical content will be an important part of the study. Immature organs are susceptible to exposure to chemicals during critical stages of development and may even be permanently impaired. Most damaging might be man-made or natural chemicals that mimic our own (endogenous) hormones and disrupt developing endocrine systems.

Nutritional and genetic factors do not act in isolation but interact in a complex way that is not well understood at present. Existing studies of large numbers of obese and other children will form the basis of an exploration of these interactions. The project will deliver a greater understanding of the genetic, physiological and nutritional factors that interact to advance sexual maturity.

PIONEER is also working on new experimental models that will speed up the study of exogenous and endogenous influences on the onset of puberty. It will use in bred strains of mice with early or late onset of puberty for phenotype characterisation and genetic analysis. It will establish the chromosomal loci responsible for the timing of puberty and use them to identify the genes responsible for the differences in this timing between the two mouse strains. The mice will then be used to study the effect of nutrition on their maturation, and how it interacts with the individual genotype.

The results of PIONEER will provide evidence on whether the EU needs to take specific action to prevent children from maturing sexually too early. This will contribute to the general health and well-being of EU citizens. The project will also enable longer-term systematic collection and analysis of data as to when Europe's children reach puberty.

Acronym: PIONEER

Full title: puberty onset – influence of environmental and endogenous regulators

Contract n°: 513991

Website:
http://www.cascadenet.org/

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EU contribution:
€ 3M

POULTRYFLORGUT

POULTRY PRODUCTS UNDER THE MICROSCOPE

LIST OF PARTNERS

- Agence Française de Sécurité Sanitaire des Aliments (France)
- Università di Bologna (Italy)
- Institute of Immunology of Vilnius University (Lithuania)
- Institut Technique de l'Aviculture (France)
- The Royal Veterinary and Agricultural University (Denmark)
- Institut de Recerca I Tecnologia Agroalimentaries (Spain)
- Institut National de Recherche Agronomique (France)
- University for Veterinary Medicine of Vienna (Austria)
- Tierärztliche Hochschule Hannover (Germany)
- University of Veterinary and Pharmacological Sciences of Brno (Czech Republic)
- Animal Sciences Group, Wageningen UR (The Netherlands)
- Veterinary Laboratory Agency (UK)
- University of Perugia (Italy)
- Danish Institute for Food and Veterinary Research (Denmark)
- Centre de Recerca en Sanitat Animal (Spain)

European consumers want food that is free from chemical and biological contaminants. They also want food production systems that respect animal welfare and the environment. This has resulted in regulations banning the use of feed-based antibiotics to control intestinal microflora in poultry – as these could cause drug resistance in microbes that afflict humans – and changes of food production systems leading to the modification of poultry feeding (e.g. ban of in-feed antibiotics and 100%-vegetal diets) and rearing conditions (e.g. out-door breeding). These significant changes have resulted in an increased incidence of digestive disorders in poultry flocks due to imbalances in bacterial microflora, creating risks of degraded hygienic quality of products meant for human consumption.

Specific Targeted Research Project (STREP) POULTRYFLORGUT concentrates the efforts of 15 partners from ten European countries to optimise poultry production and to meet consumer concerns for animal welfare, the environment and public health. In particular, it aims to monitor the effects on poultry and its products of the new European food regulations and changes in food production systems, and to define ways of eliminating unintentional negative effects.

HATCHING A PROJECT PLAN

Poultry carry human enteric pathogens, such as *Campylobacter* and *Salmonella*, in their intestinal tracts, often without exhibiting clinical signs. Scientific and agro-food experts have recently noted increased prevalence of these and less common contaminants in flocks, possibly stemming from regulatory and other changes affecting feeding, raising techniques or processing and distribution. However, data is scarce on the effects of these changes, and knowledge of the ecology of poultry intestinal flora is very poor, due to a lack of accurate methodology.

The three-year POULTRYFLORGUT project aims at providing a strong factual basis for the optimisation of the hygienic quality of the poultry products meant for human consumption, and addressing the economic assessment of changes in poultry practice and effect of organisational arrangements in the poultry food chain. It will focus on the control of the intestinal flora of the broilers and laying hens, including the food-borne pathogens. The approach to study and reduce microbial risks associated with consumption of poultry products (eggs, meat) concerns the different steps of poultry products production from farm to fork.

Developing methodologies using novel molecular techniques will allow the global and integrative study of the intestinal flora of poultry: PCR-SSCP (Polymerase Chain Reaction – Single Strand Conformation Polymorphism), DGGE (Denaturing Gradient Gel Electrophoresis), FISH (Hybridation in situ par fluorescence), and T-RFLP (Restriction Fragment Length Polymorphism). It will also help to define and validate intestinal health or pathological micro-biological criteria in poultry, to study the interaction between the intestinal flora and food-borne pathogens and, consequently, to improve the characterisation of the digestive disorders.

CHARTING PROGRESS

POULTRYFLORGUT will establish a European molecular database on known and emerging food-borne pathogenic strains/species in poultry production, which will aid in-depth evaluation of human exposure to food-borne pathogens. A European database on molecular intestinal flora fingerprints collected in specific raising conditions will help in evaluating 'healthy' intestinal flora in poultry flocks.

A website will provide advice on products improving bacteriological safety while maintaining the profitability of the poultry industry, based on the estimation of the socio economic consequences due to the changes occurring in poultry production.

Acronym: POULTRYFLORGUT

Full title: control of the intestinal flora in poultry for ensuring product safety for human consumers

Contract n°: 007076

Website:
www.poultryflorgut.org

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EU contribution:
€ 2.3M

PROTECTOR

RECYCLING BONE MEAL FOR ENVIRONMENT-FRIENDLY CROP PROTECTION AND NUTRITION

LIST OF PARTNERS

- Terra Humana Clean Technology Development, Engineering and Manufacturing (Hungary)
- Plant Research International (The Netherlands)
- University of Turin (Italy)
- University of Paris-XI (France)
- Migal Galilee Technologies (Israel)
- Consejo Superior de Investigaciones Certificas (Spain)
- The University of Reading (UK)
- University of Rostock (Germany)
- Universität Hannover (Germany)
- UFZ - Umweltforschungszentrum Leipzig - Halle (Germany)
- Smits Vuren (The Netherlands)
- ARPAD Agrar Termelo Kereskedelmi es Szolgaltato (Hungary)

The European Union's campaign to improve food safety and quality includes provisions for boosting low-input and organic agriculture. To reduce hazards to human health and the environment from heavy metal (cadmium) loaded fertilisers and chemicals, the EU's Environmental Action Plan stipulates that food-chain organic wastes and by-products should be recycled and upgraded into bio-fertilisers and biocontrol products. However, recycling of such wastes can also produce cross-contaminants, so new technology is needed. The 42-month PROTECTOR project brings together 12 partners from eight countries to develop a sustainable agriculture system for safe recycling and upgrading of food-chain organic wastes, to provide natural and economical alternatives to chemical pesticides and fertilisers.

SUSTAINABLE OPTION

PROTECTOR is using advanced analytical methods to study the complex biotechnological and biogeochemical processes in transforming food-chain organic waste into added-value products. The main goal is to develop a technique to recycle calcium- and phosphorus-rich animal bonemeal into safe and sterile mineral char, using an advanced high-temperature carbonisation and surface-modification device developed by the consortium. The char will be used as a carrier for natural microbiological strains, such as *Trichoderma* and others which can mobilise the nutrient phosphorous for plant uptake, and contribute to biocontrol. Comprehensive 'product-like' innovative and patented technology is being developed, and large-scale equipment designed, built and tested, including the total thermal decomposition of the animal by-products and integrated solid-state-fermentation formulation.

Other industrial by-products, such as corn steep liquor and possibly molasses, glycerine, and whey, will serve as nutrients for microbiological growth during a solid substrate fermentation and formulation process. The resulting fertiliser will be formulated for enhanced survival of the active micro-organism in the soil. The new biocontrol agents will primarily be aimed at fighting tomato crown rot, to dampen off plant pathogens and to improve plants' natural resistance. The development will be performed in large-scale and cost-efficient field applications to demonstrate the agro-industrial viability of the innovative methods and products.

The Swedish-Hungarian-led project will evaluate the phosphorous kinetics of soil and carry out a comprehensive risk assessment. Extensive field tests will be carried out in several countries with alternative production scenarios in different soil/climatic conditions, including method validation and a cost-benefit analysis of the end products. The project will evaluate consumer acceptance of the agricultural products made using this new technology, and will demonstrate the effectiveness of its output in greenhouse tests. The STREP will disseminate its findings through workshops in several EU countries and Israel, on a specialised website, and through news organisations.

TRASH INTO CASH

PROTECTOR will serve as a platform to emphasise the needs of small and medium-sized enterprises (SMEs) working in agriculture and food production. It will strengthen SMEs' technological capacity, making it easier for them to benefit from high-quality, cutting-edge research in the fields of recycling, biology and soil science. The PROTECTOR-developed process will convert industrial by-products into profitable, high-quality agricultural products, lowering the cost of the organic waste-transformation process to around 20% of the current cost. It will contribute to the growth of low-input or pesticide-free cultivation that does not require subsidies, while improving food safety and quality and European agriculture's competitiveness.

Acronym: PROTECTOR

Full title: recycling and upgrading of bone meal for environmentally friendly crop protection and nutrition

Contract n°: 514082

Website:
www.terrenum.net/protector

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EU contribution:
€ 1.6M

REPRO

PRODUCING PROFITS FROM ORGANIC WASTE

LIST OF PARTNERS

- Institute of Food Research (UK)
- Agrotechnology and Food Innovation (The Netherlands)
- TNO (The Netherlands)
- INRA (France)
- VTT Technical Research Centre (Finland)
- SIK (Sweden)
- Manchester Metropolitan University (UK)
- Fundacion GAIKER (Spain)
- Gaziantep University (Turkey)
- CSIR Food, Biological and Chemical Technologies (South Africa)
- Wageningen University (The Netherlands)
- Latvian State Institute of Wood Chemistry (Latvia)
- Agricultural University of Norway (Norway)

Every year, European food producers throw away millions of tonnes of 'useless' by-products – such as stalks, husks, pips and peel. Vegetable growing and processing, for example, produces over 10 million tonnes of waste annually. This waste is bulky and unstable, with a tendency to putrefy, so there is a limit to the amount that can be dumped in landfill sites. Yet the waste contains many potentially useful chemical and biological ingredients. Some efforts have been made to develop enzyme procedures to extract useful products from organic waste, but with limited success. A more concerted effort to convert food waste into marketable products would simultaneously increase the profitability of food processing and go some way towards solving the waste disposal problem.

ADDING VALUE TO WASTE

The REPRO (reducing food processing waste) Specific Targeted Research Project unites European food research organisations with two from Turkey and South Africa. They aim to harness new techniques in bioprocesses and combine them with physical separation methods to extract useful products from food processing waste efficiently. They will concentrate on two major EU waste products – spent grain from brewing beer and the trimmings left from processing vegetables. For economic viability, they are looking for high-added-value products that could be used in pharmaceuticals, functional foods and cosmetics. Products of lower value, such as foodstuffs and animal feed, could be produced in larger quantities with economic benefits.

Dealing with these bulk materials requires a combination of procedures. First, enzyme processes that can extract specific high-value products will be improved so that they can break down waste in bulk. These processes use little energy and are environmentally friendly. When applied to plant waste they can extract single components or fractions that yield products like sweeteners, food colourings, stabilisers, anti-microbial agents and prebiotics. Advanced biotechnology techniques will enable tougher plant cell walls to be broken down into proteins and phytochemicals.

The result of enzymatic processing will be combined with physical treatments, such as extrusion-extraction, extraction with supercritical CO2, adsorption and membrane technology. Many of these are water-based and can be used in a closed loop system which runs at a low temperature and conserves resources. Mild methods are required to prevent destruction of some of the more fragile compounds that REPRO is aiming to extract. The techniques have already proved to be effective but need upgrading and tailoring to the specific task. Quality must also be guaranteed for food products.

CONSUMER CHOICE

REPRO is intent on minimising any risk as regards bringing the new products to market by ensuring that consumers will accept that recycled waste is wholesome. Initially, an economic risk assessment will confine the co-products to those that will be able to find a financially viable market. A broader investigation will find out whether waste-stream products are acceptable to consumers, retailers and regulators. The products will be fully traceable on the fork-to-farm principle.

Success in marketing will depend on a comprehensive information system for food processors and waste co-product producers. REPRO is setting up two information platforms. The first will allow stakeholders to learn about and discuss project results, while the other is a brokerage platform through which producers can talk to potential users, stimulating exploitation and increasing the competitiveness of Europe's food industry.

Acronym: REPRO

Full title: reducing food processing waste

Contract n°: 006922

Website:
www.repro-food.net

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EU contribution:
€ 3.1M

SAFEWASTES

TURNING ORGANIC WASTE INTO HEALTHY FEED

LIST OF PARTNERS

- University of Veterinary Medicine (Austria)
- Karl-Franzens-Universität Graz (Austria)
- Institute for Animal Science and Health (The Netherlands)
- University of Hohenheim (Germany)
- University of Thessaloniki (Greece)
- University of Udine (Italy)
- University of Milan (Italy)
- Bionorica (Germany)
- Vitamex, Nutrition Science NV (Belgium)
- Biomin (Austria)
- Institute of Soil Science (Poland)
- RTD Services (Austria)

The food industry's processing of fruit, vegetables and plants produces millions of tons of organic waste, by-products and residues annually. Today's technology for reusing these waste materials is very limited, and industry mostly disposes of them through composting or incineration, costing millions of euro and contributing to environmental problems. The European Union wants to put this organic material to better use. The Specific Targeted Research Project SAFEWASTES combines 12 participants from seven countries who are working to develop innovative biotechnology for processing and purifying organic materials from the food and plant-based-additive industries. The object is to recover valuable compounds for use in food and feed additives with significant health benefits for animals and human beings.

WASTE NOT, WANT NOT

The 36-month SAFEWASTES project groups academic staff and food industry SMEs with expertise in upgrading industrial organic wastes, biochemistry and phytochemistry, nutrition, physiology, bacteriology, functional genomics, feed technology and manufacturing, as well as environmental protection. The Austrian-led project will start by developing a recycling process for food industry waste – and adapt the process for the plant-based-additives industry – to recover valuable compounds from organic waste from sources including artichokes, milk thistle (*Silybum marianum*) and thyme extracts.

SAFEWASTES will conduct phytochemical evaluations and *in vitro* and *in vivo* testing to validate the recovery processes, as well as the functional values of the compounds and the additives made from them, assessing risks, quality and safety. It will demonstrate the costs and benefits of the processes and measure their positive and negative environmental impacts.

One key project aim is to develop organic feed additives to replace in-feed antibiotics, which the European Union plans to phase out in 2006. The phase-out, intended to minimise development of antibiotic resistance in pathogenic micro-organisms, could initially lead to increased gastrointestinal and metabolic disorders in livestock. Organic additives based on recovered compounds, such as pectins recovered from fruit and vegetable waste, can contribute to antimicrobial activity in the gut, reducing pathogenic microflora and stabilising physiological microflora. Acid oligosaccharides, recovered from carrot waste, can prevent diarrhoea in animals and human infants, and fight sepsis in laying hens. Other recovered compounds can reduce methane activity. Recycled polyphenols and flavonoids could be added to human food for their antioxidant qualities, for prevention of cancer and heart disease.

SAFETY, THE MOST IMPORTANT INGREDIENT IN ORGANIC FARMING

SAFEWASTES will help food manufacturers employ scientific approaches to meet consumer demands for safer, higher quality food. By providing new, natural and functional products that improve animal welfare and, hence, lead to better food products, the project boosts European competitiveness. Improved recycling of organic wastes should reduce the load on landfills and cut methane production by compost, as well as reduce other potentially toxic compounds. SAFEWASTES can improve cooperation between industry and academia, generating new employment in biotechnological processing. The project will establish an easy-access website database compiling the results of its research.

Acronym: SAFEWASTES

Full title: evaluating physiological and environmental consequences of using organic wastes after technological processing in diets for livestock and humans

Contract n°: 513949

Website:
www.safewastes.info

Project co-ordinator:
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EU contribution:
€ 2.2M

CDEUSSA

GLUTEN CAN GLUE SCIENCE AND INDUSTRY TOGETHER

LIST OF PARTNERS

- Leiden University Medical Centre (The Netherlands)
- Umea University (Sweden)
- University of Naples, Federico II (Italy)
- The Medical University of Warsaw (Poland)

The majority of Europeans eat all types of foods with no major repercussions on their health, but as much as one per cent of the population is debilitated by coeliac disease (CD). This chronic disorder is caused by hypersensitivity in the small intestine to gluten, a substance found in some cereals, including wheat, rye and barley. In people with CD, gluten reacts with the small bowel, which is responsible for absorbing nutrients and vitamins, triggering the immune system to attack its sensitive lining.

Whilst CD wreaks havoc on people's health, it also burns big holes in society's pockets. In recent years, researchers have worked diligently to shed light on the immunological, genetic and epidemiological factors of this disorder. However, disparities exist between the groups of researchers working on CD's basic scientific aspects, and those assessing the clinical and social aspect.

Consequently, one of the aims of the CDEUSSA project is to bridge the gap between the basic science (genetics, immunology and cereal chemistry) carried out on CD, and its application in prevention, clinical treatment and the food industry. Key partners from diverse backgrounds are working together to establish the scientific basis for groundbreaking research on the primary prevention and effective treatment of CD, using genomics and proteomics techniques.

JUMPING ON THE BANDWAGON

The project's participants, hailing from the academic and industrial sectors, and patient groups, intend to create and launch two workshops in Europe, involving top scientific experts and industry representatives. A European multi-stakeholder platform of experts on CD is being established in order to further promote integrated European research in the coming years. The participants are also proposing new methods for the prevention and treatment of CD for the FP7 programme. Their recommendations include encouraging the participation of European industry, and combining basic science with clinical applications.

The latest data suggest that out of the total European population affected by CD, only 15% are diagnosed correctly. Researchers believe that the crux of the problem lies in the fact that there are disparities between basic science and the applications of its results. So it may not come as a surprise that the only treatment currently available for CD sufferers is one discovered by the Dutch paediatrician, K. Dicke in 1950. He recommended a gluten-free diet for life.

MONEY HEADACHES

The gluten-free diet weighs heavily on the budgets of the 2.5 million people affected by CD. Patients each spend about €1,200 - 1,300 per year, to ensure they are eating the right foods. In a nutshell, with 2.5 million CD cases in Europe, the financial burden for Europe reaches the €3 billion mark. It is claimed by some, however, that the extra cost is offset by the fact that patients are not off work for long periods of time, nor do they spend a great deal of money on medicines. Despite this experts maintain that primary prevention would be best, both for economical and humanitarian reasons.

CDEUSSA participants are assessing the link between diet and the risk of developing CD, and the influence of genetic variability. Fresh research strategies are also being developed to focus on the introduction of gluten in the diets of infants. Viable intervention models targeting the prevention of CD development are being designed, as CDEUSSA encourages better research on health through diet, thus promoting dietary policy.

The scientific results derived from the project will be influential in the implementation of new regulations at European level. Ultimately, encouraging and reinforcing cooperation between basic science and the applications of its results will promote high quality, safe, healthy and overall improved food for all Europeans.

Acronym: CDEUSSA

Full title: European platform for research on prevention and treatment of coeliac disease: a multidisciplinary approach to integrate basic scientific knowledge in clinical applications and food industry

Contract n°: 517787

Project co-ordinator:
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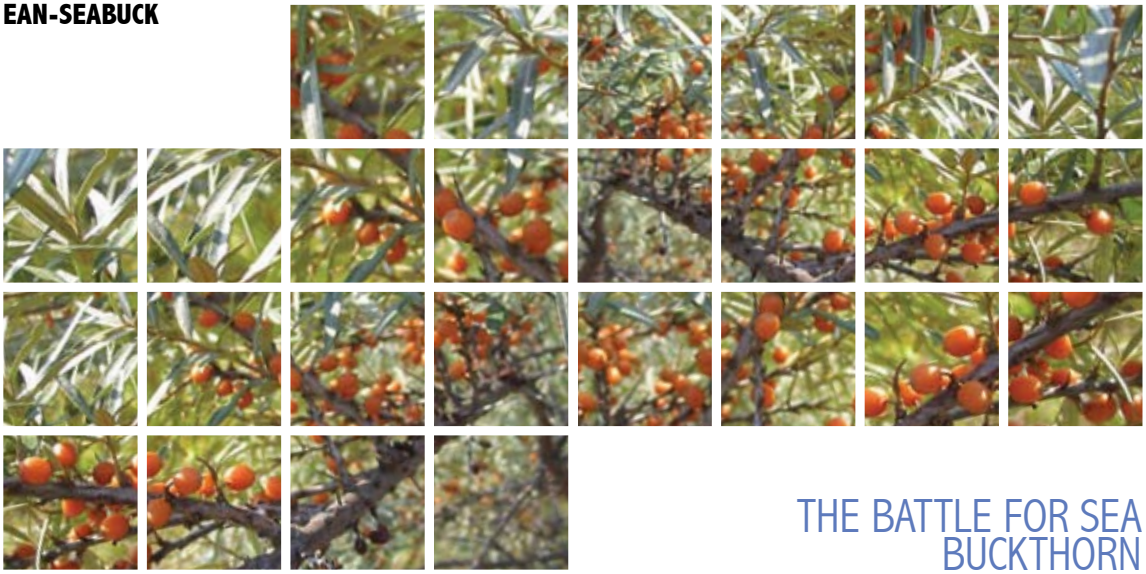
EU contribution:
€ 117,800

EAN-SEABUCK



THE BATTLE FOR SEA BUCKTHORN

LIST OF PARTNERS

- Technologie-Transfer-Zentrum Bremerhaven, TTZ-Bremerhaven (Germany)
- NIG Nahrungs-Ingenieurtechnik (Germany)
- International Centre of Research and Training on Sea Buckthorn ICRTS (China)
- Northern Research Institute of Forestry (Russia)

The nutritional and medicinal properties of Sea Buckthorn have been known since the ancient times. Following a fierce battle, for example, injured horses survived by eating Sea Buckthorn. With excellent nutritional qualities and an ability to thrive in the harshest of conditions, its economic potential for Europe and Asia is just waiting to be tapped into.

The deciduous shrub, also known as Seaberry grows predominantly along coastal regions and has seen a wide variety of applications. It has curative properties used in many ulcerative and inflammation-related disorders such as canker sores, ulcerative colitis, cervicitis and peptic ulcers.

THE CROP WITH A HEALTHY DIVIDEND

The attraction of Sea Buckthorn lies in the fact that the berries of this versatile plant are amongst the most nutritious and vitamin-rich fruits. In fact, it contains the largest source of pro-vitamin A (carotene), tocopherols (Vitamin E) and flavonoids. It is third in Vitamin C content and is rich in other vitamins such as B1, B2, B3, B9, F and K, as well as fruit acids and minerals.

With the increasing popularity of cosmetics based on natural products, Sea Buckthorn is ready to exploit this growing niche in the market. With its remarkably high content of essential fatty acids like Omega 3, phytosterols and vegetable oils, Sea Buckthorn contains some of the most important ingredients for the cosmetics industry.

Several studies conducted over numerous decades have confirmed that the plant possesses more than 190 bio-active compounds. What makes it even more appealing as a plant for cultivation is that it is able to thrive in areas of extreme temperatures, salinity and high pH levels. As a result, it is also healthy for the soil and is used in China to revitalise degraded soils from mining activities, as well as offering protection from wind and water erosion.

ANCIENT CULTURES SHARE WEALTH OF KNOWLEDGE

The benefits of Sea Buckthorn have been long known. Theophrastus, the father of Botany, mentioned it, as did Dioskorid who supposedly prescribed it to the Roman armies. A whole continent away, during the Tang Dynasty, the book of *The Four Tantras* wrote about its medicinal uses.

Now these two ancient cultures of Europe and Asia are combining their experiences and knowledge for the mutual benefit and profit of both their regions.

COLLABORATIVE SOWING OF THE SEEDS

EAN-SEABUCK creates a unique win-win situation by establishing a cooperation network between Europe and Asia for the sustainable cultivation and utilisation of Sea Buckthorn. The key to this collaboration lies in the fact that while Europe, predominately Germany and Romania, are leaders in the commercialisation of Sea Buckthorn, its overall expansion is restricted by the limited access to the berry.

Meanwhile, Asia and Russia are abundant with Sea Buckthorn crops but lack the resources and the knowledge required to process and add value to the crops. This proposal therefore utilises the positive environmental, nutritional, economic and social effects that are engendered by the sustainable cultivation of Sea Buckthorn.

As a result, the partners cooperate throughout the project and all results will be exploited In the frame of their business agreements. The mobilisation of the scientific and technological capacity of the EU serve to benefit and create better relations with these regions.

Acronym: EAN-SEABUCK

Full title: nutritional and establishment of European-Asian network for the development of strategies to enhance the sustainable use of sea buckthorn

Contract n°: 016106

WEBSITE:
www.eanseabuck.com

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 501,666

ERMES

PROTECTING THE MED FISHING INDUSTRY

PROJECT PARTNERS

- Teseo – Technical Support for European Organisations (Belgium)
- Chambre de Commerce et d´Industrie Marseille-Provence (France)
- Chambre de Commerce et d´Industrie de Tunis (Tunisie)
- The Istanbul Chamber of Commerce (Turkey)
- Fundacion Azti (Spain)
- University of Firenze (Italy)
- Etat - Food Industrial Research and Technological Development Company (Greece)
- Institut technique de développement des produits de la mer - ID.MER (France)
- Camera di Commercio Industria Artigianato e Agricoltura di Palermo (Italy)

Fish is a fabulous food - lots of variety in taste and texture, versatile and low in saturated fat. Oily fish (mackerel, herring, sardines) contain Omega-3 fatty acids, a type of polyunsaturated fat which can help to reduce total blood cholesterol. Omega-3 protects the heart and circulation and may reduce the risk of heart disease and certain cancers. So it's no surprise that diets with a high fish content have gained an international reputation and are fast becoming popular around the world.

However, the news is not all good. The fishing industry of the Mediterranean is characterised by its high propensity of small to medium enterprises. With mounting competition and regulation they are facing increasing challenges to stay on the market.
For this reason the aim of ERMES is to support access to research and development activities and to new technologies for SMEs of the seafood industry (from capture to aquaculture to processing and distribution) in the Mediterranean area.

ADDING TEETH TO SMALL FISH

ERMES is a vital project that assists the seafood based SME's of the Mediterranean countries to adjust to increasing pressure from global competition by helping them tap into the latest research. As opposed to northern Europe where the fishing industry is characterised by a high level of industrialisation, the backbone of the fishing industry in the Mediterranean is made up of small traditional companies.

ERMES is employing the expertise of top research institutions from Spain, France, Italy and Greece. These institutions have combined their experience with that of Chambers of Commerce from Turkey, Tunisia, France and Italy. The business support organisations are assisting in the compilation of profile data on the various companies that are most likely to benefit from the project. Scientific advice can now flow from the research community to industry and help improve the quality of seafood capture, farming and processing in the region.

GIVING A BOOST TO LOCAL INDUSTRY

The project expects to generate greater cooperation within the seafood sector in the region and provide it with the relevant information on available research opportunities. The consortium has contacted over 700 small companies and in some cases companies have been able to benefit by technical innovation through the networks created by ERMES, thus making the transfer of knowledge easier. In these cases the project is able to provide specific support through a partner that specialises in the transfer of technology within the seafood production chain.
Overall, the objective is to assist approximately 70 to 80 relevant organisations that have potential either in research or technological innovation and may be supported through more advanced scientific services.

ERMES stands out by giving a boost to the small producers and processors in the regional seafood industry as well as promoting a long-term dialogue between companies all along the seafood production chain. In this way the project ensures the quality and safety of seafood from the Mediterranean, both within the EU and beyond. Therefore the ERMES consortium is not only protecting the consumer, but also this traditional industry and the communities that depend upon it.

Acronym: ERMES

Full title: European research for Mediterranean seafood

Contract n°: 016107

Website:
www.ermesproject.org

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 599,320

FUNCTIONALFOODNET

EUROPEAN FOOD INDUSTRIES NETWORK ON CALL

LIST OF PARTNERS

- FoodGroup Denmark (Denmark)
- Teagasc (Ireland)
- University of Turku (Finland)
- Technical University Munich (Germany)
- MÉTE (Hungary)
- Inside Consult (UK)

Hippocrates, the father of medicine once said, "Let food be thy medicine and medicine thy food." Nearly 2 500 years have passed since these words were immortalised, and their importance rediscovered. Today, food as medicine is beginning to mirror this concept in ways never before imagined. Functional foods are defined as having a role in disease prevention and health promotion, and are gaining increased interest by researchers and developers alike. Their contribution therefore to lightening the load on social healthcare systems, can be enormous. €53 billion a year is currently spent on functional food products, and establishing networks to intensify the development of new edible goods that enhance good health, is perhaps one of the better ways to ensure that the interest in functional food grows.

The dissemination and exploitation of new functional food science is the driving force behind the EU creating a functional food network. Not only does this new initiative prove advantageous for members of the EU, but people in the United States, Canada, Australia and Japan benefit as well. Helping to get this initiative off the ground are the food industries, and SMEs active in the market segment of the food industry. Each play a significant role in the creation of a Technology Transfer Network on Functional Foods (FuntionalFoodNet).

Essentially, there are a number of issues that will be resolved with this initiative. With around 140 active companies, the food industry network will boost the competitiveness of the European industry; foster healthier and scientifically documented food products, while bolstering the well-being of EU citizens. Domestic and foreign cooperation is stimulated and the participation and cooperation of SMEs facilitated.

TWO BREWING CELLS

FunctionalFoodNet is divided into 2 sub-networks: general network (GN) and product specific network (PSN). The GN's objective is to disseminate the functional food science from the 5th and 6th Framework Programmes to the food industry. Project coordinators and experts in the field support this phase and discuss exploitation opportunities. The PSN is split into four different product areas (cereal products; dairy products; beverages; and oils/emulsions) and includes experts from various disciplines, like scientists, technology transfer and legal specialists whose aim is to attain a Proactive Technology Transfer.

Whilst European companies want to develop and market new and improved health food products, failure of food/ingredient industries to forge strategic alliances with food scientists, specialists and other commercial partners hinder the exploitation of scientific results in many cases.

In order to boost the participation of SMEs on this front, a proactive network must be created between the SMEs and larger companies. This measure strengthens cooperation on a global front and forge strategic alliances. It also forges an effective technology transfer with participation from scientists, market specialists, SME consultants and innovation experts. From a commercial perspective, market development and the legal situation help fuel the development of functional foods and nutrition-enhanced foods.

A GROWING MARKET

Based on estimates published by Datamonitor, the development of the functional foods market, worth some €53 billion, is accelerating rapidly at a rate of 8-16% each year globally. A breakdown shows that the biggest product group in Europe is dairy-based functional foods, worth €3.9 billion, followed by cereal products at €2.5 billion. As for the functional foods market in the US, the figure reached €12.7 billion in 2000, against €8.2 billion in Japan.

The establishment of a functional foods network also relies on two aims. Firstly, to accept use of health claims on advertisements and food packs stating that the product may reduce chronic disease risk when scientifically documented and green-lighted by the European Scientific Committee, and secondly, to boost market introductions and annual rates of growth.

The data show that of the 140 organisations already registered to participate in this new initiative, 54% are SMEs, 26% larger companies and 20% associations/organisations. Of these, 10% are from new EU members and 6% from the US, Canada and Australia.

Acronym: FUNCTIONALFOODNET

Full title: exploitation of functional food science by creating a European network of food industries

Contract n°: 517817

Project co-ordinator:
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EC Scientific Officer:
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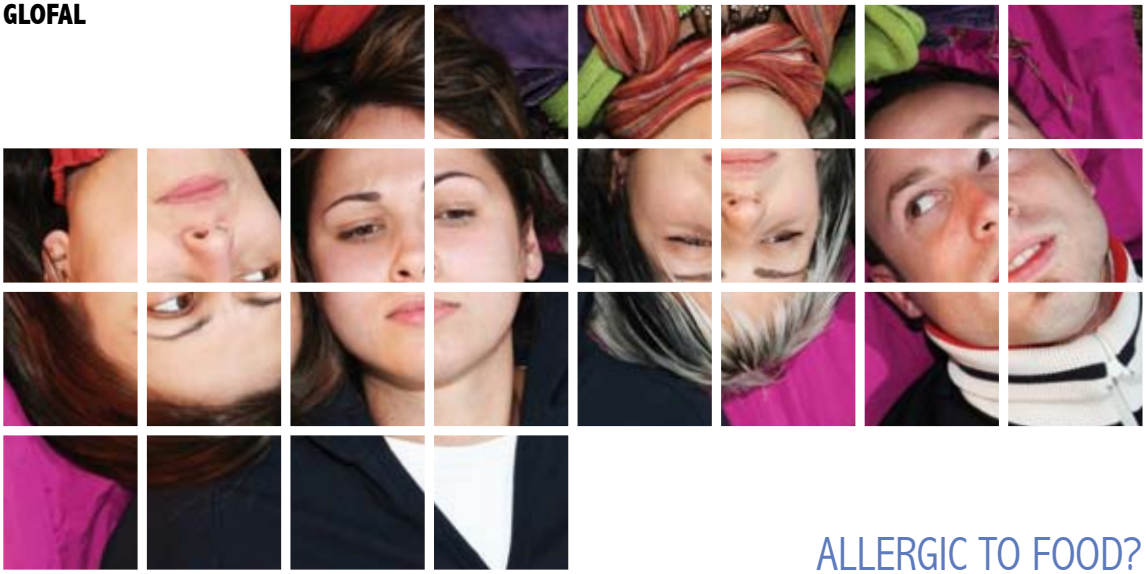
EU contribution:
€ 697,017

GLOFAL



ALLERGIC TO FOOD?

LIST OF PARTNERS

- Leiden University Medical Center (The Netherlands)
- Academic Medical Center Amsterdam (The Netherlands)
- Medical University of Vienna (Austria)
- Institute of Food Research (UK)
- Noguchi Memorial Institute for Medical Research (Ghana)
- Albert Schweitzer Hospital (Gabon)
- University of Indonesia (Indonesia)
- Hassanuddin University (Indonesia)

On a European level, between 11 million and 26 million individuals, of which an estimated 6% are young children, suffer from food-related allergies. The problem appears to be increasing through a cascade of events created by modern European living conditions. In non-western parts of the world, there is little knowledge or perception of food allergies with reliable data. Furthermore, in Africa and Asia, reactions to allergens and disease development might be affected by different factors to those in Europe.

STRONG TEAMS TO PREVENT FOOD ALLERGY

The changes in food processing, food intake, mucosal permeability and immune reactivity to allergens need to be understood in depth before appropriate interventions are possible. This can be facilitated by taking a more global view of food allergies since allergic disorders have been increasing in prevalence, particularly in western countries. If we are to understand why allergies are increasing, we need to study regions that are in transition; these regions would reflect lifestyles that represented Europe one hundred years ago and are moving towards lifestyles that resemble modern Europe. By understanding the causes and mechanisms that underlie the apparent tolerance for allergens in some geographical areas where prevalences of allergies are low, knowledge-based plans to combat allergic disorders in Europe can be laid.

Therefore, it is important to build up strong teams that are capable of conducting research in the area of food allergy in regions where allergies are less common. Most studies so far have examined inhalant allergies; now, however, food allergies must be addressed.

ASSURING BETTER KNOWLEDGE

GLOFAL brings together a group of European experts in the area of food allergy to train a number of medical doctors, nurses and scientists from African and Asian centres, by organising workshops and laboratory-based courses. Researchers in African and Asian countries are provided with the necessary tools to design strategies for estimating the extent of the problem and to identify risk as well as protective factors in the development of allergic disorders. This, in the long term, improves the health and quality of life of subjects suffering from food allergy in Africa and in South East Asia. The project will thus set the stage for future international cooperation in understanding the influence of diet, environment and infections on the development of food allergy.

GLOFAL capitalises on the expertise and resources available within the laboratory of European partners who all belong to the Europrevall consortium — a platform of experts active in various aspects of food allergy.

The potential impact of the project falls into the following specific areas: food allergy management; diagnosis of food allergy; prevention and therapies for food allergy in the future; transfer of knowledge and technology; creation of a critical mass of scientists; and international cooperation. High European standards are applied for the first time to determine the extent and nature of food allergy in diverse populations.

This research is particularly important, with a view to preventing food allergies from becoming an increasingly significant disease mechanism with considerable socioeconomic impact. In addition to strengthening European research, this Specific Support Action provides a unique opportunity for addressing the specific and under-appreciated needs of certain third countries.

The building-up of teams with a sound knowledge of food allergies has wider implications on understanding and creating interest in related topics, such as obesity, consumption of processed food, changes in food production and management. A number of ongoing European programmes on allergy equally benefit from the GLOFAL research results, and partners from this Specific Support Action have the opportunity to join related programmes in the future.

Acronym: GLOFAL

Full title: global view of food allergy: opportunities to study the influence of microbial exposure

Contract n°: 517812

Project co-ordinator:
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EC Scientific Officer:
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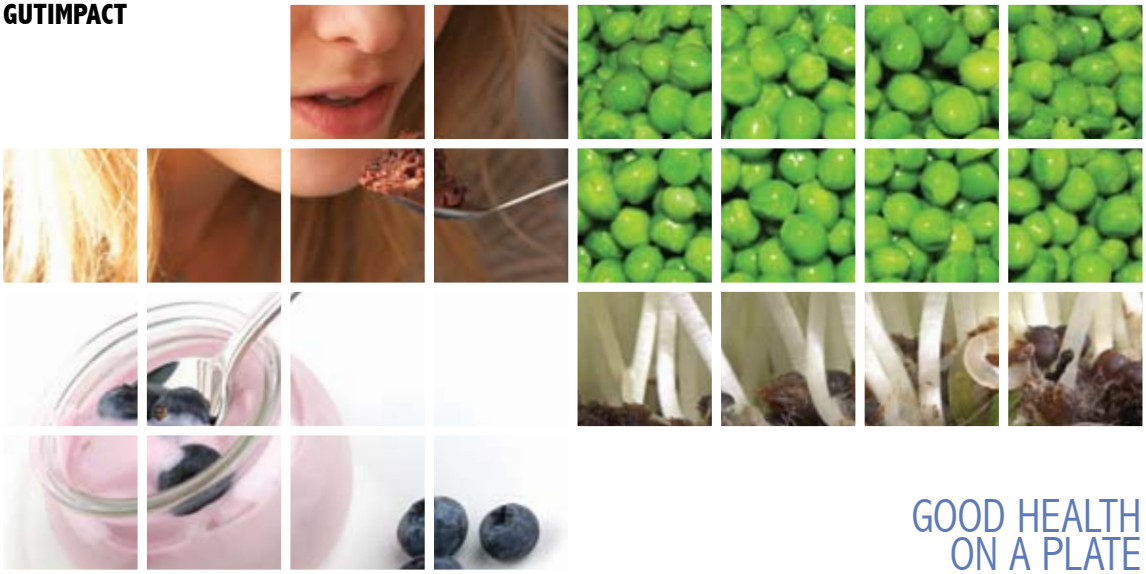
EU contribution:
€ 413,814



GOOD HEALTH ON A PLATE

LIST OF PARTNERS

- Valio, R&D/Dairy Innovations (Finland)
- Lactic Acid Bacteria Industrial Platform, LABIP, European Economical Association (The Netherlands)
- Wageningen University, (The Netherlands)
- Advanced Analytical Technologies, AAT, Piacenza (Italy)

"We are what we eat," the old expression goes, but rapidly changing lifestyles and increasing consumer demand for healthy foods have warranted the development of innovative food products known as 'functional foods'. These specifically include so-called gut-health foods that affect our intestinal tract. This is the primary site where food meets our body, and which has been colonised since birth by microbes that contribute to our health. The challenge behind the GutImpact project has been to address the development of foods that contribute to our intestinal health and may serve to combat diseases on a preventive basis.

Functional foods have been identified with 'natural medicines', and their positive influence is frequently acknowledged in both scientific and non-scientific publications. Scientists may be about to serve up a new-era dish in which food will be the next generation's medicine. An EU specific support action on GutHealth foods has been funded to increase public awareness of functional foods' potential and impact on human intestinal health.

FUNCTIONAL FOODS TAKE ACTION

The latest advances in genomics and biotechnology with regards to health have paved the way for innovative research actions in the development of new foods. These are optimised to enhance the most beneficial properties of products designed to improve human health. The increasing demand for tailor-made functional foods to address health issues, such as the ones targeting intestinal health, has made it imperative to intensify efforts in this field.

The GutImpact specific support action has been successful in attracting EU funding to identify and work towards bridging the knowledge gaps associated with functional foods. These are reflected in the range of consumers 'producers' and authorities' perspectives towards new and existing foods that target our gut. The consortium intends to provide means of bridging these gaps by constructing a virtual technology road map to facilitate communication between the public and private sectors and consumers. This will lay the foundations for the submission of a position paper for a Technology Platform focusing on gut-health research under the 7th Framework Programme.

A RECIPE FOR COORDINATION

Coordination and implementation of the project is managed by the Finnish company Valio Ltd. Valio is bringing together key players in the gut-health field and setting up a dialogue between industry, scientists and other stakeholders. It occupies a share of the international market for probiotics and has extensive experience in similar knowledge sharing actions targeting medical practitioners, consumers, etc. Discussion platform meetings are organised in cooperation with Wageningen University (WU) in the Netherlands. WU's participation is an asset due to its extensive involvement in gut-health issues and its extensive network of contacts with key scientists and organisations.
The Lactic Acid Bacteria Industrial Platform (LABIP), a European Economic Association that represents 40 food industries (including SMEs), will strengthen the links between industry and consumers. Their participation is critical since it conveys the views of the industrial sector currently involved in gut health research. LABIP and GutImpact partners' concerted efforts are directed towards preparing a positioning paper for a technology platform on gut-health functional foods.

LABIP's efforts are supported by Advanced Analytical Technologies (AAT), an Italian spin-off company which uses molecular biology techniques to study human and animal microflora. AAT is 'the voice' of the SMEs and other industries involved in gut-health products and addresses their needs. Existing and new knowledge will be made available through a virtual technology platform dedicated to gut-health food innovations and impact.

GutImpact targets healthy consumers, consumer organisations and patients but also the scientific community, industrial sector and decision makers. The project increases public awareness of functional foods by providing information, sharing knowledge and improving scientific understanding. Improving consumers' knowledge is the key to success for the functional foods industry. Unravelling their methods of action and their full potential for improving human health will significantly influence healthcare costs through prevention and treatment.

Acronym: GUTIMPACT

Full title: innovations and impact of gut health foods: a virtual technology platform

Contract n°: 517821

Website:
www.etpfood.net/gutimpact/

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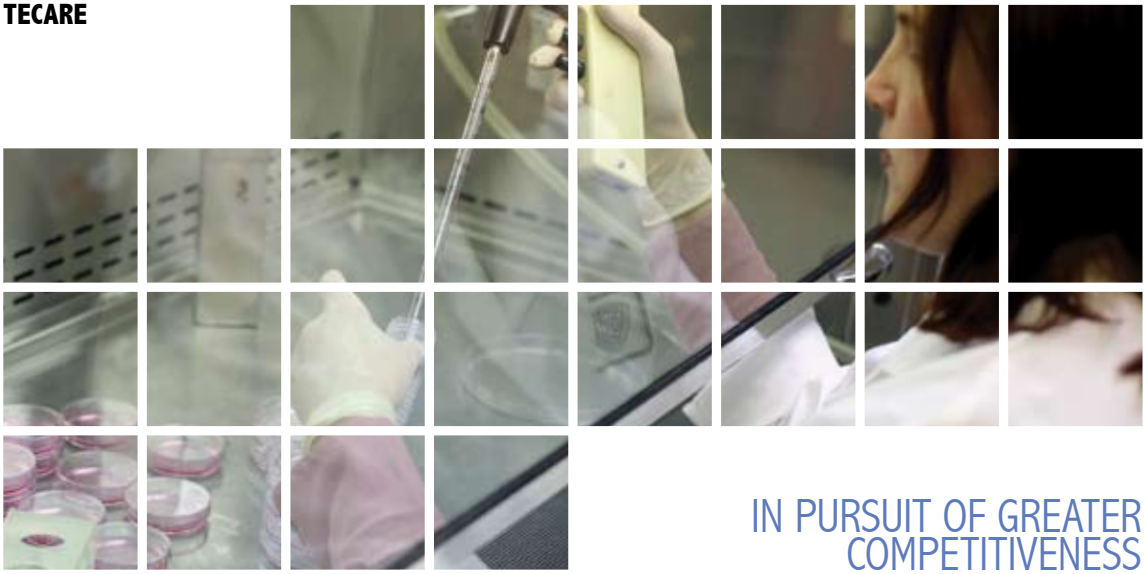
EU contribution:
€ 582,000

TECARE



IN PURSUIT OF GREATER COMPETITIVENESS

LIST OF PARTNERS

- Veneto Innovazione (Italy)
- Tecnoalimenti (Italy)
- Parco Scientifico STAR (Italy)
- Instituto Andaluz de Tecnología (Spain)
- Banat's University of Agricultural Sciences and Veterinary Medicine (Romania)
- TTZ - Technologie-Transfer-Zentrum an der Hochschule Bremerhaven (Germany)
- Wroclaw Centre for Technology Transfer (Poland)
- Isa-Media (Belgium)

The European Union intends to become a leader in the international knowledge-based economy. Developing the European Research Area and boosting R&D investment towards the 3% of GDP target can help to achieve this goal. This entails building partnerships between the private sector, including small and medium-sized enterprises (SMEs), and the public sector, such as universities and government research organisations. With this in mind, an increased focus on the meat research field has emerged, causing the EU to take a bottom-up approach in creating a European Cooperative Platform to effectively forge public-private alliances amongst the research community, policymakers and industry at trans-regional level.

Although the SMEs engaged in food production and processing are highly active and stimulate the socioeconomic environment, their level of competitiveness is low because of the pressures wrought by the European internal market and globalisation. What has become clear is that competitiveness can be improved if management and scientific capacities are implemented. However, securing these capacities is impossible if private and public partnerships at trans-regional level are nonexistent.

At present, science and technology research groups and other organisations are failig to collectively work with agro-food SMEs in Europe. There are four main hurdles involved: a lack of information for SMEs regarding European and regional research and innovation public policies; insufficient knowledge concerning active scientific and technological capacities abroad; a dearth of 'technological mediators' that would help increase SMEs' participation and act as contact points, promoting research initiatives; and a lack of mechanisms for attracting those SMEs interested in research initiatives.

MEATY INITIATIVES

This project targets the creation of a strong research platform where SMEs, researchers and technology experts can collaborate to build strong consortia and develop innovation initiatives. The trans-regional co-operative platform is a model that can be used by other agro-food chains at European level. Regional institutions are also expected to collaborate and participate in forthcoming research activities.

This platform can determine which problems affect the meat food sector, by setting up a network of trans-regional thematic platforms to stimulate teamwork between industry and research organisations, and to promote the exchange of knowledge between stakeholders. It also intends to establish a technological mediators' network between SMEs and public research members and regularise regional policies for SMEs, by identifying and standardising a common approach for SME involvement. The platform can inform EC policymakers of research strategies and technical recommendations, while setting the basis for the creation of research consortia and future research projects.

The project is moving towards a horizontal & vertical multidisciplinary approach. The former involves specialists from the research/academic world, while the latter concerns trans-regional SMEs operating at different stages in the same agro-food chain. Ultimately, ensuring the safety and quality of the food system will advance the health and well-being of European nationals. The research focuses on the quality and safety of beef and poultry, animal welfare, antibiotic resistance and animal feed. Other research topics that have been identified during the first phase of the TECARE project include studies into new products, improved shelf life and waste recycling. By encouraging SMEs to participate and cooperate with the research community, every European can benefit in the long run.

Acronym: TECARE

Full title: trans-regional cooperative platform for competitiveness in meat research and SMEs

Contract n°: 016121

Project co-ordinator:
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EU contribution:
€ 628,000

WHITE BIOTECH TP

BIOTECHNOLOGY GETS ENVIRONMENTAL FOCUS

LIST OF PARTNERS
- Europabio (Belgium)
- ESAB-EFB (The Netherlands)

Biotechnology is present in many aspects of everyday life, from modern medicine to agriculture. The third wave of biotechnology development is changing the industrial sector by providing new ways of making products which are better for the environment.

The so-called industrial or white biotechnology uses micro-organisms and enzymes, for example, to convert organic material (from agriculture or household wastes) into fuels for cars or enzyme-based detergents for washing at lower temperatures. New methods of production and new products are being developed in many industrial sectors, such as chemistry, food and feed, paper and pulp, textiles and energy.

These applications can impact the economic and social parameters of the European economy, making sustainable development a reality in the years to come. The WHITE BIOTECH TP is setting up a technology platform that can support and further the use of biotechnology in a number of industrial settings, bringing down costs and benefiting both the environment and society at large.

OVERCOMING BARRIERS

What is impeding the full exploitation of biotechnology in the industrial field is partly the need for further research to develop the new technologies required by this sector, but also a number of shortcomings in the areas of policy, investment and regulatory frameworks across Europe. WHITE BIOTECH TP (Technology Platform) provides, for the first time, a common ground for relevant stakeholders, Member States and the European Commission. The overall objective is to translate European scientific excellence in industrial biotechnology to socio-economic growth and sustainable development.

The technology platform tool is ideally structured to increase the awareness of white biotechnology among stakeholders and the public, and create viable links between the industrial and scientific communities. Through a series of key alliances and networking activities, innovation and knowledge generation is stimulated; this can lead to specific market advantages and increased competitiveness.

ACTIVITIES

Is white biotechnology the key to a brighter new future for the European industry? Biotechnology applications can, indeed, find a variety of outlets and it can impact manufacturing and other industrial processes to a great degree. White biotechnology essentially supports the use of biological matter, such as enzymes and micro-organisms, for the manufacture of a variety of products in numerous sectors, such as the textile industry, the chemical industry and the energy sector. A bio-approach to energy matters can result in new uses of raw materials, renewable energy sources, limited waste material and overall diminished impact to the environment.

The platform brings industry, academia and policy-makers together to develop a common vision of the contribution that industrial biotechnology can make to our society. To achieve this vision, all aspects are explored – from support and research to policies – thereby stimulating research and innovation, entrepreneurship and market development.

Such a supporting framework helps the development and implementation of technologies for a more rational use of resources, and reduces our footprint on the environment, while maintaining European quality of life and competitiveness.

Acronym: WHITE BIOTECH TP

Full title: a European technology platform on industrial biotechnology for sustainable development

Contract n°: 517814

Website:
www.bio-economy.net

Project co-ordinator:
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EU contribution:
€ 500,200

YOUNG-TRAIN

TRAINING EARLY CAREER SCIENTISTS FOR A BETTER TOMORROW

LIST OF PARTNERS

- European Association for Animal Production (Italy)
- Teagasc - Agriculture and Food Development Authority - Ashtown Food Research Centre (Ireland)
- Institut de Recerca I Tecnologia Agrolimentáries (Spain)
- Departments of Animal Product Processing and Qualification and Animal Physiology and Hygiene, University of Kaposvár (Hungary)
- Institute for Learning and Research Technology, University of Bristol (UK)
- Animal Nutrition and Nutritional Diseases, Veterinary Faculty of Firat University (Turkey)
- Kozponti Elelmiszer-Tudomanyi Kutatointezet (Hungary)
- Agricultural Institute of Slovenia (Slovenia)
- Baltic Genofund (Lithuania)
- Institut Agronomique et Vétérinaire Hassan II, Dept. Sciences Alimentaires et Nutritionnelles (Morocco)

A food alarm has sounded across Europe, and early career animal scientists (ECS) are rising to the challenge. With consumer demand for improvement in the transparency and accountability of systems increasing, the ECS will focus on the quality and safety of meats being offered to EU citizens. Specifically, nations from Central and Eastern Europe and the Mediterranean, including EU Member States, Candidate Countries or countries associated to the EU will have to meet transnational food standards and adopt innovative strategies on quality and safety, to stay competitive.

TRAINING YOUNG SCIENTISTS

The YOUNG-TRAIN project aims to further knowledge on meat quality and safety with training and mentoring through a network approach. Thereby it will make them aware of current EU research challenges posed by the whole food chain. They are trained in presentational and e-Learning techniques, and counselled by a multidisciplinary steering group representing food chain stakeholders. Furthermore, YOUNG-TRAIN gives these young scientists the impetus to submit prospective research proposals on the future framework programme. It also advances the dissemination and use of research results relating to a whole food chain approach to meat quality and safety.

As a result, research into the food chain approach is developed through the training of the ECS who lead the research on developing processes, in order to make sure that their respective countries' needs and problems are addressed.

MEETING FUTURE CHALLENGES

YOUNG-TRAIN supports, stimulates and facilitates the participation and collaboration of scientists from Candidate, Central and Eastern European and Mediterranean Countries. The project will also promote future programmes on quality and safety issues of the whole food chain approach. It is not enough for researchers to participate in projects; they must expand their knowledge to ensure that key issues, like animal welfare, and economic and societal concerns, among others, are assessed.

They will work together with members of the study commissions and working groups of the European Federation of Animal Science (EAAP), who are aware of safety, ethical and environmental concerns about livestock systems and problems in the Candidate and Mediterranean countries, to make sure that YOUNG-TRAIN'S deliverables meet the demands of the general public. Moreover, collaboration between ECS and retail and consumer groups will support the initiative.

BRINGING IT ALL TOGETHER

The Early Career Scientists will take part in a specific symposium, training sessions and round table discussions, permitting them to gain access to the mainstream research area and to the broader influences of consumer and public needs. Cooperation with National Contact Points (NCPs) will further the participants' quest to establish food quality and safety in their respective countries.

The YOUNG-TRAIN project will help define and support the whole food chain concept by encouraging ECS to connect with other scientists and build communication between researchers. Better information interfaces between research groups and the food chain will be set up. The definition of the whole food chain and livestock system RTD needs will be addressed, and links between different countries and NCPs in food quality and safety will be enhanced. A challenge, yes, but definitely something YOUNG-TRAIN participants are well trained to handle.

Acronym: YOUNG-TRAIN

Full title: training and mentoring early career scientists from candidate, associated and Mediterranean countries in a whole food chain approach to quality and safety

Contract n°: 016101

Website:
www.young-train.net

Project co-ordinator:
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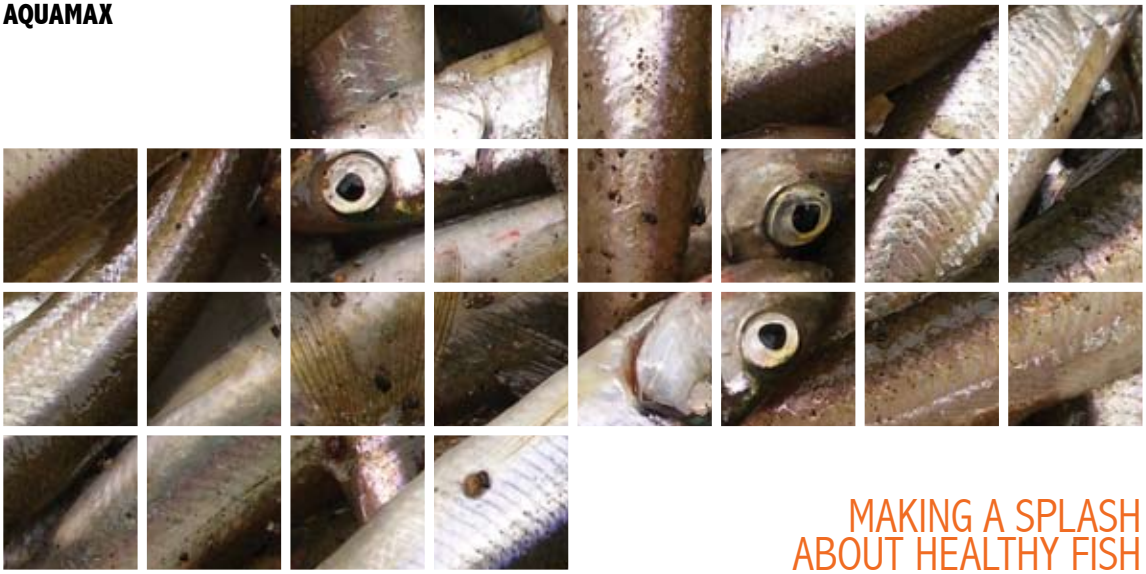
EU contribution:
€ 559,680

AQUAMAX



MAKING A SPLASH ABOUT HEALTHY FISH

LIST OF PARTNERS

- National Institute of Nutrition and Seafood Research (Norway)
- Institut National de la Recherche Agronomique (France)
- Institute of Aquaculture, University of Stirling (UK)
- CSIC Institute of Aquaculture Torre la Sal (Spain)
- Hellenic Centre for Marine Research (Greece)
- Research Institute for Fisheries, Aquaculture and Irrigation (Hungary)
- Biological Research Centre, Hungarian Academy of Sciences (Hungary)
- Nutreco Aquaculture Research Centre (Norway)
- Institute of Marine Research (Norway)
- Indian Council of Agricultural Research (India)
- Joint Research Centre (Spain)
- University of Southampton (UK)
- Institute of Nutrition and Food Safety (China)
- King's College London (UK)
- University of Granada (Spain)
- University of the Auvergne, Clermont-Ferrand (France)
- University of Uppsala (Sweden)
- University of Reading (UK)
- Istituto Superiore di Sanità (Italy)
- Peipsi Centre for Transboundary Cooperation (Estonia)
- Selonda Aquaculture (Greece)
- Halandor (Hungary)
- G. Barka (Hungary)
- Alpha Mos (France)
- WOW Creative Projects (Greece)
- Landcatch Natural Selection (UK)
- Technology Crops (UK)
- Viviers de France (France)
- Teutoburger Olmuhle (Germany)
- Caditec (Spain)
- Marine Harvest International (The Netherlands)
- Federation of European Aquaculture Producers (Belgium)

The European Commission is striving to ensure that the food chain is risk-free at all stages of production and consumption. One of the specific areas of interest is fish feed used in aquaculture across the European Union. The fish feed used is currently based mainly on fishmeal and fish oil. The participants in the AQUAMAX project are seeking to develop sustainable alternative feed resources, resulting in highly nutritious and health-beneficial farmed fish. The aims of the project include improving contamination detection methods, health benefit assessments for the 'new-diet-based' farmed fish and studies into consumer perception and acceptance.

RAISING AWARENESS OF THE IMPORTANCE OF FISH IN THE HUMAN DIET

Aquaculture constitutes an important sector of European economy, with annual growth rates of approximately 5-9%. In fact, the EU aquaculture industry is second only to its Asian counterpart. As growth of the sector continues, minimising the potential health hazards associated with fish products has become more urgent. These hazards pertain primarily to marine-derived toxic contaminants of fishmeal or fish oils, entering the food chain through the fish feeds used routinely on a global scale.

The removal of certain contaminants closely associated with the fishmeal components of fish feed can prove extremely challenging, if not impossible. The objective of AQUAMAX is not to remove contaminants, but rather to avoid use of those ingredients that might be contaminated. This process enhances the overall nutritional value of farmed fish, and results in safer food products. At the molecular level, the new diets that are being developed will ensure compatibility with fish genetic profiles so as to maintain their health and welfare.

Specific DNA monitoring techniques are being employed in order to study growth efficiency and overall performance. In essence, the overarching aim of AQUAMAX is the development of a range of 'tailored' feeds for freshwater and marine fish, which reflect a series of nutritional needs and consumer demands.

COOPERATION THROUGHOUT THE FOOD CHAIN

The AQUAMAX approach involves initiatives ranging from toxicogenomics and nutrigenomics to a nutritional trial involving pregnant women and infants. The objectives set forth in the project can only be realised through extensive collaboration with a series of partners possessing diverse sets of skills.

Partners from China and India are working alongside academic and SME participants, combining their expertise through studies on the entire food chain, ranging from toxicological investigations to market validation of the new products. The project's impact is therefore significant, contributing to further growth and new employment opportunities for the EU aquaculture industry.

At the same time, AQUAMAX aims to boost consumer confidence in the sector and its products by addressing a number of concerns in an effective and efficient manner. The outcomes of the project are to be disseminated to countries via the International Scientific Cooperation Programme (INCO), through education and knowledge exchange initiatives, with particular emphasis on Asian regions heavily involved in aquaculture. Continuous collaboration and ongoing association is expected to yield substantial benefits for the partners involved in AQUAMAX, as well as their parent organisations, for national agencies, and primarily for the public at large.

Acronym: AQUAMAX

Full title: sustainable aquafeeds to maximise the health benefits of farmed fish for consumers

Contract n°: 01624

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EU contribution:
€ 10.5M

CHILL-ON

LIFTING THE LID ON SPOILT FOOD

LIST OF PARTNERS

- Verein zur Förderung des Technologie-Transfers an der Hochschule Bremerhaven (Germany)
- Agricultural Research Organisation (Israel)
- ActValue Consulting&Solutions (Italy)
- Chinese Agricultural University (China)
- Wessex Institute of Technology (UK)
- University of Bonn (Germany)
- Agricultural University of Athens (Greece)
- Fundación Chile (Chile)
- University of Parma (Italy)
- University of Kent (UK)
- Icelandic Fisheries Laboratories (Iceland)
- Institute for Packaging, Transport and Logistics Research (Spain)
- Afcon Industries (Israel)
- Beijing Fishing company (China)
- Fjord Marin (Turkey)
- Motorola (Israel)
- Q-Bioanalytics (Germany)
- Cybelia (France)
- Research Relay (UK)
- Crytec (Israel)
- OSM-DAN (Israel)
- Freshpoint Quality Assurance (Switzerland)
- Chainfood (The Netherlands)
- Traceall (UK)

Europeans live in a fast-paced, super-charged society. Double-income families, single-parent homes and extracurricular activities have put the pressure on people to seek shortcuts when it comes to preparing and eating food. The big winner here is the chilled and frozen food products market. Year-on-year, the market grows by 10% and reports 11 million tons of food consumed.

However, since more than 70% of frozen food products are traded on the global market, we need to ensure that product quality and safety management are of impeccable standards. Industry actors recognise that 0.01% of chilled and frozen food produced cannot be consumed because storage integrity is compromised. It is clear that the EU lacks an 'integrated concept' for the management, monitoring and traceability of chilled and frozen foods.

The question is how does the EU go about securing such a concept? The answer lies in the CHILL-ON project, a pro-active and integrated approach that effectively studies and assesses each step of the chilled and frozen supply chain. It is therefore, providing Europeans with better food quality and safety, as well as transparency in the supply chain.

STRATEGY AT WORK

Building consumer confidence in chilled and frozen food products is a strategic objective for the EU and the involved sectors of food production, trade and distribution.
CHILL-ON researchers assess cutting-edge technologies, exploit innovative technological concepts, and advance their validation and potential. Special emphasis is given to monitoring management and tracing the supply chain thanks to the fresh, innovative TRACEHILL system. The project's players - geneticists, biochemists and logisticians - train and disseminate measures to ensure CHILL-ON meets its objectives: to provide accurate identification, qualification, quantification and tracing of any issue regarding product quality and safety along the supply chain.

This Integrated Project focuses on seafood and poultry, because they are highly sensitive as regards food poisoning and an increasing number of Europeans are consuming seafood products because they recognise their nutritional value. Whilst consumption patterns vary between Member States, the numbers are expected to grow by 10% within the next four years.

The European Commission points out that identifying the origin of feed and food ingredients and food sources is necessary to ensure the health and safety of consumers. Thus, guaranteeing traceability makes it possible to get unhealthy and unsafe foods off the shelves and give consumers accurate information about what went wrong. On the whole, the European food industry must show its prowess in monitoring, maintaining and guaranteeing its food product quality, in a cost-effective manner.

ON THE EDGE OF SUCCESS

Europe has a large piece of the international chilled and frozen food pie as compared with North America, which controls a mere 30%. Europe's 50% market share clearly indicates that it influences the market's moves. With respect to seafood, however, it currently imports products from Asia and South America. Putting the CHILL-ON concept into action effectively reinforces Europe's competitiveness in the seafood market. Only by bolstering its competitiveness can the European food industry gain the technological edge it needs.

European policy objectives can be achieved when Europeans implement a global, integrated approach for better monitoring and control of the seafood supply chain. In a nutshell, CHILL-ON can and will make this happen. With the industry facing losses of €1 billion each year, CHILL-ON will help the EU industries, and SMEs in particular, reap the fruits of success.

Acronym: CHILL-ON

Full title: developing and integrating novel technologies to improve safety, transparency and quality insurance of the chilled/frozen food supply chain

Contract n°: 016333

Website:
www.chill-on.com

Project co-ordinator:
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EU contribution:
€ 10.1M

EU-SOL

NEW AND IMPROVED TOMATOES AND POTATOES

LIST OF PARTNERS

- Plant Research International BV, (The Netherlands)
- Flanders Interuniversity, Institute for Biotechnology (Belgium)
- INRA (France)
- Max Planck Institute of Molecular Plant Physiology, (Germany)
- Max Planck Institute for Plant Breeding Research, (Germany)
- Friedrich-Alexander University Erlangen-Nürnberg, (Germany)
- GSF Forschungszentrum fuer Umwelt und Gesundheit, GmbH, (Germany)
- Consejo Superior de Investigaciones Cientificas, (Spain)
- Stazione Zoologica Anton Dohrn, (Italy)
- University of Malaga (Spain)
- Centre Technique Interprofessionnel des Fruits et Legumes, (France)
- Ecole Normale Supérieure, (France)
- Institut National Polytechnique de Toulouse, (France)
- Agro-technology & Food Innovations RV, (The Netherlands)
- Aristotle University of Thessaloniki, (Greece)
- The Hebrew University of Jerusalem, (Israel)
- Weizmann Institute of Science, (Israel)
- Royal Holloway and Bedford New College, (UK)
- Scottish Crop Research Institute, (UK)
- Imperial College of Science, Technology and Medicine, (UK)
- The University of Nottingham (UK)
- The Natural History Museum, (UK)
- Consiglio Nazionale delle Ricerche, (Italy)
- Ente per le Nuove Tecnologie, l'Energia e l'Ambiente, (Italy)
- The "Federico II" University of Naples, (Italy)
- Maritsa Yegetable Crops Research Institute, (Bulgaria)
- Agricultural Biotechnology Center, (Hungary)
- BIOPLANT, Biotechnologisches Forschungslabor GmbH, (Germany)
- KEY GENE NY, (The Netherlands)
- GENELAB SRL, (Italy)
- LIS Consult, (The Netherlands)
- GENOME Express (France)
- METAPONTUM AGROBIOS, (Italy)
- SAVEOL SCA, (France)
- Agro Marche Strategies, (France)
- National University of Salta (Argentina)
- Centro de Investigaciones en Ciencias Veterinarias y Agronomicas (Argentina)
- University of Sao Paulo, (Brazil)
- University of Pretoria, (South Africa)
- Hebron University, (Israel)
- ENZA Zaden Beheer BV, (The Netherlands)
- SVS Holland BV, (The Netherlands)
- Kweek- en Researchbedrijf Agrico BV, (The Netherlands)
- Averis Seeds BV,
- (The Netherlands)
- HZPC HOLLAND BV,
- (The Netherlands)
- Syngenta Seeds BV, (The Netherlands)
- Rijk Zwaan Zaadteelt en Zaadhandel BV, (The Netherlands)
- De Ruiter Seeds R&D NL BV, (The Netherlands)
- Vilmorin & Cie SA, (France)

Tomatoes and potatoes are widely consumed in Europe, making them one of the most important crop types grown. To address the current and future needs of consumers, processors and producers throughout Europe, the EU-SOL project aims to develop high quality tomato and potato varieties with improved traits.

The project particularly focuses on mapping, isolating and characterising genes underlying important traits such as nutritional value, taste, flavour, fragrance, shelf-life, starch composition, yield and plant architecture. These traits will be mapped in the large reservoir of mostly unexploited wild tomato and potato species.

As a matter of fact, in a world where most food products are enhanced with additives and preservatives, a recent trend is pushing for the return of natural and biological aliments. The project's findings on solanaceous crops' biodiversity could have a significant commercial impact on this specific agricultural sector.

SOLANACEOUS GENETICS

EU-SOL is dedicated to mapping, isolating and characterising genes responsible for important traits for consumers, processors and producers of solanaceous crops. Assembly of these genes within new genotypes will boost the existing knowledge on the factors affecting crop quality and provide a blueprint for novel, high quality varieties. These new varieties are being developed using efficient breeding strategies based on marker-assisted breeding and genetic engineering that exclusively use natural plant genes.

The project participants acquire an understanding of the molecular and regulatory mechanisms underlying biosynthesis, accumulation and degradation of metabolites and profiling tomato and potato collections. Mapping crop genetics allows for a better exploitation of the crops' biodiversity to enrich the genetic basis of cultivated plants with new alleles that improve productivity, quality and adaptation.

WORLDWIDE TOMATOES AND POTATOES

Genetic variation is the engine that drives modern plant breeding. Designed as a network of plant scientists, EU-SOL is the ideal vehicle to strengthen the competitiveness of EU plant breeding SMEs, by building up the critical mass needed for breakthrough genomics research into tomato and potato quality.

EU-SOL aims to have a major impact on the commercial activities of European companies, with the establishment of a Technology Transfer Platform, ensuring that the scientific output of the project is made available to the society at large, both in the EU and in all the partner and International Cooperation countries involved. The dissemination of these results by means of a website, forums and educational activities also facilitates the interaction of EU-SOL with other research projects in the field.

The activities of this project support the improvement of the quality and wholesomeness of solanaceous-based products. By using state-of-the-art science, EU-SOL will explore the natural crop biodiversity to find ways of creating healthier and better quality tomatoes and potatoes.

Acronym: EU-SOL

Full title: high quality solanaceous crops for consumers, processors and producers by exploration of natural biodiversity

Contract n°: 016214

Website:
www.eu-sol.net

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 18.7M

IDEFICS

IMPROVED DIETARY AND LIFESTYLE STRATEGIES FOR CHILDREN

LIST OF PARTNERS

- University of Bremen, Bremen Institute for Prevention Research and Social Medicine (Germany)
- Ghent University, Faculty of Medicine and Health Sciences, Department of Public Health/ Department of Movement and Sport Sciences (Belgium)
- Research & Education Foundation of Child Health (Cyprus)
- University Joseph Fourier, Laboratory of Nutrition, Ageing and Cardiovascular Diseases (France)
- Verein zur Förderung des Technologietransfers an der Hochschule Bremerhaven Sensory Laboratory (Germany)
- University of Glasgow, Institute of Biomedical and Life Sciences (UK)
- Lancaster University, Institute for Environment, Philosophy and Public Policy (UK)
- University of Pécs, Medical Faculty, Department of Paediatrics (Hungary)
- Università Cattolica del Sacro Cuore, Centre for High Technology Research and Education in Biomedical Sciences (Italy)
- National Research Council, Institute for Food Sciences, Unit of Epidemiology & Population Genetics (Italy)
- National Cancer Institute, Epidemiology Unit (Italy)
- University of Milan, Department of Pharmacological Sciences (Italy)
- University of Zaragoza (Spain)
- University Illes Balears, Laboratory of Molecular Biology, Nutrition and Biotechnology (Spain)
- Göteborg University, Queen Silvia Children's Hospital, Department of Paediatrics (Sweden)
- European Food Information Council (Belgium)
- Laboratoriumsmedizin Dortmund, Eberhard & Partner (Germany)
- BioTel (UK)
- Pécs TV Communication (Hungary)
- Agorà Med (Italy)
- National Institute for Health Development (Estonia)
- Gockel Design (Germany)
- Copenhagen Business School (Denmark)

IDEFICS is contributing to improving health conditions for children by understanding their food habits and looking for solutions to problems such as weight and obesity disorders. The project is examining the connection between diet and environment, and proposes new interventional approaches for reducing the negative impacts of imbalanced food habits on children.

IDENTIFYING THE CAUSES OF DIET-RELATED DISORDERS

In order to bring a halt to the epidemic of diet and lifestyle-induced diseases and ill health, the IDEFICS study is introducing evidence-based methodologies, such as cross-sectional surveys. These are producing a good assessment of the prevalence of disorders, such as overweight in European children. Associated disorders, also assessed during the surveys, include obesity, scoliosis, metabolic syndrome and diabetes.

A key component of the project is the conducting of epidemiological studies that take into account certain biochemical and genetic factors. These are being carried out into the effects of diet, food composition and lifestyle on the development of those conditions that are impacting on children. Investigations are also being conducted to determine how sensory perception and environmental factors influence food choices among consumers. This study is complemented by additional research into children's physical activity.

As a result of all this work, IDEFICS is developing a standardised data collection methodology and database that can be used for health research in the future. Such research will include gaining an understanding of the metabolic pathways of the conditions being considered.

INTERVENING BEFORE IT IS TOO LATE

The cross-sectional surveys, conducted in 9 European countries, in which self-reported and biological baseline data of children of preschool and school age will be collected, will find out about key risk factors for overweight and obesity. Additionally, the surveys will provide baseline data collected in a comparable and standardised manner on the prevalence of the disorders in question. As a further result of the study, IDEFICS will for the first time deliver reference data for physiological parameters like height, weight, blood pressure, etc. in children between the ages of 2 and 10.

By identifying the causes of diet-related disorders, the consortium is able to develop, implement and evaluate specific interventional approaches with the aim of reducing the prevalence of diet-related disorders among children. IDEFICS produces a standard set of intervention modules, adjustable to suit the characteristics of each country's dietary habits, physical activity and leisure pursuits in which parents and children, as well as teachers, nurses and local authorities all participate. If the modules prove successful, they can be spread to a broader population of European youngsters.

The IDEFICS team is also developing a core set of guidelines on nutrition, behaviour and ethics, directed towards scientists, policymakers, the health insurance industry and consumers with the aim of promoting healthy food. The consortium is drawing upon the experience gained by its wide range of participants including research institutes, universities and the small-to-medium sized enterprise sector. This invaluable knowledge has been taken from the fields of nutrition, health and biology and from the monitoring of physical activity, in order to carry out the proposed research activities.

IDEFICS aims at raising public awareness, changing attitudes and improving the uptake and acceptance of preventive measures. Moreover, the project is providing a better understanding of the mechanisms required for preventing the development of diseases and disorders. This in turn will lead to improved dietary and lifestyle strategies for children, and provide the necessary advice for those who take care of them. In addition, awareness has been raised among local authorities and policymakers responsible for the issue of overweight children, and proper guidelines have been provided for promoting prevention strategies. In the long term, this will result in fitter and happier youngsters and reduce the likelihood of poor health in later life.

Acronym: IDEFICS

Full title: identification and prevention of dietary- and lifestyle-induced health effects in children and infants

Contract n°: 016181

Website:
www.etpfood.net/gutimpact/

Project co-ordinator:
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EU contribution:
€ 13M

ISAFRUIT

LIVE A LONG AND FRUITFUL LIFE

LIST OF PARTNERS

- University of Aarhus (Denmark)
- Agroscope Changins-Wädenswil (Switzerland)
- Danish Institute for Food and Veterinary Research (Denmark)
- Institut de Recerca i Tecnologia Agroalimentàries (Spain)
- Institut National Recherche Agronomique (France)
- Università di Bologna (Italy)
- The Norwegian Institute of Agricultural and Environmental Research (Norway)
- Wageningen UR-Applied Plant Research (The Netherlands)
- Wageningen UR-Plant Research International (The Netherlands)
- Wageningen UR-Agricultural Economics Research Institute (The Netherlands)
- Research Institute of Pomology and Floriculture (Poland)
- University of Warwick (UK)
- University of Gembloux (Belgium)
- Research Institute of Organic Farming (Switzerland)
- Danish Cancer Society (Denmark)
- Bundesanstalt für Züchtungsforschung an Kulturpflanzen (Germany)
- Kompetenzzentrum Obstbau-Bodensee Bavendorf (Germany)
- Obstbau Versuchring Jork (Germany)
- Royal Veterinary and Agricultural University (Denmark)
- University of Copenhagen (Denmark)
- Universitad de Lleida (Spain)
- Universidad Politécnica de Madrid (Spain)
- University of Oslo (Norway)
- Consejo Superior de Investigaciones Científicas, SE Aula Dei (Spain)
- Centre Technique Interprofessionnel Fruits et Légumes (France)
- Groupe de Recherche en Agriculture biologique, Avignon (France)
- Agricultural University of Athens (Greece)
- Istituto Sperimentale di Frutticoltura, Forli (Italy)
- Land- und Forstw. Versuchszentrum Laimburg, Auer (Italy)
- DEIAFA Turin (Italy)
- University of Padova (Italy)
- Teagasc, The National Food Center (Ireland)
- University Medical Centre Groningen (The Netherlands)
- Technical University of Lodz (Poland)
- Warschau Agricultural University (Poland)
- CEMAGREF (France)
- Agricultural Institute of Slovenia, KIS (Slovenia)
- East Malling Research. Sta. HRI (UK)
- Hort Research (New Zealand)
- University of California, Pomology Department, Davis (USA)
- Andermatt Biocontrol (Switzerland)
- Hauert HBG Dünger (Switzerland)
- Schweizerischer Obstverband (Switzerland)
- NOVADI, Tree Nursery Consortium (France)
- Val-de-Vier (France)
- CIV Consorzio Italiano Vivaisti (Italy)
- Intrachem Bio Italia (Italy)
- ISOLCELL (Italy)
- SACMI (Italy)
- Fecoam (Spain)
- Alpex (Poland)
- Celiko (Poland)
- Nature's Best (UK Ireland)
- CSO Ferrara (Italy)
- Sistemi Elettronici Industriali (Italy)
- Inova Fruit (The Netherlands)
- Friesland Foods (The Netherlands)
- Association Groupe ESA (France)
- AGROCOM Polska (Poland)
- Sodexho Nederland (The Netherlands)

It may be surprising to learn that despite the vast amount of information available on the importance of fruit in a balanced diet, people are still not eating enough. The core reasons for this may not be immediately obvious or explicable. Are the varieties of available fruit limited by consumer driven preferences? Is it that certain fruits are neglected only as a matter of taste, or are consumers put off by the appearance?

The goal of the ISAFRUIT project is to increase fruit consumption throughout Europe. It is funded under the EC FP6 programme and seeks to identify the problem areas or bottlenecks that may impede consumption, adopting a holistic perspective in its approach. The consortium is focusing on all stages of the fruit's journey, from its beginnings as a seed to the moment a consumer bites into the succulent end product.

DISSECTING FRUIT

ISAFRUIT is a long-term project comprising 61 participants, including 40 institutes and 21 SMEs. The fruit species used as research models include apples, peaches and nectarines, with some studies on other species, such as apricots and red berries. The idea of the project is to increase fruit consumption through consumer satisfaction. Awareness of the health benefits of fruit may be one of the driving forces behind consumer choice and comprises part of the study, as well as research into the link between human health and fruit.

Investigations into quality and the benefits of fresh and processed fruit are bound to stimulate consumer interest through a higher safety, health and sustainability profile. The developments of a wider range of healthy products, such as low-allergy fruits and fruit products, are opening up a new market for European fruit. The use of by-products from the fruit juice industry is also helping to make the European industry more competitive.

Sustainable chain management and production methods, including organic production, are being addressed by a number of activities dealing with the post-harvest and pre-harvest quality of the fruit. As a result, it is hoped and expected that this will create greater availability of a wider range of sustainable fruit and fruit products.

EAT YOUR WAY TO BETTER HEALTH

Although international recommendations propose a minimum intake of 600g of fruit and vegetables per person per day, survey data and availability statistics from the United Nations FAO (Food and Agriculture Organization, 2004) suggest that most populations are not meeting this goal. In Europe, only a few Mediterranean countries, where availability is high, are currently meeting this recommendation on a population level. Despite a relatively high mean consumption of 500g per day in such countries, the proportion of consumers eating less than 600g per day is still comparatively great.

Fruit consumption also clearly varies within countries and between different social classes and age groups. For example, low-income households have the lowest fruit and vegetable intakes. The objectives this project has set for itself will help eradicate these disparities and improve the eating habits of the entire European population. Not only will this result in healthier and happier citizens, but also in a flourishing and more competitive fruit industry.

Acronym: ISAFRUIT

Full title: increasing fruit consumption through a trans-disciplinary approach delivering high quality produce from environmentally friendly, sustainable production methods

Contract n°: 016279

Website:
www.isafruit.org

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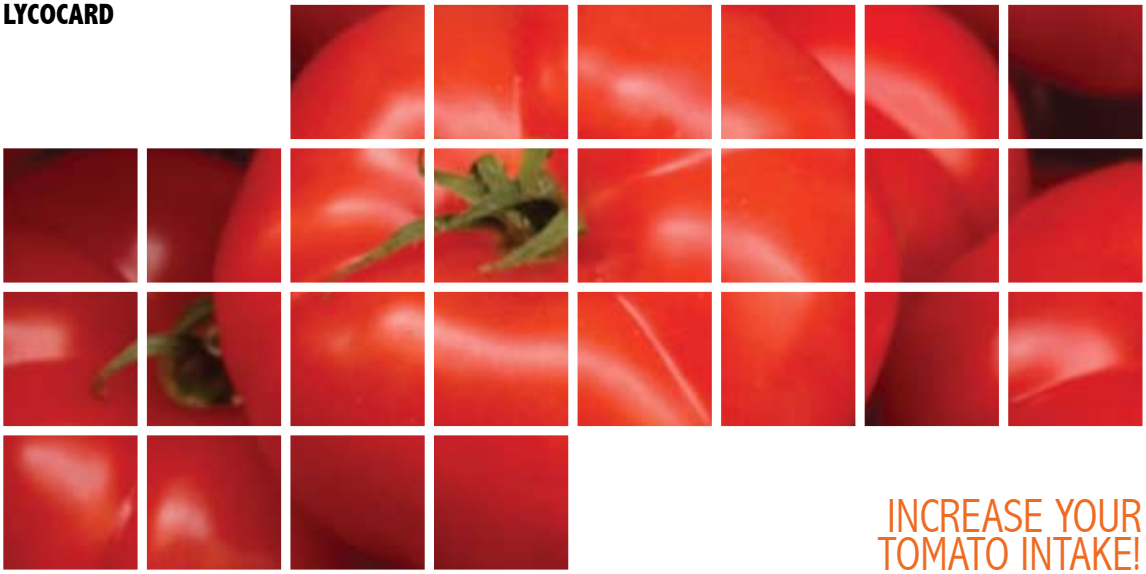
EU contribution:
€ 13.8M

LYCOCARD



INCREASE YOUR TOMATO INTAKE!

LIST OF PARTNERS

- Institute of Nutrition, Friedrich-Schiller-Universität (Germany)
- Medizinische Klinik für Kardiologie, Angiologie, Pneumologie (Germany)
- UMR INRA-UAPV A408, Sécurité et qualité des produits d'origine végétale, INRA Domaine Saint Paul (France)
- Department of Biochemistry and Molecular Biology, Medical and Health Science Centre (Hungary)
- School of Biomedical Science and Biochemistry, Liverpool John Moores University (UK)
- Department of Food Technology, Nutrition and Food Science, University of Murcia (Spain)
- UMR 476 INSERM/1260 INRA, Faculté de Médecine, Marseille (France)
- Institute of General Pathology, Catholic University Rome (Italy)
- Institute of Biochemistry and Clinical Biochemistry, Catholic University Rome (Italy)
- Deutsche Herzstiftung Frankfurt (Germany)
- Juver Alimentación Murcia (Spain)
- AMITOM, Avignon (France)
- AGRAZ, Villafranco del Guadiana, Badajoz (Spain)
- Conservas Vegetales de Extremadura, Villafranco del Guadiana, (Spain)
- Caledonian Science Press, Barcelona (Spain)

It is perhaps ironic that the tomato, coming from a genus that contains both the eggplant and potato, also puts forth a host of poisonous plants. Ironic, because recent research has identified that lycopene, the carotenoid that gives tomato its red pigmentation, may very well provide a means to reduce the risks of cardiovascular disease as well as cancer.

Investigating the role of lycopene, therefore, and how it actually affects human health became a primary focal point for a consortium of dietary specialists, researchers, patient organisations and food companies. It is their intention to bring their findings to bear directly on the development of food and or food supplements that are crimson bright with benefits.

BRIGHT RED TOMATOES …

It is not surprising that with the growing emphasis on natural remedies gaining more ground with consumers and health specialists, investigating the chemical contribution of foods in reducing cardiovascular disease has become a priority objective.

The LYCOCARD consortium is conducting an intensive study into the biochemical and physiological interactions of the compound involved with food consumption. This is a little understood process and the complexities involved require a critical mass of highly complementary European experts to analyse lycopene bio-availability; oxidative catabolism of lycopene; physiologically relevant isomers and metabolites; modulation of endothelial functions and effects of lycopene and its derivatives on cell signalling pathways. Research results will, therefore, advance significantly beyond simple correlations between particular foods and health benefits.

Better understanding of the genetic, molecular, biochemical and physiological functions of lycopene and related compounds in protecting against cardiovascular diseases will offer detailed knowledge of the protective effects of fruit and vegetables, especially tomatoes and tomato products.

… FOR THE YOUNG AND OLD!

Thanks to these research results, the food industry is able to engineer healthy new tomato-based products on scientific evidence attesting to their higher protective impact on cardiovascular health. Three studies using healthy human subjects enable inferences about the whole population. The effect of lycopene — or tomato products — on parameters involved in cardiovascular diseases, is assessed. The results are being documented as guidelines for primary prevention by two patient organisations from the LYCOCARD project.

These consumer-designed, novel dietary guidelines aimed at preventing and minimising disease risk facilitate diet selection. LYCOCARD research and development results helps to improve the health of European consumers and reduce health system costs. In addition, the position of the European food industry — and more particularly SMEs — is strengthened by the increasing demand for tomato products.

Perhaps, with the progression of the research being carried out by the LYCOCARD consortium, the tomato will become a far more prominent item on shopping lists around the world. With the advent of the proposed 'new foods' that will sprout from their fertile research results, dieting will not be so much a matter of abstinence, as a matter of eating the right foods.

Acronym: LYCOCARD

Full title: role of lycopene for the prevention of cardiovascular diseases

Contract n°: 016213

Website:
www.uni-jena.de/biologie/ieu/boehm

Project co-ordinator:
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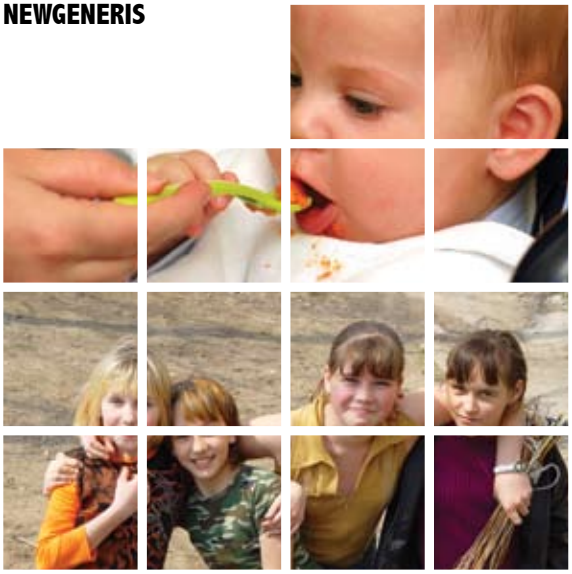
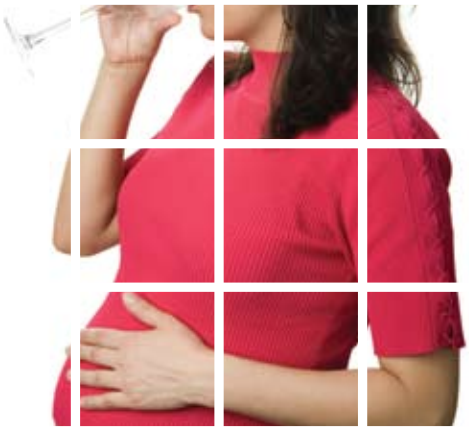
EU contribution:
€ 5.2M

NEWGENERIS





NEWBORNS TO PROVIDE ANSWERS ON MUM'S DIETARY HABITS

LIST OF PARTNERS

- Maastricht University (The Netherlands)
- National Hellenic Research Foundation (Greece)
- Municipal Institute of Medical Research (Spain)
- University of Bradford (UK)
- University of Copenhagen (Denmark)
- University of Leicester (UK)
- Karolinska Institute (Sweden)
- Free University of Brussels (Belgium)
- German Cancer Institute (Germany)
- University of Oslo (Norway)
- National Institute for Cancer Research (Italy)
- University of Leeds (UK)
- Catholic University of Leuven (Belgium)
- Norwegian Institute of Public Health (Norway)
- Statens Serum Institut (Denmark)
- University of Crete (Greece)
- University of Kuopio (Finland)
- Stockholm University (Sweden)
- National Institute of Environmental Health, József Fodor National Centre for Public Health (Hungary)
- Institute for Medical Research and Occupational Health (Croatia)
- Universitat Autonoma de Barcelona (Spain)
- Medical University (Slovakia)
- BioDetection Systems (The Netherlands)
- Imstar (France)
- GeneData (Switzerland)

The risks associated with maternal exposure to compounds with carcinogenic and immunotoxic properties through the mother's diet are not yet completely clear. NewGeneris aims to test the hypothesis that consumption of such compounds can result in *in utero* exposure, leading to increased risk of cancer and immune disorders in childhood.

The project partners will isolate and examine specific biomarkers indicating exposure to carcinogens and will study the implications to public health, following an extensive examination of dietary habits and DNA studies, as well as gene expression profile development. The biomarkers that are being developed will be able to demonstrate potential links between diets containing specific chemicals with pathogenic properties and precarcinogenic and immunotoxic effects. With this innovative approach to foetal safety, NewGeneris is able to add a new dimension to issues of health hazards associated with specific dietary components. The results could have important implications for the formulation of European policy with regard to the improvement of food quality.

UNDERSTANDING THE INCIDENCE OF CHILDHOOD PATHOLOGIES

The NewGeneris project will utilise existing mother-child birth cohorts throughout Europe to conduct a series of investigative studies (including questionnaire-based surveys) in order to assess maternal dietary exposure to carcinogens and immunotoxins. Further epidemiological surveys aim to examine the links between dietary exposure childhood cancer risk factors and immune disorders. Consortium members undertake this at a time when cancer incidence in European children is increasing, in particular the incidence of leukaemia. Atopic diseases, such as asthma and atopic eczema in children, are also on the rise.

There is no concrete evidence on what causes these diseases in childhood, nor can the scientific community explain why their incidence has indeed increased. There are, however, indications linking a number of chemicals also present in the food chain to these pathologies. The birth-cohort-approach that is used in NewGeneris is expected to provide answers on the roles of such chemicals at the onset of disease. The goal is to enrol over 200 000 pregnant women and their babies in Denmark and Sweden, with smaller study groups in the UK, Germany, Spain and Greece. The total number is expected to reach 300 000 newborns. The availability of such a large sample will allow analysis for biomarkers of exposure to carcinogens, and also of the early onset of cancer and immune disorders.

IMPACT THROUGH COLLABORATION

The objectives set out by NewGeneris will be realised through the effective collaboration of academic and public research centres throughout Europe in combination with a number of SMEs with expertise in the field of biomarker analysis. The varied sets of skills employed within the consortium will find application in the different steps of data collection and analysis, which include recruitment of study population, toxicological studies, questionnaire surveys, molecular studies, epidemiological analysis and biosafety monitoring. Collaboration among consortium partners will bridge specific gaps in our knowledge on childhood diseases. As a result of the work of the NewGeneris project, fresh tools will be made available to European policymakers for improving food quality and eliminating risk. This will, in turn, help increase the European food sector's competitiveness on a global scale.

Acronym: NEWGENERIS

Full title: development and application of biomarkers of dietary exposure to genotoxic and immunotoxic chemicals and of biomarkers of early effects, using mother-child birth cohorts and biobanks

Contract n°: 016320

Website:
www.newgeneris.org

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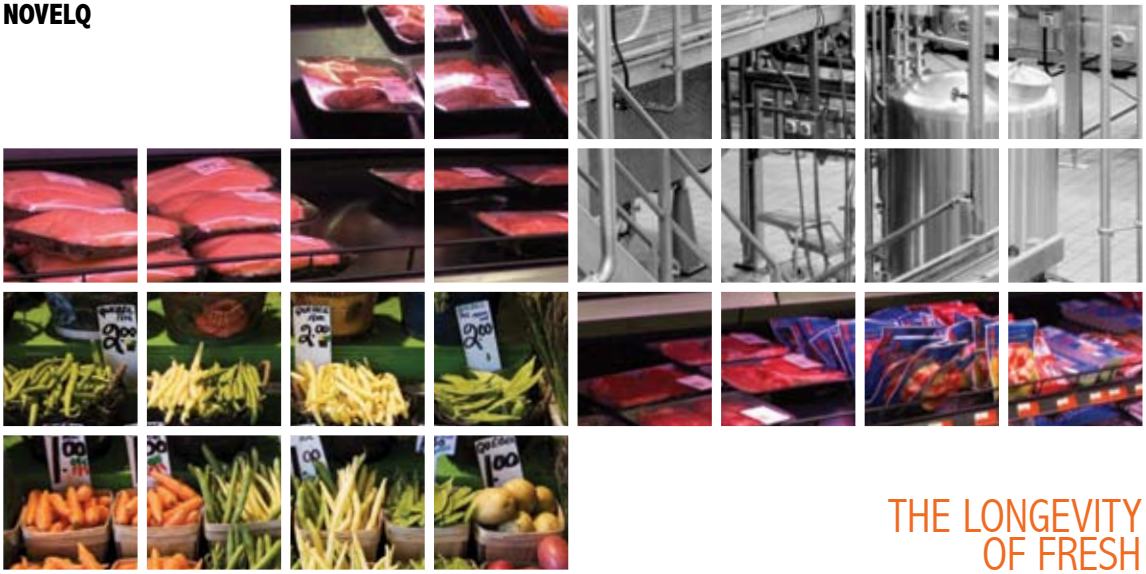
EU contribution:
€ 13.6M

NOVELQ



THE LONGEVITY OF FRESH

LIST OF PARTNERS

- Agrotechnology & Food Innovations (The Netherlands)
- TU Berlin (Germany)
- KULeuven (Belgium)
- IFR (UK)
- University of Lleida (Spain)
- VTT (Finland)
- KVL (Denmark)
- Zaragoza University (Spain)
- IMCB-CNR (Italy)
- University of Naples (Italy)
- CFRI (Hungary)
- SCA (Europe)
- Matforsk (Norway)
- Aarhus School of Business (Denmark)
- SIK (Sweden)
- CTCPA (France)
- CCFRA (UK)
- TNO-QoL (The Netherlands)
- FRIP (Czech Republic)
- University of Salford (UK)
- Resato (The Netherlands)
- I&L Invest (Belgium)
- Unilever (The Netherlands)
- EFFOST (Europe)
- Struik Foods (The Netherlands)
- Procordia Food (Sweden)
- OPAL (France)
- CGPA PENY (France)
- Montpellier II University (France)
- INTI Plàsticos (Argentina)
- CSRI (South Africa)
- Erlangen University (Germany)

In today's fast-paced world, we sometimes lack the time to go out and shop for fresh food on a daily basis. This is one reason why people increasingly choose to shop at irregular intervals. The result of this new habit is a waste of around 35% of fresh produce. The annual waste of fresh food produced in the UK alone could save 150 million people from starvation. NovelQ's goal is to develop new technologies to keep food fresh over a longer period of time, thereby minimising waste.

ON THE ROAD TO FRESHNESS

Europe already has a strong competitive position in the field of food processing technologies based on its patents and expertise. NovelQ aims to extend and strengthen this competitive advantage. Besides existing methods such as high pressure, pulsed electrical fields, cold plasma and advanced heating technologies, NovelQ aims to develop and demonstrate new products and processes that enhance freshness and storage life.

The project is very ambitious in its quest for innovation in the area of food conservation. It examines the possibility of substantially extending the shelf life of victuals, especially vegetables. In response to the demands of consumers, the project studies new alternatives for maintaining the fresh characteristics of food close to those of the raw material (which is not achievable using traditional processing methods).

Finally, NovelQ supports eco-friendly innovative processing by overhauling the traditional processing methods. Different methods are implemented, including the reduction of energy inputs via low-temperature and low-energy processing, the reduction of water and chemical utilisation and a decrease in packaging.

MAXIMISING PARTNERSHIPS

The NovelQ project involves a large number of food processing experts. The consortium includes research institutes and universities, as well as food manufacturers and machinery suppliers in order to optimise cross-sector innovations. The team members have access to all advanced facilities provided by other project partners, including unique processing prototypes, to assist with research. These factors, together with the priority paid to effective dissemination and technology transfer, ensure maximum stakeholder impact for NovelQ.

In order to reach the Commission's goal of 3% research and development spending, NovelQ connects the food sector with the equipment-manufacturing sector, which has a substantially larger research and development investment of approximately 5%. This linkage has the added bonus of providing SMEs with a greater role, since many equipment manufacturers are small businesses.

Acronym: NOVELQ

Full title: novel processing methods for the production and distribution of high-quality and safe foods

Contract n°: 015710

Website:
www.novelq.org

Project co-ordinator:
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EU contribution:
€ 11.3M

PHIME

EXPOSING TOXIC METALS IN FOOD

LIST OF PARTNERS

- Lund University (Sweden)
- Institute Jozef Stefan (Slovenia)
- Institute of Child Health (Greece)
- Karolinska Institutet (Sweden)
- Umeå University (Sweden)
- Institute for Biomedical Research, Kaunas University (Lithuania)
- Catholic University of Louvain (Belgium)
- Ministry of Health and Social Services (Seychelles)
- National Institute of Public Health (Czech Republic)
- University of Ulster Coleraine (UK)
- Oikon (Croatia)
- Oy Jurilab (Finland)
- Regional Authority of Public Health Banská Bystrica (Slovakia)
- Faroese Hospital System (Faroe Islands)
- International Centre for Diarrhoeal Disease Research (Bangladesh)
- University of Udine (Italy)
- University Medical Centre, Ljubljana (Slovenia)
- University of Brescia (Italy)
- University of Fudan (China)
- University of Southern Denmark (Denmark)
- Institute of Occupational Medicine and Environmental Health, Sosnowiec (Poland)
- University of Copenhagen (Denmark)
- University of Aarhus (Denmark)
- Leibniz-Institut für Pflanzenbiochemie (Germany)
- University of Southampton (UK)
- Universität Zürich (Switzerland)
- University of Heidelberg (Germany)
- University of Bayreuth
- (Germany)
- University of York (UK)
- Institute of Ecology of Industrial Areas (Poland)
- Warsaw University (Poland)
- University of Rochester (USA)
- University Sidi Mohamed Ben Abdallah (Morocco)
- Institute of High Energy Physics (China)
- Institute for Development of Production and Work Environment (Ecuador)
- University of Kuopio (Finland)
- University of Aarhus (Denmark)

We are all exposed to metals via food, water and air. The effect that toxic metals such as lead, mercury and cadmium have on human health has triggered action. PHIME is an EU research project that will assess the health impact of metals: sources, benefits, toxicity and some possible solutions.

PHIME's strategic objective is to develop an integrated health risk assessment of long-term, low-level environmental exposure to toxic and essential metals. This process will be conducted with an emphasis on the exposure and interaction of these metals, and how this affects humans, and in particular vulnerable groups such as children, women, the elderly and individuals with genetic susceptibilities.

BETTER HEALTH, BETTER FUTURE

The PHIME researchers seek to offer a greater insight into how metals influence the human body, where the exposure occurs geographically and what can be done in order to reduce metals in plants, thereby improving the human food chain. At the end of the day, this understanding will help researchers and the food industry provide foods of better quality that are safer for consumption, thus reducing any health risks and curbing the economic burden on the healthcare systems.

Key to the success of this project is PHIME's unique multidisciplinary and integrated approach. With strong scientific backgrounds from national, European and international levels, the PHIME consortium will launch a robust and effective communication system, both locally and abroad, to ensure the success of the project. The partners work with a network of researchers from EU Member States, Associated and Candidate Countries, and developing countries to promote knowledge exchange. Results of the project's work are to be disseminated to the EC services, national agencies, mass media (including the Internet) and consumers.

Moreover, the project meets the objectives of Priority 5 in the EU. In pursuit of a 'farm-to-fork' and a 'pollution source-to-hospital' approach, PHIME will explore how metals consumed through food and drinking water, as well as through environmental exposure, affect human health. This information is of value for risk assessment and management. It can provide an improved basis for decision-making and for ascertaining tolerable levels of elements, particularly with regard to metals in crop plants.

PHIME is innovative in its approach, as it seeks to build on earlier research efforts that were concerned with how toxic metals affect the environment, and food in particular. PHIME will effectively develop and evaluate new tools for biomonitoring exposure and effects, and will advance the foundation for risk assessment and management.

Tackling exposure to metals will effectively impact large numbers of the population in the aforementioned countries. By promoting health protection, safety and information, PHIME will give citizens the impetus they need to live longer and better lives.

Acronym: PHIME

Full title: public health impact of long-term, low-level mixed element exposure in susceptible population strata

Contract n°: 016253

Website:
www.phime.org

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 13.4M

SABRE

USING GENOMICS TO IMPROVE LIVESTOCK SUSTAINABILITY

LIST OF PARTNERS

- Genesis Faraday Partnership (UK)
- Institut National de la Recherche Agronomique (France)
- ASG Lelystad (The Netherlands)
- Roslin Institute (UK)
- Danish Institute of Agricultural Sciences (Denmark)
- Wageningen University (The Netherlands)
- Argentix (UK)
- Cordoba University (Spain)
- Parco Tecnologico Padano (Italy)
- The Volcani Center (Israel)
- MTT Agrifood Research Finland (Finland)
- Genus (UK)
- University of Berne (Switzerland)
- CNRS-UPR (France)
- Research Institute for the Biology of Farm Animals, FBN-Dummerstorf (Germany)
- Agricultural University of Norway (Norway)
- University of Bonn (Germany)
- Institut De Recerca I Tecnologia Agroalimentaries (Spain)
- Lohmann Tierzucht GmbH (Germany)
- The Royal Veterinary and Agricultural University (Denmark)
- University of Glasgow (UK)
- University of Munich (Germany)
- Cogent (UK)
- Sanger Institute (UK)
- Institute for Pig Genetics (The Netherlands)
- BioBest (UK)
- Scottish Agricultural College (UK)
- Institute for Animal Health (UK)
- University of Medical Sciences Poznan (Poland)
- JiangXi Agricultural University (China)
- Zhejiang University (China)
- China Agricultural University (China)
- Universidade Federal De Viscosa (Brazil)

Genetics has been used to help improve human health for some time now. The results of this type of research are promising and they appear to yield a staggering number of potential cures for almost every disease known to man. Scientists are increasingly looking at the potential application in animals, to improve their health, and subsequently, the health of consumers. This is all the more important if you take into consideration that overall meat consumption in the EU is projected to increase from 87.4 kg in 2004, to about 89 kg per person per year by 2012.

BREEDING A MULTI-TASK PROJECT

The European livestock breeding industries are the most advanced in the world and have achieved major genetic progress for farmed animal species in recent years. This progress has improved the economic efficiency and competitiveness of livestock industries and made substantial contributions to sustainability: pigs now produce 50% less manure for each kilogramme of meat than 40 years ago, for example. However, consumer and societal focus on issues influencing the sustainability of livestock production is increasing and this brings with it new targets for breeding, such as quality, disease resistance and other welfare related traits.

SABRE is a very ambitious project because it wants to tackle all of these diverse issues at the same time. Amongst its many goals, it plans to sequence and annotate two targeted pig chromosomes, to identify genes involved in the reproduction of cows, and to provide advice to industry on sustainable breeding strategies.

GENOMICS IS THE KEY

The many scientific approaches of SABRE all have one thing in common: to improve livestock sustainability through genomic selection. This requires that an array of genomic tools, appropriate populations and trait records are employed in a focused project. Many of the required tools and resources are already in place. SABRE is developing the final components for the major livestock species and is bringing the genomic approach to bear on a number of fundamental sustainability problems.

The project is yielding a new pool of knowledge for animal breeders and is helping to improve the ability of selective breeding. An impact should be felt across the EU in many different areas, ranging from food quality and safety to animal welfare, and the environmental footprint of livestock agriculture. Through its sheer size and its many partners, the project has the ambition to transform a wide range of ideas into ready-to-use output for the meat, milk and egg industries.

Europe's animal breeding organisations include a strong SME sector, which guarantees that Europe has the industrial ability to exploit the science of genomics in the best way possible, with clear benefits to the public. Hence, the dissemination of information from SABRE will be maximised through the transfer of knowledge and technologies to companies.

The research conducted under SABRE will help Europe maintain and expand its current competitive edge in farm animal breeding, thereby 'beefing up' the European economy as a whole.

Acronym: SABRE

Full title: cutting edge genomics for sustainable animal breeding

Contract n°: 016250

Website:
www.sabre-eu.eu

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 14M

TRUEFOOD

MAKING TRADITIONAL FOODS EVEN BETTER

LIST OF PARTNERS

- Spread European Safety GEIE (Italy)
- Institut National de la Recherche Agronomique (France)
- Ente per le Nuove Tecnologie, l'Energia e l'Ambiente (Italy)
- Matforsk (Norway)
- Agricultural University of Athens (Greece)
- Gent University (Belgium)
- Association des Centres Techniques Alimentaires (France)
- Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (Italy)
- Instituto de Recerca y Tecnologia Agroalimentàries (Spain)
- University of Warsaw (Poland)
- Dairy Research Institute of Ioannina (Greece)
- Technical University München (Germany)
- University of Prague (Czech Rep)
- University of Perugia (Italy)
- Escola Superior de Biotecnologia (Portugal)
- Progetto Europa Regions (Italy)
- Karadeniz Technical University (Turkey)
- Campden & Chorleywood Food Industry Development Institute (Hungary/UK)
- Agricultural Institute of Slovenia (Slovenia)
- Technical Educational Institute of Ionian Islands (Greece)
- Fachhochschule Weihenstephan (Germany)
- University of Milan (Italy)
- ETAT (Greece)
- Istituto Superiore di Sanità (Italy)
- University of Ljubljana (Slovenia)
- Confédération des Industries Agro Alimentaires de l'UE (Belgium)
- Centre National Interprofessionnel de l'Economie Laitière (France)
- Agriconsulting (Italy)
- Genus (UK)
- Adour Bio Conseil (France)

Ask Europeans about what types of food they like to eat and images of Italian pizza, Greek cheese pies, Swedish meatballs, German Weisswurst and French Niçoise salad come to mind. Both researchers and industry recognise that nearly two thirds of the meals consumed in Europe are made from traditional food products (TFPs). They are also aware, however, that the existing percentage (16%) of 'traditionally evolved' products, which are traditional products that are developing as far as packaging, services, quality and safety standards are concerned, is increasing. Furthermore, they are conscious of what European consumers think and expect of the foods they eat.

However, documentation regarding consumers' experiences of TFPs and their feelings towards innovations in food production is to all intents and purposes missing. The EU is now intent on shedding more light on consumers' opinions and perceptions about TFPs and their innovation. The Traditional United Europe Food (TRUEFOOD) project, therefore, seeks to understand consumers' expectations, evaluate and develop new technologies and involve SMEs in the technology transfer of innovations.

SMEs IN ACTION

Food industries from 20 EU Member States have jumped on the bandwagon to promote research for improved traditional food. With an overall budget of €20.08 million, of which €15.5 million is financed by the EU, the project targets traditional foods that are set for change, in terms of quality and safety standards, nutritional properties, packaging and services. These changes are being implemented in order to meet the growing needs and demands of consumers.

While the industry faces consumer demands, it also faces the threat of cheaper mass-produced competitive products and importation of food from abroad. For this reason, TRUEFOOD aims to support European SMEs by providing them with the means to improve the quality, nutritional value and safety of the foods they produce. It may prove challenging for SMEs, since they must contend with large-scale production and processing methods, while they themselves may lack the facilities or capital to set up microbiological or toxicological safety assurance systems. As a result, the needs and investment capacities of SMEs will be matched with made-to-measure or one-off technological solutions.

HEIGHTENED ACTIVITY

Running over a four-year period, TRUEFOOD is promoted by the SPES GEIE consortium, consisting of 11 major European food and drink federations that represent 35 000 SMEs. The project's strategic goal is to strengthen the industry's competitiveness and consumer confidence, regardless of the fact that it posts €810 billion in turnover each year. Researchers and industries are heeding the growing demands of consumers.

Concerns have surfaced, however, that the new demands have a detrimental effect upon traditional food products. Operators active in the production and distribution of traditional food products must meet the existing EU food safety policies and regulations, and satisfy the changing demands and expectations of consumers. Ultimately, developing innovation to build up the safety and quality of TFPs will come to fruition if researchers and industries work towards better methods for integrating up-to-the-minute technology with the traditional production process. TRUEFOOD is addressing the need to bring together nationally supported research and an integrated European research programme that encourages a stronger and more modern market for evolving traditional foods.

Acronym: TRUEFOOD

Full title: traditional united Europe food

Contract n°: 016264

Website:
www.truefood.eu

Project co-ordinator:
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EU contribution:
€ 15.5M

EPIZONE

EPIZOOTICS FREE ZONE

LIST OF PARTNERS

- Central Institute for Animal Disease Control (The Netherlands)
- Instituut voor Dierhouderij en Diergezondheid, part of Animal Sciences Group (The Netherlands)
- Federal Research Institute for Animal Health (Germany)
- Institute for Animal Health, Pirbright Laboratory (UK)
- Veterinary Laboratories Agency (UK)
- Agence Française de Sécurité Sanitaire des Aliments (France)
- Danish Institute for Food and Veterinary Research (Denmark)
- Statens Veterinarmedicinska Anstalt (Sweden)
- Centre de Coopération Internationale en Recherche Agronomique pour le Développement (France)
- Centre of Animal Health, National Institute for Agriculture and Food Research and Technology (Spain)
- Istituto Zooprofilattico Sperimentale delle Venezie (Italy)
- Lanzhou Veterinary Research Institute CAAS (China)
- National Veterinary Research Institute (Poland)
- FMD Institute Ankara (Turkey)
- Centrum voor onderzoek in Diergeneeskunde en Agrochemie (Belgium)
- Hannover Institut für Virologie (Germany)
- Istituto Zooprofilatico Sperimentale della Lombardia e dell'Emilia Romagna (Italy)
- Harbin Veterinary Research Institute CAAS (China)
- FAO, Food and Agriculture Organization of the United Nations (Rome)
- Digital Value Internet Professionals (The Netherlands)

Epizootic outbreaks cause panic among citizens and have lasting negative effects on the economy of the food industry. Diseases such as foot-and-mouth, avian influenza and classical swine fever spread very fast in high densities of susceptible animals and can only be fought with complete food chain approaches. EPIZONE is an ambitious project aimed at improving research on preparedness, prevention, detection and control of epizootic diseases by collaboration, in order to reduce the economic and social impact of eventual future outbreaks.

PUTTING AN END TO RESEARCH FRAGMENTATION

EPIZONE uses currently available skills and knowledge to develop and improve new tools, to control rapidly (re-)emerging epizootic diseases. A worldwide network of institutes contribute to available expertise through collaboration in the fields of diagnostics, intervention strategies, surveillance and epidemiology, and risk assessment.

The main difficulty for current disease prevention and control is that research is fragmented between a range of research entities. This fragmentation phenomenon is due to a lack of collaboration between institutions and to the lack of appropriate funding. EPIZONE aims to diminish the unnecessary duplication of resources and capacities, and encourage both the rapid expansion of skills and the spreading of excellence between partners, to open up new opportunities for international research. To this end, the project uses electronic communication systems to improve the transfer of information, for example.

The project is also developing and implementing Strategic Integration Activities for the establishment of international priorities in scientific activities, strategic review and planning in themed areas. EPIZONE's approach follows the 'fork-to-farm' model, which takes into consideration all the food production and processing stages.

MINIMISING THE IMPACT OF FUTURE EPIZOOTIC OUTBREAKS

The EPIZONE Consortium Agreement defines the development of a management structure based on a 'virtual institute', with clear rules, processes and procedures, including mechanisms for review and assessment, and an appropriate administrative support. Such a system defines the basis of future control and diagnostic methods, and can contribute to reducing the economic and social impacts of epizootic outbreaks.

The combination of a full chain approach and the available expertise will provide a better understanding of epizootic agents and their interaction with hosts — such as cattle, pigs, poultry and farmed fishes. It is this understanding and the establishment of diagnostic databases and improved genome sequences that can enhance public perception of European agriculture and aquaculture. Consumers are, indeed, very sensitive to epizootic outbreaks and to the control measures they entail. A better perception of outbreak dangers and answers leads to production of high-quality products and, thus, increased competitiveness of the European food sector.

EPIZONE actively contributes to the improved perception of European food sectors, by developing modern, effective and more acceptable control and diagnosis of epizootic diseases. The reduced research fragmentation targeted by the project also has a significant role to play in minimising the impact of possible future outbreaks.

Acronym: EPIZONE

Full title: network of excellence on epizootic disease diagnosis and control

Contract n°: 016236

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EU contribution:
€ 14M

HECTOR

HEALTHY EATING OUT

LIST OF PARTNERS

- National and Kapodistrian University of Athens – Coordinating Centre (Greece)
- Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (Italy)
- Associazione Iblea per la Ricerca Epidemiologica (Italy)
- Deutsches Krebsforschungszentrum (Germany)
- Technische Universität München (Germany)
- Kuluttajatutkimuskeskus (National Consumer Research Centre) (Finland)
- Andrija Stampar School of Public Health (Finland)
- Croatian National Institute of Public Health (Croatia)
- Ministry of Health, Department of Primary Health Care (Albania)
- National Food and Nutrition Institute (Poland)
- Universiteit Gent (Belgium)
- Department of Nutritional Sciences, University of Vienna (Austria)
- Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto (Portugal)
- Department of Medical and Public Health Services, Ministry of Health (Cyprus)
- University of Tromsø (Norway)
- Gastropol Group (Poland)
- Kobatsiari BROS (Greece)
- Hochschule Wadensil (Switzerland)
- BVBA De Appelier (Belgium)
- National Institute of Food Safety and Nutrition (Hungary)
- Agricultural University of Athens (Greece)
- Coca-Cola Services (Belgium)
- Department for Environment, Food and Rural Affairs (UK)
- UNISELF, Gestão e Exploração de Restaurantes e Empresas (Portugal)
- Culinor (Belgium)
- Michele Triolo actino as il Mezzogiorno (Belgium)
- LTC Zagreb d.o.o. (Croatia)
- Studentsamskipnaden i Tromsø (Norway)
- International Agency for Research on Cancer (France)
- Consumer Association New INKA (Greece)
- McDonald's Europe Limited (UK)
- German Institute of Human Nutrition Potsdam-Rehbruecke (Germany)
- Unilever Nederland Holdings, Unilever Research & Development Vlaardingen (The Netherlands)
- Georgios Tsilihristos (Greece)

The pressures of modern life are producing rapid changes, both in our view of the world around us and in our eating habits. From grabbing a bite at the office to having a snack while on the move, current social trends show a rise in eating out. However, the medical industry has raised the red flag, warning of a less savory aspect accompanying this trend. It seems there is a growing risk of Europeans eating themselves into expensive medical bills. The rise in disorders and chronic diseases related to nutrition may be the final call for the *maître d'*.

WHO EATS WHAT AND WHERE?

At a time of rising concern about energy imbalance and careless dietary choices, out-of-home food and beverage consumption is thought to play a role in the increasing prevalence of obesity and diet-related chronic disease in Europe. This is especially important because out-of-home consumption is very popular among adolescents and young adults, who are still developing their eating habits and are in need of greater guidance.

HECTOR'S objective is to understand the market patterns of eating out for Europeans. In terms of demand, the project is studying how lifestyle and social and demographic factors determine consumer choices. As for supply, the project analyses the services provided by catering-related enterprises, including the small-to-medium sector. The data, relating to enterprises, aids our understanding of how menus are compiled, prepared and presented, and how both the specific needs of groups within populations and the requirements of safety principles are put into practice.

The study is based on records representing 50 000 people, collected between 1995 and 2004 through projects conducted in 15 Member States.

The HECTOR observations will improve understanding of all the factors determining consumption and better support the comparison between eating in and eating out. It also takes into consideration anthropometric characteristics, such as Body Mass Index and waist circumference, with eating patterns.

GUIDING CHOICE

The project is developing a framework to enable the assessment and monitoring of within-home and out-of-home choices, in terms of expenditure. The findings will enable strategies and concrete measures for promoting healthy out-of-home dietary choices available.

A 'Current and optimal out-of-home dietary patterns of European consumers Report', will provide a scientific basis for improving health through diet. Furthermore, if the industry accepts the project's recommendations to respond to what consumers want, we can still savour the experience of eating out at our favourite catering establishment, but in a healthier and more informed way.

Acronym: HECTOR

Full title: eating out: habits, determinants, and recommendations for consumers and the European catering sector

Contract n°: 023043

Web site:
www.nut.uoa.gr/hector

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EU contribution:
€ 1.2M

CONSUMERCHOICE

OUT OF SEASON, IN SEASON

LIST OF PARTNERS

- King's College London (UK)
- BioAlliance (Germany)
- BIOTRIN (Czech Republic) EDYTOR (Poland)
- Tallinn Technical University (Estonia)
- National Hellenic Research Foundation (Greece)
- University of Ljubljana (Slovenia)
- Linköping University (Sweden)
- Universitat Autonoma de Barcelona (Spain)
- Delft University of Technology (The Netherlands)
- Dorte Hammelev (Denmark)
- London School of Economics (UK)

Several food related crises, such as BSE and toxic chemical contamination from various sources, have caused Europeans to be wary about the food they consume. Questions arise about the safety of the food they eat, putting pressure on authorities to provide solutions. One such contentious question is, 'How are Europeans dealing with the GMO food issue?' Unresolved and in the spotlight for ten years, the European Commission has launched a project to investigate this matter.

The ConsumerChoice proposal involves 11 Member States, and includes natural and social scientists, retailers and consumer groups, formed to discover the facts about Europeans and genetically modified food. Going beyond the traditional opinion polls, the project investigates actual reactions when citizens are provided a choice between GMO's and traditional food types. Specifically, this is to explore the discrepancy between what consumers actually do and what such polls suggest they do.

ConsumerChoice began by assessing what GM food types are available in the various countries and how readily they are purchased in comparison to their non-GM type equivalents. These observations are supplemented with the findings of target-group specific opinion polls and focus-group studies.

To further enhance these findings, the project undertakes a continued observation on both the national political climate surrounding GM products, as well as the nature of media exposure that might influence European trends.

COLD, TEPID & HOT REACTIONS

Currently, several studies suggest that while some consumers oppose GMOs, many, perhaps most, remain indifferent. Furthermore, price has a direct relevancy to purchasing habits. A case in point is a series of studies carried out in various European cities in 2004. Fake GM foods were sold at cheaper prices alongside non-GM foods at regular prices. Consumers willingly purchased more 'GM' foods than they did the 'non-GM' counterparts.
An additional finding indicates that consumer positions are also influenced by such factors as ethical, existential and epistemological issues. On average, the European public is more sceptical when it comes to GM food than they are with respect to biotechnology for medicine.

Undoubtedly, how consumers view genetic engineering will influence the existing and future development of health-promoting food using gene technology. The results for labelled GM foods that emerge from the ConsumerChoice study will help to shape the actions of Europe's food industry in a multitude of ways.

INFORMED CHOICE IS THE TICKET

In order to comply with EU regulations, GM food products containing more than 0.9% GM content in any one component must be labelled. Experts claim that Europe will see a surge in the number and in the variety of GMOs that will become available.

With a budget of €707 752, ConsumerChoice offers researchers and industry evidence of actual consumer behaviour as opposed to assumptions based on opinion polls asking about attitudes and intentions. If Europeans accept GM foods, the majority of food SMEs will be able to find solid footing in the market and will increasingly cooperate with larger companies in a publicly agreed common policy of handling GMO issues with transparency.

However, the situation is not a simple matter. Variance in regional and national consumer behaviour complicates matters. Retailers often respond with a range of reactions. If GM foods are widely acceptable, the food industry will doubtless act accordingly. However, if they are not, Europe is still able to go forward successfully as an area largely devoid of agricultural biotechnology and its products.

The point is to be informed. The European Commission has worked diligently to boost resources for biosafety research. Over a 15-year period, the EU spent some €70 million on 80 projects involving more than 400 laboratories across the continent. Making well informed decisions is imperative, for both the public and authorities alike.

Acronym: CONSUMERCHOICE

Full title: do European consumers buy GM foods?

Contract n°: 518435

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EU contribution:
€ 707,752

EPIPAGRI

SHARING AGRICULTURAL PROGRESS

LIST OF PARTNERS

- Institut National de la Recherche Agronomique (France)
- Flanders Interuniversity Institute for Biotechnology (Belgium)
- France Innovation Scientifique et Transfert (France)
- Fundação Luis de Molina (Portugal)
- INRA Transfert (France)
- Institut de Recerca I Tecnologia Agroalimentàries (Spain)
- Irish Agriculture and Food Development Authority (Ireland)
- Plant Bioscience (UK)
- Szeged-Biopolisz Innovation Services, Biopolisz (Poland)
- Sveriges Lantbruksuniversitet (Sweden)
- Garching Innovation (Germany)

European Public Research Organisations (PROs) currently hold 25% of European agriculture's biotechnology intellectual property (IP). They produce a broad spectrum of generic results, which should be the basis for further technological development. This represents a huge innovation potential for the European industry, as well as opening up new opportunities for cooperation with developing countries. However, fragmentation of ownership and heterogeneous licensing policies limit the efficiency of this process. Therefore, there is an urgent need for greater cooperation between European PROs with regard to harmonising intellectual property and technology transfer strategies. This is where the EPIPAGRI project steps in, and demonstrates the feasibility for joint management of the intellectual property of European PROs.

PATENTS FOR EVERYBODY

The proliferation of patenting during the last two decades has resulted in the fragmented ownership of intellectual property rights (IPR). Consequently, exploiting an innovation depends on access rights to an overwhelming number of protected inventions. This situation generates conflict risk, costly arrangements and uncertainty over 'freedom to operate'.

Difficulty in accessing comprehensive information on IP discourages 'small players' from taking part in biotechnology development, and consequently the transfer of technology from public research to the private sector is hampered. Even scientific research has become more and more caught up in the issue of access to IPR. Many biotechnology patents are currently held by PROs, but have been licensed for exclusive use by private sector companies.

In addition, enormous investments have been made by the major agrochemical companies to fulfil their need for holding complete technology sets in the sector of pest-resistant and herbicide-tolerant crops. This has led to a situation where 4 companies own more than 60% of granted patents in agricultural biotechnology. This situation hinders the development of potential applications that may be beneficial to the public good but have a low market value. This is especially true with applications that may be of use to developing countries.

In this context, the strategy of the EPIPAGRI consortium consists of progressively raising interest in a European initiative for harmonised public IP policies, by implementing pragmatic actions and achieving results that bring concrete benefits to participants.

The project brings together PROs from different European countries, representing a range of IP policies and licensing practices that together hold a significant number of agricultural biotechnology patents. Participants will agree to share information concerning their published patents, in particular the ones that are licensed in a nonexclusive way, and to set up a common database.

Patent bundles are to be established, allowing individual PROs to make further technological offers for nonexclusive licensing. In addition, participants are examining their licensing practices and their choice between exclusive or nonexclusive licenses more closely. The aim is to design consensus instruments, including guidelines, research partnership agreements, IP and licensing policies and cross-licensing agreements between PROs.

Using the results of these activities as a basis, EPIPAGRI proposes to extend its collaboration to other European PROs and share its recommendations with European public and private networks. The aim is to disseminate good practice for public-private partnerships and to harmonise European PRO IP and licensing policies.

While the best use of IP in the field of agricultural biotechnology remains a global issue for the 21st century, the Epipagri project demonstrates that it is feasible to face this challenge with transparency, efficiency, and fairness.

Acronym: EPIPAGRI

Full title: towards European collective management of public intellectual property for agricultural biotechnologies

Contract n°: 022973

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EU contribution:
€ 600,000

EUROLYMPH

A GLOBAL VOICE FOR RESEARCH

LIST OF PARTNERS

- International Agency for Research on Cancer (France)
- Catalan Institute of Oncology (Spain)
- German Cancer Research Centre (Germany)
- University of Cagliari (Italy)
- University of York (UK)

Twenty-nine thousand EU citizens die from non-Hodgkin's lymphoma (NHL) every year. The incidence of NHL is increasing worldwide at an average annual rate of between 4% and 5% with no evidence of stopping. More than 280 000 new cases are recorded annually across the globe; 59 000 of which represent citizens from EU countries. Studies in the past have produced hypotheses about the causes of the disease, such as the role of environmental factors, but the results have been inconsistent.

The strength of the ambitious EUROLYMPH project lies in the large-scale data supplied by research centres from around the world. Recent information gathered on over 7 000 NHL cases will form the basis of a comprehensive investigation. EUROLYMPH is expected to produce results that will not only contribute greatly to understanding the causes of NHL, but also to developing preventative measures.

The rise in incidence of NHL appears to be consistent across countries, sexes and ethnic groups. The risk factors that have been suggested include family history, nutritional factors (such as food contamination), immunodeficiency, infection with Epstein-Barr and other viruses, as well as exposure to UV radiation, pesticides, solvents and hair dyes. The occupation most associated with an elevated risk for NHL is farming and agricultural work. Those occupations exposed to elements such as solvents (for example, drycleaners and laundry workers) are also associated with a higher risk.

LARGE-SCALE SOLUTION

According to the EUROLYMPH consortium, the key to overcoming the problems encountered by previous studies lies in testing the relevant exposure on large-scale cases as well as controls, and addressing the risk of specific NHL subtypes. As such, the EUROLYMPH consortium investigates both environmental and nutritional factors by analysing two recent NHL studies of 2 400 cases, and a comparable control group conducted in eight European countries.

Additional studies from Europe, North America and Australia (from the InterLymph initiative) are integrated into the research, bringing the total to 7 500 cases to be analysed. The pooling together of this considerable data provides the statistical power to study rare risk factors, as well as consistency in comparing populations and disease subgroups within NHL. EUROLYMPH represents the largest NHL initiative of its kind ever to be implemented.

A MULTIFACETED ANALYSIS MATRIX

The project aims to produce results on risk of NHL from exposure to various categories of pesticides and solvents, organic dusts and ultraviolet radiation, as well as contact with animals and animal-related products. These studies also take into account the interplay of these factors on genetic susceptibility. Further studies include analysing the effect of duration of the exposure, the level of exposure and when the exposure occurred in the course of the case study's life. The data is classified by gender, geographic region and major NHL type.

The project represents the establishment of the network of NHL studies, creating a stronger leadership role for European scientists in this area. More importantly, however, the identification of environmental and nutritional risk factors through the EUROLYMPH project can contribute to the prevention of NHL.

Acronym: EUROLYMPH

Full title: collaborative European action into environmental, nutritional and genetic factors in non-Hodgkin's lymphoma

Contract n°: 023103

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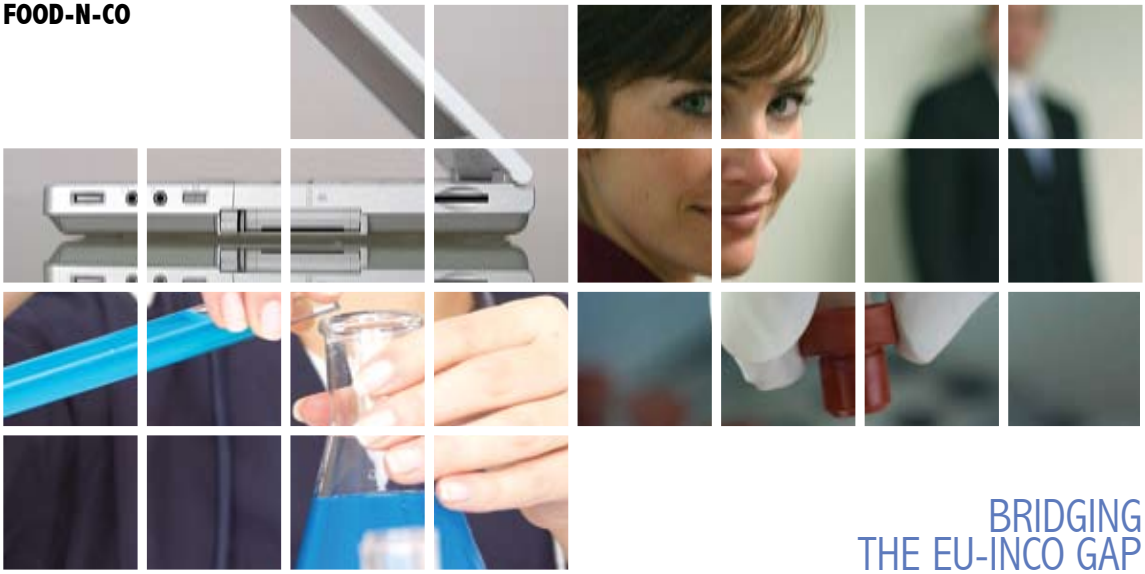
EU contribution:
€ 420,000

FOOD-N-CO



BRIDGING THE EU-INCO GAP

LIST OF PARTNERS

- SenterNovem/EG-Liaison (The Netherlands)
- HSTF Hungarian Science and Technology Foundation (Hungary)
- Austrian Research Promotion Agency (Austria)
- The Brussels Enterprise Agency (Belgium)
- Instytut Podstawowych Problemów Techniki Polskiej Akademii Nauk (Poland)
- Agenzia per la Promozione della Ricerca Europea (Italy)
- Technology Centre of the Academy of Sciences CR (Czech Republic)
- Secretariat of Science, Technology and Innovative Production (Argentina)
- CSIR Food, Biological and Chemical Technologies (South Africa)
- Nawaharlal Nehru University, School of Life Sciences (India)
- Ministry of Scientific Research, Technology and Development of Competency (Tunisia)
- Ministère de l'éducation nationale, de l'enseignement supérieur, de la formation des cadres et de la recherche scientifique (Morocco)
- Ministry of Science and Environmental Protection (Serbia)
- National Commission for Scientific and Technological Research (Chile)
- Brazilian Agricultural Research Corporation (Brazil)
- Egyptian National Scientific and Technical Information Network (Egypt)
- Higher Council for Science and Technology (Jordan)
- Ministarstvo znanosti, obrazovanja i športa (Croatia)
- Universidad Nacional Autónoma de México. Programa Universitario de Alimentos (Mexico)
- China-EU S&T Cooperation Promotion Office (China)

The European Union is the world's largest importer and exporter of more and more diverse food products, trading with countries all over the world. With this extensive trade, food safety cannot be seen solely as an internal issue. Exactly the same can be said about zoonoses, mycotoxins, chemical contaminants and other hazards to food products in international trade and international research.

Scientific and technological cooperation between European and third countries' scientists bring added value to scientific, technical and economic progress within the EU. This cooperation is also of particular interest with regards to the reinforcement of the EU's political and socioeconomic position in the world.

The proposal FOOD-N-CO aims to improve the quantity and quality of International Cooperation Third Countries (INCO) in Food, Agriculture and Biotechnology-related research. Better quantity and quality will come from the development of a strong network of National Contact Points (NCPs) and Information Contact Points (ICPs) in Europe and INCO countries.

ENCOURAGING PARTICIPATION

The NCPs /ICPs network is built via a series of training sessions, information days, national training sessions, a brokerage event and a final INCO conference. Essentially, the needs of each country emerge, thus facilitating the process to find the right partners in INCO countries for EU projects. Besides strengthening capacity and supporting a network between EU and INCO countries, FOOD-N-CO also effectively increases participation by bolstering ties between the two groups and promoting research communities of INCO countries.

FOOD-N-CO, comprised of 7 EU Member States and 13 INCO countries, secures the highest possible standard. The presence of well-trained and qualified staff at the Information Contact Points (ICPs) for the research communities guarantees this. FOOD-N-CO successfully builds a permanent network allowing an exchange of skills and experience between the partners. Participants focus on strengthening capacity, training at transnational level and swapping experiences.

It should be noted that new lifestyles and dietary patterns has brought on diet-related diseases, such as diabetes mellitus, cardiovascular disease and various forms of cancer, among others. These changes have been harmful also to developing and newly developed countries. Partnerships between European and other researchers bring added value to the scientific, technical and economic progress with the EU and worldwide.

Ultimately, the FOOD-N-CO project will bear fruit if a multiparty effort is made. All Member States, Candidate Countries and Associated Countries can profit from their cooperation with Food ICPs from INCO countries.

Acronym: FOOD-N-CO

Full title: cooperation network of national contact points with a special focus on third countries in the areas of food quality and safety and food, agriculture and biotechnology

Contract n°: 023114

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www.food-n-co.net

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EU contribution:
€ 900,000

INFOOD NETWORK

INFOOD FOR FARMERS' THOUGHTS

LIST OF PARTNERS

- Unione Regionale delle Camere di Commercio CCIIAA del Veneto (Italy)
- Sogesca (Italy)
- Federazione regionale degli agricoltori dell'Emilia Romagna - Confagricoltura Emilia Romagna (Italy)
- Azienda Agricola Bubani Giuseppe (Italy)
- Hungarian Chamber of Agriculture (Hungary)
- Pilze-Nagi (Hungary)
- Anysoft (Romania)
- Coordinadora de Organizaciones de Agricultores y Ganaderos (Spain)
- Cluj Chamber of Commerce and Industry (Romania)

Since the era of huge corporate farming, SMFs (small and medium farms) have become a growing development in alternative farming methods. Their efforts need support, particularly when it comes to the exchanging of information. Important developments need to be shared and disseminated in order to maximise their potential for all SMFs.

INFOOD NETWORK aims at facilitating the participation of SMFs in EU research and increasing their opportunities for cooperation and innovation. This is especially true with regard to the technologies and methods necessary for improving the management of environmental, safety and traceability aspects related to food.

FARMERS KNOW BEST

The INFOOD NETWORK project has a number of objectives. They include the creation of a system for sharing information and solutions on environmental and safety issues, among European agricultural SMEs. The traceability of agricultural products as an integration solution of international interest is also being assessed. New research projects are being identified. The farmers' capacity to manage is being developed, and this is enlarging and consolidating the INFOOD network across Europe.

The environmental aspects and related safety issues arising from the development of agriculture in Europe pose problems that need to be solved mainly at governance level. Collaboration between farmers, their associations and staff can boost the development and adoption of new technologies, and give a bottom-up input with regards to policy development and new regulations.

The added value of the INFOOD NETWORK is characterised by the sharing of know-how among SMFs. This is achieved by jointly tackling the environmental, safety and food traceability issues that concern European farms. Exchanging best practice and jointly developing a unified European management system constitutes an important step towards improving the effectiveness of farmers' production methods.

COPING WITH THE AGRICULTURAL CHALLENGES OF THE 21ST CENTURY

The information system and the flow of information within INFOOD NETWORK offer a more cost-effective environmental and safety support structure. Although both simple and accessible, it is also tailor-made and specific to the needs of SMFs. In order to function at the optimum level, it requires time and cost-efficient solutions to be properly implemented. The support offered is 'hands on' rather than just 'self-help' information. Well-qualified personnel are being used, with experience relevant to SMEs and agriculture. INFOOD is being carefully coordinated at regional level through partnerships with local associations. Last but not least, it is promoting information on available technological solutions, research opportunities and funding possibilities.

The INFOOD network also aims to have an impact on policymakers' decisions, notably on questions such as:
'What barriers have to be overcome?', 'Which are the farmers' needs?' and 'What opportunities are there?'

Rather than simply conducting its research within the ivory towers of academia, INFOOD strives to include farmers in its studies, along with their invaluable practical experience. This ensures a successful outcome for the project, because if there is one truth in agriculture, it has to be that farmers know best.

Acronym: INFOOD NETWORK

Full title: sharing information on food related environmental, safety and traceability aspects among European small-medium farms

Contract n°: 518443

Website:
www.infoodnetwork.eu

Project co-ordinator:
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EU contribution:
€ 374,935

EU BRIDGES THE RESEARCH GAP WITH FORMER-USSR COUNTRIES

LIST OF PARTNERS

- Agenzia per la Promozione della Ricerca Europea (Italy)
- Centre for Innovation and Technology of Biologically Active Substances,
- Russian Academy of Sciences (Russia)
- National Agricultural University of National Agricultural, University of Ukraine (Ukraine)
- Belarusian Institute of System Analysis and Information Support of Science and Technology Sphere (Belarus)
- Yerevan State University (Armenia)
- Tudomanyos es Technologiai Alapitvany (Hungary)
- Food Industrial Research and Technological Development Company (Greece)
- SenterNovem (The Netherlands)
- Independent Expert Consulting Board to Promote Scientific Research Activity in Kazakhstan (Kazakhstan)

The EU is keen to maintain strong partnerships with the Eastern Europe and Central Asian countries. One way of achieving this is by helping to develop professional expertise in the countries of Kazakhstan, Russia, Ukraine, Armenia and Belarus (KRUAB) through closer scientific links. Bearing this in mind, the Injoy&Train project is focusing on creating research partnerships between the EU and these five nations, specifically in the area of food quality and safety, and in the food, agriculture and biotechnology sectors.

Injoy&Train contributes towards increased KRUAB participation in EU Framework Programmes by directly assisting and coaching research partners from these countries. The project facilitates the exchange of knowledge among researchers, multipliers and small to medium enterprises (SMEs), while promoting the competencies of KRUAB countries. It also supports capacity building and encourages the engagement of skilled potential partners, while providing extensive know-how on submission procedures.

THE BRAINS BEHIND THE RESEARCH

An established multi-skilled consortium is the impetus behind the project's success. The group comprises nine partners from nine countries. The consortium creates a proactive network of researchers, multipliers and SMEs in KRUAB countries, and trains them in the legislative and institutional environment of EU framework plans. A further benefit is the creation of research partnerships between the two groups of nations, with participants from the agriculture, food and biotechnology fields in training workshops.

The effective dissemination of information is a significant part of the project. This is achieved through the project's website (which is in English and Russian), and by issuing a quarterly electronic newsletter which actively informs those registered with the InJoy&Train database about the project's progress.

InJoy&Train strengthens cooperation between the research communities of the EU and the five former USSR countries by forging links across the region. However, this goes beyond promoting learning and technology and organisational innovation. The project is also instrumental in developing human and institutional potential at both regional and international levels.

MIXING BUSINESS WITH SCIENCE

Injoy&Train offers strategic support by guaranteeing a proactive network of researchers, multipliers and SMEs in KRUAB countries, and by taking a direct approach towards operators in the food, agriculture and biotechnology sectors. This serves to develop new and safer food production chains and foods. The building, strengthening and securing of these partnerships is of importance because it helps to reinforce the European Research Area (ERA), which aims for better coordination of research activities and the convergence of research and innovation policies, at national and EU levels. The InJoy&Train project is therefore helping to develop a vibrant European knowledge-based economy, by bringing together science, industry and other key players to make the most of new and emerging opportunities. In this way research, cooperation and innovation breed success, and being a good neighbour makes sound economic sense.

Acronym: INJOY&TRAIN

Full title: east European cooperation network for international joint training in FP6/FP7 food, agriculture and biotechnology for EU-Kazakhstan-Russia-Ukraine-Armenia-Belarus countries

Contract n°: 023157

website:
www.enjoyandtrain.net

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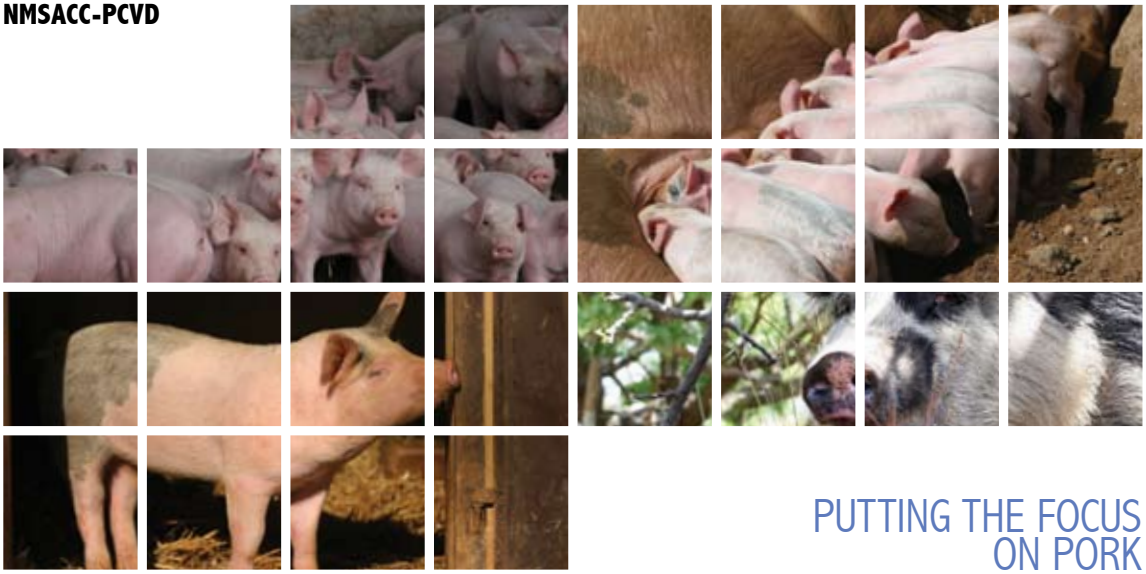
EU contribution:
€ 343,914

NMSACC-PCVD



PUTTING THE FOCUS ON PORK

LIST OF SSA PARTNERS

- The Queens University of Belfast (UK)
- Merial SAS (France)
- Meat and Livestock Commission (UK)
- Veterinary Research Institute (Czech Republic)
- National Veterinary Research Institute (Poland)
- Kosice University of Veterinary Medicine (Slovak Republic)
- Szent Istvan Faculty of Veterinary Sciences (Hungary)
- Croatian Veterinary Institute (Croatia)

LIST OF SSA AFFILIATED INSTITUTES

- Ministry of Agriculture (Cyprus)
- State Veterinary Institute (Czech Republic)
- Veterinary Research Institute (Czech Republic)
- Institute of Veterinary Medicine and Animal Sciences (Estonia)
- Estonian Veterinary and Food Laboratory (Estonia)
- Central Veterinary Institute (Hungary)
- State Veterinary Medicine Diagnostic Centre (Latvia)
- National Diagnostic Centre of FVS (Latvia)
- Veterinary Institute, Lithuanian Veterinary Academy (Lithuania)
- Faculty of Veterinary Medicine Skopje (FYROM)
- University of Ljubljana, Veterinary Faculty (Slovenia)
- National Diagnostic and Research Veterinary Medical Institute (Bulgaria)
- Faculty of Veterinary Medicine, University of Zagreb (Croatia)
- University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca (Romania)
- National Scientific Center (Ukraine)

Pork accounts for about half of all the meat consumed in Europe. As such, it is vital that its quality is closely monitored and any potential disease problems are quickly discovered and controlled. This Specific Support Action ensures that measures established within an existing and linked EC-funded Specific Targeted Research Project (STREP), for detection and control of porcine circovirus disease (PCVD), an important emerging viral disease of pigs, will be widely disseminated and easily accessible for the benefit of all European citizens and consumers.

EU researchers working on projects funded under Frameworks 5 and 6, in collaboration with industry, have been at the forefront of studies on this disease of pigs, and have defined the disease and helped develop commercial diagnostics and vaccines.

Food quality and safety is of growing importance and interest, and Europe is leading the way with farming guidelines and programmes to recognise and respond to emerging disease outbreaks before they become pandemic. With the health and welfare of food animals being essential for public health and for the protection of consumers, these two linked EC-funded projects maintain the established global lead of EU researchers in identifying and dealing with a new pig disease that threatens pork quality and safety.

RISE OF NEW DISEASES

A new wasting disease of pigs, caused by a new virus, has recently emerged around the world with terrible consequences for Europe's pork industry. The cost to producers in EU Member States is estimated to be more than €600 million in losses each year, which has led to some producers going out of business. The importance of gathering information on diagnosis and control that can be readily disseminated to, and shared with, pig producers in EU Member States is imperative in countering this devastating disease.

Virus infections of pigs cannot be treated by antibiotics, however on pig farms these viral infections will normally lead to additional secondary bacterial infections which are routinely dealt with by an increased use of antibiotics. The EU announced new programmes to counter such problems, and it is here that the project also has an important impact, by providing immediate information on diagnosis and control measures through its extensive network.

A wide information grid crossing the EU and its Neighbour States will provide concise and immediate information that helps diagnose and control problems, while at the same time promoting food quality and safety. Just as importantly, it attends to consumer concerns regarding animal welfare and assists producers by boosting their competitiveness in the global market.

RESPONSE TO AGRICULTURAL PROBLEMS

The two projects have created a Europe-wide network of over 37 partners, including new and potential EU Member States. Such multidisciplined EU-led teams will be better able to deal with immediate concerns, and will also form the basis for future responses to potential varied animal health and welfare, and food safety problems.

With dissemination of the increased available knowledge, the improved techniques that will be available and the training opportunities for young scientists, the eventual eradication of a serious disease in pigs is possible. The reduction of disease, and therefore the improved health and welfare of pigs, will result in improved quality of pork products, thereby securing sustainable and viable farms throughout the EU and its neighbours. Farms as viable businesses will help to counter unemployment, and small-to-medium sized family farms within a rural environment can be preserved.

Acronym: NMSACC-PCVD

Full title: PCVD: towards improved food quality and safety within EU new Member States and associated candidate countries

Contract n°: 518432

Website:
http://pcvd-ssa.vri.cz

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 497,340

SAFOODNET

FOOD SAFETY IS NOT A LUXURY

LIST OF PARTNERS

- VTT Technical Research Centre of Finland (Finland)
- Tallinn University of Technology (Estonia)
- Veterinary Research Institute (Czech Republic)
- Bio-Centrum - DTU (Denmark)
- Chamber of Commerce and Industry of Slovenia (Slovenia)
- Tübýtak Marmara Research Centre (Turkey)

Following recent food scares in Europe over the last few years, consumers have begun to ask for more safety guarantees for the entire food chain. These assurances have been introduced progressively, resulting in an EU-wide decrease in the number of cases of food poisoning. Between 2001 and 2005, the United Kingdom alone saw recorded food poisoning cases fall from around 96 000 to 78 921, a drop of almost 17 000. Nevertheless, the final stages of food production are still of crucial importance. They are the last point of checking before products are put on supermarket shelves. This is where SAFOODNET comes in.

FOOD SAFETY DIFFICULT TO IMPLEMENT IN MANY MEMBER STATES

Food contamination is not uncommon, even in the most developed countries, and foodborne diseases (for example campylobacteriosis, salmonellosis and listeriosis) have reached epidemic proportions in several Member States. This can have a significant effect on the economy of a nation or region because of working days lost, which may be considerable. The other is a downturn in business as a result of losing the confidence of consumers, both locally and globally.

Emerging microbial problems, such as foodborne viruses, avian flu, and also bovine spongiform encephalopathy (BSE) are creating additional concerns among both the public and decision makers. It is, therefore, crucial to involve the scientific community in reassuring the consumer by properly explaining the issues.

LEARNING BY JOINING FORCES

Following the enlargement of the EU in May 2004, one of the greatest challenges has been to preserve the integrity of the food safety area. In this way food safety within the EU has been further improved. This important work continues with SAFOODNET, which is building a sustainable network with an emphasis on microbial food safety. The project is promoting the sharing of knowledge, in order to prevent risks related to microbial hazards. Furthermore, the core group together with external experts will identify important RTD needs, as well as outline solutions on how to fulfil the defined RTD needs in microbial food safety at European level. Concurrently, based on the outlined solutions, actions will be taken to apply for RTD funding in food processing and packaging safety.

In practical terms, scientific institutions from across Europe are participating in pilot actions, seminars and workshops. Interested researchers and representatives of SMEs from other EU countries, as well as Associated and Candidate Countries are encouraged to participate in these activities. The establishment of a network between food companies, especially SMEs, and researchers in the new Member States is of paramount importance. Indeed, the more input there is, the better the results.

Failures in the food safety system are the cause of major economic losses, both for the companies involved and for the entire food chain. When safety failures lead to crisis, which they increasingly do, the economies of countries and regions suffer. Reaching a high level of food safety, therefore, has to be at the very top of the agenda for the new Member States and for the Associated and Candidate Countries. The stakeholders in the food industry are now making progress and responding to this challenge, much to the benefit of both consumers and industry.

Acronym: SAFOODNET

Full title: food safety and hygiene networking within new Member States and associated candidate countries

Contract n°: 022808

Website:
www.safoodnet.vtt.fi

Project co-ordinator:
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EC Scientific Officer:
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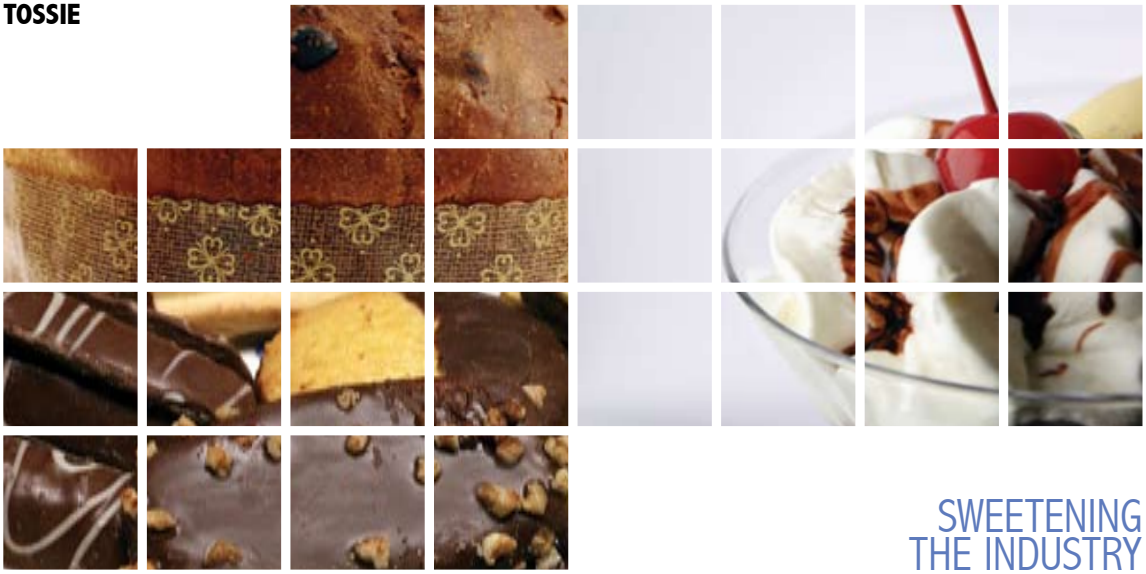
EU contribution:
€ 555,000

TOSSIE



SWEETENING THE INDUSTRY

LIST OF PARTNERS

- Warsaw University of Technology (Poland)
- University of Ferrara (Italy)
- University of Maribor, Faculty of Chemistry and Chemical Engineering (Slovenia)
- Graz University of Technology (Austria)
- Cooperativa Produttori Bieticoli (Italy)
- Pfeifer & Langen Kommanditgesellschaft (Germany)
- Krajowa Spolka Cukrowa SA (Poland)
- EnerDry (Denmark)

Sweetening the market potential of the sugar production industries of lesser-developed countries with the objective of helping them to join the global market economy has soured relations with local sugar producers.

Unless preventive measures are taken by introducing new innovative ideas, the European sector may face a bitter future as a consequence of increased foreign competition. Facing this challenge, the TOSSIE project will introduce a strategy for the competitiveness and environmental friendliness of the sugar sector, and establish contacts with relevant European Technology Platforms (ETPs).

BETTER SUGAR BEET PROCESSING

TOSSIE fosters debate and promotes the dissemination of recent research results in the fields of alternative processing technologies, engineering and management tools, as well as innovative value-chain structures (from sugar beet growing, harvesting and transport through beet processing to distribution of products). As a public/private partnership involving universities and industries, the project is expected to propose new ideas and technologies for augmenting the restructuring effort of European sugar manufacturers and to help secure the sustainability and future of the sugar sector.

Researchers are looking for methods, such as new plant designs, to modernise sugar manufacturing and make it both more efficient and environmentally friendly. For instance, participants wish to reduce the use of energy and water in production lines, in order to minimise the negative impact on the environment. Industries rely heavily on non-renewable energy and often use huge quantities of water during the preprocessing of raw material.

Another project aim is to offer new solutions for optimising the use of raw material that enters production lines. Under this project, by-products are to be most economically re-used as animal feed, fertilisers and compost, or even reprocessed to produce pharmaceuticals and energy sources (for example, bioethanol and biogas). The initiative not only contributes to better environmental protection, but also sustains many industrial sectors linked to the sugar industry via its by-products. This prospective modernisation should create new industrial opportunities and give fresh impetus to the sugar sector, which in 2004 represented over 800 000 employees in 550 factories, working on 4.5 million hectares of cultivated land throughout Europe (including non-EU countries). Moreover, the new technologies should improve the quality of sugar products and by-products, which play an important role in human nutrition.

SWEET PROSPECTS

TOSSIE joins European initiatives paving the way for the 7th Framework Programme of EU R&D, by establishing working contacts with relevant ETPs and by contributing to the European Research Area objectives. The project offers a coordinated view of research activities and helps establish the integrated scientific and technological base that is vital for improving the competitiveness and environmental friendliness of sugar production from sugar beet.

The partners in this consortium are European entities belonging to industrial and professional associations. TOSSIE ensures the widespread dissemination of its results by communicating with all its partners and respective associations. The dissemination of information strengthens links with the industries of new Member States. However, communication with big European sugar producers is also of crucial importance. Furthermore, with the assistance of industrial and professional associations, the TOSSIE results can reach other sugar-related industries in Europe and beyond.

TOSSIE is bringing the sugar sector closer to a bright and sweet future by improving production, reducing environmental impacts and creating the right conditions for a competitive European sugar industry.

Acronym: TOSSIE

Full title: towards sustainable sugar industry in Europe

Contract n°: 022944

Website:
www.tossie.pw.plock.pl

Project co-ordinator:
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EC Scientific Officer:
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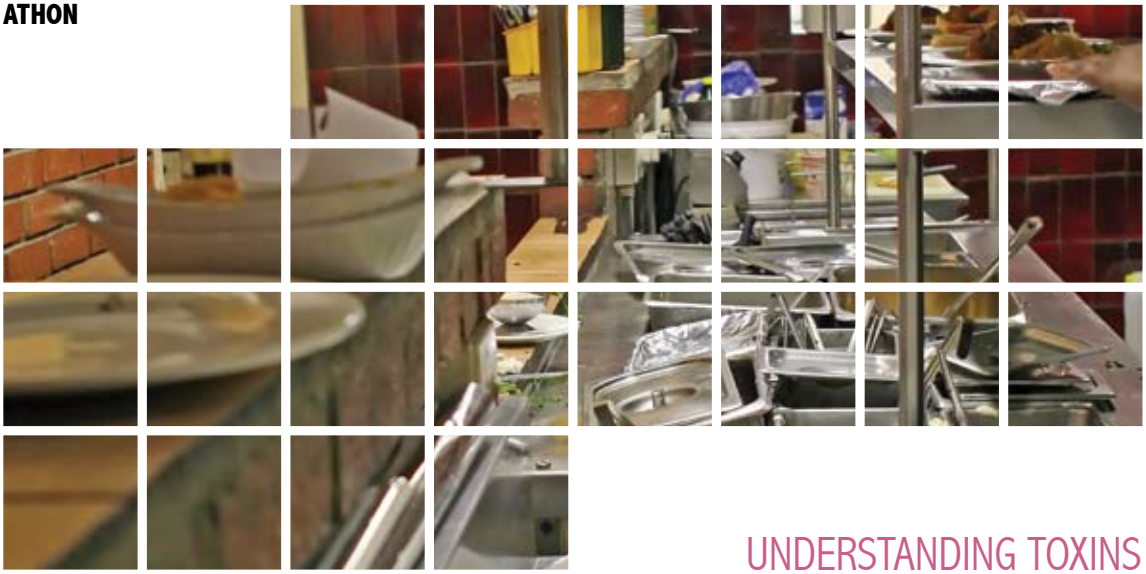
EU contribution:
€ 520,800

ATHON



UNDERSTANDING TOXINS

LIST OF PARTNERS

- Karolinska Institutet, Institute of Environmental Medicine (Sweden)
- Vlaamse Instelling voor Technologisch Onderzoek (Belgium)
- Veterinary Research Institute, Department of Chemistry & Toxicology (Czech Republic)
- Foundation for Biomedical Investigations of Valencia, Laboratory of Neurobiology (Spain)
- National Public Health Institute, Department of Environmental Health (Finland)
- •Research Institute for Occupational Medicine of the German Social Accident Insurance, BGFA (Germany)
- Technical University of Kaiserslautern, Food Chemistry and Toxicology/Faculty of Chemistry (Germany)
- Institute of Pharmacological Research "Mario Negri", Department of Environmental Health Sciences (Italy)
- Utrecht University, Institute for Risk Assessment Sciences (The Netherlands)
- Free University of Amsterdam, Institute for Environmental Studies (The Netherlands)
- University of Oslo, Department of Biochemistry (Norway)
- Umeå University, Environmental Chemistry (Sweden)
- United Bristol Healthcare NHS Trust (UK)
- Health Canada (Canada)

Food safety is an issue of global significance. In spite of advancements in food technologies, however, there are still gaps in our understanding of toxicological mechanisms and the potential effects of certain contaminants. Non-dioxin-like (NDL) poly-chlorinated biphenyls (PCBs) are prevalent contaminants in a number of animal-derived food products. They have been receiving increasing attention internationally, given the lack of a comprehensive health risk assessment relating to their presence in the food chain.

NDL-PCB toxicity has been linked to immune deficiencies, cancer, neurobehavioural disorders, endocrine disturbances and other pathologies. There is, therefore, a pressing need to fully understand the health hazard to humans and animals and thus set the foundations for a complete review of epidemiological data in the future. The ATHON project aims to shed light on toxicity by meeting a number of key objectives relating to NDL-PCB metabolism, classification profiles and the development of suitable *in vitro* and *in vivo* models for their study.

PARTNERS OF CHOICE

The consortium that has come together to achieve the ATHON objectives is able to draw upon its multidisciplinary and international character in order to underline the global dimension of this problem. Non-EU partners and members of the advisory board are cooperating on a worldwide scale in order to further the efforts of international bodies and governments in the field of NDL-PCB toxicity.

The European Commission and the World Health Organisation have in the past organised a series of conferences addressing the issue of health hazards. However, most derived datasets to date fail to clearly illustrate the effects on human health. Partners and advisory board members from the EU, Canada, the US and Japan are now set to address a series of scientific, technological and management issues relating to NDL-PCBs and food quality.

ADDRESSING THE SCIENTIFIC CHALLENGES

NDL-PCBs are similar to a number of other contaminants and can have a varied and long lasting effect on human health. So far, these effects have been poorly understood and it is the aim of the project to address and understand them. NDL-PCBs have been implicated in a number of diseases including ailments of the reproductive and developmental systems and special attention is now being paid to prenatal and postnatal PCB exposure, given foetal sensitivity to food contaminants. In order to understand the toxicological mechanisms behind these diseases, a number of specific objectives have been defined and outlined.

ATHON partners are utilising cell systems and animal models that enable them to study NDL-PCB in an experimentally controlled and reproducible manner. This is to be followed by the extensive examination of toxicity profiles and the derivation of toxicokinetic data, which will lead to the compilation of a specific document relating to the risk assessment methodologies for NDL-PCBs and PCB metabolites. The document will also include a novel classification system for NLD-PCB congeners based on appropriate biomarker information.

Overall, the ATHON project is advancing the current state of scientific knowledge in the field of NDL-PCB toxicology by providing innovative testing and research methods and a reliable classification system.

Acronym: ATHON

Full title: assessing the toxicity and hazard of non-dioxin-like PCBs present in food

Contract n°: 022923

Website:
www.athon-net.eu

Project co-ordinator:
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EC Scientific Officers:
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EU contribution:
€ 4.6M

BEE SHOP

THE BIG BUZZ ON HONEY

LIST OF PARTNERS

- Martin-Luther-University, Halle-Wittenberg (Germany)
- Swedish University of Agricultural Sciences (Sweden)
- Queen's University (UK)
- CNRS (France)
- CEBAS (Spain)
- University of Hohenheim (Germany)
- Slovak Academy of Science (Slovakia)
- Italian National Institute of Apiculture (Italy)
- Bee Research Institute Dol (Czech Republic)

Honey is one of mankind's oldest food products and is not only renowned for its high nutritional value, but also for its ability to treat various ailments. Consequently, Europeans have worked painstakingly over the years to control its quality. Unfortunately, environmental pollution and consumer demands for higher quality and purity have put the production of honey at risk. Agrochemicals are used to treat honeybee diseases whilst pollution from chemicals increases, thereby contaminating the honey with various toxic compounds.

In a quest to get to the bottom of the problem, nine leading honeybee research groups in Europe have teamed up with the beekeeping industry to create the BEE SHOP network. Its aim is to reduce potential sources of contaminants, thus improving the health and well-being of consumers.

BEES UNDER THE MICROSCOPE

In order to promote European high standards, BEE SHOP focuses on developing new tools for improving honey quality. These include innovative methods for disease control, preventative measures with regard to foraging upon contaminated nectar and pollen, and new treatments for diseases.

The honey food chain goes from a drop of nectar in a flower to a jar on the shelf of the local supermarket. As in the 'from fork to farm' approach, BEE SHOP considers new ways for ensuring purity at every stage of the production process, thereby promoting genuine, high quality European honey on a sustainable basis.

The two main factors affecting honey production are the foraging of bees upon contaminated material and the chemotherapy used to treat disease. In an attempt to combat the first problem, BEE SHOP is developing the biological resistance of honeybees to pests and pathogens so as to avoid the use of chemotherapy. The network screens a range of European honeybee races and populations to determine their level of resistance to the infectious agents affecting honey production.
BEE SHOP addresses the latter issue by studying the disparities between the bees' foraging patterns and their underlying biological mechanisms. The project assesses how honey quality affects disease prevention in colonies, by analysing the antimicrobial properties of bee and plant-derived compounds in bee products.

BUSINESS THE EU WAY

The close cooperation between researchers and the industry is fundamental in ensuring the success of BEE SHOP. It is the beekeeper that has an important role in producing the honey and the new technologies are being implemented in apicultural operations. Thus, each scientific research partner has a commercial beekeeping partner who provides the resources for field trials and provides honey and bee samples for the research work.

In addition, a number of European partners are working with target countries from the International Scientific Cooperation Programme (INCO), such as Brazil, Mexico and South Africa. These joint ventures support local beekeeping for rural development and the production of regional high quality honey. BEE SHOP wishes to establish European quality standards for honey, and then use them as a standard in INCO target countries. Since they have the same objective, i.e. the production of high quality honey using local bees in order to encourage sustainable beekeeping operations, both BEE SHOP and the INCO target countries benefit accordingly.

BEE SHOP's strategic goal is to halt the ongoing decline of European apiculture by benefiting from a biological approach. This will increase the competitiveness of beekeeping and the appeal of honey through improved quality and consumer safety, allowing us all to enjoy its sweetness for years to come.

Acronym: BEE SHOP

Full title: bees in Europe and sustainable honey production

Contract n°: 022568

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 1.8M

BENERIS

GETTING TO THE HEALTH OF HEALTHY FOOD

LIST OF PARTNERS

- National Public Health Institute, KTL (Finland)
- Delft University of Technology, TUDelft (The Netherlands)
- Oy Foodfiles-FFiles (Finland)
- Food Safety Authority of Ireland-FSAI (Ireland)
- Food Research Institute of Denmark (Denmark)
- Food Safety Authority of Denmark-FVST (Denmark)
- Lendac Lendac (Ireland)
- Fundación Privada para la Investigación Nutricional, FIN (Spain)

Good nutrition and a balanced diet are important health goals. Simply eating the right food can open the door to a better and healthier way of living. It is, therefore, important for us to understand the benefits of good food choices.

Food can be risky. Even healthy food can have an adverse effect on our well-being. Recent crises have proven that risks related to food must be dealt with in a responsible and sophisticated way. The strategy driving the Beneris project has these food safety issues in mind. Not only does it aspire to stimulate awareness of the health benefits of food in a clear and transparent way, but also to get to the core of the risks of the food we eat every day.

ACHIEVING THE AIMS

The bold objective of the project is to forge major advancements in food benefit/risk analysis on human health. As such, the project requires highly interdisciplinary work with a range of professionals. Beneris brings together a team representing eight authority, research, and communication bodies from five European countries with the necessary expertise, as well as crucial access to contacts and data. Importantly, the project's end-users (such as policymakers) are involved from the outset to facilitate greater collaboration, and to ensure the work has relevance to both science and society.

The Beneris team adapts existing benefit/risk analysis tools and assesses existing scientific evidence. In the development of the project's framework methodology, the team is responsible for identifying the systems needed, as well as for creating and using these new systems. One of the developed methods estimates the health effects of food contaminants and nutrients by integrating two sets of data. The Beneris project also breaks new ground in the development of specialised methodological tools.

A THREE-TIER WORK PLAN

In addition to developing these comprehensive methods for analysis, the project is further divided into two other areas. A major focus of Beneris is the diverse range of real-life case studies that will be conducted. One of the studies looks at the beneficial and harmful effects of nutrients and pollutants in fish. Another focuses on vegetables in the diet of a specific age group. The dissemination of results, and particularly the development of new methods of handling and distributing the information, is also a significant part of the project. One system ensures that results can be accessed more effectively using a new Internet interface.

Beneris forms a cluster with the Qalibra project. Although both projects have the same overall aim to improve the analysis of benefits and risks of foods, their areas of focus are very different. Beneris' objective is to develop new approaches for analysis, while Qalibra is charged with developing a practical computer tool for risk assessors. The complementary projects run separately, but with key milestones in their respective strategies for joint meetings and collaborative activities.

Acronym: BENERIS

Full title: benefit-risk assessment for food: an iterative value-of-information approach

Contract n°: 022936

Website:
www.beneris.eu

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 1.1M

DELIVER

DELIVERING SOLUTIONS AGAINST THE LIVER FLUKE

LIST OF PARTNERS

- University of Cordoba (Spain)
- Dublin City University (Ireland)
- University College Dublin (Ireland)
- University of Aberystwyth (UK)
- University of Exeter (UK)
- University of Liverpool (UK)
- Witold Stefanski Institute of Parasitology, Polish Academy of Sciences (Poland)
- Queen's University Belfast (UK)
- Instituut voor Dierhouderij en Diergezondheid, part of the Animal Sciences Group of Wageningen UR (The Netherlands)
- Agricultural University of Athens (Greece)
- Institute of Experimental Pathology and Parasitology - BASc (Bulgaria)
- Universidad Nacional del Centro de la Provincia de Buenos Aires (Argentina)
- Osvaldo Cruz Foundation, Fiocruz (Brazil)
- Universidad Nacional de Cajamarca (Perú)
- Lara Media (Ireland)
- University of Liverpool (UK)

Liver fluke disease, or fasciolosis, affects an estimated 17 million people worldwide, particularly in Andean America, Africa and Asia. In ruminants, fasciolosis has dramatically increased in the EU in recent years, causing annual livestock losses of €60 million in Ireland alone. DELIVER was set up with the aim of developing new environment-friendly methods for the control of the disease in livestock, thereby minimising the use of anthelmintic drugs and enhancing the quality and safety of meat and dairy products.

REDUCING THE USE OF ANTHELMINTIC DRUGS

Current disease control measures are based on the use of drugs, which can leave potentially dangerous chemical residues in foodstuffs. Furthermore, resistance to drugs has appeared in some parts of the EU, and so it has become crucial to find new means of fighting fasciolosis. DELIVER is developing a new forecast model, based on geographical observations and data on fluke populations, to assist farmers in planning appropriate control strategies and minimising the use of flukicides.

The project is also studying the resistance of fluke to drugs. By studying the genetic and phenotypic changes in resistant populations, participants in DELIVER will determine the optimal strategies for preserving drug efficiency and using alternative control methods where possible. This could safeguard the efficacy of triclabendazole drugs for use in cases of infection in humans.

Furthermore, DELIVER is going a step further and conducting further research on innovative techniques. Team members have started testing potential future vaccines for cattle, sheep and goats, based on the promising experimental vaccines, including recombinant antigens and DNA vaccines. Controlled breeding is also studied, to evaluate the extent of innate immunity in sheep.

THE IMPORTANCE OF CONTROLLING THE DISEASE

DELIVER has launched its research into forecasting, vaccine development and drug resistance studies, but the overall disease control process faces other challenges. For example, fluke can multiply in the wildlife through snail vectors and plants, and in this scenario, the triclabendazole drugs are ineffective — they only work with farm animals. There is also evidence that climate change, bringing warmer and wetter spring and summer seasons, is increasing the incidence of the infection and spreading it to areas previously unaffected.

The outcomes of DELIVER will play an essential part in safeguarding the value and reputation of the EU exports market for meat and dairy products. The project's work will provide alternatives to the present unsatisfactory control of the most intractable parasite of farm animals in Europe. This will contribute to sustainable rural development, at a time when the number of farmers is predicted to decrease.

On the other hand, the project will strengthen the European Research Area by conducting pioneering work on economically important, zoonic, helminth disease of livestock that can later be used to provide improved control of other parasitic diseases. In terms of policy development, DELIVER fulfils the policy aims of 'The Life Sciences and Biotechnology Action Plan' that promotes the development of biotechnology.

'Delivering' Europe of liver fluke is an ambitious target, but this project has provided the means to success by involving experts from different fields and countries, working hand in hand.

Acronym: DELIVER

Full title: design of effective and sustainable control strategies for liver fluke in Europe

Contract n°: 023025

Website:
www.deliver-project.eu

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EU contribution:
€ 3.5M

DOUBLE FRESH

HIGHER QUALITY READY-TO-EAT MEALS FOR EUROPEANS

LIST OF PARTNERS

- A&F-WUR (The Netherlands)
- ATV-WUR (The Netherlands)
- INS / UNIVIE (Austria)
- IVV (Germany)
- LEI-WUR (The Netherlands)
- MATFORSK (Norway)
- SIK (Sweden)
- University of Ioannina (Greece)
- Sodexho Nederland (The Netherlands)
- Plaza Food (The Netherlands)
- Lé Medaillon (Belgium)
- Gilde Norge BA (Norway)
- Fjordland (Norway)
- Snellman (Finland)
- Pindos (Greece)
- Freshflex (The Netherlands)
- Mitsubishi Gas (Germany)
- Roxytron (Denmark)
- Supachill Europe (UK)
- Hilcona (Principality of Liechtenstein)

Hungry consumer demands are pushing for improved ready-to-eat (RTE) meals, causing scientists and industries across Europe to bring better quality meals of higher nutritional value to the dinner table. To meet this challenge, the EU has launched the DOUBLE FRESH project, which aims to offer meals that are more appealing in terms of freshness and taste, as well as being healthier and safer. In order to make these meals economically attractive, a longer shelf life is targeted, which is especially beneficial for less densely populated countries.

BRING ON THE TASTE!

EU governments, scientists and industries realise that social influences, such as budget, family lifestyles, and different time restraints affect consumer decisions on what and how they are going to eat. There is a growing consensus that by improving the freshness and nutritional value of ready-to-eat meals, Europeans will be more inclined to buy such products, thus giving them greater opportunity to pursue a better quality of life.

The DOUBLE FRESH concept involves RTE meals with fresh meat or fish and fresh vegetables, precooked starch components, and sauce inside a microwavable package. The shelf life of the new RTE meals could be extended from 5 days to 9-14 days. As for the 'freshly cooked' concept, these cooked meals have either not been post-pasteurised inside the package or have received a milder treatment.

Under the existing system, food manufacturers must carry out post-pasteurisation to reduce the risk of harmful substances in the food and ensure a long shelf life. However, this kind of manipulation somehow detracts from the food's taste and its aesthetic appeal. The DOUBLE FRESH project targets the development of new packaging systems that would either make the post-pasteurisation unnecessary or generate new milder methods.

THE DISCIPLINES AT WORK

Scientists and industry are working together to ensure the project bears fruit. The consortium comprises 5 research institutes, 3 universities, 4 technology providers, 7 food concerns and 1 catering firm. From a scientific standpoint, 7 disciplines will team up to achieve the desired results. They include nutritional scientists, food microbiologists, consumer researchers, mathematicians, sensory scientists, food process engineers and packaging technologists.

The DOUBLE FRESH project also benefits the SME sector, as 6 out of 12 companies are small-to-medium sized enterprises. These businesses are active in the market segment of the food industry, particularly within the area of ready-to-eat meals, although they lack the resources for combining fundamental and applied research in order to create groundbreaking meal concepts.

Both economic viability and technological developments are being taken into consideration. Cost-effective and innovative techniques are being analysed and the industry is ensuring that the technologies developed will continue to be implemented once the project has been completed.

DOUBLE FRESH helps improve the competitiveness of European food companies now active in the market sector while covering key societal and policy-related issues, and its success will be the result of cooperation between scientists and industry.

Acronym: DOUBLE FRESH

Full title: towards a new generation of healthier and tastier ready-to-eat meals with fresh ingredients

Contract n°: 023182

Website:
www.doublefresh.eu

Project co-ordinator:
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EU contribution:
€ 1.9M

ΣCHAIN

ADDRESSING FOOD CHAIN VULNERABILITY

LIST OF PARTNERS

- University College Dublin (Ireland)
- Bundesforschungsanstalt für Ernährung und Lebensmittel (Germany)
- TNO Quality of Life (The Netherlands)
- Institut National de la Recherche Agronomique (France)
- Agricultural University of Poznan (Poland)
- AgriTech Solutions (Ireland)
- SINTEF Fiskeri og Havbruk (Norway)
- IFQC (Ireland)
- Instituto de Tecnologia de Alimentos (Brazil)
- Wageningen University (The Netherlands)
- Syncom (Germany)

In recent years, the possibility of epidemics caused by food has been brought to the attention of the European consumer. Measures to prevent the occurrence of such epidemics are currently being taken.

The most serious consumer food scares in the last ten years have been attributed to contaminated feeds finding their way into foods of animal origin. European consumers would benefit from harmonised food and feed chain traceability systems that offer greater protection from food poisoning by dangerous agents and substances. To this end, the SIGMA CHAIN (ΣCHAIN) project is developing systems that will counteract chain vulnerability to contamination.

FOOD-TO-FARM CHAIN TRACEABILITY

In order to reduce contamination risks in the chain, the systems developed must be able to link products to their source, identify dangerous agents and substances, counteract fraud and malicious contamination of the chain and ensure that proper processing has taken place (e.g. sufficient sterilisation temperature and time). There is a clear emphasis on full chain traceability from food to farm, both for foods and for drinking water.

∑CHAIN aims to increase consumer confidence in the food supply chain. The project addresses food chain integrity by mapping product chains. It uses state-of-the-art diagnostic techniques, identification technologies and risk assessment to comprehensively map chains, with contamination risks identified for each link in the chain. Traceability systems are being evaluated, including current methodologies for the identification of contaminants. Such contaminants may be of chemical or biological origin, and may be added naturally, inadvertently or maliciously.

As chain vulnerability to contamination varies for each product type, studies are being conducted on four highly vulnerable products, representing three major chain categories. The products are: drinking water (i.e. a rapid contamination chain); milk powder (i.e. a batch mixing chain); and both poultry meat and farmed salmon (i.e. long geographic chains). A model is being developed to provide quantitative risk assessments of chain vulnerability. A generic framework is being set up for prioritising risks, which will be validated using the four case studies. The results are to be presented in a guide that will be of relevance to all food chain stakeholders. It will address consumers' needs and enable legislative and regulatory authorities to protect consumers' interests.

MAPPING THE CHAINS

The *Stakeholders' Guide* is to be in book format. It is supported by software that enables the stakeholder to input specific chain data for a product in order to produce associated chain maps and assessments of contamination risk. In the case of a food chain contamination incident, chain mapping and risk ranking systems allow for a targeted and accurate withdrawal of contaminated products and a rapid dissemination of information to the public. In summary, robust and effective food chain mapping and risk ranking systems provide a means to increase the transparency of the supply chain, minimise the risk of contamination and help increase consumer confidence.

Overall, ∑CHAIN facilitates the regulation of the food-to-farm chain. The project also enables the development of a pan-European system that can inform all stakeholders about the safety and integrity of their food chains (e.g. the quality, origin and mode of production of the food). In particular, ∑CHAIN provides stakeholders with methodologies to counteract chain vulnerability to contamination.

So, what's in a book? The English jurist Henry of Bracton would probably answer: "An ounce of prevention is worth a pound of cure".

Acronym: ∑CHAIN

Full title: developing a stakeholders' guide on the vulnerability of food and feed chains to dangerous agents and substances

Contract n°: 518451

Website:
www.sigmachain.eu

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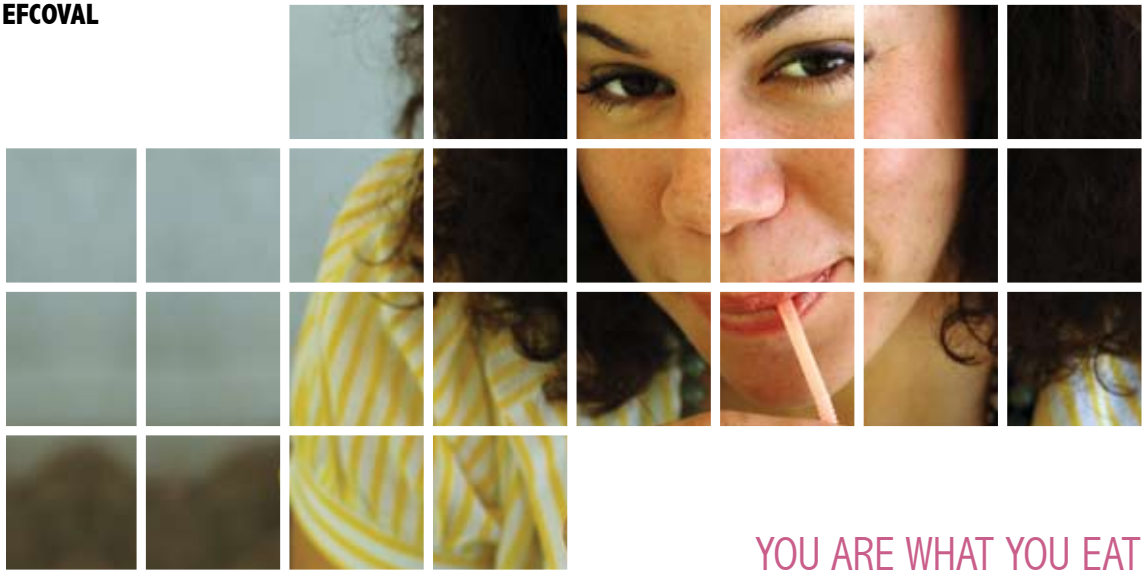
EU contribution:
€ 2.9M

EFCOVAL



YOU ARE WHAT YOU EAT

LIST OF PARTNERS

- Netherlands Organisation for Applied Scientific Research (The Netherlands)
- German Institute of Human Nutrition (Germany)
- Danish Institute for Food and Veterinary Research (Denmark)
- Fundación Vasca de Innovación e Investigación Sanitarias (Spain)
- Ghent University (Belgium)
- Institut National de la Recherche Agronomique (France)
- International Agency for Research on Cancer (France)
- Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (Italy)
- Rijksinstituut voor Volksgezondheid en Milieu (The Netherlands)
- Wageningen University (The Netherlands)
- University of Oslo (Norway)
- National Institute of Public Health (Czech Republic)
- Agence Française de Sécurité Sanitaire des Aliments (France)
- Akademija Medicinskih Znanosti Hrvatske (Croatia)
- Prima Informatics (UK)

"Tell me what you eat, and I will tell you who you are." This quote by the 18th century French politician Anthelme Brillat-Savarin, a keen gastronome, perfectly reflects the aims of the EFCOVAL (European food consumption validation) project.

Europe is one of the most diverse entities on earth. It has more cultural variety than any nation, and as expected, it has very different traditions and tastes in food.

EFCOVAL is devoted to the development and validation of a European-wide food consumption survey instrument, designed to evaluate the intake not only of foods and nutrients, but also of potentially hazardous chemicals in the European population. The project results will be disseminated in the fields of statistics, nutrition, health and epidemiology, and will contribute to the improvement of future EU health policies.

BUILDING ON THE EFCOSUM LEGACY

The EFCOVAL initiative follows in the footsteps of the 'European Food Consumption Survey Method' project (EFCOSUM) and further develops and validates its achievements. EFCOSUM aimed to define a methodology for monitoring food consumption across Europe, using nationally representative samples taken in a comparable way from men and women of all ages.

EFCOVAL will build on the conclusions from EFCOSUM, namely that new pan-European food consumption surveillance at an individual level, based on uniform procedures and methodologies, is required. EFCOSUM advised the use of a repeated, non-consecutive 24-hour recall system and a strictly standardised procedure, for reliable and comparable transnational data collection. The EPIC-SOFT program is considered to be the first choice for collecting 24-hour recalls in European countries.

The overall objective of EFCOVAL is to continue the work initiated by EFCOSUM, and to further develop and validate the food consumption instrument (EPIC-SOFT) for assessing dietary intake; this is necessary for studying associations between (public) health and food safety issues in future pan-European monitoring surveys.

Most of the participants in the new project have already worked together in the past, and their experiences and previously acquired knowledge will be an important asset for its success.

EFCOVAL INPUTS AND IMPACTS

The first objective of the project is to achieve European-wide implementation of the EFCOSUM-recommended method for undertaking dietary surveys, by expanding the predictions of the survey instrument. Attention will be given to dietary surveys among children, and to exposure to chemicals.

EPIC-SOFT will be at the core of the second objective. The software will be further developed and improved, to adapt it to more recent IT environments. Moreover, the instrument will be validated in 5 selected EU countries or regions with clearly different consumption patterns, to ensure a method valid for use in a pan-European setting.

The final objective of ECOVAL concentrates on the results of the instrument. The final goal of a pan-European dietary assessment tool is to provide policy makers with the information they require to address food quality and food safety issues.

EFCOVAL will be a crucial project for future EU health and safety policies because it provides a general overview of the dietary habits within Europe. It will also provide a detailed analysis of each region's particulars, and fuel the debate over who has the best quality food.

Acronym: EFCOVAL

Full title: European food consumption validation

Contract n°: 022895

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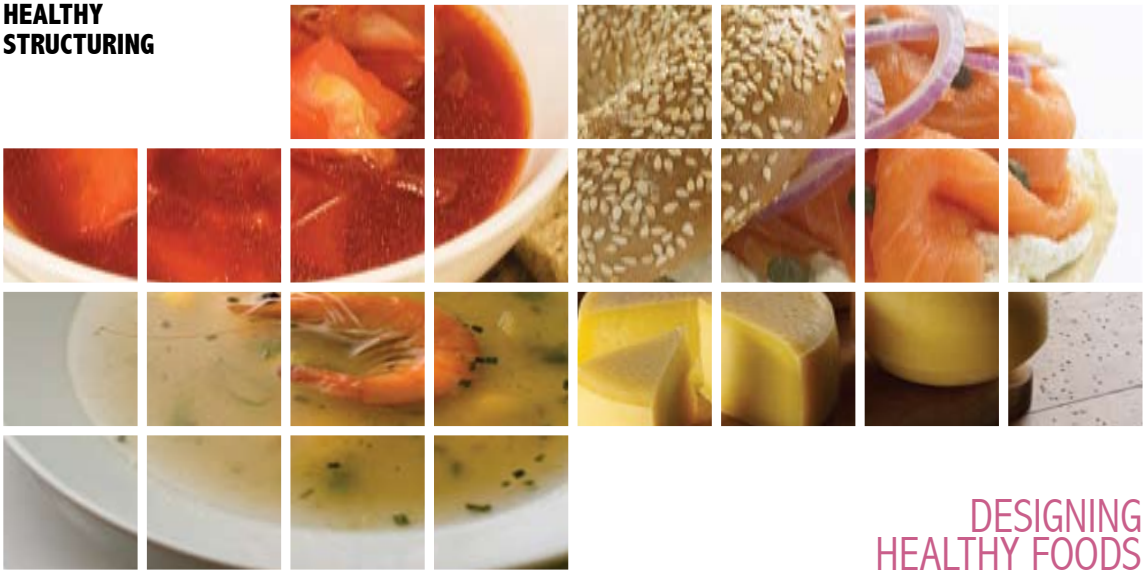
EU contribution:
€ 2.6M

HEALTHY STRUCTURING



DESIGNING HEALTHY FOODS

LIST OF PARTNERS

- Swedish Institute for Food and Biotechnology (Sweden)
- Institute of Food Research (UK)
- Verein zur Förderung agrar - und stadtökologischer Projekte, ASP (Germany)
- Chalmers University of Technology (Sweden)
- Unilever (The Netherlands)
- University of Murcia (Spain)
- Tetra Pak Processing Systems (Sweden)
- Katholieke Universiteit Leuven (Belgium)

European consumers love ready-to-eat meals that are quick and easy to prepare and suit modern lifestyles. However, busy consumers are not prepared to eat just anything, and demand foods that are fresh, safe and healthy.

The overall objective of HEALTHY STRUCTURING is to answer public demands by improving the nutritional and structural quality of ready-to-eat fruit and vegetable products. Epidemiological studies have shown that fruit and vegetables are protective against a variety of diseases, particularly cancer and cardiovascular disease; however, most people do not eat enough fruit and vegetables to significantly reduce the health risks for these diseases. HEALTHY STRUCTURING aims to use new and innovative technologies and optimal mixtures of raw materials to ensure that ready-to-eat meals contribute to good health.

THE END OF OVER PROCESSING

HEALTHY STRUCTURING focuses on preserving the qualities of fruit and vegetables throughout the whole process of production of ready-to-eat meals. The project will use real food products containing tomatoes, carrots and broccoli as the focus of the study. The idea is to analyse plant characteristics from the early stages of production up until the moment they arrive on the consumer's table, as well as the impact during consumption. Ways of preserving the nutritional qualities of the raw materials as much as possible will be explored. The quality of foods is expected to improve, thereby ensuring that consumers who regularly enjoy ready-to-eat meals have intakes of around 600gr of fruit and vegetables daily.

The consortium will create a database of the composition, microbiology, mechanical properties and structure of plant tissue at all stages of growing and storage. After studying the effects of alternative mechanical and thermal pretreatment of ingredients, project participants will also create mathematical models for predicting nutritional and textural loss, as well as enzyme inactivation during processing. The observations and models will be used to develop optimal thermal processing of complex products.

The aim is to avoid over processing, which destroys natural qualities of fruit and vegetables, to decrease the use of stabilisers in processed foods, and to use plant cell material to preserve the texture and freshness character of the raw products. A further project step will be the evaluation and quantification of the structural and nutritional functionality of selected mixtures of fruit and vegetables.

A NEW GENERATION OF HEALTHY READY-TO-EAT MEALS

HEALTHY STRUCTURING will evaluate a series of parameters in in vitro models and in human subjects. For instance, biochemical parameters, as well as the nutritional bioavailability or bio-efficacy of meals, will be tested to provide evidence of potential beneficial effects of consumption of the ready-to-eat fruit and vegetable products. To this purpose, 88 people whose diets do not include fruit and vegetables will be studied. They will have their blood tested to determine whether consumption of the new products will have potential beneficial effects on people's health.

This project is not limited to establishing ways of increasing dietary intakes of fruit and vegetables to improve consumer health. It will also enhance the competitiveness of EU producers, who will benefit from improved agronomic conditions and from adjusting their production to incorporate the optimised or new processing methods. Better production and increased consumption will have a huge economical impact on the European economy, as will the patenting of new technologies. It will also impact on the environment, because it promotes the use of practices and methods that contribute to the quality of water, soil and landscape, and that encourage biodiversity.

Consumers today are looking to their food and diet to promote disease prevention, anti-ageing, immune system boosting and a feeling of general well-being. HEALTHY STRUCTURING will tap into this trend and help consumers enjoy the convenience of ready-to-eat foods while ensuring high fruit and vegetable intakes.

Acronym: HEALTHY STRUCTURING

Full title: nutritional and structural design of natural foods for health and vitality

Contract n°: 023115

Website:
www.sik.se/hstructuring

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EU contribution:
€ 3.3M

HIGHQ RTE

TECHNOLOGY TACKLES TASTE

LIST OF PARTNERS

- University of Bologna - Dipartimento di Scienze degli Alimenti (Italy)
- Orma (Italy)
- Vilnius University - Institute of Material Sciences and Applied Research (Lithuania)
- Universidad Politécnica de Valencia (Spain)
- SIK - Institutet for Livsmedel och Bioteknik (Sweden)
- Institute of Food Research (UK)
- Laboratoire National de Métrologie et d'Essais (France)
- Consejo Superior de Investigaciones Científicas (Spain)
- UAB "Palink" (Lithuania)
- Tecnoalimenti (Italy)
- Ortoreale (Italy)
- Cooperativa Sociale "Il Bettolino" S.C. (Italy)
- Rubinetteria Webert (Italy)
- Acetum (Italy)
- Centro Tecnico Regionale di Ricerca sul Consumo Europeo (Italy)

Killing micro-organisms can kill taste. This is not the slogan for a health advice campaign, but could well be the simple conclusion reached by consumers who eat ready-to-eat (RTE) meals. RTE foods are very popular for their convenience and widespread availability, but they are not always as tasty and healthy as fresh products.

The lack of taste and freshness is mainly due to decontamination processes, where the eradication of micro-organisms for the protection of human health often goes hand in hand with the loss of nutrients and flavour. The project HighQ RTE looks into the decontamination problem and suggests novel non-thermal technologies to improve microbial safety and shelf life of RTEs, while maintaining overall high taste and nutritional quality.

PERISHABLE FOODS

In HighQ RTE, the focus is on three types of foods: ready-to-eat vegetable and fruit salads; fluid foods (egg- and dairy-based products and ingredients); and ready-to-eat meals of vegetable origin.

Current thermal food manufacturing processes can improve food safety and product shelf life without leaving residues, and are cheap and well perceived by consumers. However, heat treatments at high temperatures induce several changes including lipid oxidation, nutrients bioavailability and modifications of the organoleptic properties. Another frequent effect of thermal treatments is the 'Maillard reaction' which results in melanoidins which can be metabolised by the microflora of the hind gut in heterocyclic amines, some of which have been reported to be human carcinogens.

HighQ RTE is developing four new technologies. For each, modelling of the death kinetics of the naturally occurring microbial population and deliberately inoculated pathogenic species is performed. This results in models of bacterial survival and regrowth that is the basis for quantitative risk assessment procedures. Risk assessment is fundamental in determining lethality levels and treatment doses in all processes and for choosing the appropriate processes for each food system.

HIGH TECHNOLOGY FOR HIGH QUALITY AND TASTE

Four non-thermal processing technologies are being developed to improve the safety and shelf life of RTE meals: Photosensitisation (PHOTO); Pulsed Electric Fields (PEF); High Pressure Homogenisation (HPH); and High Hydrostatic Pressure in combination with CO_2 atmospheres (HHPCO).

PHOTO is used for ready-to-eat vegetable and fruit salads. It consists of the combination of a non-toxic dye and a bright light which, in the presence of oxygen, results in the selective destruction of the target micro-organisms. The PHOTO technique can also be used for packaging decontamination. PEF and HPH is used for fluid foods.

PEF involves the application of high voltage electrical fields for microseconds to liquid foods such as sauces, dressings, beverages and fillings. During HPH treatment the fluid is forced, under high pressure, through a narrow valve after which it undergoes a rapid depression. The process variables affect also the food microstructure and the interaction between food ingredients.

The fourth technology is HHPCO which is used for RTE meals. It combines traditional high hydrostatic pressure with CO_2 for safer packaging and longer shelf life. HighQ RTE studies the effects and results of these four technologies and compares them to thermal treatments.

HighQ RTE is developing pilot scale equipments. The resulting technologies can be used to significantly increase the production of high quality and safe RTE products in the catering sector.

Acronym: HIGHQ RTE

Full title: innovative non-thermal processing technologies to improve the quality and safety of ready-to-eat meals

Contract n°: 023140

website:
http://www.highqrte.eu/

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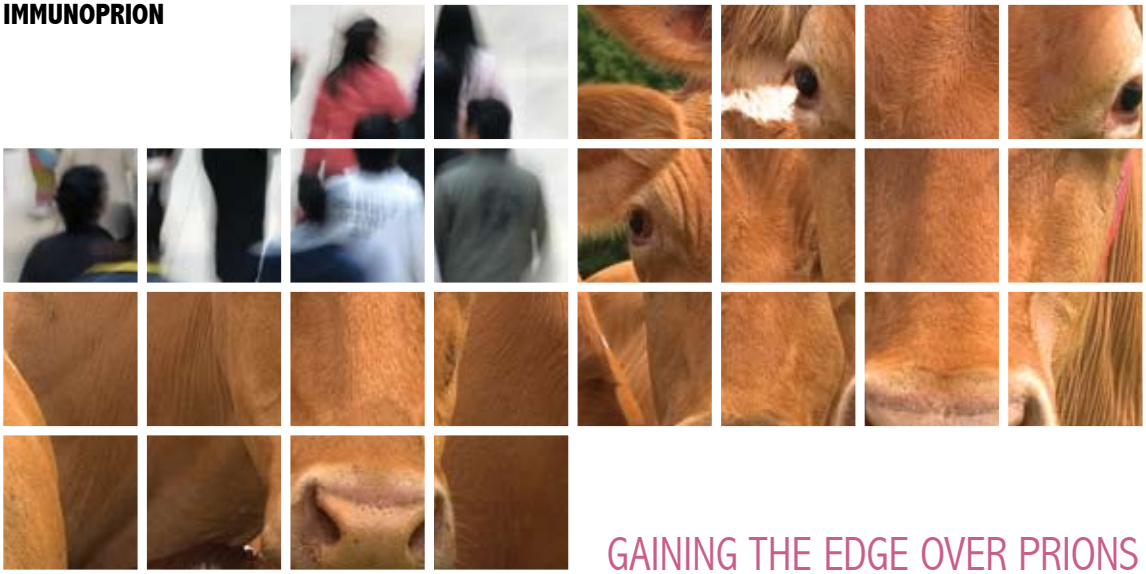
EU contribution:
€ 2.1M

IMMUNOPRION



GAINING THE EDGE OVER PRIONS

LIST OF PARTNERS

- Institut National de la Santé et de la Recherche Médicale (France)
- The Chancellor, Masters and Scholars of the University of Oxford (UK)
- University of Zurich (Switzerland)
- Het Nederlands Kanker Institut (The Netherlands)
- TecKnowMetrix (France)
- Centre National de la Recherche Scientifique (France)
- Université de Liège (Belgium)

ImmunoPrion is a project at the cutting edge of current scientific knowledge on Transmissible Spongiform Encephalopathy (TSE). The project is built around three key issues: the strain diversity of TSE agents, the crossing of the species barrier and the evaluation of the host innate and acquired immune responses. TSEs are conditions that affect the brain and the nervous system of humans and animals, among which we find the commonly called mad cow disease and its human equivalent, Creutzfeldt-Jakob disease. TSEs are propagated by prions (a type of infectious agent made only of protein). ImmunoPrion is therefore investigating the fundamental features of TSEs to enable the development of detection and control strategies for prion strains.

STUDYING THE DIVERSITY OF STRAINS

The project's first goal is to provide a better definition of prion strains based on the structural properties of scrapie, a prion disease occurring in sheep. The teams have begun by producing *in vitro* synthetic variants of prions, because they constitute a reliable and homogenous source, mimicking natural strain diversity, which is important for characterising naturally infectious strains. They will then switch to naturally infectious strains from mice, hamsters and sheep. The members are also developing a new imaging technique in order to achieve high-resolution 3-D characterisation of prion strains. The ultimate objective in using this highly innovative approach is to achieve a well-standardised map of prion diversity and to relate the morphological specificities to pathogenic profile.

STOPPING THE PRION CONTAGION

The existence of a species barrier of variable efficacy has been recognised since the mid-seventies and is a key parameter in food safety. However, the mechanisms involved in this phenomenon are still not fully understood and science is still unable to predict whether a prion strain will pass into another species — for example, if BSE (Bovine Spongiform Encephalopathy) will go on to infect sheep or humans — and what the biological mechanisms influencing prion passage to the host are. The ImmunoPrion project is attempting to acquire a better understanding of the species barrier by carrying out research using rodents to probe the transmission of TSE agents of animal origin to humans. This model will allow direct testing on prions of potential concern, including BSE, CWD (Chronic Wasting Disease, in deer) and other emerging scrapie strains.

The SME involved in ImmunoPrion is responsible for liaising with the project participants and the political, industrial and academic world in order to promote the project's goals and participate in the establishment of markers and methods for the detection of prion strains. All European countries aim at the highest possible standards of consumer protection, which include the safety of food products. To this end, the project's objectives are organised around the idea that a rational food safety strategy must prevent, predict and protect. Therefore, the results of this research will have a major impact on the development of improved food safety measures.

Acronym: IMMUNOPRION

Full title: immunological and structural studies of prion diversity

Contract n°: 023144

Project co-ordinator:
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EU contribution:
€ 2M

IRRIQUAL

IRRIGATING PATHS TO HEALTHIER FOODS

LIST OF PARTNERS

- Consejo Superior de Investigaciones Científicas (Spain)
- Universidad Politécnica de Cartagena (Spain)
- Federación de Cooperativas Agrarias de Murcia (Spain)
- Abacotech (Spain)
- Contariego (Spain)
- Institut National de la Recherche Agronomique (France)
- University of Thessaly (Greece)
- Universita degli Studi di Foggia (Italy)
- Wageningen University (Netherlands)
- Lebanese Agricultural Research Institute (Lebanon)
- Litani River Authority (Lebanon)
- Institute Agronomique et Veterinaire Hassan II (Morocco)
- Sapiama (Morocco)

Irrigation provides life for agricultural crops. Yet, despite its indispensability, bad water management may very well sound the death knell for many farmers. Better water management, or sustainable irrigation, not only provides an equilibrium between economic, social and environmental dimensions, but also produces better crop yields and fruit quality.

While this sounds logical, its practical application is the matter of IRRIQUAL scientific research. The relationship between water practices and fruit safety, for example, is not immediately obvious, but there is a sound association between the two.

Understanding such principles is the purpose of IRRIQUAL and the contribution it makes provides new, more successful practices and methods for farmers to employ.

LESS INPUT

About 70% of water resources are dedicated to irrigation in Mediterranean countries, implying that any increase in efficiency of irrigation water use would save a significant amount of water. Saving water would be particularly beneficial to areas with high level of water stress on the aquifers, where it is compulsory to reduce and eliminate the gap between extraction and recharge. At a mid-term horizon, part of the saved water could be available for other agricultural, industrial and domestic uses. On the other hand, the conservation and preservation of water resources and its better use by farmers, would enhance the sustainability of irrigated farming systems.

To address these issues, IRRIQUAL's approach is developing and validating an irrigation management model that allows it to realistically simulate the behaviour of the soil-tree system. This model can be applied to the design and management of more sustainable and efficient irrigation techniques. The project's research methodology is based on a combination of experiments, field surveys and modelling tools aimed at predicting the impact of a given irrigation practice on the relevant inputs (water, fertilisers) and outputs (yield, quality, safety). This methodology is applied to four Mediterranean fruit tree species (peach, olive, almond, citrus).

Prior to the establishment of such practices, a better knowledge of effects, such as physiological response, quality and safety, of different irrigation strategies on crops, is required. The resulting recommendations on irrigation design and practices are transferred to farmers, and best practices for each target crop and location is elaborated. Data and know-how is transferred to the irrigation industries through the development of new irrigation technology. The latter includes hardware and software components for automated irrigation equipment, and the optimisation of disinfection of irrigation water using ultrasound technology.

MORE OUTPUT

Improving irrigation technology ensures the competitiveness of European farmers in the market. Another spin-off of new irrigation management practices is a more flexible rendering of the farming system, which is better adapted to changes in the socioeconomic environment. The project establishes a Mediterranean network of representative fruit tree agrosystems, combined with research and development activities that are central to a rational implementation of sustainable irrigation practices and management.

Overall, the project builds a scientifically sound platform for further European research and development on sustainable irrigated farming. In this respect, IRRIQUAL should become an important milestone in the successful implementation of sustainable irrigation strategies .

Acronym: IRRIQUAL

Full title: sustainable orchard irrigation for improving fruit quality and safety

Contract n°: 023120

Website:
www.irriqual.com

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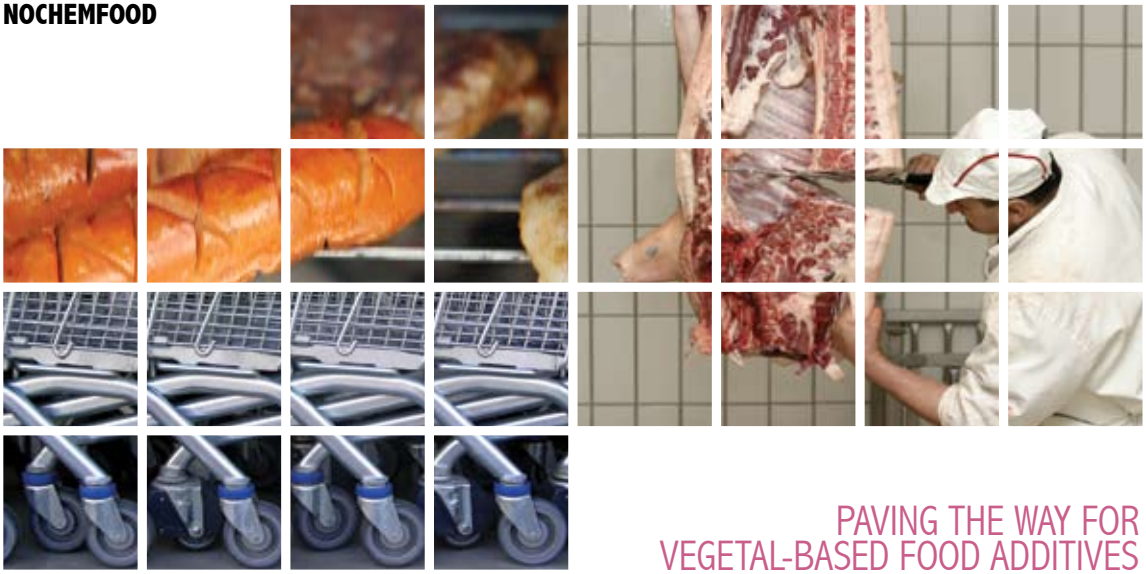
EU contribution:
€ 2.2M

NOCHEMFOOD



PAVING THE WAY FOR VEGETAL-BASED FOOD ADDITIVES

LIST OF PARTNERS

- Bioma Agro Ecology CO AG (Switzerland)
- CNR Avellino -Istituto di Scienze dell'Alimentazione (Italy)
- Centro Tecnólogico de la Industria Cárnica de la Rioja (Spain)
- CSIC-Institute of Industrial Fermentation-Madrid (Spain)
- Università del Molise-Dipartimento di Scienze e Tecnologie Agro-Alimentari e Microbiologiche (Italy)
- Innova S .p.A (Italy)
- Salumificio Spiezia (Italy)
- Embutidos Dany SL (Spain)
- Evaggelopoulos Apostolos (Greece)

The NOCHEMFOOD project endeavours to develop a novel class of food additives based on plant sources. These new vegetal-based extracts are being tested with a view to replacing currently used classes of chemicals. Keeping in mind the economic importance of the food additive industry, attempts will be made to fully exploit the market potential of the innovative technologies that are likely to emerge from NOCHEMFOOD. The first step is to test these new extracts on a specific food group widely consumed in Europe: the sausage.

VEGETABLE ALTERNATIVES TO CHEMICAL ADDITIVES

NOCHEMFOOD employs a host of biotechnological, genomic and biochemical techniques to extract and process vegetal-based substances and study their applicability in the food industry. One of the project's goals is to develop and scale-up appropriate extraction methods, which are not only friendly to the environment but also capable of meeting industrial demands. Characterising and potentially optimising the extracted substances is an important part of the project's overall strategy. These efforts include a variety of tests aimed at examining the effect of these substances, not only on food preservation but also on taste and overall quality.

IMPACTING THE EUROPEAN FOOD MARKET

Following EC decisions to reduce authorised levels of nitrates and nitrites in meat products, NOCHEMFOOD can offer alternative additives that result in food products with improved quality and safety. These vegetal-based bioorganic additives could eventually replace chemicals such as nitrites and nitrates throughout the food industry. The first industry to be included in this initiative is meat processing. Sausages rank high among European consumers' preferences and as such offer a viable market diffusion tool for any new class of food additives developed within the NOCHEMFOOD consortium. The sausage/pork meat market is particularly sensitive to pathogens; therefore the economic benefits of NOCHEMFOOD could be significant indeed.

Acronym: NOCHEMFOOD

Full title: novel vegetal-based extracts additives for chemical-free food
Contract n°: 023060

Project co-ordinator:
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EU contribution:
€ 2.3M

NUTRA-SNACKS

A SNACKING GOOD WAY TO HEALTH

LIST OF PARTNERS

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- University of Crete (Greece)
- Institute of Soil Science and Plant Cultivation (Poland)
- Università di Pisa (Italy)
- National Institute for Biological Sciences (Romania)
- Université de Perpignan (France)
- NéoSENS (France)
- ALSO (Italy)
- DAS (Italy)
- University of Milan (Italy)

Having that midday snack or that little midnight nibble has become increasingly popular despite the association with obesity and compulsive eating disorders. The truth of the matter is that snacking, i.e. eating smaller amounts of food on a more regular basis, is actually healthier.

Even though the growing fondness for snacks reaches the billions of euro mark, their ingredients are destined for change since they are threatened by issues regarding their health benefits.

Snacks are, traditionally speaking, filled with preservatives, artificial sweeteners and flavourings to the point where their contribution to health is questionable. The rise of functional foods, however, has heralded a union that could have dynamic, if not financially staggering, results.

Functional foods are foods containing natural but bolstered ingredients that might, in some future scenario, be used as a means to combat specific diseases. It is NUTRA-SNACKS' objective to harness this potential.

A SNACK FOR ANTI SOMETHING

Nutraceutics constitutes a growing sector of the food industry which attempts to define food components that can benefit human health. Under the support of the European Commission, the NUTRA-SNACKS project utilises a combination of technologies, through the synergies of which it can achieve innovative ready-to-eat foods with functional health-promoting attributes.

The use of biotechnology enables researchers to isolate natural metabolites with anticancer, anti-inflammatory, antioxidant and other properties as well as include them in food products. During the initial stages of the project, partners from research institutes and SMEs isolated those specific metabolites with anticancer, antimicrobial, antibacterial, antifungal, antiviral, antihypertensive, anti-inflammatory, anticholinergic and antioxidant activity. One of the main aims is developing microbial or plant-based bioreactors, which are used to produce bulk quantities of the desired metabolites.

These systems are subject to further optimisation in order to improve yield and quality at a later stage. In an effort to combine different sets of skills and competences which culminate in the production of innovative ready-to-eat food products, the project consortium spans 6 EU countries with participants from the public and private sectors. The objectives also include the development of regulatory guides for the emerging nutraceutics sector, as well as safety and control protocols for all the processes involved.

CREATING A NEW PARADIGM

NUTRA-SNACKS provides the correct framework through which a new generation of food products can reach the European consumer. The purpose is to create a favourable economic climate that stimulates the spin-off of SMEs, thus achieving the commercialisation of a new wide range of health-promoting products.

NUTRA-SNACKS aims include plans to enrich the production chain. It is developing novel production systems (including innovative sensor-controlled bioreactors). It also intends to set and define new standards for the nutraceutics industry, complete with regulations and risk assessment documentation.

Health issues remain with a great number of functional foods and the consortium is devising new methods for assessing the potential health hazards of these innovative food products. NUTRA-SNACKS offers not only the possibility of innovation in the fields of knowledge creation and technology, but also the provision of adequate regulatory and quality assurance procedures.

Acronym: NUTRA-SNACKS

Full title: ready to eat food for breakfast and sport activity with high content of nutraceutics preventing disease and promoting public health

Contract n°: 023044

Project co-ordinator:
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EU contribution:
€ 2.4M

PARASOL

REDUCING THE RISK OF INFECTION

PARTICIPANT LIST

- Ghent University, Faculty of Veterinary Medicine, Laboratory of Parasitology (Belgium)
- University of Bath, Department of Biology & Biochemistry (UK)
- University of Bristol, School of Veterinary Medicine (UK)
- INRA, Laboratories of Multiresistance and Anthelmintics, and Ecology and Genetics of Parasites (France)
- University of Veterinary Medicine, Institute for Parasitology (Germany)
- National Veterinary Institute and Swedish University of Agricultural Sciences, Department of Biomedicine and Veterinary Public Health, SWEPAR (Sweden)
- Moredun Research Institute (UK)
- Parasitological Institute, Slovak Academy of Sciences (Slovakia)
- University of Pretoria, Departments of Veterinary Tropical Diseases and Large Animal Production (South Africa)
- Institute for Agronomy and Veterinary Medicine Hassan II, Parasitology Department (Morocco)
- Aristotle University, Laboratory of Parasitology and Parasitic Diseases (Greece)
- University of Naples "Federico II", Faculty of Veterinary Medicine, Department of Pathology and Animal Health,(Italy)
- Innovis, Peithyll Centre (UK)
- National Wool Growers' Association (South Africa)
- SVANOVA Biotech (Sweden)
- Plantamedium and Propago (Germany)
- Fränz & Jaeger (Germany)

Farm animals such as cattle, sheep and goats are prone to infection from a series of parasites including nematode worms, which pose the greatest threat to animal welfare, productivity and overall food safety. The current state-of-the-art treatment for worm infections involves drugs called anthelmintics. However, there are concerns over cost plus their impact on the environment, consumer health and the emergence of resistance, thus limiting their long-term suitability as the treatment of choice.

The EC-funded PARASOL project can now propose a new solution to solve problems associated with current practices. Realising the importance of anthelmintics in the long-term fight against nematode infections, the PARASOL consortium proposes the adoption of an innovative approach towards infection treatment, i.e. the administration of drugs only to those animals exhibiting clinical symptoms or decreased productivity. This Targeted Selective Treatments (TST) method aims at a rational use of resources over the long term, while at the same time reducing the risk of resistance.

INNOVATION IN FARMING PRACTICES

Globally, anti-nematode control relies mostly on anthelmintics, and the related costs reach approximately €2.8 billion, the bulk of which is spent in Europe, the USA and Australasia. These costs are incurred by farmers and passed on to consumers. Currently, drugs are given to all animals in a herd, whether or not they display symptoms of nematode infection. This practice increases costs dramatically while the unnecessary use of drugs raises the risk of resistance to anthelmintics.

The novelty of TST lies in the fact that it does not burden healthy or symptom-free animals with unnecessary drug treatments, limiting them only to the livestock that need it. In effect, the method ensures a huge reduction in inputs and minimises the anthelmintic residue in food products such as milk, meat and wool but also on the environment.

The PARASOL consortium is investigating the effects of TST on a number of factors including productivity and animal welfare, as well as the spread of resistance genes in a variety of farming conditions. In addition, partners are working on the best methods of identifying the animals that need anthelmintic intervention, and on the assessment and development of resistance detection kits. These key innovations in farming practices will be communicated directly to stakeholders, including farmers, veterinarians and advisors, among others, through a comprehensive communication plan.

REACHING FARMERS ON A GLOBAL BASIS

The PARASOL project takes off at a time when anthelmintic resistance is increasing at an alarming rate in farms, not only within the EU but also in INCO (International Cooperation) countries, with potentially devastating consequences. The low input and sustainable practices proposed with TST may prove to be the answer in guaranteeing long-term animal welfare and food safety in this area. An important aspect of the project is to understand the molecular processes behind these drug treatments, and use the emerging knowledge to improve on current treatments and on the proposed TST.

Animal research experts from northern and southern Europe, as well as Africa are now coming together under the PARASOL consortium to cooperate and exchange knowledge on the different farming practices in their regions that might affect TST. Farms across the EU, and as far as South Africa and Morocco, are expected to benefit, protecting their levels of productivity (which can be reduced by as much as 50% in certain cases of infection), and ensuring their economic viability.

Acronym: PARASOL

Full title: novel solutions for the sustainable control of nematodes in ruminants

Contract n°: 022851

Project co-ordinator:
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EU contribution:
€ 2.9M

PARATUBERCULOSIS: PROVIDING TOOLS TO ADDRESS THIS MULTIFACETTED PROBLEM.

LIST OF PARTNERS

- Central Institute for Animal Disease Control (The Netherlands)
- Queen's University Belfast (UK)
- Scottish Agricultural College (UK)
- National Veterinary Institute (Norway)
- Universidad Complutense de Madrid (Spain)
- Universidad de León (Spain)
- Instituto Vasco de Investigacion y Desarrollo Agrario (Spain)
- Veterinary Research Institute (Czech Republic)
- Danish Institute for Food and Veterinary Research (Denmark)
- INRA (France)
- Dairy Products Research Centre, (Ireland)
- St. Georges Hospital Medical School (UK)
- Agence française de sécurité sanitaire des aliments (France)
- The Royal Veterinary College (UK)
- Institute for Hygiene and Food Safety, (Germany)
- The Royal Veterinary and Agricultural University (Denmark)
- Ministry of the Flemish Community (Belgium)
- Statens Serum Institut (Denmark)
- VU University medical center (The Netherlands)
- Dept. Health & Safety (The Netherlands)
- Veterinary and Agrochemical Research Centre (Belgium)
- ADIAGENE SA (France)
- ID-VET Sarl (France)
- Moredun Research Institute Pentlands Science Park (UK)
- University of Otago, (New Zealand)
- Montreal General Hospital (Canada)
- Instituto Nacional de Tecnología Agropecuaria (Argentina)
- Michigan State University (USA)

Paratuberculosis, a chronic wasting disease in ruminants, is causing significant production losses to both dairy and meat producers, due to a decreasing milk yield, loss of body weight and early replacements. The absence of adequate diagnostic tools for early detection of subclinically infected livestock severely interferes with animal welfare, since affected animals are sent to slaughter only when they are in an advanced stage of disease. In addition, animals with subclinical disease will suffer additionally from an increased susceptiblity to secondary infections. Therefore, the objectives of this project aimed at the development of better tools for the control of paratuberculosis will directly contribute to the welfare of domestic livestock. The presence of live Mptb in retail milk in combination with its possible association with Crohn's disease in humans, has resulted in consumer concerns for quality and safety of milk and dairy products. This potential zoonotic role, the human exposure to Mptb via milk and the fact that this relationship cannot be proved or disproved, is reason for great concern. This latent foodsafety issue, combined with the economic and welfare impact the disease has on animal husbandry in the EU strengthen the importance of an effective paratuberculosis control. This project seeks to address the serious shortfalls in the current methodology for (early) diagnosis of paratuberculosis, in livestock as well as in humans, for the detection of Mptb in food, for the risk-assessment of human exposure via the foodchain to Mptb and to further investigate the possible role of Mptb in the aetiology of Crohn's disease.

GLOBAL PARTICIPATION IN SEARCH OF INVESTIGATIVE TOOLS

Paratuberculosis (also called Johne's Disease in Anglo-Saxon countries) in ruminants is not a problem unique to Europe. Countries worldwide are facing the same problem and are looking for solutions. As a result ParaTBtools will include research institutions from 28 countries around the world. While institutions from across Europe will be part of the project, research institutions from Non-EU countries will also play a crucial part in the project. Large cattle and dairy producing countries such as Argentina, Canada, USA and New Zealand will be represented in the research. In addition, the consortium will seek to build a strong collaboration with other consortia working in this area, e.g. the USDA funded Johne's Disease Intergrated Programme (JDIP) using the synergy between the projects to strenghten the efforts made worlwide.

The group will be able to pool their expertise and exploit different approaches and hopefully develop an innovative diagnosis programme. Therefore, a highly significant achievement for the project will be the establishment of a multidisciplinary consortium within the EU to study the important and multifaceted problem of paratuberculosis, and the implications for food safety and animal welfare. It is expected that the wide range of disciplines within this consortium will provide a much needed platform of expertise within and beyond the lifetime of this project.

In summary, ParaTBTools will directly address EU policy on Food Quality and Safety by developing tools for an effective control of paratuberculosis of domestic livestock in the EU and thus reducing the load of M. paratuberculosis entering the foodchain. In addition, the improved diagnostic tools will allow for an earlier detection of infected animals, thus contributing to improved animal welfare in infected herds.
In addition, ParaTBtools will generate tools and information, allowing for control measures to assist owners of infected farms, in particular those with small ruminants, suffering heavily under paratuberculosis infection and often struggling for survival.

Acronym: PARATBTOOLS

Full title: development of improved tools for detection of paratuberculosis in livestock, *M.paratuberculosis* in food and for the assessment of the risk of human exposure

Contract n°: 023106

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EU contribution:
€ 3.9M

QALIBRA

FISHING FOR IMPROVED QUALITY OF LIFE

LIST OF PARTNERS

- Icelandic Fisheries Laboratories (Iceland)
- Central Science Laboratory (UK)
- National Institute of Public Health and The Environment (The Netherlands)
- Wageningen University (The Netherlands)
- University of Patras (Greece)
- Altagra Business Service (Hungary)

Recent major crises in the European food market have affected consumer trust in food safety, and more particularly in seafood, which has been associated with major food poisoning outbreaks. Decision-makers and consumers now wish to be more informed and aware of food characteristics or production practices before legislating or making eating choices, respectively. Yet quality assessment requires risk/benefit analyses of foods, which then need to be converted into a common denominator. In this context, the QALIBRA project is working on the 'net health impacts' of seafood and functional foods. The models – accessible and adapted to the needs of all stakeholders – will be made available on web-based software.

GENERAL FRAMEWORK FOR RISK-BENEFIT ANALYSIS

QALIBRA is developing a general framework for risk/benefit analysis of foodstuffs. The project provides specific information on the overall health impacts of different foods, via the development of a raft of quantitative methods for assessing and integrating beneficial and adverse effects of foods. Methods for risk/benefit analysis of environmental factors detrimental to health are defined – be they chemical, biological, physical or linked to the food chain. The methods should be a basis for policy decisions on how to prevent or minimise effects and risks.

The tools are applicable to combined exposures of authorised substances, including the impact of local environmental disasters and pollution on the safety of foodstuffs. Emphasis is placed on the cumulative risks and health impacts of environmental pollutants, including long-term effects and exposure to small doses. International epidemiological data shows that the most clearly identified consumer risks derive either from human enteric viruses that contaminate bivalve molluscs, or from pathogenic bacteria that form biogenic amines in certain fish products. The impact on endocrine disrupters is also considered, particularly in sensitive consumer groups such as children.

The primary focus is the setting up of a general framework for studying the risks and benefits of selected food groups. However, QALIBRA's techniques and software can also be applied to other direct environmental exposures, via air, soil and water.

As a result, the assessment tools can also be applied to nutrients and bioactive compounds, as well as to environmental contaminants. The evaluation of dose-response models and the identification of suitable methods for characterising the main types of uncertainty affecting food risk/benefit assessments are tested and evaluated in case studies including both seafood and functional foods.

INTEGRATING ADVERSE AND BENEFICIAL HEALTH EFFECTS

Oily fish have been selected for seafood because their consumption presents both benefits such as the reduction of cardiovascular disease risk and risks such as cancers and developmental effects. Functional food products enriched with phytostanols and phytosterols are also studied in contrast with these traditional food products.

Study results generate highly innovative and improved means of assessing and integrating health benefits, risks and uncertainties associated with fish and other functional foods. The targeted dissemination of these results helps reinforce the competitiveness of European food industries. These industries are provided with advanced information on the overall health impacts of different foods and on production practices – in other words, they are given extra means to meet consumer demands for healthy foods.

Decision makers, industrialists and consumers foresee the upcoming food-related challenges of the 21st century. Reducing obesity and increasing physical activity to protect the health of consumers is definitely one of them. Guaranteeing the regular availability of diverse sustainable and healthy food in sufficient quantity is another.

Acronym: QALIBRA

Full title: quality of life – integrated benefit and risk analysis web-based tool for assessing food safety and health benefits

Contract n°: 022957

Website:
www.qalibra.eu

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EU contribution:
€ 1.9M

SAFIR

GOOD FOOD FROM BAD WATER?

LIST OF PARTNERS

- University of Aarhus (Denmark)
- Consorzio di Bonifica di II grado per il Canale Emiliano Romagnolo (Italy)
- Royal Veterinary and Agricultural University (Denmark)
- Natural Environment Research Council, Centre for Ecology and Hydrology (UK)
- Bureau de Recherches Géologiques et Minières (France)
- London School of Hygiene and Tropical Medicine (UK)
- Institute of Food and Resource Economics (Denmark)
- DHI Water and Environment (Denmark)
- National Agricultural Research Foundation (Greece)
- Swiss Federal Institute of Food Economics (Switzerland)
- Polish Academy of Sciences, Franciszek Gorski Institute of Plant Physiology (Poland)
- University of Belgrade, Faculty of Agriculture (Serbia and Montenegro)
- China Agricultural University (China)
- Chinese Academy of Agricultural Sciences (China)
- Netafim (Israel)
- Stazione Sperimentale per l'Industria delle Conserve Alimentari (Italy)
- Grundfos Management (Denmark)

Europeans are concerned about the food they eat, in particular its quality and safety. When asked what things come to mind when thinking about possible risks associated with food, respondents in a recent European survey came up with more than 20 key words. Answers ranged from chemicals, pesticides and toxic substances to bacteria, pollution and lack of sanitary controls – to mention just a few.

What is now being demonstrated by well over a dozen research institutions from all over the world, is that new irrigation patterns can not only increase water-use efficiency but also the quality of vegetable crops. Vegetables are a very important part of one's diet, and the negative consequences of not eating enough soon become apparent.

The modern consumer's strong interest in high-quality food coincides with clean, fresh water becoming a limited resource. However, recent innovations in the water-treatment and irrigation industry have shown potential for the use of low-quality water resources, such as rivers and other surface water, for the irrigation of vegetable crops – without jeopardising food safety and quality.

WATER AND FOOD UNDER STRESS

The use of clean, fresh water for crop irrigation is in fierce competition with the demand for household consumption, as well as with the need to protect the quality of aquatic ecosystems. At the same time, scientific and other stakeholder organisations are currently putting a strong focus on food quality and safety. New production standards and increasing competition in the world market requires the food industry to be highly productive and efficient.

NOVEL WATER IRRIGATION FOR BETTER FOOD

The SAFIR project has been developed in order to deal with the issues of better food quality and new irrigation systems. Three important objectives have been envisaged: new irrigation systems; quality and safety of fresh and processed food from 'farm to fork; and the feasibility and applications of the system to the food production sector, through the identification of the financial and economic aspects, and institutional and consumer barriers.

A Decision Support System is being developed for the on-farm management of water resources. A range of dissemination activities addressing national and EU authorities, commercial stakeholders from the food sector and farmers' organisations are also on the agenda. For the development of the new irrigation system, the project is taking into account findings from other EU-funded projects.

SAFIR is addressing an urgent need. It actively helps develop irrigation management and water-saving technology for the production of high-quality and safe vegetable crops by using low-quality water resources. This is an important contribution to the protection of our environment and to the safety and quality of the vegetables we eat.

Acronym: SAFIR

Full title: safe and high quality food production using low quality waters and improved irrigation systems and management

Contract n°: 023168

Website:
www.safir4EU.org

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EU contribution:
€ 4.7M

STRAINBARRIER

STRENGTHENING THE PRION CURTAIN

LIST OF PARTNERS

- Hebrew University of Israel (Israel)
- The Netherlands Cancer Institute (The Netherlands)
- Karolinska Institutet (Sweden)
- University of Santiago (Spain)
- IP (France)
- Instituto Nacional de Investigacion y Tecnologia Agraria y Alimentaria (Spain)
- MabGenics GmbH (Germany)
- French National Institute for Agricultural Research (France)
- National Veterinary Institute (Sweden)
- Department for Environment, Food and Rural Affairs (UK)

With the identification of 10 cases of vCJD (Variant Creutzfeld-Jakob Disease) in 1996, the potential risk of BSE as a cause of a human fatal disease has been a growing European concern.

The wellbeing of European citizens through better control of food production is the driving force behind the StrainBarrier project. It addresses the urgent need to perform fundamental TSE research into what defines a 'strain' and what causes the so-called 'species barriers'.

ABOUT STRAINS AND SPECIES BARRIERS

The existence of stable strains of prions differing in incubation times, clinical features and neuroanatomical PrPSc (abnormal form of the cellular Prion Protein, or PrPC) is disquieting. Some strains, including BSE, can traverse species barriers causing concerns in the EU.

The StrainBarrier consortium – consisting of partners with proven experimental and industrial achievements – are focusing on studying the molecular biology and comparative characteristics of common TSE strains as well as novel scrapie and BSE strains. The partners expect that the definitions of a 'strain' and what causes the so-called 'species barriers' can then be better established, making it possible for TSE detection and control strategies to be devised.

CONTROLLING THE FOOD CHAIN

The StrainBarrier project brings together European scientists with unique competencies and methodological skills in different fields of prion research. Each laboratory involved contributes its distinctive knowledge to this collaborative project. Together with the SME partner they are advancing the understanding of basic structural and molecular underpinnings that confer their distinct character and properties on PrPSc strains. The knowledge obtained is being used to assess and devise further research aimed at developing better diagnostic and control tools to detect, characterise and neutralise different PrPSc strains.

This project is developing a number of innovative technologies and materials that can be used in the future by other researchers in the field. These include new prion strains produced by passage of 'parental' strains to transgenic mice carrying PrP genes from different species. Other techniques are: PK-sen PrPSc from different strains; new strain-specific antibodies, generated by the project's industrial partner; and new cell lines susceptible to infection by a variety of PrPSc strains.

The basic knowledge acquired throughout the initial phases of the project has been used to develop strategies that can be used for a better diagnosis and control.

It is clear that StrainBarrier will contribute to better food quality in Europe, spurring our appetite for more research.

Acronym: STRAINBARRIER

Full title: understanding prion strains and species barriers and devising novel diagnostic approaches

Contract n°: 023183

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EU contribution:
€ 2.1M

TRANSCONTAINER

CONTAINING GMOs

LIST OF PARTNERS

- Plant Research International (The Netherlands)
- Wageningen (The Netherlands)
- Swedish University of Agricultural Sciences, Umeå (Sweden)
- Research Institute for Vegetable Crops, Istituto Sperimentale per l'Orticoltura ISO, RIVC (Italy)
- Vienna University, Campus Vienna Biocenter (Austria)
- University of Milan (Italy)
- National University of Ireland (Ireland)
- CNR-IGV (Italy)
- BVL (Germany)
- UOP (Bulgaria)
- SBC (The Netherlands)
- STT (Sweden)
- DLF (Denmark)

For consumers, the issue of genetically modified foods (GMOs) is about providing them with a choice. Either they can consume GMOs or they can opt for more conventional food types. Producers need to ensure that the transgenic varieties of such crops are neither crossed with, nor pose a threat to conventional crops. Whether through wind-borne pollination or through insect-derived cross-pollination, conventional crop integrity must be ensured by minimising the flow of genes from transgenic varieties.

Europe has allowed new and improved transgenic crops to be grown. This has led to increasing public and scientific concern regarding the potential and/or perceived risks that GMOs might pose for the environment. The World Resource Institute (WRI) has recently stated that the formulation of strategies to prevent transgenic material from moving into the genomes of related species should be of the highest priority. In both Europe and the United States, the issue of transgenic containment is becoming increasingly important.

FACILITATING CO-EXISTENCE

TransContainer is a European Commission-funded project, which is developing efficient and stable biological containment systems. It is facilitating the improvement and simplification of the rules for co-existence between the GM and the non-GM agriculture sectors in Europe.

The project's main objective is to develop stable, environmentally safe and commercially viable biological containment strategies for crops that are economically relevant to Europe. Over the last 15 years a number of strategies have been proposed for biological containment, most of which have been tested for effectiveness using model plant species. TransContainer aims to implement and test the most promising strategies, comprising three state-of-the-art biological containment technologies.

These technologies include chloroplast transformation systems, which were previously developed for crops such as tobacco and potato. The project is now extending the technique to oilseed, rape and sugar beet. Transcontainer also aims to implement controllable flowering technology on a large scale, to include important crops like sugar beet, red fescue, and perennial ryegrass, as well as trees such as birch and poplar. Transgenic transmission can also be controlled by way of pollen and controllable fertility by focussing on various methods of male sterility, which in addition to conferring pollen containment, also allow for the development of an effective hybrid breeding system.

THE TRACK OF INNOVATION

The biosafety of the biologically contained GM plants is assessed in accordance with the risk assessment guidance of the European Food Safety Authority (EFSA). Additional parameters for environmental risk assessment, based on containment technology, are being developed. The potential for these biologically contained GM plants to facilitate co-existence with non-genetically modified, sexually compatible plants is also being evaluated. In addition, the socioeconomic impacts of the biologically contained GM plants are being assessed using the 'Real Option Model'.

This model, which has been developed by the EU ECOGEN research project, estimates the 'maximum incremental social tolerable irreversible costs' for the usage of genetically modified plants. It takes into account reversible and irreversible costs and benefits for the private sector (technology providers, farmers, agro-food chain operators, occupational safety for farmers, investment in cultivation machinery, etc.) and the public sector (regulations, environment, biodiversity, etc.). With a view to biologically contained GM crops, the Real Option Model includes a second stage, the reversible and irreversible public and private costs and benefits related to compliance with co-existence requirements.

Containment can only be effective with the involvement of both stakeholders and the public. The projects results must be effectively communicated by enhancing the understanding and acceptance of biological containment strategies, and by increasing the potential of biologically contained crops for adoption by the European market. The results are disseminated via workshops, the project's website and through the production of a DVD.

Acronym: TRANSCONTAINER

Full title: developing efficient and stable biological containment systems for genetically modified plants.

Contract n°: 023018

website:
www.transcontainer.org

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EU contribution:
€ 4.1M

BRAFO

FOOD QUALITY BOILS TO THE SURFACE

LIST OF PARTNERS

- International Life Sciences Institute Europe (Belgium)
- Centre for Health and Economics, University of York (UK)
- Imperial College of Science, Technology and Medicine (UK)
- Procter and Gamble Service (Germany)
- Rijksinstituut voor Volksgezondheid en Milieu (The Netherlands)
- Technische Universität München (Germany)

What we eat is considered a pre-eminent element in healthy lifestyles. More than a means to ensure quality of life, good food has become increasingly important as a means to combat diseases and ailments.

The growing number of instances in which food safety has been questioned of late has given rise to the issue of measuring food quality. Standardising a means to do so remains imperative as both the industry and consumers alike have a vested interest in ensuring that available products meet safety standards and protect consumer health.

A MEASUREMENT FOR SUCCESS

Safety, however is not simply about food. It is about the entire food chain, 'from farm-to-fork', and thus requires a broad variety of specialists. Taking expertise from across Europe and further afield, BRAFO includes professionals from different backgrounds.

Using a risk/benefit analysis review and QALY- or DALY-like methodology, whilst taking a holistic approach, BRAFO investigates hot topics such as natural foods, foodstuffs used, dietary intervention and heat-processed compounds. 'Fork-to-farm' considerations are brought on board to deliberate what should be focused upon, i.e. how it was produced, under what conditions, what the storage and delivery facilities are, etc.

Furthermore, BRAFO will provide definite, all-inclusive and scientifically proven ways of understanding what the nutritional requirements are for individuals, and ultimately, ensuring populations live longer, healthier and disease-free lives.

BARGAIN OFFERS

Part of the project offers organised workshops to disseminate the results and inform participants of future developments, such as the planned publications, a methodological review and subsequent proposed framework.

Educating consumers, stakeholders and other interested parties is of vital importance. In many ways, it is a strong measurement of the project's perceived success. Providing SMEs with the opportunity to review and comment on the work is a key factor, as SMEs are considered an important link in both quality food production and in bolstering local and regional markets.

FOOD FOR THOUGHT

A website is another tool used to disseminate information from the project. A literature review provides a detailed account of how the foods analysed fared against the criteria they were set against.

BRAFO facilitates better interaction between those involved in like-minded pursuits within the scientific, commercial and consumer communities. This results in better quality food and a reduction of risk factors.

Becoming what we eat, therefore, is not so much a matter of being aware of the food we consume, but more dependent on making the food we eat more becoming to us.

Acronym: BRAFO

Full title: a specific support action to investigate the risk-benefit analysis for foods

Contract n°: 031731

EC Scientific Officers:
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EU contribution:
€ 642,866

DIVERSEEDS

FOOD SAFETY MEANS PROTECTING GENETIC RESOURCES

LIST OF PARTNERS

- International Dialogue and Conflict Management (Austria)
- University of Natural Resources and Applied Life
- Sciences Vienna (Austria)
- University of Birmingham, School of Biosciences (UK)
- University of Kassel (Germany)
- Israeli Gene Bank for Agricultural Crops, Volcani Center (Israel)
- Institute of Botany, Chinese Academy of Sciences (China)
- Chinese Academy of Agricultural Sciences (China)
- Khon Kaen University (Thailand)
- Hanoi Agricultural University (Vietnam)
- Bioversity / International Plant Genetic Resource Institut (International Organisation)

Today, the diversity of the earth's plant life is under threat as an increasing number of species are added to the endangered list. In agriculture, the widespread adoption of a few improved crop varieties has narrowed the genetic base of important food crops and led to the disappearance of hundreds of local varieties. As the earth's population is predicted to double or even triple before it stabilises late in this century, a huge increase in food production will be required. Conserving and using plant genetic diversity is thus vital in meeting the world's future development needs.

The centres of origin of important food crops, called Vavilov centres, are considered to be crucial sources of genetic diversity for crop-breeding programmes. While the importance of genetic resources for global food safety has grown considerably, the centres of origin will continue to remain mostly in developing countries. It is necessary to link European researchers with scientists from those parts of the world who would otherwise have limited resources for exchanging their work. The DIVERSEEDS project will open European Research networks to Asian scientists working in centres of origin, providing an important contribution to global food security.

DIVERSITY IN ACTION

Of the 7000 plant species used worldwide in food and agriculture, only 30 crops 'feed the world'. These are the crops that provide 95 percent of global plant-derived calories and proteins. For example, wheat, rice and maize alone provide more than half of the global dietary intake. Taking into account the importance of relatively few crops for global food security, it is particularly important that the diversity within these major crops is conserved effectively. They should also be widely available and managed wisely.

At subregional level, however, a greater number of crops are becoming significant. Beans and bananas, for instance, emerge as very important staples in certain subregions. These food crops, as well as many others such as lentils, cowpeas, yams, groundnuts and peas, are dietary staples for millions of the world's poorest people. Nevertheless, they receive relatively little development and research attention. This problem needs to be addressed.

In order to conserve and take advantage of plant genetic diversity, an extensive information system is essential. Within the EU, effective exchange information networks in the areas of Plant Breeding Research and Crop Wild Relatives already exist. However, communication between Europe and the International Cooperation (INCO) countries, such as those in Asia, is still rather scant. DIVERSEEDS is establishing a communication platform that makes it possible for European researchers and their Asian counterparts to exchange the results of their research. They are also able to discuss scientific and socioeconomic problems, look for joint solutions to prevent genetic erosion and stimulate knowledge and technology transfer.

WORKING TOGETHER FOR SUSTAINABILITY

The consortium is jointly producing a list of recommendations and strategies to improve the sustainable use of plant genetic resources, especially in centres of origin. These recommendations will be disseminated to researchers, policymakers, farmers and the general public. DIVERSEEDS has significant and overriding synergies with the Food and Agriculture Organisation's International Treaty on Plant Genetic Resources. The project is putting special emphasis on assisting in the implementation of the treaty, and is contributing to overcoming any gaps.

DIVERSEEDS takes into account potential future developments, such as climate change and its consequences for genetic reserves. The impact of novel forms of biotechnology — such as "synthetic biology" —on conservation strategies of genetic diversity in food crops will also be dealt with. DIVERSEEDS is working towards its overall goal of addressing the issue of sustainable use and conservation of genetic diversity in food crops, by cooperating closely with partners from Asia to ensure food security for generations to come.

diverseeds

Acronym: DIVERSEEDS

Full title: networking on conservation and use of plant genetic resources in Europe and Asia

Contract n°: 031317

Website:
www.diverseeds.eu

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EU contribution:
€ 581,310

ETNA

CREATING OPPORTUNITIES FOR A NEW GENERATION OF EUROPEANS

LIST OF PARTNERS
The first summer school (2006) was organized by the PlantMetaNet member institutions.

- Max Planck Institute of Molecular Plant Physiology (Potsdam-Golm, Germany)
- University of Potsdam (Germany)
- Leibniz Institute for Plant Biochemistry (Halle, Germany)
- Leibniz Institute of Plant Genetics and Crop Plant Research (Gatersleben, Germany)
- Max Planck Institute for Chemical Ecology (Jena, Germany)

Europe is striving to become a world leader in cutting edge science and technology. As part of its commitment to the future, it is bringing together young scientists from across the EU and a number of non-EU countries, as part of the ETNA project. The fundamental idea of ETNA is to build up a network of plant genome research and bioinformatics all over Europe, including third countries. The network that will be fostered through the ETNA objectives will provide continuous interaction among scientists, research organisations and research programmes.

One of the key deliverables of the project is a yearly summer school event with particular emphasis on the training of young researchers. By pursuing the training aspect, the exchange of ideas and the creation of an active and living network, the ETNA summer school is of great benefit to the bioinformatics and plant genome research community and thus of great value to all relevant stakeholders.

BRINGING TOGETHER YOUNG SCIENTISTS

The main emphasis of ETNA training courses is on the middle- and eastern European countries and their research communities. The selection committee wishes to include young scientists in an effort to nurture researchers that are considered to be at the onset of the careers. The summer course is entitled "European Training and Networking Activity in Plant Genomics and Bioinformatics" and it is as much about scientific training as it is about the creation of a Europe-wide network of scientists in the field of plant genomics. Both aspects are considered extremely important, if European research is willing to remain innovative and groundbreaking in all fields over the long term. The importance that is placed on the younger generation of scientists is crucial towards this goal.

ORGANISING THE SUMMER SCHOOL

The summer course aims to combine the latest theoretical advancements with extensive practical classes. It is considered a valuable tool towards the creation of a network of plant genome researchers and bio computer scientists. An annual brochure containing lecture notes and experimental protocols is produced to maximise the knowledge transfer to a wider group of interested parties. The summer school, which includes leading research institutions and universities, aims to incorporate researchers from across the continent and in particular from middle- and eastern European countries, which appear not to be fully assimilated in the European research effort. Furthermore, the creation of European networks in this field is set to overcome obstacles in the overall cooperation of scientists in Europe, which often hamper further knowledge exchange and innovation. ETNA forms part of the training initiatives supported by ERA-Net Plant Genomics, a network of research funding organisations working on the development of national and regional research programmes in the area of plant genomics. By supporting young scientists and effectively disseminating the very latest research information, the ETNA project helps to progress both Europe's science base and its economy.

Acronym: ETNA

Full title: European training and networking activity in plant genomics and bioinformatics 2006 - 2008

Contract n°: 031740

Website:
www.eu-summer-school.org

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EU contribution:
€ 235,000

EUROLATSEA

FISHING FOR VALUE

LIST OF PARTNERS

- TESEO - Technical Support for European Organisations (Belgium)
- GAIA - Asociación de Industrias País Vasco (Spain)
- Hidrocultivos (Chile)
- CENAIM - Centro Nacional de Acuicultura e Investigaciones Marinas (Ecuador)
- Fundación AZTI (Spain)
- Centro Tecnológico Valparaíso (Chile)
- DIFRES-Danish Institute for Fisheries Research (Denmark)
- Università degli Studi di Firenze (Italy)
- Camera Nacional de Acuacultura de Ecuador (Ecuador)

Latin America is becoming a real force in aquaculture, supplying international markets with products like shrimp, tilapia, salmon, mussels, abalone and oysters. Three countries in the region, Chile, Brazil and Mexico, are now among the top ten in terms of greatest increase in culture production, although Asia still remains the largest aquaculture producer in the world.

As a major exporter of seafood products, Latin America plays a key role in the seafood value chain. The export trend to the EU continues to increase steadily in most cases. However, if Latin American countries wish to maintain or increase their exports of seafood products to the EU, they must comply with a number of European standards, rules and procedures. Strict policies on food quality, traceability and safety throughout the production, transformation and distribution chains need to be upheld.

SUSTAINING SEAFOOD VALUES

Technological developments and innovative changes in fishing must ensure that certain practices can be sustained. Besides concerns related to food quality and safety, the environment is under great stress. Particular fishing techniques, processing and transformation chains and transport modes may have a serious impact on the environment. Certain practices might even have undesirable effects on unrelated sectors such as tourism, hygiene and health, or compromise the safety of products we buy in our supermarkets every day.

So far, the Latin American aquaculture, capture, processing and distribution industries have had limited exposure to scientific research institutions and experienced poor uptake of technological innovation. The EUROLATSEA project has tremendous potential for helping improve the quality of seafood processing in the Latin American region, by ensuring better communication between producers and research institutions and improved exposure to technological innovation.

HELP FOR THE LATIN AMERICAN SEAFOOD INDUSTRY

EUROLATSEA supports access to research and development (R&D) activities and new technologies for organisations within the Latin American seafood industry. This includes those involved in capture, aquaculture, processing and distribution. It provides scientific and technological advice to companies, including small and medium-sized enterprises (SMEs), and research centres on the basis of careful analysis of their innovation needs in the traceability of seafood, in the improvement of quality of exports, and the safeguarding of consumer health.

The project directly involves five research organisations from Chile, Denmark, Ecuador, Italy and Spain. It combines the expertise of scientific institutions with that of business support organisations (industry associations and companies from Europe and Latin America), in charge of contacting, informing and profiling organisations likely to be assisted by the project in different countries. Three of the nine project partners form part of the ERMES consortium (European Research for Mediterranean Seafood), another Food Quality & Safety initiative.

Scientific advice — provided through a series of workshops, one-to-one sessions and follow-ups — helps organisations in need of research to find the most appropriate research institution working on the issue in question and/or to set up cooperation with a particular initiative under Framework Programmes 6 and 7. Organisations requiring technology transfer are assisted by EUROLATSEA specialists to upgrade their technological capacity.

The expected results of this Specific Support Action are to provide organisations from the Latin American region working with European companies and exporting to Europe, with a wide set of scientific services. Meeting their innovation and technological needs through vigorous European-Latin American cooperation in research will contribute to high quality, safe, economically viable and sustainable seafood production.

Acronym: EUROLATSEA

Full title: European research for the Latin American seafood industry

Contract n°: 031766

Website:
www.eu-summer-school.org

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EU contribution:
€ 600,000

FORALLVENT

TO CURE AND PREVENT

LIST OF PARTNERS

- University of Munich (Germany)
- University of Basel (Switzerland)
- Children's Hospital Schwarzach-Salzburg (Austria)
- National Public Health Institute (Finland)
- University of Franche Comté (France)
- University of Ulm (Germany)
- Leiden University Medical Centre (The Netherlands)
- University of Natural Resources & Applied Life Sciences (Austria)
- Moorepark Food Research Centre (Ireland)
- Wroclaw Medical University (Poland)
- Ecos Communication (Switzerland)

According to the European Federation of Allergy and Airway Diseases Patients Association (EFA), there are over 100 million asthma, allergy and chronic obstructive pulmonary disease patients in Europe today. Since their numbers continue to increase, there is an urgent need for new prevention and healing strategies. The FORALLVENT project has been set up to bridge the gap between these two goals.

The prevalence of asthma and allergies across Europe is very high, causing huge social problems and enormous medical costs. Current therapies may be effective in controlling symptoms in most patients, but no curative or preventive approach has yet been found. There is an urgent need for novel ideas in the field of allergic diseases prevention. To this end, the FORALLVENT project creates a platform for the development of strategies to bridge the gap between science and the practical application of its results.

GLOBAL CONCERN

Children with asthma have a lower standard of physical and social activities than healthy children. Individuals who develop occupational asthma are more likely to lose their jobs within five years of the start of symptoms. Families of children with allergies face a significant economic burden as specific infant and toddler diets are expensive and difficult to implement, and significant loss of school and working days occur. It becomes more and more obvious that allergic diseases have a considerable impact on health and quality of life – with consequential costs in Europe and globally.

The advancement of both personalised and preventive medicine based on genetic predisposition and drug treatments is necessary. But this goal can only be achieved through innovative research strategies. Public research laboratories and institutions of higher education must interact with enterprise-based research and other private bodies. European research efforts have to focus on the new prospects offered by multidisciplinary research. However, excellence in the science base is not enough; it is essential to have the capacity to translate knowledge into new products, processes and services, that in turn, generate benefits for society.

Most scientists in allergy research - be it clinical, epidemiological or basic science - have had little contact with people responsible for product development in SMEs or even large companies. As a result, awareness of those involved in food manufacturing and the creation of new food processing chains has been minimal. Furthermore, product developers and food manufacturers have not always been informed about new concepts and findings relating to the origins of allergic diseases. Cooperation between researchers, scientists and product developers is key to the emergence of new ideas and innovative approaches.

EUROPEAN METHOD

FORALLVENT exploits and synthesises knowledge from different disciplines and from experience gained in various experimental and epidemiological studies in Europe. The project enables an interdisciplinary expert group to brainstorm on the most promising innovative strategies for the development of novel preventive and therapeutic approaches. An existing birth cohort (a group of children followed prospectively from birth onwards) is maintained to evaluate the allergy protective substances by testing generated hypotheses *in vitro* and *in vivo*. Findings are disseminated to all stakeholders, including potential partners in industry, trade associations, interest groups, patient organisations, policy-making bodies, as well as the general public.
Overall, minimising the communication gap between science and industry has a tremendous impact on combating the allergy epidemic of our times.

Acronym: FORALLVENT

Full title: forum for allergy prevention

Contract n°: 031708

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EU contribution:
€ 671,000

INPLISTA

HELPING SMEs NAVIGATE IN A SEA OF REQUIREMENTS

LIST OF PARTNERS

- LVA Lebensmittelversuchsanstalt (Austria)
- TTZ Bio Nord (Germany)
- ISA Head Office (The Netherlands)
- C & C Hungary (Hungary)
- Wageningen UR, Agrotechnology & Food Innovations (The Netherlands)
- IRTA Monells (Spain)
- Central Science Laboratories (UK)
- AFRC, The National Food Centre (Ireland)
- PRODUKTIVNOST, poslovodno svetovanje, Samo Reja (Slovenia)
- ETAT (Greece)
- Universitatea de Stiinte Agricole si Medicina Veterinara (Romania)
- Center of Technology Transfer (Poland)
- Institute of Agricultural and Food Information (Czech Republic)
- CSQA Certificazioni (Italy)
- SIK Swedish Institute for Food and Biotechnology (Sweden)
- Matforsk (Norway)

The European food and drink industry is the largest manufacturing sector in the EU, accounting for a 13.6% share of the total turnover in the EU manufacturing sector. In addition to being larger than the automobile, chemical, machinery or equipment sectors, this SME-dominated industry strives to maintain very high quality standards.

Due to the potential consequences on public health of product failures, production hygiene and quality management are strictly regulated. The labyrinth of modulation may prove too intimidating for many SMEs to deal with or negotiate their way through. The INPLISTA action helps SMEs navigate in this regulated environment.

SURVIVING IN A COMPLEX ENVIRONMENT

Historically, the food industry has always been subjected to a constant flow of new regulations that are put into place to guarantee that the highest levels of excellence are maintained.

The main objective of INPLISTA is to prepare, compare, edit and explain the most important international food standards and legislation, in order to assist SMEs and enable them to survive in an ever more competitive market. In so doing, SMEs may gain better insight into the European market, enabling them to build up export connections for the future.

In short, INPLISTA is an information platform targeted at the specific needs of SME food companies. This project aims to improve and stabilise the position of small players on the European market, but also to assist them in keeping up to date with current standards and requirements.

TO NETWORK IS TO IMPROVE

The participants in the project will benefit from an extensive knowledge exchange in order to establish a common European interpretation of international food standards. This has become all the more important since the EU has grown to 25 countries, with new economies heavily dependent on the agricultural sector. As a matter of fact, the new Member States (NMS) are still in the process of digesting a huge number of food-related regulations. Through INPLISTA, the food producers of NMS will improve their ability to keep up with their competitors – notably in the western European countries, but also globally.

The conferences and working meetings undertaken during the course of the INPLISTA project will serve as national and European platforms for communication, where experts can share their know-how, thus spreading information and increasing the competence of the stakeholders involved. The information platform combined with networking strategies can also result in the development of a common basis for future standardisation and harmonisation efforts.

An INPLISTA website provides information material, topical publications, newsletters, FAQs and a contact board. This tool will help disseminate and easily update information for SMEs.

There's a saying that bugs are found during requirement analysis and simulation, or if not, then during integration testing, or if not, in live testing by the users. INPLISTA definitely wants to avoid the last possibility occurring, and that must be good news for all of us.

Acronym: INPLISTA

Full title: information platform on international standards for SMEs in the food sector

Contract n°: 518696

Project co-ordinator:
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EU contribution:
€ 549,500

MEDA GO TO EUROPE

INTEGRATING MEDITERRANEAN INNOVATION POTENTIAL

LIST OF PARTNERS

- Association de Coordination Technique pour l'Industrie Agroalimentaire (France)
- Alma Consulting Group (France)
- Agenzia per la Promozione della Ricerca Europea (Italy)
- The Brussels Enterprise Agency (Belgium)
- AINIA Centro Tecnológico (Spain)
- Univerza na Primoskem, Znanstvenoraziskovalno sredisce Koper (Slovenia)
- Institute of Food Bioresources (Romania)
- The Scientific and Technological Research Council of Turkey (Turkey)
- Agence Nationale pour la Promotion de la Petite et Moyenne Entreprise (Morocco)
- Centre Technique pour l'Industrie Agroalimentaire (Morocco)
- Partners Agroconsulting (Tunisia)
- Centre Technique Agroalimentaire (Tunisia)
- Food Technology Research Institute (Egypt)
- Food Technology Centre (Egypt)
- VITECH Consulting (Lebanon)
- University of Science and Technology Mohamed Boudiaf Oran (Algeria)

In a world now dominated by globalisation, Mediterranean countries are potentially important commercial partners for the EU. This is especially true with regard to food, agriculture and biotechnology research. Drawing on experiences gained from the FP6 framework programme, MEDA GO TO EUROPE aims to achieve a better, faster and more balanced implementation of the FP7 framework programme, which includes the participation of Mediterranean nations. Therefore, the project brings together partners from Morocco, Tunisia, Egypt, Lebanon and Algeria, as well as European participants from France, Italy, Belgium, Slovenia, Romania and Turkey.

INCREASING MEDITERRANEAN PARTICIPATION…

MEDA GO TO EUROPE intends to reinforce the active collaboration between European and Mediterranean countries, favouring commercial and scientific links in the area of food, agriculture and biotechnology. The aim is to increase the number of organisations involved as partners in FP7 projects, as well as increasing the quantity and quality of research projects proposed by Mediterranean partners that are not part of MEDA GO TO EUROPE, but which benefit from the support of its participants. A further aim is to encourage more Mediterranean SMEs to take part in different kinds of food-related projects.

By taking advantage of all the abilities and networking potential of its participants, the project maps organisations interested in FP7 and supports the matchmaking process between them and their European counterparts. It assists those interested in European Community funded projects during the preparation of proposals and provides tailor-made training for researchers, as well as technical and service centres.

Networking with potential partners is crucial to the successful integration of SMEs in FP7, which places them at the centre of its priorities. MEDA GO TO EUROPE endeavours to promote SME participation in EU projects by identifying their specific needs and supporting them in submitting proposals, joining ongoing projects or projects in preparation.

MEDA GO TO EUROPE pays special attention to the individual collaboration needs of Mediterranean countries. The planned dissemination policy at the end of the project will highlight the fact that international cooperation can have significant political, commercial and scientific advantages for both EU and non-EU Mediterranean countries.

…FOR THE BENEFIT OF FUTURE RELATIONSHIPS

The reasoning behind an increased participation of non-EU Mediterranean countries in EU-funded projects is to improve the health and well-being of consumers. This includes access for all people at all times to sufficient good quality food, allowing them to lead active lives. It is important to reinforce European links with Mediterranean countries, as their geographical proximity favours commercial relationships in the food, agriculture and biotechnology sectors.

In a wider EU policy context, MEDA GO TO EUROPE contributes to the implementation of the Barcelona Process, which creates the regional framework for political, social and economical relationships between the EU and its Mediterranean neighbours. In the same fashion, this Specific Support Action also has benefits for the EU's Neighbouring Policy, which is aimed at establishing privileged relations between bordering countries, based on common values such as the market economy and democracy.

Acronym: MEDA GO TO EUROPE

Full title: enhancing the participation of Mediterranean countries in the area of food, agriculture and biotechnology in Framework Programme 7

Contract n°: 031713

Project co-ordinator:
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EU contribution:
€ 725,000

PETER

MEAT AND 2 VEG AT STAKE

LIST OF PARTNERS

- Chambre de Commerce et d'Industrie du Gers (France)
- Institut National de la Recherche Agronomique (INRA) (France)
- AIM UK (UK)
- Central Science Laboratory (UK)
- Centre Wallon de Recherches Agronomiques (Belgium)
- University of Parma (Italy)
- Danish Institute for Fisheries Research (Denmark)
- Centre de Coopération Internationale en Recherche Agronomique pour le Développement (France)

The EU took the initiative and launched a new Specific Support Action, which analyses problems such as the BSE crisis and establishes how existing research from the EU's €100 million investment in eight major traceability projects relates to the analysis.

The PETER (Promoting European Traceability Excellence & Research) project has brought together the coordinators of these eight major FP5 and FP6 projects. They are able to offer the EU and other major parties information regarding existing hazard analysis and traceability research projects, as well as results. According to many experts, these results are fragmented, duplicated or sometimes incoherent.

GENERATING AND…

PETER offers governments, producers and consumers scientifically-based information for advancing the debate on hazard analysis, traceability and incident management. It brings prominence to previous and current work whilst offering a greatly needed platform for discussion and debate. Through targeted stakeholder activities, relating to the involvement of hundreds of projects and partners, and by a planned level of dissemination of the information, there are high expectations for the success of the project.

Eight research groups from five EU countries are collaborating on this project. For them, two important issues determined the area of focus. Firstly, although the Member States are required to adhere to EC Food Law Regulation 178/02, PETER has already discovered that implementation, especially for SMEs, has been problematic due to the impractical nature of the regulation. Secondly, the team believes that the key to its success is in carrying out of a rigorous analysis of existing problems and an all-inclusive review into the current research situation within the area of traceability, to see how they align.

…SHARING INFORMATION

PETER comes from the EU's 5th & 6th Framework Programmes, created to consolidate and disseminate combined intra-European expertise to key players involved in the manufacture and transportation of food products. PETER offers SMEs the know-how for gaining greater access to and success in the global market economy. Moreover, an international forum is being established where major industry players can pool their resources in an environment that is conducive to further learning and understanding. This exchange of knowledge, experience and ideas, within the area of traceability, is proving fruitful for everyone involved, thus increasing consumer confidence, and in turn stimulating future market conditions.

The first part of this two-year project was a three-day conference which reported back on its meta-programme of research. The conference looked at the needs of consumers and SMEs so that they can be taken into account as PETER progresses through its stages of research. The dissemination of the project's findings is supported by the website, the creation of an e-brochure, and the setting up of workshops and conferences around the world.

Acronym: PETER

Full title: promoting European traceability excellence & research

Contract n°: 031717

Website:
www.eu-peter.org

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EU contribution:
€ 679,635

TOWARDS

GLOBAL COOPERATION BEARS FRUIT

LIST OF PARTNERS

- Instituto Andaluz de Tecnología (Spain)
- Eddleston Innovation (UK)
- Thessaloniki Technology Park (Greece)
- University of Technology and Agriculture (Poland)
- Lietuvos Inovaciju Centras (Lithuania)
- Technology Development and Innovation (Bulgaria)
- Agritec, Research, Breeding & Services (Czech Republic)

Traditions are strong in agriculture, since methods of farming have been handed down through the ages and are slow to change in less developed nations. In many cases, this often results in a non-harmonised understanding of food quality and safety, which impedes competitiveness and growth.

Experts in this field know that changes must be implemented. International cooperation and innovation fuel growth and intensify the food sector's competitiveness in Europe. Without bringing about the necessary changes that will remove obstacles to agricultural development, European interests will not have the competitive edge.

But change is in the air. Proof of this is the TOWARDS project, which aims to research, support and promote the migration of networks and associations from a producer and regional focus towards a market and European direction. In a nutshell, the objective of its fork-to-farm approach is to get everyone playing on the same field.

Eyes are on the creation of an Agro-food Web Platform and a Migration toolkit, which intends to bring together intelligence and business information for agri-food networks. TOWARDS is predominantly a call for a market/client-oriented approach, aimed at generating awareness and improving dissemination of knowledge at the national, regional and European level.

HEARING THE VOICE

European consumers are characteristically vocal about their lifestyles, while health and dietary habits are high on their lists of concerns. Inevitably, the food sectors in the EU Member States often fail to see eye-to-eye as regards the growth of demand-led innovation by major food distributors and retailers. The EU must also deal with heightened challenges resulting from lower cost-based suppliers and foreign competitors.

Accordingly, TOWARDS is conducting research into what adjustments should be made in the organisational chart so that these challenges are met and best practices can emerge. Experts, such as supply chain analysts and professional advisers, are on hand to provide key information and assistance for removing any obstacles bogging down SMEs and their networks. Retailers, distributors and regional innovation system players are helping assess the migration plans of SME agri-food networks.

BUCKING THE SYSTEM

Modifying the existing network of structures, resources and people, and accelerating innovation can prove taxing. TOWARDS' innovation framework faces the task of altering habits already entrenched in the system. However, project members are keen to implement the changes and achieve the necessary results. The project helps 36 target agro-food SME networks to adopt the changes.

A web technology platform is being created by TOWARDS, as it aims to systematically re-orient producer networks into market-focused networks. This essentially fuels innovative ideas and stimulates cooperation and knowledge exchange amongst different markets. The project also carries out its work through cooperation among EU Member States, Candidate Countries and sector European networks.

Benchmarking is performed through a number of innovative agro-food sector networks in Europe. This puts into practice the migration plans for those in need of better direction towards the fork-to-farm approach. A professionally managed and business-oriented project, TOWARDS reinforces supply chain capacities across Europe and improves the health and well-being of consumers.

Acronym: TOWARDS

Full title: migrating networks from a producer towards a market orientation within the agro-food sector

Contract n°: 518702

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EU contribution:
€ 493,000

BIOTRACER

TRACKING MICROBES FOR IMPROVED FOOD SAFETY

LIST OF PARTNERS

- Danish Institute for Food and Veterinary Research (Denmark)
- University of Veterinary Medicine Vienna (Austria)
- Royal Veterinary and Agricultural University, (Denmark)
- University of Lund (Sweden)
- Instituto Valenciano de Investigaciones Agrarias (Spain)
- University of Ljubljana (Slovania)
- Free University of Berlin (Germany)
- University of Bern (Switzerland)
- University of Regensburg (Germany)
- Technical University of Munich (Germany)
- University of Helsinki (Finland)
- Institute of Chemical Technology Prague (Czech Republic)
- University of Manchester (UK)
- Agricultural University of Athens (Greece)
- Wageningen University and Research Centre (The Netherlands)
- London School of Hygiene and Tropical Medicine (UK)
- University of Galati (Romania)
- Prevas (Sweden)
- Thomsen Bioscience (Denmark)
- SmartGene Services (Switzerland)
- Check-Points (The Netherlands)
- HUGIN Expert (Denmark)
- Glantreo (Ireland)
- Moorepark Food Research Centre Research (Ireland)
- National Veterinary Institute (Sweden)
- Agence Francaise de Sécurité Sanitaire des Aliments (France)
- Istituto Superiore di Sanità (Italy)
- Bundesinstitut für Risikobewertung (Germany)
- RIKILT-Institute of Food Safety (The Netherlands)
- National Institute for Public Health and the Environment (The Netherlands)
- Food Research Institute (Slovakia)
- Lithuanian Veterinary Academy (Lithuania)
- Institute of Food Research (UK)
- Norwegian Food Research Institute (Norway)
- Embrapa Food Technology (Brazil)
- Gadjah Mada University (Indonesia)
- The Russian Academy of Sciences (Russia)
- Danish Meat Research Institute (Denmark)
- Statens Serum Institute (Denmark)
- Nestec (Switzerland)
- VION Food Group (The Netherlands)
- Svenska Foder (Sweden)
- Centre National Interprofessionel de l'Economie Laitière (France)
- Nutrition Sciences (Belgium)
- COOP ITALIA (Italy)
- Joint Stock Company Agaras (Lithuania)

Food contamination represents a threat for consumer protection. To minimise the effects of a possible contamination incident, the General Food Law of January 1st 2006 (178/2002) introduced , for the first time, a responsibility for traceability of all products for food and feed producers (Section 4, Articles 18-20). BIOTRACER is improving the bio-traceability of unintended micro-organisms and their substances in food and feed chains, as well as in bottled water, to strengthen further the level of consumer protection.

UNDERSTANDING THE THREAT

BIOTRACER is developing recommendations for controlling the risk of any possibility of food contamination with microbes, through the integration of novel genomic and metabolimic data, resulting in a better understanding of the physiology of contaminating micro-organisms.

Current methods for microbial analyses, including genotyping, are time-consuming and do not provide all the necessary information for assessing the potential virulence of food borne pathogens. The BIOTRACER team have taken up this challenge and are creating analytical models in order to understand the mechanisms of contamination. They are also developing biomarkers that indicate the quantity of pathogenic microbes across the food and feed chains. The project is studying the main micro-organisms responsible for contaminating food, which represent a potential risk for consumer's health. Examples include *Salmonella* in pigs, *Listeria* in dairy products, *Campylobacter* in chickens, toxins in feed, and other bacteria and viruses in bottled water.

BIOTRACER is identifying the most relevant contamination scenarios and critical points in the whole food chain, quantifying the likely impacts on food safety through various food chain models. For example, 'Virtual Contamination Scenarios', based on characteristics of agents and transmission vehicles, are being developed to facilitate recommendations for improved risk control in the case of bioterror attack.

CREATING AND EXPLOITING A NEW TRACER SYSTEM

A better understanding of the contamination threats helps the consortium to develop newer, faster and more reliable test systems, allowing operators to put into practice efficient tracing tools within their particular link of the food and feed chains.

BIOTRACER provides guidelines and scientific advice to European authorities and agencies but also helps industry to improve its compliance with the food sector's strict health and safety regulations. The project involves experts from European and INCO (International Cooperation) countries, since cooperation with non-EU food producing nations is vital for the importation of safe and high quality food into the EU.

A major midterm goal for the project is the establishment of a 'Virtual Traceability Institute', securing a sustainable RTD structure for traceability research. The project contributes to new standards by producing laboratory protocols such as quantitative tests, that can be incorporated into the European Commission Regulations for Microbial Criteria for Foods.

It is important to ensure that the project's results are widely disseminated. End-users will apply the developed methods and models, industry partners will extend their portfolios and quality procedures and control processes, and academic partners will improve their level of knowledge.

The major outcome of BIOTRACER will be the development of an efficient tracing system, making a major contribution to improving the consumer's well- being and to restoring trust in European agriculture and food sectors.

Acronym: BIOTRACER

Full title: improved bio-traceability of unintended micro-organisms and their substances in food and feed chains

Contract n°: 036272

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 11M

PROSAFEBEEF

SAFER BEEF FOR A HEALTH-CONSCIOUS EUROPE

LIST OF PARTNERS

- Teagasc - The Agriculture and Food Authority (Ireland)
- Institut National de la Recherche Agronomique (France)
- Institute of Grassland and Environmental Research (UK)
- Matforsk, The Norwegian Food Research Institute (Norway)
- Agricultural University of Athens (Greece)
- Association pour le Développement de l'Institut de la Viande (France)
- Ghent University (Belgium)
- University College Dublin (Ireland)
- University of Bristol (UK)
- Institute of Farm Animal Biology (Germany)
- Agricultural University of Poznan, Institute of Meat Technology (Poland)
- Aarhus School of Business (Denmark)
- Aristotle University of Thessaloniki (Greece)
- University of Veterinary Medicine (Austria)
- National Veterinary Research Institute (Poland)
- Danish Meat Research Institute (Denmark)
- University of Novi Sad (Serbia & Montenegro)
- Organización de Consumidores y Usuarios (Spain)
- RIKILT, Institute of Food Safety (The Netherlands)
- University College Cork (Ireland)
- Queen's University Belfast (UK)
- International Atomic Energy Agency (Austria)
- British Nutrition Foundation (UK)
- Institute of Agro-Food Research and Technology (Spain)
- Universidade Federal de São Paulo (Brazil)
- Universidade de São Paulo (Brazil)
- Macrobióticos (Brazil)
- Greifenfleisch (Germany)
- Ensors Abattoir Limited (UK)
- Celtic Pride Limited (UK)
- Union Nationale des Coopératives d'Elevage et d'Insémination Animale (France)
- Josef Strobel und Sohne (Austria)
- Apostolos Papadopoulos (Greece)
- Ecofarm Peloponessos (Greece)
- Furuseth Slakteri (Norway)
- Prima Jære (Norway)
- Institute of Environmental Science and Research (New Zealand)
- Co-operative Research Centre, Cattle and Beef Quality (Australia)
- University of Florida, Dept of Animal Science (USA)
- Prof. John Sofos (USA)
- USDA, Western Regional Research Centre (USA)
- Canadian Research Institute, University of Guelph (Canada)

Beef production within the EU region is an activity of major economic importance, valued at €75 billion. However, reforms to the Common Agricultural Policy, increased globalisation, reduced commodity prices and an increasingly sophisticated, health-conscious consumer are requiring the industry to produce beef and beef products that are convenient, traceable, nutritious and of consistent quality. Alongside these considerations, today's consumer demands assurances regarding food safety, which is of paramount importance given the serious impact of the beef related health scares during the 1990s. In order to boost consumer trust and invigorate the industry, the ProSafeBeef project is examining new ways of reducing contaminants in the beef chain from 'farm-to-fork' as well as enhancing quality, choice and diversity.

RISKY BUSINESS

The European beef sector, with more than 8 million tonnes produced annually, is particularly important for the positioning of the EU in the global meat market. In this context, the industry is subjected to very high consumer demands regarding beef safety and quality. Furthermore, European consumers have additional requirements; not only does beef have to be free of contaminants (chemical and microbial), but it also has to be nutritionally rich, tasty and available in different product lines. Failure to fulfil the consumers' wishes would have significant financial consequences for producers and meat distributors. There would also be a serious impact on rural communities, which often rely for the main part on beef production for their livelihoods and incomes.

MEAT REVOLUTION

The ProSafeBeef project brings together experts and small-to-medium sized enterprises (SMEs) from Europe, North America, Brazil, New Zealand and Australia, and analyses the various stages of beef production in order to optimise the process as a whole, and to make meat products safer and healthier for consumers. One example is the way in which it will take a risk-assessment based approach to the development and introduction of new approaches to controlling microbial contaminants by studying their prevalence, persistence and virulence in beef produced within or imported into the EU. The role of chemical contaminants is also studied. ProSafeBeef also focuses on the development of new practices and strategies with regard to animal feeding strategies, meat processing and packaging technologies, to yield diversification in meat products.

The project's results will be disseminated among participants to encourage further cooperation between SMEs, which play a crucial role in this sector of the industry. This will allow enterprises to work in closer cooperation in order to reinforce their position in the market and comply more effectively with consumer expectations. In the longer term, ProSafeBeef will help the industry meet the requirements of EU regulations on microbiological criteria for foodstuffs and hygiene. The achievement of the project's aims will result in a better quality product with a reduced risk of illness from meat consumption, improved consumer trust and a thriving beef industry.

Acronym: PROSAFEBEEF

Full title: improving the quality and safety of beef and beef products for the consumer in production and processing

Contract n°: 036241

Project co-ordinator:
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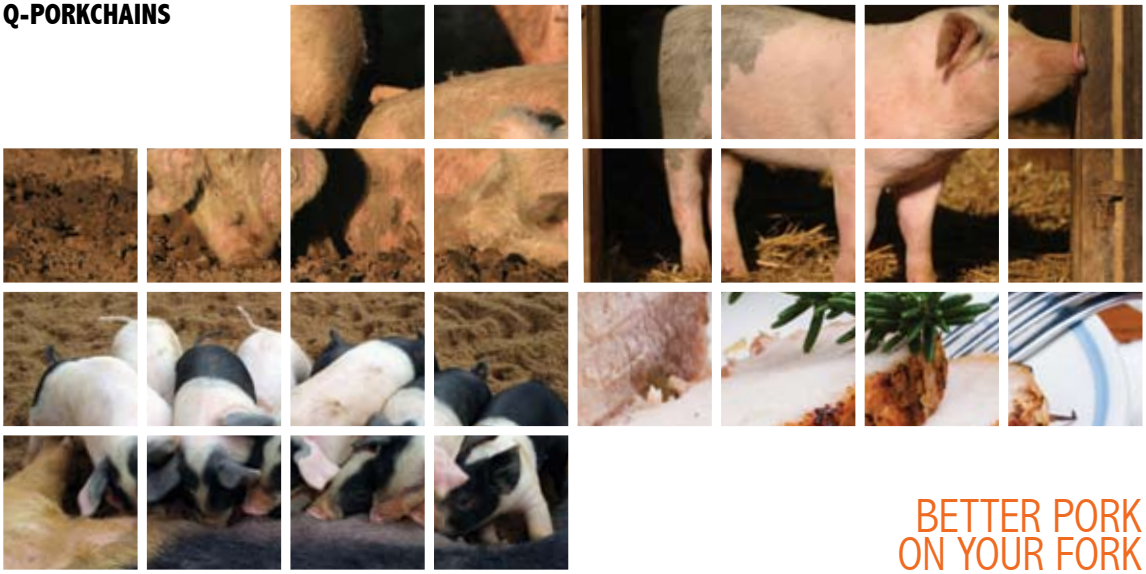
EU contribution:
€ 10.9M

Q-PORKCHAINS



BETTER PORK ON YOUR FORK

LIST OF PARTNERS

- University of Copenhagen (Denmark)
- MAPP Centre, Aarhus School of Business (Denmark)
- Wageningen University (The Netherlands)
- University of Bonn (Germany)
- Swedish University of Agricultural Sciences (Sweden)
- Agricultural University of Athens (Greece)
- Ghent University (Belgium)
- University of Newcastle (UK)
- Technical University of Lodz (Poland)
- Politechnic University of Madrid (Spain)
- Institut Polytechnique LaSalle Beauvais (France)
- University of Helsinki (Finland)
- Royal Veterinary College (UK)
- Polish Academy of Science (Poland)
- University College Dublin (Ireland)
- University of Naples (Italy)
- French National Institute for Agricultural Research (France)
- Institute for Food and Agricultural Research and Technology (Spain)
- University of Aarhus (Denmark)
- Ashtown Food Research Centre (Ireland)
- Norwegian Food Research Institute (Norway)
- ASG Veehouderij BV (The Netherlands)
- Danish Meat Research Institute (Denmark)
- Central Food Research Institute (Hungary)
- Agrotechnology & Food Sciences Group (The Netherlands)
- RIKILT - Institute of Food Safety (The Netherlands)
- Grenzüberschreitende Integrierte Qualitätssicherung (Germany)
- Agri Chain Competence Centre (The Netherlands)
- Zentralverband der Deutschen Schweineproduction (Germany)
- Association of Meat Processors in Bulgaria (Bulgaria)
- Institut de la Filière Porcine (France)
- Chambre Régionale d'Agriculture de Bretagne (France)
- The Danish Meat Trade College (Denmark)
- Danish Crown (Denmark)
- Vion Food Group (The Netherlands)
- Nutreco, Swine Research Centre (The Netherlands)
- Pigchamp Pro (Spain)
- PIC. (UK)
- Casademont (Spain)
- Esteban Espuña (Spain)
- Glon Group (France)
- Erzeugergemeinschaft Osnabrueck (Germany)
- France Hybrides (France)
- Chainfood (The Netherlands)
- Plato (Germany)
- Qualitype (Germany)
- r-biopharm (Germany)
- Nanjing Agricultural University (China)
- University of Pretoria (South Africa)
- Fundacao para Pesquisa e Desenvolvimento da Administracao, Contabilidade e Economia (Brazil)
- Institute of Animal Science/ Chinese Academy of Ag. Science (China)
- Kansas State University (USA)
- Scottish Agricultural College (UK)

Over 46% of all meat consumed in the EU is pork, with the figure surpassing 50% in some Member States. In fact, the EU produces over a fifth of the world's pork. The high demand has also increased consumer interest in where it comes from. This, in turn, has led to an interest in concepts such as sustainable and organic methods of farming. Q-PORKCHAINS is completely revitalising the pork industry by focusing its efforts on exploring the development potential of the industry, taking into consideration both the production and consumer point of view.

FROM FORK TO FARM

The pork industry is a highly competitive market with countries such as China and America eager to overtake the EU in terms of production. The total amount consumed in the EU makes it a lucrative market. It also means that quality and safety are of the utmost importance. The research conducted by Q-PORKCHAINS has a strong focus on innovation-related aspects that take into consideration consumer demands regarding the products and sustainability of the production system.

The 'fork-to-farm' methodology takes a holistic approach by including a multitude of disciplines that cuts across several research areas. This, in effect, brings together the latest advances in genomics and biology and combines it with a better understanding of consumer behaviour and socioeconomic factors.
This last objective of combining the demands of the consumer with those of industry is a complex process but one that needs tackling. By focusing on sustainability, the project is able to take into account the economic, social and environmental aspects in one research project. Q-PORKCHAINS evaluates the many perspectives in anticipation of a broad definition of sustainability in the future.

With SMEs representing a majority of business concerns in the EU, it was imperative that they formed a part of the research consortium. Therefore, five to ten partners are expected to be active participants during the lifetime of the project. In short, Q-Porkchains helps to elevate pork production and consumption while simultaneously improving the environment.

Acronym: Q-PORKCHAINS

Full title: improving the quality of pork and pork products for the consumer: development of innovative, integrated, and sustainable food production chains of high quality pork products matching consumer demands

Contract n°: 036245

website:
www.q-porkchains.org

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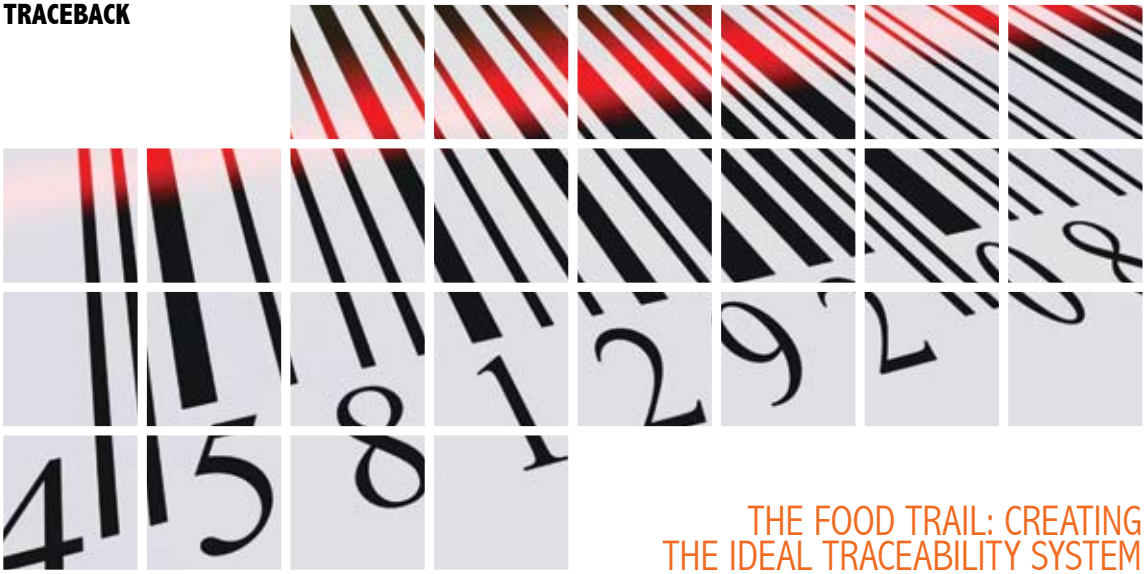
EU contribution:
€ 14.5M



THE FOOD TRAIL: CREATING THE IDEAL TRACEABILITY SYSTEM

LIST OF PARTNERS

- Tecnoalimenti (Italy)
- Asociaciòn de investigaciòn de la Industria Agroalimentaria (Spain)
- Atos Origin Sociedad anònima espanola (Spain)
- Engineering Ingegneria Informatica (Italy)
- University of Kent (UK)
- Institute of Logistics and Warehousing (Poland)
- Swedish University of Agricultural Sciences Faculty of Alnarp (Sweden)
- University of Parma (Italy)
- Combined European Management and Transportation (Italy)
- City University London, Centre for HCI Design (UK)
- Consiglio nazionale delle Ricerche, Istituto di Chimica del Riconoscimento Molecolare (Italy)
- CONSUM Sociedad Cooperativa Valenciana (Spain)
- Institut für Agrar und Stadtökologische Projecte an der Humboldt, Universität zu Berlin, Träger: A.S.P.e.V.(Germany)
- Max Plank Society for the Advancement of Science represented by the Max Plank Institute for Polymer Research (Germany)
- MTT Agrifood Research Finland (Finland)
- Teagasc Agriculture & Food Development Authority (Ireland)
- Selex Communications (Italy)
- SGS ICS Ibérica (Spain)
- Federalimentare (Italy)
- Akdeniz University, Economic Research Center on Mediterranean Countries (Turkey)
- Scuola Superiore ISUFI, eBusiness Management Section, University of Lecce (Italy)
- Centiv (Germany)
- NSCE (Egypt)
- KBS (France)
- Parmalat (Italy)
- Technobiochip (Italy)
- Transformaciones Agricolas de Badajoz (Spain)
- Regionalna Wielkopolska Izba Rolno - Przemysłowa (Poland)

Twenty-eight European organisations have joined forces to create and test a new food traceability system that would provide objective and reliable information along the entire food chain. By amalgamating emerging and existing technologies into a single framework, the TRACEBACK project aims to create the ideal system in which to establish an information link from a product's raw material stage to its eventual sale.

Not only does this herald improved health and safety standards for the consumer, it signals a practical and cost-effective model for industry players. The system will assist them to meet food regulation requirements and allow them to trace their product (and gauge its quality) along the chain of production, manufacturing, handling, transportation and distribution.

SERVICE-ORIENTED

The goal of the project is to establish an innovative traceability system through the implementation of microdevices based on microarrays and technologies embedded in a lab-on-a-chip. In order to ensure the product is widely accepted as a routine system by the industry, the TRACEBACK team have developed goals for the project with the pragmatic needs of stakeholders (covering the gamut of the food chain, from the producer to the retailer) in mind.

As such, a key driver is the development of an information management system compatible with existing technology – that is, without the burden of changing the technology currently operating in the field. This service-oriented infrastructure model is further supplemented by the aim to keep costs to a minimum.

Since traceability expenses normally account for between 1 and 2 percent of product costs, the project proposes to make use of inexpensive internet-based technology, and intends to continually assess the cost of the project's results as well as consider novel ways to use this system at its greatest potential. The TRACEBACK consortium is also committed to providing an extensive training programme to support food chain stakeholders during the final implementation phase.

ROAD TESTING

Along with the TRACEBACK participants themselves, small and medium-sized food enterprises will test the research results in two representative models: feed/dairy and tomato (both dominant chains of the agro-food sector). The project partners view pilot testing as a preliminary activity of exploitation; the participants will test the model and provide feedback and, once they are aware of the results, will be further recruited for their input from organisational and innovation perspectives.

The European agro-food industry is the largest manufacturing sector in Europe, transforming over 70 percent of the European Union's agricultural raw materials and supporting some 280 000 companies. As such, the absence of traceability procedures can have severe consequences. The TRACEBACK system will make it possible to prevent food chain crises (such as those evidenced in recent years), and allow the consumer to make more informed choices regarding the producers of the goods on their supermarket shelves. This, in turn, can significantly hinder the flow of inferior food and encourage quality and competitiveness throughout the European sector.

Acronym: TRACEBACK

Full title: integrated system for a reliable traceability of food supply chains

Contract n°: 036300

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 9.7M

ENDURE

SUSTAINABLE CROP PROTECTION

LIST OF PARTNERS

- Institut National de la Recherche Agronomique (France)
- Biologische Bundesanstalt für Land- und Forstwirtschaft (Germany)
- Rothamsted Research (UK)
- Centre de Coopération Internationale en Recherche Agronomique pour le Développement (France)
- Consiglio Nazionale delle Ricerche (Italy)
- Danish Institute of Agricultural Sciences (Denmark)
- Agroscope Swiss Federal Research Station (Switzerland)
- International Biocontrol Manufacturer's Association (France)
- INRA Transfert (France)
- Plant Breeding and Acclimatization Institute (Poland)
- Scuola Superiore Sant'Anna, University of Pisa (Italy)
- Szent Istvan University (Hungary)
- Universitat de Lleida (Spain)
- Plant Research International (The Netherlands)
- Danish Agricultural Advisory Service (Denmark)
- Association de Coordination Technique Agricole (France)
- Applied Plant Research B.V., (The Netherlands)
- Agricultural Economic Research Institute (The Netherlands)

European agriculture continues to be heavily reliant on pesticide use. Its effect on natural resources and its impact on human health have prompted the civil society, scientists and some stakeholders to question chemically-based crop protection. Moreover, researchers, advisers and farmers face increasingly higher levels of risk due to pesticide-resistant pest populations, exotic and emerging pests, secondary outbreaks, and vulnerable agro-ecosystems.

ENDURE paves the way for solutions in responding to the challenge of new sustainable crop protection and strategies, by reshaping European research and development on pesticide use in crops.

RESHUFFLING EUROPEAN RESEARCH EFFORTS

ENDURE creates a coordinated structure that takes advantage of alternative technologies, builds on advances in agricultural sciences, ecology, behaviour, genetics, economics and social sciences, and connects researchers to other stakeholders in extension, industry, policymaking and civil society. This multidisciplinary and cross-sector approach is designed to foster the development and implementation of strategies rationalising and reducing pesticide inputs as well as reducing risks.

The overarching goal of the project is to overcome the fragmentation of ideas and resources, as well as differences in approaches and methodologies within Europe, by fostering greater collaboration through joint activities. In doing so, ENDURE aims to create the foundations for a European entity that will lead the development and implementation of pest control strategies across the globe.

AMBITIOUS GOALS

ENDURE proposes to establish greater unity in the field by sharing knowledge and people, as well as pooling facilities, biological resources (such as reference strains of anthropods, weeds and plant pathogens, as well as DNA and RNA libraries) and equipment (such as experimental field sites and pest monitoring databases) through a joint crop protection research programme.

A virtual laboratory the European Pest Control Competence Centre has been created as a source of knowledge and expertise for supporting public policymakers, regulatory bodies, extension services and other crop protection stakeholders. It will help disseminate knowledge, know-how and resources through training and education to farmers, advisers, researchers and policymakers. The infrastructure that is being developed is the first ever of its kind in the field of crop protection.

Another goal is to enhance the research innovation process by creating working relationships between researchers and practitioners in extension and farming. Industry, policymakers and civil society are included to help define the research agenda.

ENDURE establishes a sustainable, coherent and transnational institution made up of leading European crop protection research, R&D, extension and industry organisations to ensure safer foods for a healthier Europe.

Acronym: ENDURE

Full title: European network for the durable exploitation of crop protection strategies

Contract n°: 031499

Project co-ordinator:
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EU contribution:
€ 11.2M

STIRRING UP A FOOD GUIDELINE TO FEED MANY

LIST OF PARTNERS

- ILSI Europe (Belgium)
- Aarhus School of Business (Denmark)
- Ashwell Associates (UK)
- Biotemp-Consultorio em Biotechnologia (Portugal)
- Catholic University of Leuven (Belgium)
- Euro Consultants (Belgium)
- European Food Information Council (Belgium)
- FoodLab (Cyprus)
- Hylobates Consulting (Italy)
- University of East Anglia (UK)
- Lambert Nutrition Consultancy (UK)
- Minerva Public Relations & Communications (UK)
- National and Kapodistrian University of Athens (Greece)
- National Association for Consumer Protection in Hungary (Hungary)
- National Institute of Public Health (Czech Republic)
- Nutrition Research Foundation (Spain)
- Oxford Brookes University – School of Biological Sciences (UK)
- TNO – Netherlands Organisation for Applied Scientific Research (The Netherlands)
- University College Cork – National University of Ireland (Ireland)
- University of Las Palmas de Gran Canaria (Spain)
- University of Belgrade – Institute for Medical Research (Serbia)
- University of Central Lancashire (UK)
- University of Milan (Italy)
- University of München (Ludwig-Maximilians) (Germany)
- University of Oslo (Norway)
- University of Pécs (Hungary)
- University of Surrey (UK)
- University of Ulster (Northern Ireland)
- University of Zaragoza (Spain)
- Wageningen University (The Netherlands)
- Warsaw Agricultural University (Poland)
- World Health Organization Regional Office for Europe (Denmark)
- Institut National de la Recherche Agronomique (France)
- Community Nutrition Unit of Bilbao (Spain)

Improving well-being by improving consumers´s diets is of utmost concern for Europeans. As the prevalence of obesity has trebled in WHO European Region states over the last two decades, especially in children, eating well and staying fit has become more challenging than ever before. However, what exactly is the right thing to eat, and who are Europeans supposed to listen to? Dietary advice changes as often as a chameleon changes its colours and consumers must perpetually keep abreast of the latest developments. In these ever-shifting sands of dietary advice, what is needed is a framework of standardised advice about nutrition for consumers, where they can turn to and obtain harmonised dietary guidelines. Luckily, the Network of Excellence EURRECA has taken action and is on the fast track to providing the missing pieces in this jigsaw puzzle. It will provide a framework to complete the puzzle efficiently and effectively, and to do this repeatedly as science will continue to produce new puzzle pieces.

THE 34 STRONG AND ABLE BODIES

EURRECA has established a multi-national network of 34 partners working together to bring to the European public quality-assured and aligned nutrient recommendations. The actors are identifying essential micronutrients and the population groups that are most vulnerable. The NoE's aims and objectives are being met through the standardisation of definitions, methodologies and markers to assess nutrient intake, status and requirements. EURRECA will provide quality frameworks and a system that will be put through the grind frequently.

A EUROPEAN CONNECTION IN HIGH GEAR

Through their hard work and effective communication the stakeholders, i.e. academic and industry experts, as well as SMEs, researchers and media, are including a consumer perspective at all stages guaranteeing applicable and useful nutrient recommendations that are slated for development. The success of EURRECA will be possible thanks to the sustainable, yet innovative, actions of all stakeholders. Also important is the fact that the Network is cooperating with EFSA to fill any research and policy gaps identified by the latter, as well as enlightening diverse sub-population groups of the work carried out by the European food safety watchdog.

Acronym: EURRECA

Full title: harmonising nutrient recommendations across Europe with special focus on vulnerable groups and consumer understanding

Contract n°: 036196

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EC Scientific Officer:
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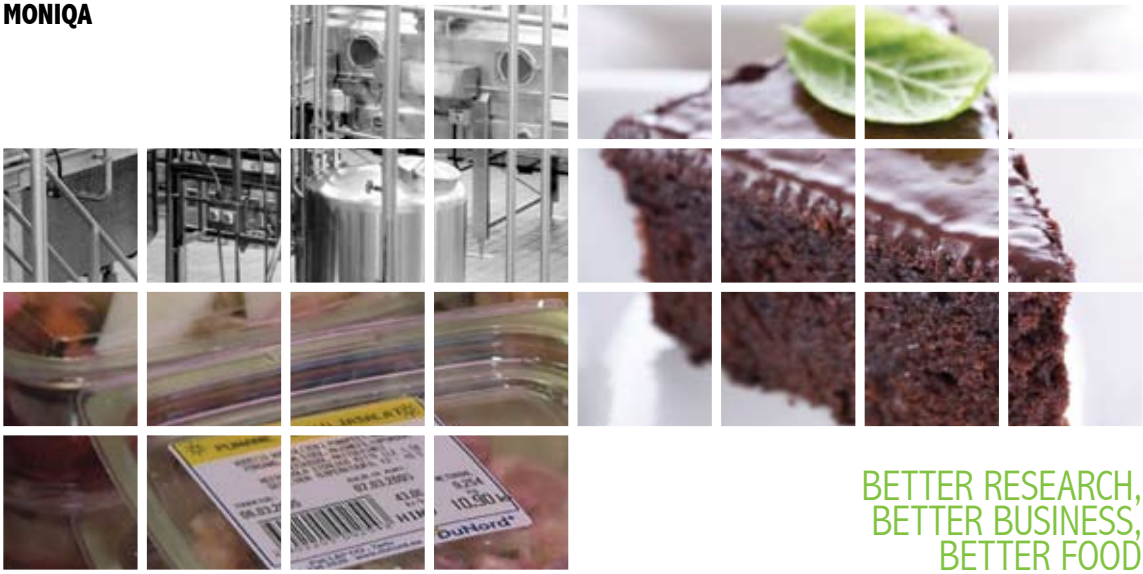
EU contribution:
€ 13.2M

MONIQA



BETTER RESEARCH, BETTER BUSINESS, BETTER FOOD

LIST OF PARTNERS

- ICC - International Association for Cereal Science and Technology (Austria)
- BOKU - Universität für Bodenkultur Wien (Austria)
- Ain Shams University (Egypt)
- Campden and Chorleywood Food Research Association (UK)
- CER - Centre d´Economie Rurale (Belgium)
- Eurofins Analytik GmbH (Germany)
- Centro Tecnologico Gaiker (Spain)
- CSL - Central Science Laboratory (UK)
- Q-Plan - International Quality and Environment Services (Greece)
- Tübitak Marmara Research Center (Turkey)
- University of Food Technologies (Bulgaria)
- VocalTag (Israel)
- VTT Technical Research Centre of Finland (Finland)
- University of Napoli, Federico II (Italy)
- Matforsk - Norwegian Food Research Institute (Norway)
- National Technical University of Athens (Greece)
- National Institute for Public Health and the Environment (The Netherlands)
- Sichuan University (China)
- Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (Italy)
- Budapest University of Technology and Economics (Hungary)
- Institute of Environmental Science and Research (New Zealand)
- National Food and Nutrition Institute (Poland)
- Hacettepe University (Turkey)
- CCOA - Chinese Cereals and Oils Association (China)
- Institut Pertanian Bogor (India)
- Hanoi University of Technology (Vietnam)
- IFR - Institute of Food Research (UK)
- National Research Council (Italy)
- RTD Services (Austria)
- JRC - Joint Research Centre (Belgium)
- Rheinische Friedrich-Wilhelms Universität Bonn (Germany)
- Interdisciplinary Centre for Comparative Research in the Social Sciences (Austria)
- University of Bologna (Italy)

"Good food," the expression goes, "takes time." Good food research, takes networks of excellence. The bottom line is that European and global consumer demand for improved food quality and safety is strong and keeps growing. Support must come from key food players, and in particular, from industries, SMEs and research institutions active in corresponding fields of analytical methods for research. However, problems arise when these groups fail to pool their resources. The result is the fragmentation in food quality and safety research. A case of too few cooks spoiling the broth.

With a keen eye on the problem, the EU has established a network of excellence project called MONIQA. It promotes the harmonisation of analytical methods for monitoring food quality and safety in the food supply chain. MONIQA integrates leading groups by forging a strong tie-up, which sets up mechanisms for coordinating and combining research activities, infrastructure and personnel. Two separate groups benefit from MONIQA: consumers secure higher quality and safer foods, and the industry and SMEs profit from harmonised detection methods and technologies.

A GLOBAL FEEL

The network has a global feel. Members, totalling 33, hail from all corners of the globe. The membership breakdown shows the involvement of research institutions, industry partners, NGOs and doctoral students, among others. Integrating European and global food quality and safety research is achieved by establishing a virtual laboratory for joint research, training, dissemination and mobility programmes. The European and foreign partners in MONIQA are working together to detect and quantify biological and chemical contaminants.

That is not all, however. An international platform for food quality and safety researchers further promotes knowledge and data exchanges between members and gives them access to materials, equipment and personnel. Ultimately, these integrated activities give key players and interested parties shared access to leading research facilities, databases and technological platforms the world over. Consumers are finally gaining the support they need to meet their food demands.

Today, the European food and drink industry holds the biggest piece of the production pie, providing jobs to more than 4 million people in approximately 280 000 companies and covering a market of 450 million EU consumers. The industry posted €810 billion in turnover in 2004 and its export potential stood at €50 billion. These figures only prove the influence Europe has on the world market.

Acronym: MONIQA

Full title: towards the harmonisation of analytical methods for monitoring quality and safety in the food chain

Contract n°: 036337

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www.icc.or.at

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EU contribution:
€ 12.3M

AQUAGRIS

JOINING FORCES TO REFORM THE ENVIRONMENT

LIST OF PARTNERS

- University of Lecce (Italy)
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- Tampere University of Technology (Finland)
- Centiv (Germany)
- Austrian Agency for Health and Food Safety (Austria)
- Ben Gurion University of the Negev (Israel)
- STM Aquatrade (Italy)
- University of Southern Denmark (Denmark)
- Pancham Aquaculture Farms (India)
- The Suganthi Davadason Marine Research Institute (India)
- Institute for Vegetable and Ornamental Crops (Germany)
- Istituto per lo Studio degli Ecosistemi, Sezione di Firenze (Italy)
- National Institute of Oceanography (India)
- Norwegian University of Life Sciences (Norway)
- Fundacion AZTI - AZTI Fundazioa (Spain)
- Scottish Association for Marine Science (UK)
- JTI - Swedish Institute of Agricultural and Environmental Engineering (Sweden)
- Transnational Consulting Partnership (Germany)
- Universidad de Las Palmas de Gran Canaria (Spain)
- Universita' Degli Studi Di Lecce (Italy)
- University of Barcelona (Spain)
- University of Crete (Greece)
- University of Gent (Belgium)
- University of Haifa (Israel)
- University of Murcia (Spain)
- University of Caen - Basse Normandie (France)
- Cochin University of Science and Technology (India)

The safety of what is served up to us on our dinner plate is no longer something we can take for granted. In the past the belief was that with a little care, good food would provide safe, healthy and high-quality nutrition. Not much thought was given to how food was grown and processed. Consideration for how plants, animals, soil and water were treated by conventional farming systems was not on our minds.

Extensive use of pesticides, fertilizers and significant energy inputs to maximize production brought with them considerable waste release and a variety of related environmental problems. Over the last few decades, consumers' awareness of food production systems that are more environmentally sustainable and compatible with the demands of the earth's ecosystem has increased.

Knowing that we are what we eat has made us more sensitive to our natural environment, both in terms of what we put in and what we take out. To make this system more palatable, 26 organisations from 16 different countries united their efforts, in the context of the AQUAGRIS Coordination Action, in order to reform environmental management for improved sustainability in the farming, fisheries and aquaculture (FFA) industries.
Leading specialists from different countries with expertise in environmental management are reviewing the latest international scientific literature, to elucidate the optimum standards in sustainable farming and highlight future research priorities.

The AQUAGRIS network aims to increase understanding and awareness of the problem areas facing today's FFA industries, and develop solutions that have minimal impact on biodiversity and the environment.

Frequent seminars and workshops, an ongoing discussion between leading experts in the field resulting in subsequent cross-fertilisation of ideas are on the menu. These get-togethers encourage the formation of a coherent strategy for future research, avoiding duplication of effort and fragmentation of resources. In addition, all stakeholders are able to meet and exchange ideas at the custom-made website.

In order to be able to incorporate existing or new technological advances into current management systems, standards, policies and regulation on environmental management in FFA, industries must obviously be harmonised. The first step to producing compatible, sustainable, unified systems involves the mapping of the current situation, concerning the status of national and international standards, codes of practice, policies and regulation.

In this way, the main barriers that prevent the development, implementation and use of measures to decrease the impact of the FFA industries can be identified. This effort will yield new standards and codes of practice, removing bottlenecks and loopholes and promoting best practice.

AQUAGRIS is developing new strategies for environmental management in order to produce sustainable systems. Such systems are designed to imitate natural systems to maximize existing soil nutrient and water cycles, energy flows and soil organisms. The ultimate goal is to coordinate processes so that waste from one process or system becomes input for another. This information can be used to form guidelines on how to achieve environmental best management practice in a cost-effective way.

The AQUAGRIS network consists of 13 universities, 7 research institutes and 6 SMEs. The diversity in the nature of these institutes ensures exchange of knowledge, experiences and ideas. The effort will sustain its future expansion with the identification of suitable Centres of Activity, throughout the European Research Area, which may become associate and observer members in the research forum.

AQUAGRIS is without doubt a big step forward in environmental management for improved sustainability in the FFA industries. Through interaction, discussion and knowledge it will provide the necessary expertise for informed decision-making for environmentally beneficial and sustainable practices.

Acronym: AQUAGRIS

Full title: environmental management reform for sustainable farming, fisheries and aquaculture

Contract n°: 036298

Web site:
www.aquagris.org

Project co-ordinator:
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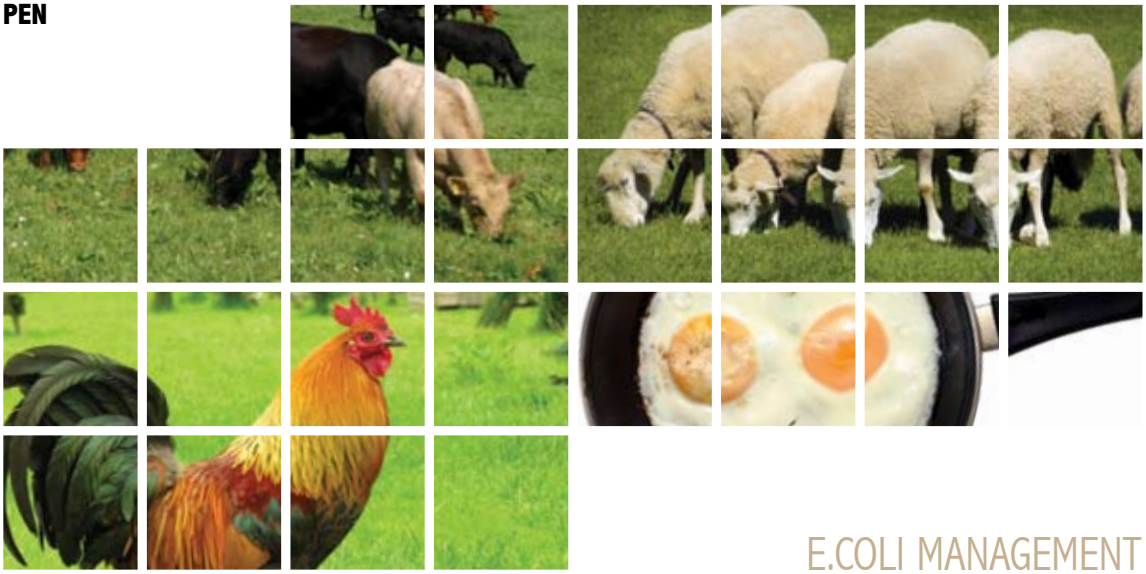
EU contribution:
€ 899,671



E.COLI MANAGEMENT

LIST OF PARTNERS

- Teagasc, The National Food Centre (Ireland)
- Campden & Chorleywood Food Research Association (UK)
- Federal Institute for Risk Assessment (Germany)
- Universidad de Santiago de Compostela (Spain)
- Istituto Superiore di Sanità (Italy)
- Ghent University (Belgium)
- Istituto Zooprofilattico Sperimentale delle Venezie (Italy)
- Commonwealth Scientific and Industrial Research Organisation (Australia)
- Agence Française de Sécurité Sanitaire des Aliments (France)
- E. coli O157 Reference Laboratory, Lothian Health Board, Scotland (UK)
- The Food and Consumer Product Safety Authority (The Netherlands)
- Institut für Hygiene, Universitätsklinikum Münster (Germany)
- Swedish Institute for Infectious Disease Control, Smittskydds institutet (Sweden)
- United States Department for Agriculture – Agricultural Research Service – Eastern Regional Research Center, USDA-ARS-ERRC (United States)
- Queen's University Belfast (UK)
- Faculté de Médecine Vétérinaire, Université de Liège (Belgium)
- University of Ulster at Jordanstown (UK)
- Health Protection Surveillance Centre (Ireland)
- Statens Serum Institut (Denmark)
- Agricultural University of Athens (Greece)
- University of Aberdeen (UK)
- National Veterinary Research Institute (Poland)
- Institut National de la Recherche Agronomique (France)
- University of Adelaide (Australia)
- Instituto de Ciencias Biomédicas (Chile)
- The Hebrew University of Jerusalem (Israel)
- University of Hohenheim (Germany)
- Institute of Environmental Science and Research (New Zealand)
- Norwegian School of Veterinary Science (Norway)
- University of Manchester (UK)
- Imperial College, London (UK)
- Academisch Ziekenhuis Vrije Universiteit Brussels (Belgium)
- Public Health Laboratory, HSE, South Western Area (Ireland)
- Robert Koch Institute (Germany)
- Scottish Salmonella Reference Laboratory, National Health Service (UK)

Escherichia coli (more commonly known as *E. coli*) is one of the main species of bacteria that live in the lower intestines of mammals. This bacteria recently made headlines in the United States when about 200 people from 26 states were infected with it from fresh spinach. Although most *E. coli* are harmless organisms, there are many pathogenic strains which can cause a variety of illnesses in humans and animals. However, the virulence of certain pathogenic strains is reflected in a low infectious dose. In one particular outbreak, for instance, there was less than one *E. coli* cell per gram of contaminated salami. There is little doubt that more pathogenic groups will evolve and be recognised in the future.

A COMMON BACTERIA, LITTLE KNOWN

Despite considerable research on *E. coli*, there are still areas where a fundamental understanding of these organisms is lacking. Furthermore, technical deficiencies and a lack of harmonisation across disciplines, along the food chain and between continents, have prevented optimum gain from past and ongoing research. Food-borne illnesses adversely affect competitiveness: there are the economic costs associated with lost working days, food-borne illnesses and the associated adverse publicity which may result in lost sales, lost market share and reduced profits.

The network aims to improve public health protection, coordinate research outputs and maximise collaboration between different disciplines as well as between Europe and other continents. Key issues addressed by PEN include methods of detection, molecular characterisation, epidemiology, pathogenicity, ecology, and the control and management of bacteria.

PEN VS. E. COLI: A NETWORK VERSUS BACTERIA

PEN forms a multidisciplinary network of international research groups working on *E. coli* and other potentially pathogenic strains and serotypes with the ultimate aim of reducing the burden of related illnesses.
The project is developing and achieving international integrated research on the way that food is produced, processed, distributed and consumed. The data and information collated and generated underpins practical and legislative risk management at European level and beyond.

Scientists will be able to develop a sustainable, collaborative approach for enhancing and strengthening Europe's position as a centre for Food Safety Research Excellence. The network is able to complement existing knowledge in the area and focus on specific gaps not addressed by current research programmes. Specifically, these involve the development of a fundamental understanding of pathogenic *E. coli.* PEN can build a capacity in bacterial genomics, proteomics and bioinformatics that is sustainable beyond the life of the project, and will position the European food industry at the forefront of these exciting biotechnological developments.

Using the 'farm-to-fork' approach, PEN develops novel food safety control measures by gaining a fundamental understanding of the genomic responses to factors that may promote the emergence and survival of pathogenic *E. coli.*

It can provide technologies and approaches to implement full traceability of food-borne pathogens from farm to fork and from human infection to animal sources. This network can link the scientific output with European initiatives in risk management for protecting public health.

PEN is building a molecular technology platform for disseminating information and expertise on state-of-the-art molecular techniques for pathogenic *E. coli* isolation, identification and characterisation for microbial researchers, regulators, legislators, the food industry, and veterinary and public health experts.

Acronym: PEN

Full title: pathogenic *escherichia coli network*

Contract n°: 036256

Project co-ordinator:
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EU contribution:
€ 810,657

DEVELONUTRI

NUTRITION IN PROGRESS

LIST OF PARTNERS

- Scottish Crop Research Institute (UK)
- Royal Holloway, University of London (UK)
- Italian National Agency for New Technologies, Energy and the Environment (Italy)
- Swiss Federal Institute of Technology (Switzerland)
- Istituto Sperimentale per la Cerealicoltura (Italy)
- The Science and Research Council of Turkey (Turkey)
- Mediterranean Agronomic Institute of Chania (Greece)
- Institutul National de Cercetare - Dezvoltare pentru Chimie si Petrochimie (Romania)
- Max-Planck-Institut für Molekular Pflanzenphysiologie (Germany)
- University of Helsinki (Finland)
- Council for Scientific and Industrial Research (South Africa)
- Specialist Bioanalytical Services Limited SBS (UK)
- SWISSMILL Division der COOP (Switzerland)
- Tamma Industrie Alimentari Di Capitanata (Italy)
- Solway Veg (UK)

ASSOCIATE MEMBERS

- National Institute of Science and Technology (United States of America)
- Bruker BioSpin (Germany)

Maintaining human health and well-being requires a steady and balanced intake of nutrients. Plants and plant-derived foodstuffs are an excellent source of beneficial metabolites, including vitamins and minerals. The metabolites, particularly those found in grains, fruits and vegetables, play a key role in human nutrition. The improvement of nutritional composition in breeding programmes and the optimisation of nutrients in product formulations have therefore developed into important research targets.

ESSENTIAL NUTRIENTS, INVALUABLE TOOLS

DEVELONUTRI draws upon a broad range of interdisciplinary expertise, including breeding, primary production, processing, consumption and nutrition as well as the analytical sciences. The project is exploring ways to ensure optimised nutritional value and safety throughout the food chain. It is developing and validating state-of-the-art metabolite profiling and analysis platforms that can be deployed at all stages of crop improvement, production and processing.

Numerous studies have revealed that there are often protective effects of one metabolite (or nutrient) for another following the complex metabolic processes that can occur post-harvest and post-processing. Therefore, the enhancement of the nutritional value of crops and the maintenance of the elevated nutritional status throughout the food chain and into processed foodstuffs can no longer be carried out on a single compound analytical basis.

In order to face this scientific challenge, DEVELONUTRI applies validated ring test methods to fully assess the added value of technologies in crop and crop-based food analysis using model species, which are economically and socially important in Europe. The focus is on the *Solanaceae* species (tomato, potato) and cereals (wheat), and it includes traditionally bred genotypes together with Genetically Modified Organisms (GMOs) grown under a range of environmental conditions. Importantly, many samples are derived from existing EU RTD networks, which provide added European value and minimise duplication of research efforts.

The scientific outputs of this project will, among others, result in the compilation of improved standard operating procedures and databases, which facilitate the merging of data from a range of analytical methods. Furthermore, the DEVELONUTRI consortium is engaging and collaborating with SMEs in the practical assessment of raw and processed materials' quality using the validated analytical methods and focusing on standard non-GM raw materials and foods.

Participants from International Cooperation (INCO), Candidate, and Associated Countries are making important contributions to the development of harmonised methodologies at an international level.

The project will disseminate its findings to researchers, industry, consumers and NGOs. The work of the consortium with its platform profiling techniques will produce information that can be used as the foundation for high throughput plant food compositional analysis.

Acronym: DEVELONUTRI

Full title: development of high throughput approaches to optimise the nutritional value of crops and crop-based foods.

Contract n°: 036296

Website:
www.eu-peter.org

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EU contribution:
€ 3.3M

EU-FRESHBAKE

TO FRESH BREAD

LIST OF PARTNERS

- Ecole Nationale d'Ingénieurs des Industries Agricoles et Alimentaires (France)
- Krakow University (Poland)
- Consejo Superior de Investigaciones Científicas (Spain)
- Faculty of Food Technology and Biotechnology Zagreb (Croatia)
- Technologie-Transfer-Zentrum Bremerhaven (Germany)
- Russian Academy of Science (Russia)
- MIWE (Germany)
- Puracor NV (Belgium)
- Biofournil (France)
- Bezgluten (Poland)
- Dr. Schär (Italy)

The baker's profession is one of the oldest in the world. Up to now, European customers looking for healthy bread have turned to freshly baked bread from the baker's. Industrial refrigerated bread, on the other hand, although considered more or less tasty, has little or no nutritional value. However, new ways are currently being explored to merge craftsmanship with high-tech, industrial tools to create fresh, healthy bread.

Bake Off Technology (BOT) involves producing bread from industrial refrigerated bakery goods and retailing them in downtown vending shops (hot points) or sometimes in bakeries, or in supermarkets for domestic baking. So far, BOT has concentrated its efforts on production of plain white bread of low nutritional value. However, if specific enzymes, and fermentation processes are used, the nutritional qualities of bread can be improved through refrigeration. The EU-FRESH BAKE project supports the ongoing development of BOT and is improving its adaptation to consumer needs.

FRESH IS COOL

A variety of technologies are adopted by BOT. The three main breads produced and named according to these technologies are as follows: Unfermented Frozen Dough breads (UFD); Partially Baked Frozen breads (PBF); and Partially Baked Unfrozen breads (PBUF). Partially baked (PBF and PBUF) products are the leading products, probably because they can be prepared in less than an hour.
On the other hand, their production is energy- consuming and quality may sometimes suffer. Crust quality is especially compromised (flaking, unappetising colour, etc.). Unfermented frozen dough technology (UFD) gives the best quality, but at least three hours plus trained personnel are needed to deliver a product. Research is thus needed to improve the energy efficiency of partially baked bread.

EU-FRESH BAKE is developing innovative process pathways to reduce energy consumption and at the same time improve the nutritional quality of breads. To achieve this double objective, specific indexes are being established: the Energy Efficiency Index (EEI) determines the energy consumption of a given process; the Nutrition Quality Index (NQI) permits the evaluation of changes in specific nutritional parameters; and the Quality Index (QI) allows the assessment of overall organoleptic quality. The latter is a subjective appreciation of the flavour, texture and appearance of the product.

THE SCIENCE OF TASTE

EU-FRESH BAKE is about a better understanding of both the product-process interaction and process management on an industrial scale. It takes into account health benefits, environmental and economical aspects, as well as consumer acceptance.

Taking the case of partially baked frozen bread as a reference value, processes and formulations are developed in order to reduce energy consumption by up to 50%, while at the same time preserving the organoleptic properties and keeping the QI constant or improving it. Moreover, specific parameters like the Glycaemic Index are expected to be enhanced.

Fermentation is clearly the central step in the bread making process. It strongly affects the structure of the bread (crumb cells, texture, crust thickness, etc) and it also contributes to modifying the nutritional quality of a product.

Mathematical models are being developed to understand the limiting factors to bread expansion during fermentation and baking. Special attention is given to crumb contraction during chilling, which may explain some problems such as crust flaking. The impact of process parameters on crumb and crust is also investigated.

MARKETING BREAD-FOR-HEALTH

EU-FRESHBAKE evaluates health benefits through specific procedures and protocols. The information gathered is used to design a specific label to be displayed on the shelves of bakeries and sales outlets. This label informs the consumer that the bread has been produced with minimal energy consumption and that it offers improved health benefits.

Bread may be one of the oldest traditional foods, but projects like EU-FRESH BAKE will ensure that it still has a tasty future ahead of it.

Acronym: EU-FRESHBAKE

Full title: freshly baked breads with improvement of nutritional quality and low energy-demanding for the benefit of the consumer and the environment

Contract n°: 036302

website:
http://eu-freshbake.eu/eufreshbake/

Project co-ordinator:
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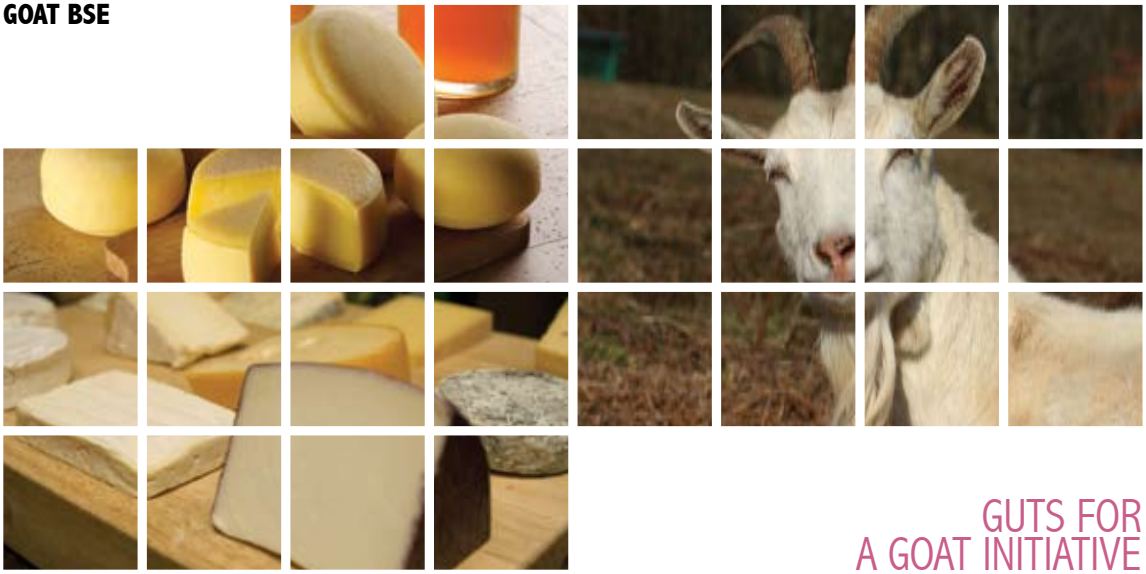
EU contribution:
€ 2M

GOAT BSE



GUTS FOR A GOAT INITIATIVE

LIST OF PARTNERS

- Central Institute for Animal Disease Control Lelystad, Wageningen UR (The Netherlands)
- Institut National de la Recherche Agronomique (France)
- Institute for Animal Health (UK)
- Instituto Nacional de Investigación, Tecnología Agraria y Alimentaria (Spain)
- University of Zaragoza (Spain)
- Institute for Novel and Emerging Infectious Diseases at the Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health (Germany)
- Istituto Zooprofilattico Sperimentale of Piemonte, Liguria and Valle d'Aosta (Italy)
- Istituto Superiore di Sanità. Department of Food Safety and Veterinary Public Health (Italy)
- Institute for Agrobiotechnology, Centre for Research and Technology (Greece)
- Commissariat à l'Énergie Atomique, Service de Pharmacologie et d'Immunologie (France)

Prion diseases are fatal transmissible neurodegenerative diseases that are currently incurable. Although the risk to humans is generally considered low, cases of Creutzfeldt-Jacob in humans are a fact, and the recent discovery of two bovine spongiform encephalopathy (BSE) cases in goats has shown that the species barrier is not watertight. Goat BSE will therefore aim to provide sound scientific information to allow the risk assessment of human exposure to BSE via goat milk, meat and products thereof.

EARLY DETECTION IN GOATS…

The members of this consortium bring their rich RTD experience in small ruminant prion research to Goat BSE. The project aims at studying the influence of PrP (prion protein) genotypes on the susceptibility of goats to transmissible spongiform encephalopathies (TSE), particularly BSE. Understanding of infectivity distribution of BSE, in nervous tissues, bones, lymph nodes, intestines, muscle tissues and milk, is also expected to be gained.

The determination of strain types and the geographical mapping of prions in goats, based on the collection of TSE goat cases in Europe, contributes to the assessment of current standard diagnostic methods. Optimised strain detection and differentiation are also expected results. The possibility of BSE self-maintenance in goat herds through maternal and horizontal transmission, and of new breeding programmes to improve prevention and control strategies for TSE in goat, is also to be evaluated.

To validate current BSE/scrapie discriminatory assays and to better understand transmission of goat TSEs between species, caprinised, ovinised, bovinised, and humanised transgenic mice will be used as animal models. In addition, goats with various PrP genotypes are inoculated with BSE. Natural scrapie is hugely widespread within European herds of small ruminants, and the capacity to accurately discriminate potential BSE from scrapie is paramount to a coherent and graduated response in terms of control measures and human health protection.

…FOR BETTER HUMAN HEALTH PROTECTION

The improvements in detection of BSE in goats will be crucial to understanding how the species barrier works. New data has to be compiled, in order to quantify the risk posed by milk and meat products to humans.

The findings related to BSE will be disseminated to risk assessors as well as the relevant stakeholders (including consumers), in order to inform them of the safety of goat-derived products, leading in turn, to an increased competitiveness for this growing sector.

In terms of scientific research, Goat BSE has a multiplier effect, because the multidisciplinary approach leads to developments in different fields. The project team will also provide training and employment for young researchers, which contributes to consolidating the EU scientific infrastructure and reduces the brain drain of researchers from the EU to other countries, such as the USA.

By improving goat TSE diagnosis and assessing the potential infectivity of derived products, Goat BSE contributes to the prevention of outbreaks of diseases that are currently incurable and fatal, and thus, might significantly improve human health protection in the field.

Acronym: GOAT BSE

Full title: proposal for improvement of goat TSE discriminative diagnosis and susceptibility based assessment of BSE infectivity in goat milk and meat

Contract n°: 036353

Project co-ordinator:
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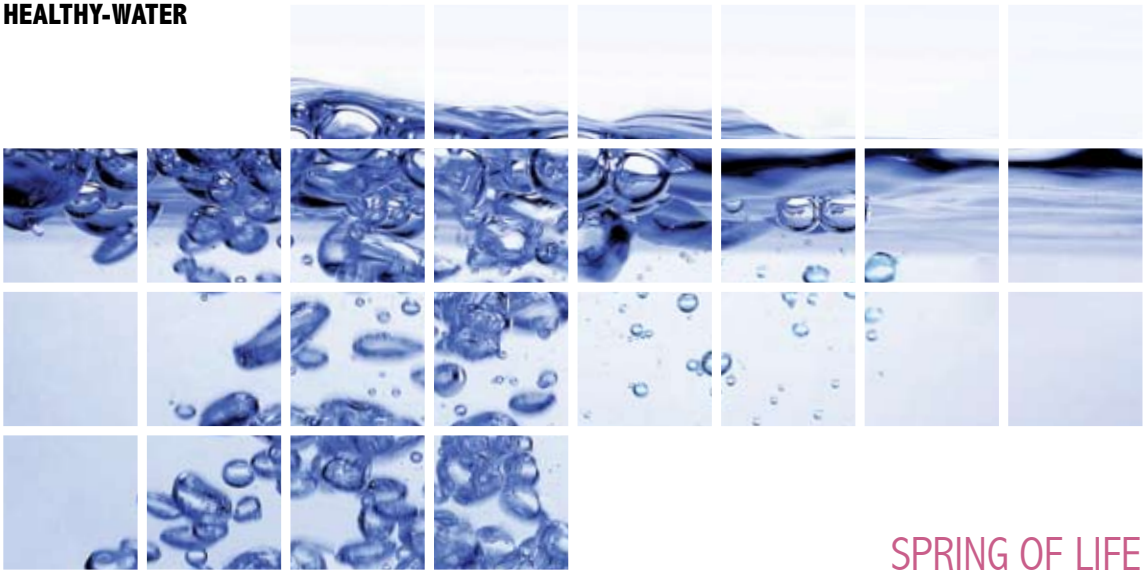
EU contribution:
€ 3.8M

HEALTHY-WATER



SPRING OF LIFE

LIST OF PARTNERS

- Helmholtz-Center for Infection Research, Department of Vaccinology (Germany)
- School of Medicine, Health Policy and Practice, Department of Biomedicin, University of East Anglia (UK)
- International Association for Danube Research - Austrian Committee (Austria)
- University Rovira & Virgili, Unit of Microbiology, Faculty of Medicine (Spain)
- University of Barcelona, Department of Microbiology (Spain)
- Environnement, Centre International de Recherche sur l'Eau et l'Environnement (France)
- National Institute of Environmental Health, Fodor Jozsef National Centre of Public Health (Hungary)
- University of Nice-Sophia-Antipolis (France)
- Molecular Diagnostics Center (Spain)

Waterborne pathogens are on the rise, and instances of contamination challenge global authorities to ensure greater safety for the water we drink. Scientists, governments and citizens alike are concerned about the challenges posed by microbial threats to world health. Unhealthy water, as well as bad sanitation and hygiene are responsible for 4% of all deaths globally. In the EU, there have been outbreaks of emergent waterborne diseases in areas where they had previously been undetected.

To date, developing countries have not benefitted enough from modern public health and technological advances in the ongoing battle against infectious diseases. In reality, many of them have little or no clean water and their sewage systems are unable to cope or are nonexistent. Diseases affect the entire globe, but are more prevalent within the developing world. Research has estimated that every day 36 000 individuals die from infectious diseases. What has emerged is the need to identify which specific environmental factors are causing health problems, followed by the need to understand the mechanisms that may be involved.

A POOL OF KNOWLEDGE

HEALTHY-WATER has been created to support the needs of the EU's 6th Framework Programme. The project is designed to further scientists' understanding of pathogens in drinking water, by building on previous work done on microbiological surveillance of water supplies. A major focus is the development and validation of molecular detection technologies. Currently, EU governments need to show that their water supplies meet certain standards, which are set by the EU's directive on drinking water.

The team set up the project to study (from source to tap) the current status of the EU's drinking water and to fill the knowledge gap concerning waterborne pathogens and ways of detecting them over the long term. They also run a molecular survey combined with an epidemiological study, thus gaining a greater understanding of the impacts of emerging pathogens on human health. The focus is on high-risk water supply systems in Europe. Partners also check the immunological status of exposed populations in order to examine the effects of consuming water taken from high-risk target areas. The HEALTHY-WATER consortium comprises an interdisciplinary team from academic institutions, water works and industry, thus providing a broad experience in drinking water issues.

The findings of HEALTHY–WATER offer SMEs, agencies and governments new information which can be applied to water geared for mass consumption, thereby reducing risks both within and beyond the borders of the EU, and ultimately in developing countries. A further benefit of the project is greater employment opportunities in academia, as well as the industry sector and the strengthening of the competitiveness of Europe's food and biotechnology sector.

Acronym: HEALTHY-WATER

Full title: assessment of human health impacts from emerging microbial pathogens in drinking water by molecular and epidemiological studies

Contract n°: 036306

Website:
www.helmholtz-hzi.de/healthy-water

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EU contribution:
€ 2.4M

FRESH FROM THE TAP

LIST OF PARTNERS

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- National Public Health Institute (Finland)
- Vytautas Magnus University (Lithuania)
- University of Crete (Greece)
- Université de Rennes (France)
- Municipal Institute of Medical Research Foundation (Spain)
- Centre for Genomic Regulation (Spain)
- University of Modena and Reggio (Italy)
- Istituto di Ricerche Farmacologiche 'Mario Negri' (Italy)
- Swedish Institute for Infectious Disease Control (Sweden)
- Hylobates Consulting (Italy)
- ICON Ltd (UK)
- Scarab (Sweden)

Water is the blue gold of the 21st century. Yet, as aureate as it is, it often lacks the purity of its metallic counterpart. Water, in many instances, is contaminated. Often, tap water does not meet the necessary quality criteria and, as such, threatens the health of millions of Europeans. HiWATE, a European research initiative, is set to change that.

HIGH CHALLENGE

Consumer concern regarding the quality of drinking water has recently risen, and this concern has caused an increase in the consumption of expensive bottled water. In order to help improve water quality and security, the HiWATE project will use a wide and innovative combination of disciplines, beyond those traditionally deployed.

Water contamination is evident over a wide geographical area, and given subterranean sources of pollution, not always immediately evident. This presents a multifaceted problem. HiWATE provides an integrated approach that cross-cuts several research areas including environmental science, chemistry, microbiology, engineering, exposure assessment, statistics, reproductive and cancer epidemiology, and health-risk assessment and policy. Research also includes the area of gene-environment interaction, identifying potentially genetically susceptible populations.

The overall aim is to investigate potential human health risks, like cancer and reproductive effects such as congenital anomalies associated with long-term exposure to low levels of disinfectants and disinfectant by-products (DBPs), which occur in water. The project will comprise risk and benefit analyses, including quantitative assessments of the microbial contamination risk of drinking water versus chemical risk, and will compare alternative treatment options.

Microbial contamination and the presence of some DBPs have led to adverse health impacts, and risks should be reduced as far as reasonably possible. However, a balance between risks and benefits of water treatment solutions needs to be found. The research scope covered by the HiWATE project is particularly broad and covers, among others, the identification of causal agents, including contaminants such as DBPs, and mechanisms of environmental and food-linked hazards. Other research goals include the characterisation of DBP mixtures in water, understanding of exposure pathways and an estimation of the health effects of cumulative, low-dose and combined exposures.

EUROPEAN SOLUTION

The project's aim is to strengthen the scientific evidence to support decisionmakers and consumers. In particular, it will seek to address the lack of adequate exposure data, knowledge on exposure-response relationships in European populations, and sound health risk assessment, which often inhibits the possibilities for better and effective prevention.

HiWATE is expected to bring a considerable improvement in the quality of life, particularly as it highlights associations between particular DBPs and adverse reproductive outcomes and/or cancer. This should indeed lead to measures to reduce DBP levels, and therefore the number of resulting health problems.

Acronym: HIWATE

Full title: health impacts of long-term exposure to disinfection by-products in drinking water

Contract n°: 036224

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EU contribution:
€ 3.5M

META-PHOR

METABOLOMICS: A METAPHOR FOR HEALTHIER FOODS?

LIST OF PARTNERS

- Plant Research International (The Netherlands)
- Max Planck Institute, Golm (Germany)
- Rothamsted Research (UK)
- Wageningen University (The Netherlands)
- University of Manchester (UK)
- University of Wales, Aberystwyth (UK)
- Weizman Institute (Israel)
- INRA-Bordeaux (France)
- Harvest Plus (United States)
- Royal Veterinary & Agricultural University (Denmark)
- The Volcani Centre (Israel)
- International Rice Research Institute (The Philippines)
- National Agricultural Research Centre (Laos)
- State Institute of Food Safety (The Netherlands)
- Crop Design (Belgium)
- Vezet (The Netherlands)
- AnalytiCon-Discovery (Germany)
- PROSOY (The Netherlands)
- Waters (UK)
- Bruker BioSpin (Germany)
- LECO Instrumente (Germany)
- Thermo Electron (Germany)

Listen to shoppers returning from their latest supermarket trip and you will be struck by the number of complaints relating to the variable quality of the fruit and vegetables on offer. META-PHOR aims to change all this by developing new tools, which can be used to improve plant breeding, engineering and processing strategies. The expected result is a greater variety of food products with improved nutritional quality.

LISTENING TO THE CONSUMER

More than ever before, consumers have been making demands concerning the quality of the food they purchase. They have also become more aware of terms such as sustainability, user-friendly production methods and genetic modification. Meeting these new demands means generating an enhanced food production chain, extending from the breeding of improved crops through to their cultivation and ultimately to their purchase by the consumer.

Any new product requires improved quality assessment before being released to the public. Furthermore, with consumers demanding maximum variety and year-round product availability, further guarantees are required, that imported, out-of-season products also continue to meet quality expectations.

RE-DISCOVERING TASTE

Though its results are bound to have a significant impact on consumers' renewed quest for taste, META-PHOR remains first and foremost a scientific project. The impressive consortium of 22 project partners represents organisations from across the globe, including Europe, Asia and the United States. Both the institutional and industrial sectors will be involved.

One of the goals of the project is to facilitate greater collaboration between the various international research groups that already work on the development and application of plant metabolomics tools (the systematic study of the unique chemical fingerprints that specific cellular processes leave behind). The results of this collaboration are incorporated into the activities of industrial partners, including the European small-to-medium sized enterprise sector, who benefit greatly from access to such a platform in their own applied research.

Acronym: META-PHOR

Full title: metabolomic technology applications for plants, health and outreach

Contract n°: 036220

Project co-ordinator:
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EU contribution:
€ 3.4M

MICROMAIZE

FEWER CHEMICALS, HIGHER YIELDS

LIST OF PARTNERS

- UMR CNRS 5557 Ecologie Microbienne (France)
- Cylnatis (France)
- National University of Ireland in Cork (Ireland)
- Institute of Integrative Biology, Swiss Federal Institute of Technology (Switzerland)
- Agricultural Research Institute, Hungarian Academy of Sciences (Hungary)
- National University of Mexico (Mexico)
- Symbio-m (Czech Republic)
- Arvalis (France)
- Alma Consulting Group (France)

European agriculture practices over the years have been successful in dramatically increasing crop yields, but only through intensive use of chemical fertilisers. In recent decades, concerns have been raised regarding the use of nitrogen and phosphate fertilisers and their detrimental impact on surface and ground water. The Specific Targeted Research Project MICROMAIZE is now seeking to develop alternative strategies that will result in the significant reduction of chemical fertiliser used in a key European cropping system: maize monoculture. They also aim at such a reduction while maintaining high crop yields and maintaining existing profit margins.

Maize crop systems are extremely popular across the EU, and maize products can find wide application in a variety of activity areas including the production of biofuels. Therefore new practices are likely to have a favourable environmental and financial impact on a broad scale within the EU and also on an international scale through collaborating countries. MICROMAIZE partners will employ an often ignored ally in soil- and crop-management practices, the soil microbial community.

Specifically, three types of soil microbes were chosen: the bacteria *Azospirillum* and *Pseudomonas*, and the mycorrhizal fungus *Glomus*. *Azosprillum* populations are involved in nitrogen fixation and plant hormonal balance regulation. *Pseudomonas* bacteria play a role in phosphate solubilisation and modulation of plant hormonal balance, and *Glomus* fungi are involved in nitrogen and phosphorus mineralisation and plant nutrition. Research is focused on establishing plant-beneficial microbial populations and combinations with the aim of achieving phytostimulation and biofertilisation.

FOCUS ON MAIZE

Maize is a key crop in Europe, but also worldwide; therefore changes to crop management practices are expected to have a deep impact in a great number of EU and non-EU countries. The new microbial-based management practices developed through the MICROMAIZE project will be field-tested in Europe and Mexico, and after this, validation can be applied in a number of INCO (International Cooperation) regions worldwide.

Project partners from a number of EU and non-EU countries will work in unison to identify the specific microbial-plant interactions that can be of benefit to maize plants and can be incorporated in crop management practices in order to reduce the use of chemical inputs. Partners are keen not to jeopardise the EU's position as a leading producer but at the same time they are seeking to reduce the environmental impact of current cropping systems, which function with high fertilisation and irrigation inputs. Maize responds very well to fertilisers, and very high volumes of chemicals are used in cultures, increasing the potential for contamination of ground and surface waters.

Acronym: MICROMAIZE

Full title: management of plant-beneficial microbes to balance fertiliser inputs in maize monoculture

Contract n°: 036314

Project co-ordinator:
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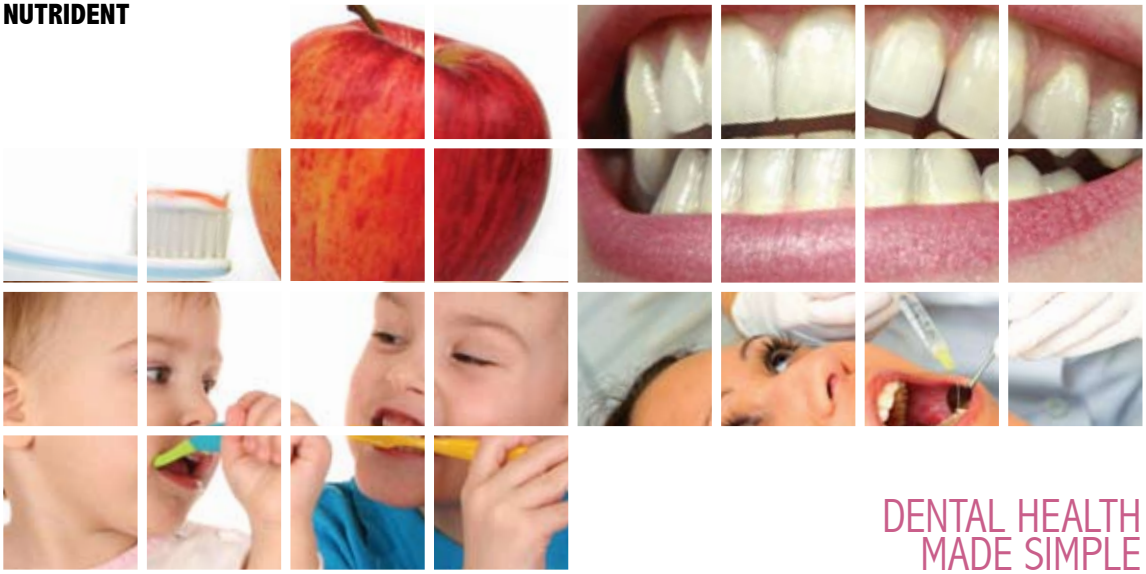
EU contribution:
€ 1.9M



DENTAL HEALTH MADE SIMPLE

LIST OF PARTNERS

- UCL Eastman Dental Institute (UK)
- University of Pavia (Italy)
- University of Tel Aviv (Israel)
- University of Genova (Italy)
- Goteborg University (Sweden)
- Academic Centre for Dentistry, Amsterdam (The Netherlands)
- University of Verona (Italy)
- Quest International (UK)
- Glycologic Ltd (UK)

Dental plaque is not only damaging to teeth but, according to reports, it is also damaging to the European economy. Over €54 billion is spent annually across the EU to treat the effects of dental caries and gingivitis, both of which result from the accumulation of oral biofilms known as dental plaque. Recent scientific developments, however, could radically change this situation and introduce new ways through which we can safeguard oral health.

It has long been suggested that a number of foods contain substances which are able to protect against caries and gingivitis and the European research community, under the backing of the EC, set out to investigate this. The NUTRIDENT project was set up to determine exactly those food ingredients that provide protection against the formation of dental plaque and its adverse effects. Once isolated and shown to be clinically safe, these compounds can form a basis for the production of novel functional foods and oral hygiene products.

CHEW YOUR WAY TO A HEALTHIER SMILE

Functional foods are receiving an increasing amount of attention, given their potential as a delivery vehicle of choice for a number of products that could enhance and protect consumer health. In the field of oral hygiene, functional foods like chewing gum, could prove extremely helpful in the fight against caries and gingivitis, given the ease of administration compared to tooth brushing or the use of dental floss. According to NUTRIDENT, functional foods with ingredients of a beneficial nature could be a reality in the field of oral hygiene before the end of the project. Identifying the range of foods and beverages that have a favourable set of properties is the first step towards that goal. Once the actual constituents responsible for the anti-plaque properties have been isolated, researchers will have at their disposal a host of potentially beneficial materials that can be used as food additives. The positive impact on public health would be significant, given that consumers could protect their teeth simply by chewing a stick of gum.

SETTING NEW STANDARDS IN ORAL HYGIENE

NUTRIDENT has set ambitious goals for all the partners that are involved in the consortium. Identifying potentially beneficial food products is only the beginning for the participants. Instead of urging consumers to merely concentrate on eating more of those specific foods, NUTRIDENT will identify the specific components of those foods which give them their anti-plaque properties. Once their safety and effectiveness have been ascertained in a clinical trial setting, these components can be formulated into a range of products. But the objectives are even loftier than that: NUTRIDENT aims to utilise partners' biotechnology skills to develop new strains of plants, able to produce large quantities of those components, therefore ensuring a constant supply. Overall, keeping our teeth and gums healthy may soon be simpler than we ever thought possible.

Acronym: NUTRIDENT

Full title: towards functional foods for oral healthcare – isolation, identification and evaluation of beverage and food components with anti-caries and/or anti-gingivitis activities

Contract n°: 036210

Project co-ordinator:
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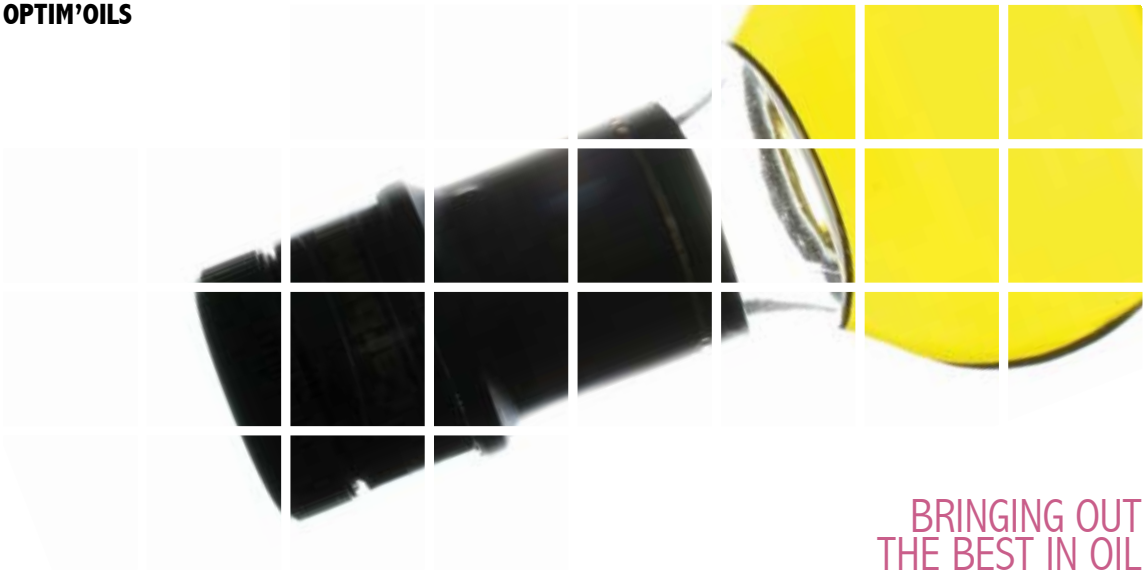
EU contribution:
€ 2.1M



BRINGING OUT THE BEST IN OIL

LIST OF PARTNERS

- Institut des Corps Gras (France)
- The Swedish Institute for Food and Technology (Sweden)
- Centre de recherche et d'expérimentation sur les oléagineux et les protéagineux (France)
- Asociación de Investigación de la Industria Agroalimentaria (Spain)
- Istituto Superiore di Sanità-Section of Food Science, Nutrition and Health (Italy)
- Ecole Nationale Supérieure des Industries Agricoles et Alimentaires (France)
- Instituto de Biologia Experimental e Tecnológica (Portugal)
- Centre de Recherche en Nutrition Humaine (France)
- Faculté Universitaire des Sciences Agronomiques de Gembloux (Belgium)
- Unilever Nederland Holdings BV (The Netherlands)
- LESIEUR (France)
- Lesieur Cristal (Morocco)
- Ets ABDELMOULA (Tunisia)
- Association de Coordination Technique pour l'Industrie Agro Alimentaire (France)

Our health and well-being depend on the quality and quantity of what we eat. Improving the nutritional status of popular foodstuffs is not always an easy task, but a new project, OPTIM'OILS, aims to do just that. OPTIM'OILS intends to improve the lipidic micronutrient content of edible vegetable oils and thus reduce the risk of cardiovascular disease. Targeted seeds include sunflower, rapeseed and soybean. Project partners envisage this to be a multistep process. Based on knowledge gained during the initial stages of the research, improvements will be implemented at the processing and refining stages in order to optimise the micronutrient content.

The use of oleaginous seeds and vegetable oils in European food products is extremely popular in many different product groups. Changing the lipidic micronutrient content of these foods could have a significant positive impact on consumer wellbeing, which is the overall objective of OPTIM'OILS.

DEFINING MICRONUTRIENTS OF WORTH

Vegetable oils can act as a main source for a number of key micronutrients. Even though these substances are proving beneficial against various diseases, current processing methods often result in their breakdown, reducing the natural nutritional value of these oils. The EC, through the OPTIM'OILS project, aims not only to enhance our knowledge of these micronutrients and how they can benefit human health, but also to develop new methodologies for promoting their preservation during the extraction, and refining stages of seed processing.

The project focuses on four micronutrients: these include phospholipids, phytosterols, coenzyme Q10 and phenolic compounds. Coenzyme Q10 has been shown to exhibit cell-protective properties and is a known antioxidant, potentially of benefit in the treatment of coronary heart disease. Phenolic compounds can also minimise oxidative stress, but much remains to be learnt about the role of phospholipids and glycolipids, as well as other micronutrients of potential benefit that are encountered in edible oils.

A CONSORTIUM OF INTERNATIONAL FLAVOUR

A total of 14 project partners from European and non-European countries have come together to work towards common objectives. With expertise ranging from agricultural research to multinational food distribution, members are in an excellent position to shed light on the micronutrient profile of edible oils, and the ways of protecting the micronutrient pool of oleaginous seeds during the extraction and refining processes. The consortium includes expert knowledge on environmental practices and industrial effluent treatment, which will be applied to the traditional oils industry with the aim of minimising by-products and improving valorisation and waste treatment.

The partners will finally focus on the demonstration of the novel 'healthy oils' that will emerge from the OPTIM'OILS project. The end products will be validated on their quality and cost efficiency levels, and their ability to bring overall added value in terms of profits and health benefits.

Acronym: OPTIM'OILS

Full title: valorisation of healthy lipidic micro-nutrients by optimising food processing of edible oils and fats

Contract n°: 036318

Website:
www.optimoils.com

Project co-ordinator:
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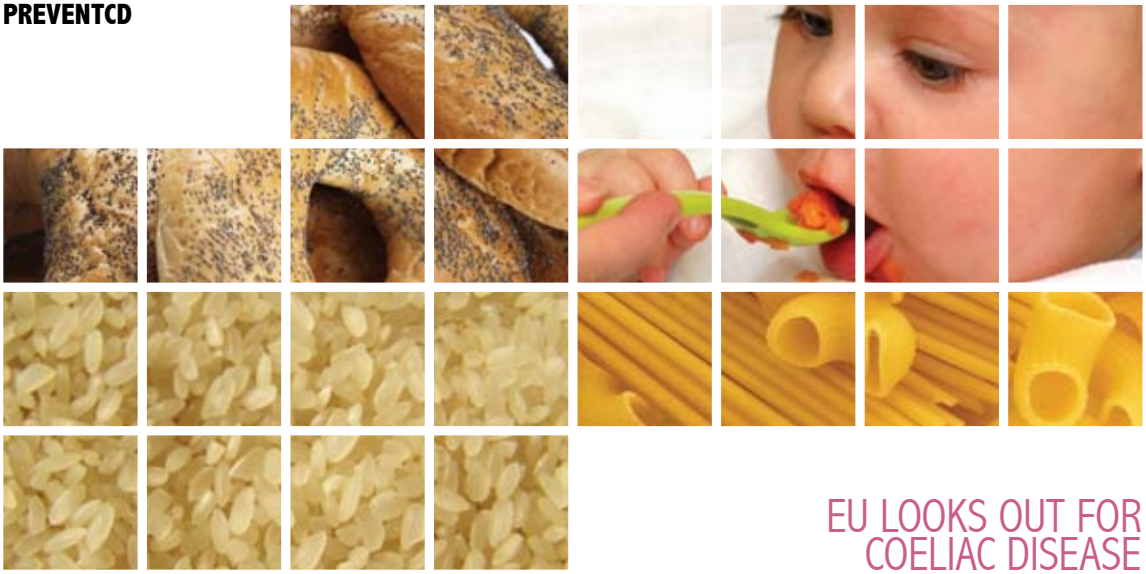
EU contribution:
€ 1.9M

PREVENTCD



EU LOOKS OUT FOR COELIAC DISEASE

LIST OF PARTNERS

- Academisch Ziekenhuis Leiden acting under the name Leids Universitair Medisch Centrum (The Netherlands)
- University of Naples, Federico II (Italy)
- Umeå University (Sweden)
- Akademia Medyczna w Warszawie (Poland)
- University Medical Center Utrecht (The Netherlands)
- La Paz University Hospital (Spain)
- La Fe University Hospital (Spain)
- Royal Numico N.V (The Netherlands)
- Association of European Coeliac Disease Societies (Belgium)
- Phadia (Germany)
- Eurospital (Italy)
- TECHNION – Israel Institute of Technology (Israel)
- University of Oslo (Norway)
- Children's Hospital Zagreb (Croatia)

One in every hundred Europeans is affected by coeliac disease (CD), a lifelong inflammatory condition that forces people to give up some of their favourite foods. The culprit is gluten, a substance found in our daily diet and contained in cereals such as wheat, rye and barley. Gluten affects the sufferers' small bowel, causing the immune system to attack its sensitive lining, thereby interfering with the proper absorption of nutrients and vitamins.

This disease, however, also causes financial heartache for patients and their families. Because they are forced to follow a specific gluten-free diet, sufferers must fork out €1 200 to €1 300 a year to meet the extra cost. With 2,5 million CD cases in Europe, the financial burden for the EU is a whopping €3-3,3 billion a year. Consequently, PREVENTCD has set its eyes on reducing the number of Europeans suffering from CD, with success being achieved through the development of primary prevention strategies for the condition. These are determined by investigating the influence of early dietary history and early feeding practices on young European children, along with genetic, immunological and environmental factors.

INNOVATIVE NEW TREATMENT FOR BABIES

Unfortunately for CD sufferers, the only treatment currently available to them is a gluten-free diet for life. What may be even more depressing is that this treatment was discovered more than half a century ago. While non-sufferers can take for granted such pleasures as attending a dinner party or even holidaying on a cruise ship, these can prove nightmarish for those with CD. They must expend a great deal of time and effort searching supermarket shelves, cooking special foods and even visiting doctors to ensure their health. Ultimately, primary prevention would prove helpful both economically and with regard to quality of life.

Experts from different backgrounds in industry or academic and patient organisations are pooling their resources to conduct innovative research, in order to determine whether it is possible to induce gluten tolerance in genetically predisposed children through the introduction of small quantities of the substance whilst they are still breast feeding. Those involved in PREVENTCD, specifically basic science experts and leaders in clinical and preventive medicine research, will use genomics techniques to identify those factors in early dietary history that trigger a negative gluten response. As a result, new European guidelines for early nutrition in order to prevent the condition arising, will be developed.

DEVELOPING NUTRITIONAL GUIDELINES

A thousand young children who are from families considered to be at high risk of developing the disease form part of PREVENTCD's study group. Researchers are investigating the possibility of inducing an immune tolerance for gluten in these genetically predisposed children. At the same time, a follow-up population study involving 16 000 twelve-year-old Swedish children, will assess the late effect of early dietary history on CD development. PREVENTCD offers a better understanding of how dietary history affects human health. Ultimately, what is important is that formulating better early nutrition guidelines for good health will effectively improve the well-being of Europeans. PREVENTCD will give the food industry the impetus to act, making life much better for CD sufferers.

Acronym: PREVENTCD

Full title: influence of the dietary history in the prevention of coeliac disease: possibilities of induction of tolerance for gluten in genetically predisposed children

Contract n°: 036383

Project co-ordinator:
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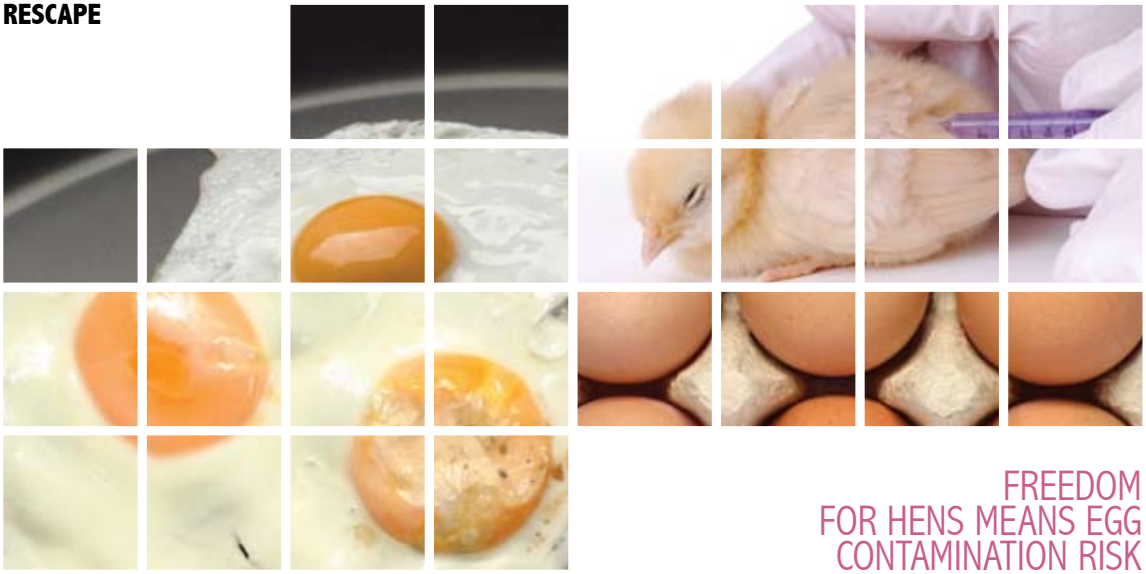
EU contribution:
€ 3.7M

RESCAPE



FREEDOM FOR HENS MEANS EGG CONTAMINATION RISK

LIST OF PARTNERS

- Institut National de la Recherche Agronomique (France)
- French Agency for Food Sanitary Safety (France)
- Institute for Agricultural and Fisheries Research (Belgium)
- GLON (France)
- INRA Transfert (France)
- Catholic University of Leuven (Belgium)
- Microwave Energy Application Company (Belgium)
- Roslin Institute (UK)
- University of Bologna (Italy)
- University of Glasgow (UK)
- University of Newcastle (UK)
- University of Ottawa (Canada)

Improve the environment, welfare and health of hens without damaging egg quality. This seems to be the message behind new legislation seeking to ban the conventional caging of chickens in order to produce healthier eggs. The conclusions of recent scientific studies point to the fact that hens moved from conventional cages to alternative systems, are more prone to contamination. With an annual volume of 13.8 million tonnes of eggs being consumed in the EU alone, that's a lot of potential poultry befoulment.

A REVOLUTION IN EGG PRODUCTION

By 2012, Council Directive 1999/74/EC defining minimum standards for the welfare of laying hens will come into effect. This legislation's goal is to abolish conventional cage systems in favour of enriched cages or floor systems in order to improve the welfare of hens, thereby banning a practice that had concerned consumers about the ethics of egg production. RESCAPE's goal of high quality, safe eggs from new production systems is an important contribution to maintaining an evenly distributed European industry. Additionally, the project should help maintain the internal market share for EU eggs and egg products.

Different scientific panels have recently concluded that keeping hens on the floor or outside presents an increased risk of contamination due to a greater exposure to infectious agents or parasites. European citizens, on the other hand, are becoming increasingly concerned about the safety of food, and demand that it be free of biological and chemical contaminants. Therefore, EU legislation regarding animal welfare needs to be balanced by effective measures for reducing any risk of human contamination.

BOOSTING THE EGGSHELL

In order to counter any future contamination, RESCAPE is looking into different research areas. The project team aims to optimise enriched cage and aviary design by recording quantitative data for egg contamination, thereby minimising the risk factors in alternative systems. Researchers will look into the reinforcement of the natural antimicrobial and mechanical defence mechanisms of eggs, by identifying the genes involved and selecting hens with superior anti-microbial alleles. The project also plans to improve technology for egg grading in order to increase the detection of eggs with the greatest risk to the consumer. The development of innovative egg decontamination treatments using microwave, hot air and gas plasma sterilisation, and modified atmosphere packaging or chitosan, will also be scrutinised. Finally, scientists plan to study the reduction of veterinary drug residues in eggs by improving vaccine technology.

The development of economically viable methods should help producers and the poultry industry complete the transition to enriched cages or alternative production systems. This improvement will maintain and ensure consumer trust and confidence in European egg products. RESCAPE will also contribute by indirectly helping limit imports of low-cost eggs (which do not conform to the EU's high welfare standards).

Pablo Picasso once said, "When you start with a portrait and try to find pure form by abstracting more and more, you must end up with an egg." Researchers in the RESCAPE project will probably not be required to deliver a Picasso painting at the end of their work. But if, through their painstaking labour, they can help hens lay healthier eggs, they will certainly have produced a work of art.

Acronym: RESCAPE

Full title: reducing egg susceptibility to contaminations in avian production in Europe

Contract n°: 036018

Project co-ordinator:
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EU contribution:
€ 2M

RHIBAC

FERTILISER ALTERNATIVES

LIST OF PARTNERS

- University of Hohenheim, Institute of Plant Nutrition (Germany)
- ARC Seibersdorf research (Austria)
- Ecole Nationale d'Ingénieurs des Techniques des Industries Agricoles et Alimentaires (France)
- AGRON, Agrochemicals Development and Marketing (Israel)
- Dalgety Arable Research (UK)
- Catholic University of Leuven, Centre of Microbial and Plant Genetics (Belgium)
- Universidad Austral de Chile (Chile)
- Fundação Educacional Charles Darwin (Brazil)
- Yeditepe University Department of Genetics and Bioengineering (Turkey)
- Embrapa Agrobiology (Brazil)

High levels of chemical fertilisers, such as ammonium nitrate, when applied to wheat and other arable crops, have allowed vastly increased yields. However, chemical fertilisers are becoming increasingly expensive, and can contribute to a range of environmental problems. This is a problem in the EU and elsewhere in the world.

RHIBAC is investigating the potential of rhizobacteria, which establish themselves among the root systems of plants, to boost plant growth and eventually replace chemical fertilizers. A number of rhizobacteria strains that promote plant growth have been found. This may allow a reduction in the use of chemical fertilisers, while maintaining yield. This effect has already enabled the development of low-input cultivation of sugarcane in Brazil. The present project focuses on wheat, a major arable crop in the EU, for which the potential of rhizobacteria has not yet been exploited.

THE NEED TO REDUCE CHEMICAL FERTILISER INPUTS

Increased use of fertilisers has had an obvious impact on crop management with improvements in farmers' yields. However, in agricultural soils much of the nutritional value of applied fertiliser (up to 50%) is lost through immobilisation, volatilisation, and in particular, leaching. This pollution is a contributor to greenhouse gases and can be harmful to water quality and wildlife.
Also, there is a growing concern in the long term that with ever-increasing costs and reduced availability of the natural oil and gas feedstock used for their production, chemical fertilisers will become less affordable for farmers in the future.

The development and use of rhizobacteria inoculants can therefore contribute to reducing the environmental impact and increasing the sustainability of arable farming.

UNDERSTANDING PLANT GROWTH PROMOTION BY RHIZOBACTERIA

Promotion of plant growth by rhizobacteria may permit reductions in chemical fertiliser inputs for inoculated wheat and is thought to be due to various factors. Nitrogen fixation, mobilisation of nutrients in the soil, or excretion of plant hormones by the rhizobacteria may make a contribution, depending on the exact species of rhizobacteria and the crop variety.

RHIBAC focuses on the most promising rhizobacteria identified in previous EU and national research programmes in Europe, Brazil and Chile. The project tries to understand the mechanisms of plant growth promotion and directly observes root colonisation, through experiments with genetically modified rhizobacteria in contained greenhouses.

The importance of plant genotype and the role of chemical compounds secreted by plant roots in plant-rhizobacteria interactions is also being investigated. Thanks to the previous experience of the participants, RHIBAC should be able to obtain reproducible, significant effects on wheat growth promotion. After a planned duration of 42 months, it aims to have conducted large-scale demonstrations of rhizobacteria inoculation of wheat in field trials in Europe, Turkey, Israel and South America. Encapsulation and seed coating are being tested for improving root colonisation as well as the survival of the rhizobacteria in the soil. Compatibility with other plant growth promotion/protection products is also being assessed.

INTERNATIONAL COLLABORATION FOR MAXIMUM IMPACT

There is considerable added value to be achieved from conducting this research at European and international levels, compared to a national project. Working with partners from many countries allows for the study of plant growth promoting rhizobacteria (PGPR), which may have developed particularly useful traits within the ecosystems of the different soils. It is also possible to test and design the inocula and delivery systems against a range of climates, soil types and agricultural practices. The project draws on scientific expertise from international research groups with a strong record in this field, and contributes to the sharing of technology and research skills between Europe and developing countries.

RHIBAC involves the participation of agricultural companies, including an SME, who would be involved in commercialisation of rhizobacteria inocula. The international partnership allows for a much greater potential impact, with the results of RHIBAC leading to significant reductions in chemical fertiliser usage around the world.

Acronym: RHIBAC

Full title: rhizobacteria for reduced fertiliser inputs in wheat

Contract n°: 036297

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EU contribution:
€ 2M

SAFEED-PAP

QUALITY FEED FOR QUALITY FOOD

LIST OF PARTNERS

- Walloon Agriculture Research Centre (Belgium)
- Veterinary Laboratories Agency (UK)
- University of Córdoba (Spain)
- Institute of Food Safety (The Netherlands)
- IRMM-JRC - European Commission (Belgium)
- The Danish Plant Directorate (Denmark)
- Central Science Laboratory (UK)
- Federal Laboratory for the Safety of Food - Federal Agency for the Safety of Food Chain (Belgium)
- National Veterinary Laboratory (Lithuania)
- University of Milan, Department of Veterinary Science Technology for Food Safety (Italy)
- CCL Research (The Netherlands)
- Diagenode (Belgium)
- China Animal Health and Epidemiology Centre (China)

Twenty years after it first appeared, mad cow disease no longer threatens livestock to the degree it once did. Nowadays, the BSE epidemic scare has become less dramatic. There has been a clear improvement in the situation in recent years, with a significant decrease (35% since 2002) in the number of cases of the disease across the EU. The European Commission is therefore considering the amendment of certain measures, provided that this positive trend continues and the necessary conditions are met. To this end, SAFEED-PAP aims to improve the quality checks for all kinds of compound feed.

TESTING FEED

In order to fulfil the scientific conditions defined by the European Commission, analytical methods for the detection of species-specific animal proteins in animal feed are being developed and validated. Four main research methodologies are being applied: classical microscopy, polymerase chain reaction, immunoassay techniques and near infrared microscopy.

The SAFEED-PAP project strives for optimal control of feed production and use. One of its aims is to produce suitable and cost-effective methods for screening for the presence of species-specific animal ingredients in feed available on the market. Thereby, a rapid screening technique for the detection of illicit ruminant by-products with the use of an improved and validated test kit will be at the disposal of the industry. Another kit, based on the Polymerase Chain Reaction (PCR) technique is being developed, to provide a method for identifying species-specific DNA.

By developing new methods, the project aims to lower the tremendous costs associated with the spread of animal epidemics.

PLUGGING THE GAPS

The feed ingredients and compound feeds may become contaminated by rodents and other wild animals. The lack of a method of assessing the cause of contamination, however, has resulted in drastic costs for the industry over the last five years. Notification of positive results on bone fragments in a variety of feed materials in 2004 and 2005 led to major recall actions of feed materials. At the beginning of 2005, the European Feed Manufacturers' Federation (FEFAC) reported economic damage in excess of EUR 35 million related to recall actions linked to positive bone findings, following the introduction of the extended feed ban in January 2001.

SAFEED-PAP, therefore, addresses some of the remaining gaps that currently prevent proper control of the extended feed ban and of future bans. A study has been launched to determine the key parameters for the production of certified reference material (CRM) that will be helpful in the implementation of the actual and forthcoming methods in control labs.

Ultimately, the project seeks to improve both feed quality and safety, thus resulting in better consumer protection, while at the same time reducing the financial burden on the meat industry. Doctor David A. Kessler, a former United States Food & Drug Administration Commissioner once said, "The history of government regulation of food safety is one of government watchdogs chasing the horse after it's out of the barn." Following the BSE epidemic in the EU, it seems that lessons have been learned, and that this time the barn doors will only be opened when quality and safety checks have been thoroughly implemented.

Acronym: SAFEED-PAP

Full title: detection of presence of species-specific processed animal proteins in animal feed

Contract n°: 036221

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EC Scientific Officer:
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EU contribution:
€ 1.7M

SAFEHOUSE FOR SAFE EGGS

LIST OF PARTNERS

- Ghent University (Belgium)
- Danish Institute for Food and Veterinary Science (Denmark)
- University of Bristol (UK)
- University of Veterinary Medicine (Germany)
- Danish Institute of Agricultural Sciences (Denmark)
- Veterinary Research Institute (Czech Republic)
- Institute of Food Research (UK)
- Swiss Federal Veterinary Office (Switzerland)
- Big Dutchman (Germany)
- Anaximandre (France)

A European Food Safety Authority study compiled in 2006 found that on average about one in five large scale commercial egg producers have laying hens infected with *Salmonella*. It is therefore not surprising that recent EU legislation requires even stricter control measures for egg producers to avoid contamination. Furthermore, housing in conventional battery cages will be prohibited from 2012. However, at the moment there is only limited information on the proportion of eggs contaminated in relation to the methods of production. SAFEHOUSE aims to provide this information in order to clarify future developments on the subject of egg contamination.

EGGS ARE OVERWHELMINGLY SAFE TO EAT

The risk of getting an illness from eggs is very low. However, the nutrients that make eggs a high-quality food for humans are also a good growth medium for bacteria. In addition to food, bacteria also need moisture, a favourable temperature, and time in order to multiply, thus increasing the risk of illness. In the rare event that an egg contains bacteria, the risk can be reduced by proper chilling and eliminated by proper cooking. When handled with care, eggs pose no greater food-safety risk than any other perishable food.

The inside of an egg was once considered almost sterile. But over recent years, the bacterium *Salmonella Enteritis* has been found inside a small number of eggs. Scientists estimate that, on average, only one in every 20 000 eggs might contain the bacteria. So, the likelihood that an egg might contain *Salmonella* is extremely small — 0.005 per cent. At this rate, an average consumer might encounter a contaminated egg once every 84 years.

THE IMPACT OF HOUSING ON EGG QUALITY

The SAFEHOUSE project will collect and analyse quantitative data to evaluate the effect of housing systems on egg contamination in the field, by studying different flocks. The expected result is the ability to predict the potential risk to the consumer of the move to better laying-hen housing systems. These risk/analysis studies will focus on *Salmonella*, but will also cover other potential zoonotic agents, antibiotic resistance gene transmission and residues.

The consortium aims at converting the knowledge generated in this project into practical applications that can be used by the European poultry industry. The project will also make European research groups more competitive. In fact, no single partner could individually achieve the objectives of this project. Bringing together the fragmented knowledge of every partner will lead to a consortium that is perfectly prepared to carry out a multidisciplinary project like SAFEHOUSE. Furthermore, in the framework of international competition, the European egg industry is focused on producing a product of exceptional quality, and this directly implies pathogen-free chicken eggs.

One of the longstanding questions to perplex humanity is whether the chicken came before the egg or vice-versa. Samuel Butler, the 19th century British novelist had this to say on the topic: "The hen is an egg's way of producing another egg." SAFEHOUSE is Europe's way of ensuring that one of our staple foods remains safer than ever.

Acronym: SAFEHOUSE

Full title: analysis and control of egg contamination by *Salmonella* and other zoonotic pathogens after the move of laying hens to enriched cages and alternative housing systems

Contract n°: 035547

Project co-ordinator:
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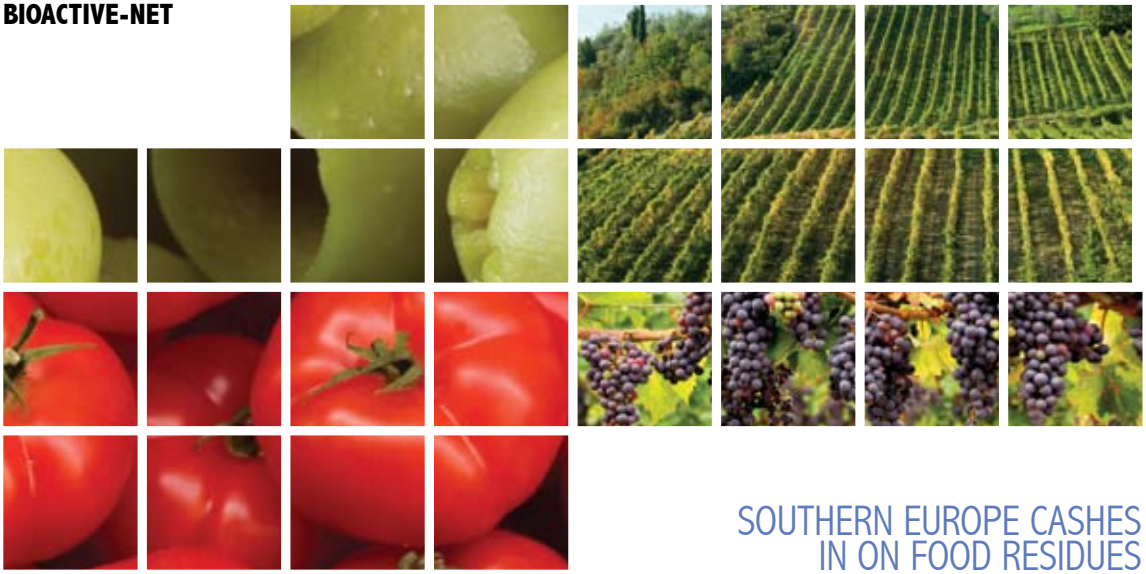
EU contribution:
€ 2.6M

BIOACTIVE-NET



SOUTHERN EUROPE CASHES IN ON FOOD RESIDUES

LIST OF PARTNERS

- Technologie-Transfer-Zentrum, Food Department (Germany)
- AINIA, Centro Tecnológico (Spain)
- CCAE, Confederación de Cooperativas Agrarias de España (Spain)
- AMITOM, The Mediterranean International Association of the Processing Tomato (France)
- Vignaioli Piemontesi (Italy)
- PEZA UNION, Union of Agricultural Cooperatives in Peza (Greece)
- ANFOVI, L'organisme de formation des Vignerons indépendants (France)
- Tecnoalimenti (Italy)

Southern European countries are the leading producers of tomato, olive and grape products throughout the EU. The cultivation and processing of these key agricultural products results in the generation of millions of tonnes of processing residues, as a by-product. BIOACTIVE-NET seeks to harness the potential of these residues as a rich, renewable source of bioactive compounds in order to further enhance the potential of the EU economy.

Substances like oils, dietary fibre, vitamins and certain plant constituents found in tomato, olive and grape pulp, can find application in the food additives and cosmetic industries, thus opening up a whole new avenue of growth for all the sectors involved. The project is creating an efficient information platform for the dissemination of research results in the fields of extraction and by-product exploitation. The specific know-how generated within the framework of BIOACTIVE-NET is disseminated to stakeholders in the main producing countries (Spain, Italy, France and Greece) via a series of workshops. Particular emphasis is placed on the involvement of small and medium-sized enterprises (SMEs), and the industrial exploitation of the natural ingredients in residues.

CREATING VALUE FOR SOUTHERN EUROPEAN AGRICULTURE

The added value to tomato, olive and grape production proposed through BIOACTIVE-NET will result in strengthening the European natural ingredients market, due to the low cost of residue raw materials. This new reality offers a significant competitive advantage to the European market in the face of intense competition from third countries such as the USA. The exploitation of the new commercial advantages offered herein can only be realised through the collaborative efforts of the agricultural, food and cosmetics industries, in combination with the scientific community.

The project follows on from previous EC efforts to create further value for the cultivation of tomatoes, olives and grapes in southern Europe. BIOACTIVE-NET is now in a position to apply this wealth of information and so bridge the gap between research and implementation. The consortium comprises associations of tomato, olive and grape processors who are heavily involved in processing pulp and are seeking to take full advantage of this rich source of active compounds, while gaining significant economic returns in the process.

FAVOURABLE IMPACT ON THE FOOD CHAIN

Components of processing residues include carbohydrates, proteins, lipids and secondary metabolites, a great number of which can find further application in a number of industries once they have been efficiently extracted. The low cost of this resource combined with the potential health benefits of these ingredients re-entering the food chain, makes this a very attractive prospect. One key application is the use of the antioxidants and colorants present in the pulp, as alternatives to the artificial chemical compounds currently used as additives by the food industry.

The bioactive compounds extracted from processing residues display a series of health benefits, and scientific data fully supports their introduction in the food chain. Antioxidants like phenols and lycopene reduce the number of free radicals, preventing cell destruction and skin damage. Natural fibres aid the growth of intestinal flora, protecting against cancer, while tomato and grape lipids can help protect against cardiovascular disease.

Overall, the use of these compounds as functional additives in the food and cosmetic industries can result in a health-promoting and environmentally-friendly means of residue utilisation, throughout the agricultural communities of southern Europe.

Acronym: BIOACTIVE-NET

Full title: assessment and dissemination of strategies for the extraction of bioactive compounds from tomato, olive, and grape processing residues

Contract n°: 043035

website:
www.bioactive-net.com

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EU contribution:
€ 589,354

BIODET

STIMULATING PESTICIDE DETECTION

LIST OF PARTNERS

- Asociación de Investigación de la Industria Agroalimentaria, AINIA (Spain)
- Immunotechnology Group, Centre for Research and Innovation on Bioengineering, Polytechnic University of Valencia (Spain)
- Department of Biochemistry, Masaryk University of Brno, MUB (Czech Republic)
- LCC Engineering & Trading (Switzerland)
- Compal - Companhia Produtora de Conservas Alimentares (Portugal)

Fresh fruit and vegetables are essential for a healthy diet, but they could also be potentially harmful due to pesticide residues, a frequent cause of several diseases. Consequently, European countries have defined the Maximum Residue Limits (MRLs) permitted for a wide range of pesticide-product combinations. So far, agro-food SMEs have outsourced MRL controls, but this has proved to be a time- and money-consuming process. Biosensor-based systems represent an alternative to performing those quantitative measurements of pesticides using a fast, automatic and cost-effective method. The aim of the BioDet project is to stimulate the dissemination of research breakthroughs in this field to potential end-users, in order to reach the highest level of consumer health protection.

HEALTHY COMPETITIVENESS …

Despite the existence of very strict rules and regulations on food contamination in Europe, consumers are continuously ingesting small quantities of pesticides through their daily consumption of food and water. The production of high quality, safe food is not only an obvious prerequisite for a healthier society, but also an economic key factor for competitiveness in the global market.

Although food quality and safety can be measured, pesticide assays are currently conducted at excessive costs for food producers. As a result, they use pesticide level controls defensively to prove that their products fall within the stipulated limits. One of the main challenges of BioDet is to convert this task into a competitive advantage.

While decentralising pesticide control into the hands of agro-food producers will motivate them to reduce pesticide use, this can only be achieved if the assays — besides working according to government regulations — are affordable, sensitive, and reliable. BioDet aims to accelerate this process by proposing future research projects, as well as collaboration and coordination between manufacturers, potential users (farmers), regulation authorities, product developers, and academia.

… FOR HEALTHY CONSUMERS

BioDet provides SMEs with available technology on MRL controls; supports policy development and harmonisation of existing national legislation; disseminates information on users' needs and policy requirements; and opens new research fields to fill technology gaps.

The project website, as a new analytical tool in the fruits and vegetables sector, will be the interface with the external community interested in biosensors. Leaflets and several members informative events will be organised to reach stakeholders from the industry, public authorities, academia, as well as consumers.

In order to improve health and quality of life, it is necessary to reduce and control the presence of pesticides in fruits and vegetables. This implies the availability of affordable, suitable technology and regulations that reinforce the use of new assays. In this regard, BioDet is an important step in the right direction.

Acronym: BIODET

Full title: networking in the application of biosensors to pesticide detection in fruits and vegetables

Contract n°: 043136

Project co-ordinator:
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EU contribution:
€ 447,000

BIOSAFENET

EU PRESSES FOR GMO BIOSAFETY RECOGNITION

LIST OF PARTNERS

- Federal Biological Research Centre for Agriculture and Forestry (Germany)
- International Centre for Genetic Engineering and Biotechnology (Italy)
- Agricultural Research Centre of Hungarian Academy of Sciences (Hungary)
- Genius (Germany)
- National Hellenic Research Foundation (Greece)

Genetically modified organisms (GMOs) are much talked about in the scientific world, but GMO safety research — and in particular its results — is not. Advocates seeking to make GMO biosafety research known are now pushing for its recognition at national, European and global levels. Biosafety research must be presented to policymakers and the wider public in a comprehensible yet constructive way.

BIOSAFENET, a project that will guarantee Europe's consistent and effective initiatives in biosafety research, will bring GMO biosafety to the surface. BIOSAFENET's strategic objective is to contribute to the information and dialogue on the scientific issues related to GMO biosafety. It will also provide a platform for information and discussion on biotechnology.

Experts believe that plant biotechnology can play a significant role in the sustainability and technological development of safe agriculture and agricultural industry. The activities of BIOSAFENET are aligned with 'Global involvement of public research scientists in regulations of Biosafety and Agriculture Biotechnology'.

A RECIPE FOR SUCCESS

A network involving European scientists specialising in GMO biosafety research is responsible for several activities: sourcing and amalgamating information on biosafety from current European GMO biosafety networks and EU research programmes; bringing together specialists from new EU Member States and Candidate Countries to deliberate upon GMO biosafety; using tools from the International Society for Biosafety Research (ISBR) to bolster European specialists' roles in the biosafety debate; reviewing and disseminating research results; improving channels of communication; and building knowledge-based information on GMO biosafety for public debate.

Seminars, conferences and dissemination of information, among others, are some of the activities that BIOSAFENET carries out to ensure the success of the programme. These activities, as they fall within the general objectives and scope of the EU's "Food Quality and Safety" thematic priority, will focus on the individual and comparative assessment of safety, quality and environmental impact related to the production of GMO-based food.

MORE KNOWLEDGE, BETTER COMMUNICATION

The European partners, along with the international forums and seminars on biosafety, are expanding the boundaries of knowledge. This will help in settling key issues, like health, safety and the environment, that affect people all over the world. Moreover, an established web network not only assists scientists from New Member States and Candidate Countries to maintain contact, but it also offers them key regional information. The end result is an established common database containing integrated aspects for European biosafety research projects. A common knowledge base is also being developed, thus stimulating the coherent development of policies and reinforcing the foundation of the European research area.

The information system that is offered by BIOSAFENET gives researchers and industry the means to garner the facts and figures of international biosafety research and resources. The BIOSAFENET consortium anticipates that online marketing, data analysis and editorial activities will help fuel the development and sustainability of a communication infrastructure. Strengthening communication will encourage public understanding, thus achieving BIOSAFENET's objective to make biosafety research more recognised.

Acronym: BIOSAFENET

Full title: biosafety research communication network

Contract n°: 043025

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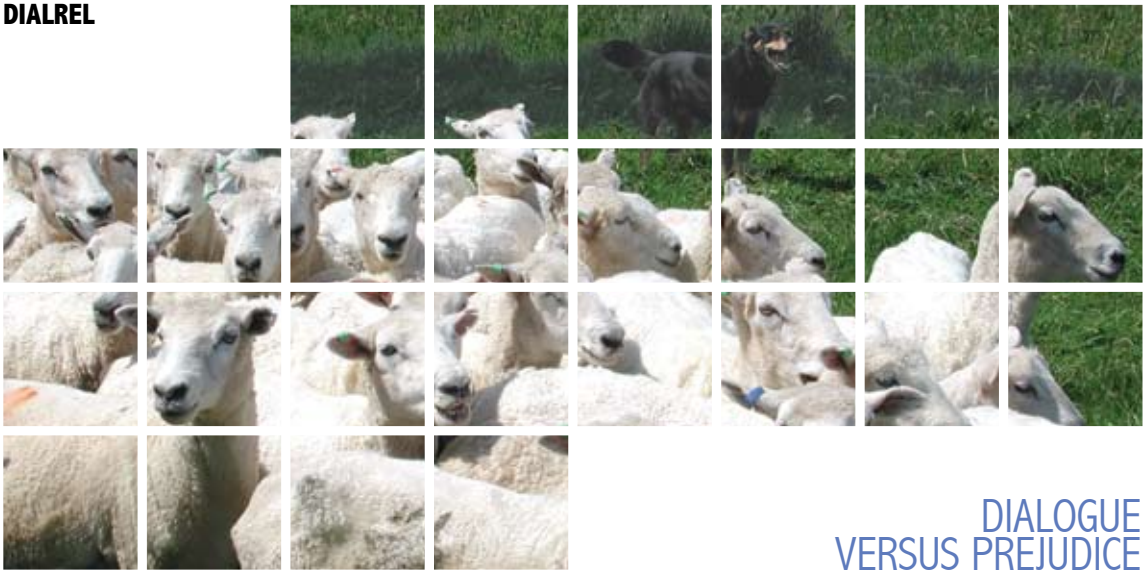
EU contribution:
€ 534,000

DIALREL



DIALOGUE VERSUS PREJUDICE

LIST OF PARTNERS

- University of Bristol (UK)
- BSI, Schwarzenbek (Germany)
- Université de la Méditerranée, Marseille (France)
- Institut De Recerca I Tecnologia Agroalimentaries (Spain)
- Cardiff University (UK)
- Freie Universität Berlin (Germany)
- National institute for Consumer Research (Norway)
- Gent University (Belgium)
- Association pour le Développement de l'Institut de la Viande (France)
- Veterinary Association, Istanbul (Turkey)
- Royal Veterinary College, London (UK)
- University of Milan (Italy)
- Animal Sciences Group Wageningen UR, ASG Veehouderij (Holland)
- University of Perugia (Italy)
- Bar Ilan University (Israel)
- Meat and Livestock Australia (Australia)

Religious slaughter has always been a controversial and emotive subject, caught between animal welfare considerations, cultural and human rights issues. There is considerable variation in current practices and the rules regarding religious requirements are still confusing. Similarly, consumer demands and concerns also need to be addressed. Therefore, there is a need for information relating to slaughter techniques as well as product range, consumer expectations, market share and socioeconomic issues. The DIALREL project aims to gather this information by encouraging a constructive dialogue between interested parties.

THE BASIS OF A REALISTIC DIALOGUE

Although religious slaughter has been performed in Europe for centuries, alongside conventional slaughtering that for about a century, has included preslaughter stunning, objections to the practices on welfare grounds have been expressed since the 19th century. However, the demand for products from animals slaughtered by religious methods has considerably increased in recent years, and as a result, their market share is now considerable.

There are two main types of religious slaughter that need to be considered in this context: the slaughter method for the production of halal meat intended for Muslims, and Shechita for obtaining kosher meat for Jewish consumers. For religious slaughter, it can be acceptable to use preslaughter stunning as in conventional slaughter. However, there is a continuing debate on the merits and possible adverse effects of preslaughter stunning in general. Although information relating to religious slaughter methods has increased in recent years, animal welfare, consumer and other socioeconomic and market issues have not yet been sufficiently addressed.

In addition, relevant EU legislation allows derogations so that Member States can retain the right to authorise religious slaughter without stunning within their own territory, under official veterinary supervision. However, it is also required that the welfare of animals slaughtered by religious methods shall be protected as it must for animals conventionally stunned and slaughtered.

MEETING EU WELFARE STANDARDS

DIALREL will facilitate the adoption of good practices in religious slaughter that can meet the welfare standards of the EU, and the expectations of the market and consumers. Activities include a review of national legislation and research and an analysis of the prevalence of various practices. The influence of diverse religious beliefs and interpretations on slaughter practices are also taken into account. Another topic to be covered is the extent to which food consumption patterns are affected, as well as public and consumer concerns for food quality and safety.

In order to review and propose a mechanism for implementation and monitoring of the practices mentioned above, the project explores the conditions for promoting the dialogue between interested parties and stakeholders. The social dialogue will take place within Member States, Candidate and Associate Countries. In the long term, the welfare of farm animals should be improved through a harmonisation of techniques and regulations within the EU.

The workplan foresees five phases: conflicting standards (in the context of religion, legislation and animal welfare); evaluation of current practices; consumer and consumption issues; market transparency; and dissemination activities. The latter is structured around dedicated websites and workshops, providing a platform for debate, exchange of information, and consensus.

Prejudices hinder communication, understanding, and knowledge. The DIALREL project is an excellent opportunity to bring together different opinions on an important cultural issue, and move towards a resolution.

Acronym: DIALREL

Full title: religious slaughter: improving knowledge and expertise through dialogue and debate on issues of welfare, legislation and socioeconomic aspects

Contract n°: 043075

Webiste:
www.dialrel.eu

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EU contribution:
€ 800,580

E-TRUST

TRUST IN THE MENU

LIST OF PARTNERS

- University of Bonn (Germany)
- University of Natural Resources and Applied Life Sciences (Austria)
- University of Maribor (Slovenia)
- University of Macedonia (Greece)
- Polytechnic University of Madrid (Spain)
- Wageningen University (The Netherlands)
- University of Florida (United States)
- University of Viçosa (Brazil)
- Uludag University (Turkey)
- University of Bologna (Italy)

In recent years, the availability of sophisticated business-to-business (B2B) e-commerce technology has improved tremendously. In the food industry, however, only large multinationals exploit the potential of such systems for their supply chain management. SMEs, for the most part, are rather reluctant to adopt advanced B2B e-commerce solutions. Given the fact that small players account for most of the turnover in the European food sector, the economic challenge is substantial.

B2B e-commerce refers to the exchange of goods and related information between companies via Internet tools. With regard to the food sector, B2B e-commerce takes place in the exchange of food products at all levels along the food chain (except retail) to consumer. This cost-reducing technology could bring several key advantages and much potential to SMEs in the European food industry, if they would only seize the opportunity.

TAKING 'E-NITIATIVE'…

The European food industry transforms 70% of EU's agricultural raw materials, employs over 4 million people in a majority of SMEs, and is central to the economic growth in new Member States, as well as to the economic development of Europe's regions and rural areas. Strengthening the competitiveness of the food sector will thus have major impact on job creation, wellbeing and welfare in Europe.

Recent developments point to the fact that only highly efficient processes for the exchange of food products along the food chains would provide the supply of European consumers with high quality food products at affordable prices. Information transparency at all stages is another condition, from trade relationships to consumers.

The barriers that prevent food sector SMEs from using B2B e-commerce are mainly due to difficulties in physically examining the quality and safety of food products and to the perceived risk of commercial transactions via e-commerce. This technology can only be affordable and trusted through improvements in both the trade process and the communication of trustworthiness between trading partners along the food chains.

…TO GET RESULTS

Subsequently, E-TRUST ensures the affordability of high quality food by exploiting the efficiency power of e-commerce for food chains. Furthermore, it generates consumer confidence through transparent, trustworthy food chains able to deliver guarantees to consumers. To this end, the project makes use of multimedia food product, presentations to secure e-commerce technology infrastructures, and third-party quality signs.

E-TRUST established a European expert network with leading scientists in the fields of food quality and safety management, and chain tracking and tracing. Effective food chain e-business solutions can only work at a European level if they work beyond the geographical and cultural borders of each individual country. The network analyses the four major food chains: meat, cereals, fresh fruits and olive oil in the countries involved, paying special attention to their specific cultural influences.

Business representatives and food chain management consultants act as intermediaries in order to reach the largest possible number of SMEs in the European food sector. Thanks to an extensive dissemination plan, this also includes SMEs from European countries not involved with the project, adding a truly continental approach to the project. The E-TRUST project significantly improves both the food supply chain and the competitiveness of the European food sector.

Acronym: E-TRUST

Full title: building trust for quality assurance in emerging markets for food chains

Contract n°: 043056

Project co-ordinator:
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EU contribution:
€ 649,471

EU-BALKAN-FABNET

OPENING ACCESS GATES

LIST OF PARTNERS

- Food Industrial Research and Technological Development Company (Greece)
- Sustainable Economic Development Agency (Albania)
- Agency for International, Scientific, Educational, Cultural and Technical Cooperation (Montenegro)
- University of Belgrade, Faculty of Agriculture (Serbia)
- Ss. Cyril and Methodius University Skopje (Former Yugoslav Republic of Macedonia)
- University of Sarajevo, Faculty of Agriculture (Bosnia and Herzegovina)
- Ministry of Science, Education and Sports, Directorate for International Cooperation (Croatia)
- Agency of the Promotion of European Research (Italy)
- Euroquality (France)
- Brussels Enterprise Agency (Belgium)
- Euro Project (Bulgaria)

The Western Balkans consists of Albania, Bosnia-Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia and Serbia and Montenegro. As the region emerges from a recent period of economic and political instability, questions arise on how best to draw on the readily available resources they offer for future growth.

The project EU-BALKAN-FABNET works on the premise that stimulating international cooperation in research, carried out in both academia and industry, is a way to face the challenge. This means encouraging stronger participation in funded research projects within the European Commission's 7th Framework Programme (FP7) in a focused and comprehensive way. For Europe as a whole, competitiveness in the international arena will be enhanced.

AGRICULTURE: A STAPLE OF THE REGION'S ECONOMY

When you consider that over half of Albania's workforce is represented in the agriculture sector, it is clear that greater involvement in the Food, Agriculture and Biotechnology (FAB) theme of FP7 should be the project's focal point. Indeed, EU-BALKAN-FABNET introduces topics directly related to this theme which have also been identified as key research areas for the Western Balkan (WB) countries.

KNOW-HOW TRANSFER DOMINO EFFECT

EU-BALKAN-FABNET has identified and incorporated as partners key National Contact Points and experienced multipliers from the region's six countries, who will participate in mapping, networking, training and awareness-raising activities. These partners represent gatekeepers for their country's respective research communities. The strategy of imparting knowledge to these project partners ultimately means reaching the local target audiences.

Through the project, all partners are well equipped to assist the target groups, identified via a mapping activity, in a number of ways. For example, by providing assistance on an FP7-related query such as the search for suitable partners, or by supporting individual participation in major international events. Furthermore, in this role, project partners are able to actively promote the networking of local researchers and act as a conduit of information exchange.

ADDING ENTREPRENEURSHIP TO EXPERTISE

The project is pragmatic in its approach. Each partner, for instance, is responsible for organising three workshops for their local audiences. The first workshop targets local multipliers, who could help in motivating the research community. The other two workshops focus on the researcher's audience: one provides introductory information, such as a briefing session on the FAB programme, the basics for project financing, suggestions on networking and exploring existing opportunities; and the other workshop builds on this by providing a more in-depth presentation on the financial and legal aspects of FP7, information on constructing effective proposals and a guide for project management.

Furthermore, the partners will compile an electronic handbook to further extend the project's reach to potential FP7 participants. The handbook will cover basic information such as project funding types and will be translated into the language of each WB partner. The project's website is also a reference point, containing support information for FP7 participation and providing tools to facilitate partner search and consortium building.

Acronym: EU-BALKAN-FABNET

Full title: EU-western Balkan network for training and the promotion of cooperation in research activities within the food, agriculture and biotechnology of theme FP7

Contract n°: 043119

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www.etat.gr

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EU contribution:
€ 570,864

EUFOOD4LIFE

AGRO-FOOD SECTOR: FROM POTENTIALTO LEADERSHIP

LIST OF PARTNERS

- Confederation of Food and Drink Industries (Belgium)
- Unilever Nederland Holdings (The Netherlands)
- Institute of Food Research (UK)
- Wageningen Centre for Food Sciences (The Netherlands)

Europe is renowned for its rich culinary traditions, but tempting food shops and fancy restaurants are only part of the picture. Overall, the European agro-food sector is facing a huge challenge. Global competitiveness is at stake, but is also achievable through innovation.

The EU food industry is becoming more competitive worldwide. It is strengthening its investment in research and development and innovation in products and processes. In order to capture new opportunities for food and drink innovation, especially in the area of high added-value health foods and services, investments and technologies are required that may, in many cases, surpass the capabilities and capacities of most businesses. Efficient public-private partnerships are imperative if research needs are to be prioritised and resources are to be effectively pooled. Individual food companies, including SMEs, cannot take on the innovation challenge alone: a joint initiative is necessary.

UNLEASHING THE POTENTIAL

The agro-food industry is the largest manufacturing sector in Europe. The industry is a global exporter, providing opportunities for growth within the new EU Member States, and within associated and candidate countries. It also encourages the development of regional economies and exploitation of cultural diversity and tradition. Still, overall growth was limited to 1.9% in 2003, and for it to remain competitive globally the sector is constantly innovating its processes and products.

The food industry is improving its innovation performance in order to keep up with its global competitors. The USA, Japan but also China and India are currently investing in science and technology at a faster pace than Europe is. To address this situation, the European Commission recently published a 19-point Action Plan to promote innovation. European Technology Platforms (ETPs) represent one of these mechanisms.

COLLABORATION MEANS SUCCESS

The FOOD4LIFE Platform was created under the auspices of the Confederation of the Food & Drink Industries of the EU (CIAA). It is strengthening the European-wide innovation process, improving knowledge transfer and stimulating European competitiveness across the food chain. The major objective of this ETP is to deliver innovative, improved food products for regional, national and global markets in line with consumer needs and expectations.

The project promotes the Strategic Research Agenda (SRA) and associated stakeholder-targeted 'layman SRAs'. It also contributes to the application of the ETP implementation plan, and to the investigation of possibilities for structuring innovation across the food chain. Links are being established with regional and national bodies that have information relevant to the ETP FOOD4LIFE operation. An open and accessible database for these data is available. A Mirror Group will be set up in 2007 and will ensure expert input from regional and national bodies (via ERA-NETs), funding agencies and private capital.

The challenge of stimulating innovation in the food chain requires a combination of a formal research-led approach and a structured, infrastructure-led approach. It is developed and tailored to the needs of larger food companies and high-tech SMEs on the one hand, and medium- and low-tech SMEs on the other hand. The interests of all stakeholder sectors are addressed through national consultations, the drafting of the SRA and the project implementation plan.

FOOD4LIFE will identify and prioritise key issues for studies against which to plan for the future and play an important role in planning of research and innovation in this field. By encouraging the consolidation of the sector, the ETP FOOD4LIFE significantly contributes to its increased global competitiveness.

Acronym: EUFOOD4LIFE

Full title: European technology platform for the agro-food sector: food for life

Contract n°: 043177

Website:
http://etp.ciaa.be

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EU contribution:
€ 533,450

BACTERIA BATTLE FOR BETTER HEALTH

LIST OF PARTNERS

- Federación Latinoamericana de Asociaciones de Empresas de Biotecnología (Argentina)
- The Plant Biotechnology Institute for Developing Countries - University of Ghent (Belgium)
- Escola Superior de Biotecnologia, Universidade Católica Portuguesa (Portugal)
- Sociedad Española de Biotecnología (Spain)
- Fundación Chile (Chile)
- Corporación Colombia Internacional (Colombia)
- Empresa Brasileira de Pesquisa Agropecuária (Brazil)
- Fundación PROINPA (Bolivia)
- Universidad Nacional Mayor de San Marcos (Peru)
- Universidad Nacional Autónoma de México (Mexico)
- European Federation of Biotechnology (Spain)

What comes to mind when you think of bacteria? Most people think of mould and other nasty substances. Alternatively, one person's mould is another person's penicillin and as disease-fighting warrior. Businesses, realising the potential of bacteria, now provide functional foods containing bacteria that promote the well-being of individuals. Consumers can now buy, for example, products such as yogurts and smoothies containing bacteria that are good for them.

Reducing cholesterol levels and fighting heart disease have also been high on the agenda for science and businesses. Supermarkets now stock up on fats, oils and spreads that reduce cholesterol, and beverages like milk and orange juice are fortified with calcium or fibre to help consumers attain healthier lifestyles. Consumers may not be aware of what the foods they are buying contain, but they are nonetheless instrumental in advancing the functional food market.

Part of the EU Health Policy is to promote healthy eating habits for all EU citizens. It is also expanding on this by assisting other regions that need support. Its latest focus is Latin America. To support the functional foods sectors within the EU and Latin America, EULAFF plans to research, develop and create new products made up in the main from naturally occurring substances. This will support the establishment of an agri-food chain innovation system for the identification and development of novel functional foods. The strategic objective is to accelerate the process of commercialisation of innovative foodstuffs, ensuring the well-being of consumers and reducing the risk of disease.

IT'S ALL IN THE FOOD

A functional food can be defined as one containing potentially healthy products, including any modified foods or ingredients that may provide positive health benefits beyond the nutrients already present. While they are not in the general sense seen as a medicine, they do have the potential to reduce illnesses and disease, promote good health, and reduce healthcare costs. EULAFF has realised the potential of these products to support the quality of life and promote nutritional and environmental development for EU citizens and governments alike.

EULAFF will oversee the creation of a global collaboration platform, where scientists and functional food experts are able to network and transfer experience and knowledge. An environment conducive to innovative research collaboration will be offered. The project envisages a successful and sustainable use of biological diversity in Latin America by focusing on its agricultural crops. Moreover, crops that have a high nutritional value, but are under-utilised, are seen as a major factor for achieving sustainability within rural Latin America.

FOOD FOR ALL

By addressing the needs of Specific Support Actions and by participating in the Food Quality and Safety programme, EULAFF works to increase competencies, strengthen education, promote innovation and increase the benefits of biotechnological research for society. Offering up these kinds of solutions to EU citizens as well as those from abroad, will assure success is on the menu.

Acronym: EULAFF

Full title: European Federation of Biotechnology Latin America action on functional foods

Contract n°: 043158

Project co-ordinator:
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EC Scientific Officer:
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EU contribution:
€ 398,320

EUROMEDCITRUSNET

JUICY MARKET FOR UNIFIED CITRUS PRODUCTS

LIST OF PARTNERS

- Sociedade Portuguesa de Inovação (Portugal)
- University of Catania (Italy)
- Cukurova University (Turkey)
- National Agricultural Research Foundation (Greece)
- Euroquality (France)
- Asociación de Investigación de la Industria Agroalimentaria (Spain)
- Institut Agronomique et Vétérinaire Hassan II (Morocco)
- Institut National Agronomique de Tunisie (Tunisia)
- Horticultural Research Institute (Egypt)
- Consorzio Euroagrumi O.P (Italy)
- Station D'Emballage D'Agrumes Kabbage Souss (Morocco)

Citrus fruits have long been prized for their flavour and nutritional benefits. Served as a garnish, used in tarts, drunk as juices or eaten raw, citrus fruits are one of the most popular fruits in the world — and Mediterranean countries are among the world's top producers.

Scientists and industry members need to collaborate to maximise the benefits reaped from research on fruit. Exploitation of the findings can improve health and bring economic benefits to the Mediterranean region. By sharing information between researchers and producers in the Mediterranean, the needs of the citrus industry can provide direction for future studies, and the results can be more effectively implemented.

CITRUS: THE JUICY FRUIT

All food sectors are undergoing changes to incorporate aspects of improved food safety. The field of citrus production is no exception.

The EUROMEDCITRUSNET project has set up a Mediterranean networking initiative to stimulate international cooperation and support policy development, as well as integrate current research. The project has a well-balanced, multidisciplinary consortium, with complimentary expertise to fulfil the project's objectives.

Many Mediterranean citrus companies are small and medium-sized enterprises (SMEs). SMEs have traditionally had little involvement in setting research agendas and participating in research. One of the primary objectives of the project is to increase SME participation, by facilitating their access to knowledge and providing them with information on training and technology.

SWEET, FRUITY RETURNS

Bringing industry and researchers together can generate both health and economic returns for two reasons. Firstly, it helps researchers to define research programmes that address the needs of industry. Also it enables industry to more easily apply the results of research, so as to improve fruit safety and quality.

Moreover, the additional cross-border exchange of information on topics such as water management or the creation of trees that can better resist disease or withstand harsher climates, can only bring economic benefits to the region. Further economic benefits can be obtained by sharing research that focuses on reduction of fruit spoilage during transport, or addressing fruit juice production issues.

Higher quality, increased safety of citrus fruits and the benefits of disseminating knowledge through the EUROMEDCITRUSNET project will certainly contribute to a better quality of life for European citizens.

Acronym: EUROMEDCITRUSNET

Full title: safe and high quality supply chains and networks for the citrus industry between Mediterranean partner countries and Europe

Contract n°: 043146

Project co-ordinator:
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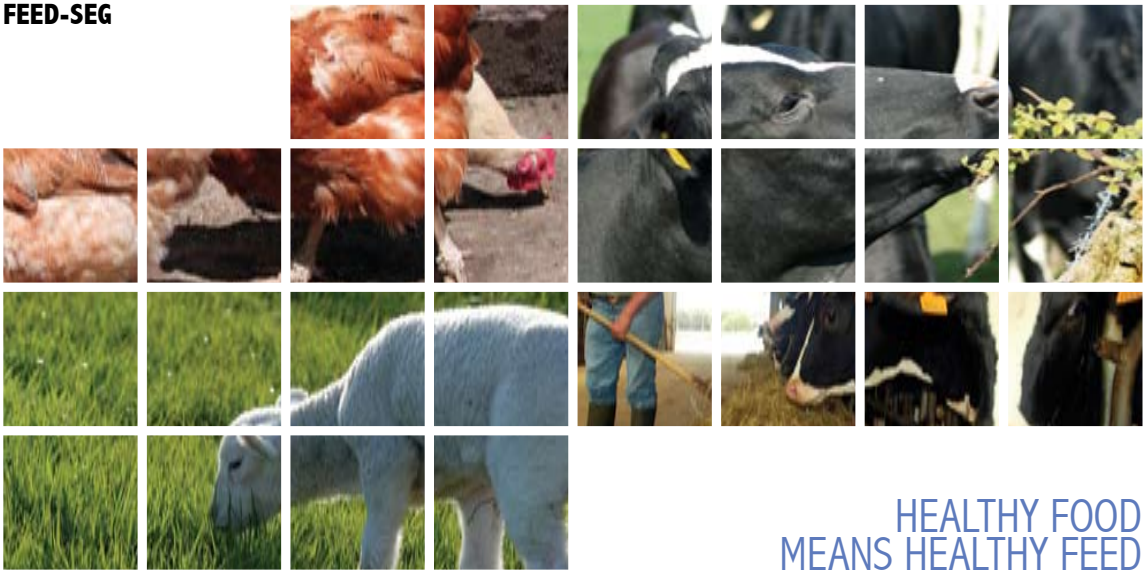
EU contribution:
€ 399,840

FEED-SEG



HEALTHY FOOD MEANS HEALTHY FEED

LIST OF PARTNERS

- University of Veterinary Medicine (Austria)
- ID Lelystad, Institute voor Dierhouderij & Diergezondheid (The Netherlands)
- Freie Universität Berlin (Germany)
- Università degli Studi di Udine (Italy)
- Nutrition Science N.V. (Belgium)
- Biomin (Austria)
- RTD-Services (Austria)
- Institute for Soil Science and Plant Cultivation (Poland)
- Rowett Research Institute (UK)
- University of Milan (Italy)
- University of Bristol (UK)
- Anadolu University (Turkey)
- National Research and Development Institute for Biology and Animal Nutrition (Romania)
- West Hungarian University (Hungary)

'You are what you eat' is a widely spread wisdom concerning human food consumption. Should this piece of wisdom be any differently applied to the food of our livestock? The secure handling of feed has a major impact on the quality and safety of food products and consequently, on the consumer.

Some EU funded projects are focusing on research to improve and develop healthy feed for the safety of livestock and humans. FeeD-SEG has been set up to bridge the results of different research in this field. The goal is to identify new topics, policies and future tendencies, as well as to disseminate results of running EU-funded projects.

JOINT EFFORT

Food quality issues are widely discussed by society. There are growing concerns about the safety of genetic modification of food. Overall, European consumers have become increasingly concerned about food safety, food composition, and subsequently, the safety of animal feed.

Safety of feed plays a central role in EU research policy in the field of food and feed, which needs support from structured expert groups from all over Europe. The FeeD-SEG project addresses a series of strategic and measurable objectives in order to support the research activities carried out in this domain. To this end, FeeD-SEG brings together experts from academia and industry, as well as policymakers. They exchange know-how, discuss and prepare future policy development, as well as identify the most promising research areas.

The ban on the use of growth-promoting antibiotics will have a massive impact on the farming practices of pig, chicken and fish farmers. The issue of how to find effective alternatives to the use of antimicrobials in animal feeds is of particular relevance. FeeD-SEG supports not only the European ban on the use of antimicrobials but also the development of substitutes and/or the identification of alternatives, which are directly linked together.

INHERENTLY EUROPEAN

The project team also disseminates state-of-the-art research results through a series of symposia, expert group meetings and an online platform, together with dedicated planning for the preparation of future activities. In addition to disseminating research results of current EU-funded projects and other projects focussing on feed safety, the consortium develops strategies and recommendations for European policies in the field of research, health and agriculture.

Basically, food or feed safety must not be restricted to national borders. The project therefore provides a platform that allows for the 'Europeanisation' of ongoing and future research in the field of feed security. As a contribution to international cooperation between EU-25, accession and candidate countries and the objectives of the European Research Area, FeeD-SEG is an inherently European activity.

Overall, FeeD-SEG paves the way for highly innovative research projects in the field of feed safety. The addressed policy activities, network activities and newly identified topics have an impact on the complete food chain, which will become healthier and safer. Abandonment of the use of growth-promoting antibiotics in animal feed ensures increased sustainability of animal agriculture. At the same time, it reduces the detrimental effects on the environment and people's health.

Acronym: FEED-SEG

Full title: healthy food for safety: dissemination of research results of EC-funded research on feed quality

Contract n°: 043077

Website:
www.feedsafety.info

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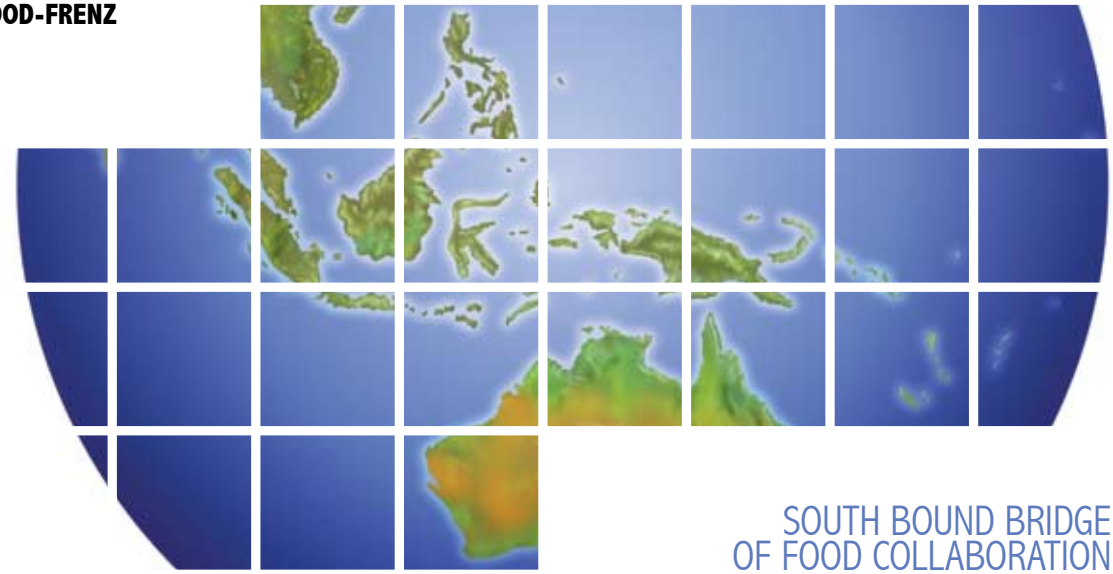
EU contribution:
€ 485,602

FOOD-FRENZ



SOUTH BOUND BRIDGE OF FOOD COLLABORATION

LIST OF PARTNERS

- Campden & Chorleywood Food Research Association (UK)
- University of Newcastle upon Tyne (UK)
- AgResearch Limited (New Zealand)
- New Zealand Institute for Crop & Food Research Limited (New Zealand)
- Institute of Environmental Science and Research (New Zealand)
- Fonterra Cooperative Group Limited (New Zealand)
- The Horticulture and Food Research Institute of New Zealand (New Zealand)
- Lincoln University (New Zealand)
- Massey University (New Zealand)
- The University of Auckland (New Zealand)

Navigating food research through the changing winds of consumer trends requires a successful business model to act as a beacon or lighthouse. New Zealand is viewed as a successful export-oriented country with a similar market need to that of the EU. Hence, collaboration between the two through the FOOD-FRENZ project is preparing to sail for horizons that are more effective.

MENTORING THE MENTOR

Food safety and quality issues require a multinational approach. Nowadays, the phenomenon of the production chain means that consumers in one country buy food grown in a second country that is often processed in a third country. The integration, therefore, of research, best practice and the establishment of regulatory standards across the globe is essential. FOOD-FRENZ represents a confident step towards achieving this goal by bringing two disparate communities together.
When it comes to economic development, however, the EU and New Zealand actually share several fundamental similarities. Both rely on the food sector for economic growth, they produce similar types of products (e.g. dairy, meat, wine, fruit, vegetables and seafood) and share many of the threats and opportunities that face the industry today.

New Zealand has well coordinated production systems, an active research base that is respected internationally and strong government support. As a global exporter of food, New Zealand, in turn, needs to ensure the country's research is linked to the best international expertise. The FOOD-FRENZ collaboration is, in fact, an obvious piece in the puzzle in creating a truly international food research community.

A STEP AHEAD OF THE CONSUMER

Trends in food consumption are changing rapidly. As consumers, for instance, we are placing more and more emphasis on food safety and the nutritional properties of food – driving the industry towards clean, green food production. The FOOD-FRENZ partners want to develop innovative food products that meet such needs in a global context, for both high-volume production as well as niche markets.

Two key areas have been isolated to achieve this aim. Firstly, the need to place importance on consumer requirements by integrating trends and perceptions into research priorities. Secondly, the need to encourage collaborations between sectors of the food industry to develop stronger links between the starting point of research and the end point of market production.

PROJECT TOOLKIT

The core activities of the two-year project include two joint workshops, twenty fellowships and a joint conference to disseminate the results of both the workshops and fellowships. Each step in the process will be shared through the project's dedicated website.

The workshops showcase the interaction of researchers and industry delegates from the partner countries. The fellowships will take place from September 2007 to February 2008, to allow EU researchers to experience first-hand the critical summer and spring period of food production in New Zealand. Finally, the joint EU-New Zealand conference will take place in Hungary in July 2008.

The FOOD-FRENZ project presents an authentic opportunity for learning through sharing. The outcome of which will focus future research, lead to increased development of multinational industries and support the long-term potential of international legislature on best practice standards.

Acronym: FOOD-FRENZ (FRENZ-NET)

Full title: food research in Europe and New Zealand: a complementary network to stimulate consumer-focused research collaboration across food sectors

Contract n°: 043147

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EU contribution:
€ 349,999

FUTUREFOOD6

EXPANDING THE BOUNDARIES OF FOOD QUALITY AND SAFETY

LIST OF PARTNERS

- United Nations Industrial Development Organisation (International Organisation)
- Fundación Observatorio de Prospectiva Tecnológica Industrial (Spain)
- The Vienna Institute for International Economic Studies (Austria)
- Institute of Economics, Hungarian Academy of Sciences (Hungary)
- Technology Centre of the Academy of Sciences CR (Czech Republic)
- BIC Group (Slovakia)
- National Wholesale Market Company Inc (Croatia)
- Executive Agency for Higher Education and Research Funding (Romania)
- Applied Research and Communications Fund (Bulgaria)

The expansion of the European Union has had a profound impact at all levels for the new Member States as well as for the future Candidate Countries. This impact has even been felt at the level of total food production chain. This is because all countries involved have recognised the importance of the economic and political opportunities which will emerge through the integration of the Central and Eastern European countries into the single European Market.

In recent years the food processors in the Czech Republic, Hungary and Slovakia have been struggling for their very survival. The industry has been facing intense pressure in their traditional markets as they face increased competition from developed market economies as well as rapidly shrinking household incomes which are adversely affecting their margins.

Parallel to this, these countries have had to upgrade their food industries in order to meet the EU's strict phytosanitary, veterinary and hygiene standards. These upgrades are colossal undertakings even at the best of times and require huge investments as well as knowledge capital. However, thanks to support from the EU, major progress has been made to the core food processors of these countries with many standards already being met, and those outstanding to be met in the near future.

Fresh from these successes, the process is being repeated in Bulgaria, Croatia and Romania. Experts are being invited to deal with a variety of challenges currently faced in all six countries. These challenges involve achieving economies of scale with new technologies as opposed to technological advances in small scale, specialised production.

Key to the success of the project is free ranging dialogue among decision-makers and all major stakeholders in all the countries involved. As a result of which it hoped that awareness of the importance of food quality and safety will be increased at all levels including industry, government and consumers.

Following an initial kick-off meeting, numerous workshops have been scheduled. Participants are encouraged to identify the major drivers in their industry, be it social, economic, technological, environmental or political, from which a map of the industry can be created and a way forward developed.

The project utilises a methodology which uses a variety of tools which are then linked together to achieve the overall goals. The findings and key results will be integrated into the policy recommendations for the future of the food industry in the Central and Eastern European countries.

FUTUREFOOD6 assists the total food chain in Central and Eastern European countries and helps them achieve international food quality and safety standards. These standards will assist them in fully integrating with the EU and other international markets. Integration with the EU market will not only further enhance European competitiveness but will also maintain the reputation of safety, diversity, sophistication and high quality products with which the EU food industry is already synonymous.

Acronym: FUTUREFOOD6

Full title: food research in Europe and New Zealand: a complementary network to stimulate consumer-focused research collaboration across food sectors

Contract n°: 043005

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EU contribution:
€ 724,929

GO-GLOBAL

TROTTING THE GLOBE FOR DINNER TABLE SAFETY

LIST OF PARTNERS

- RIKILT - Institute of Food Safety (The Netherlands)
- Wageningen University (The Netherlands)
- Central Science Laboratory (UK)
- TUBITAK - Ankara Test and Analysis Laboratory (Turkey)
- Ministry of Education, Secretariat of Science, Technology and Product Innovation (Argentina)
- Laboratory Center for Food and Agricultural Products (Thailand)
- The A.N. Bakh Institute of Biochemistry (Russia)
- New Zealand Institute for Crop and Food Research (New Zealand)

Avian influenza in 2005 is a recent example of a high-profile health scare that caught the attention of consumers worldwide. A way to protect ourselves is to develop better safeguards for our food supply against current and future threats. As a consequence of Europe's reliance on imported foods (almost 50% comes from abroad), merely taking action at home will not ensure that the health of European consumers is protected.

Communication channels between authorities, the research community and industry must be opened on a global scale. This is why the success of the GO-GLOBAL project is crucial. Aiming to establish cooperation where none currently exists, it has an ambitious work plan.

GLOBAL ISSUE HAS GLOBAL DEMANDS

In recent years, food scares have occurred more frequently, partly due to ingredients originating from all corners of the globe.

Local, national and regional authorities are struggling to keep up with the demands of monitoring the quality and safety of the high volume of foodstuffs and animal feed being imported into their geographical area of responsibility.

In an effort to address this situation, the European Food Safety Authority (EFSA) was established in 2002. However, the group of eight core partners involved in GO-GLOBAL believe that efforts must be extended well beyond Europe's borders. The project is the result of the creation of a global platform to promote the timely dissemination of information about emerging safety food risks.

GO-GLOBAL also seeks to better connect the international research community. R&D results are shared through frequent publications, including a newsletter, at several international conferences and workshops organised by the consortium and via the website.

GO-GLOBAL intends to complement and enhance regional efforts or existing initiatives from the WHO, EFSA and other bodies.

A final important component of the project is the formation of a global research agenda. Tried and tested methods are used, to identify both known as well as emerging food safety problems and gaps of knowledge, resulting in generation of outputs invaluable to research managers and interested stakeholders globally. This promotes wiser use of the limited research funding available.

AN INTERNATIONALLY INSPIRED MENU FOR CONSUMER PROTECTION

GO-GLOBAL has recruited an all-star international line-up. Of the 8 core partners, 3 are from the EU while the others hail from the far reaches of both the northern and southern hemispheres. The core partners also have a supporting cast of 14 platform members.

Each of the partners is well connected with the national and regional food safety programmes in their respective regions. The consortium as a whole is balanced both geographically and scientifically with experts in the natural, physical and social sciences.

JUST DESSERTS

GO-GLOBAL is looking to protect consumer interests, both within Europe and globally. The world economy stands to benefit as trust in food safety develops and the need for import bans on suspect food and feed products declines. Looking to the future, steps will be taken to secure funding to support the GO-GLOBAL platform, once the initial EU funding has been fully exploited.

Acronym: GO-GLOBAL

Full title: global platform on emerging risk in the food and feed chain

Contract n°: 043053

Website:
www.goglobalnetwork.eu

Project co-ordinator:
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EU contribution:
€ 800,000

MAC-OILS

OIL AS FUNCTIONAL FOOD

LIST OF PARTNERS

- Institute of Food Sciences – National Research Council (Italy)
- Consiglio per la Ricerca e la Sperimentazione in Agricoltura – Istituto Sperimentale per l'olivicoltura (Italy)
- Institute for Lipid Research (Germany)
- Institut des corps gras – Centre technique industriel (France)
- European Federation for the Science and Technology of Lipids (Germany)
- Faculté des Sciences Université Mohammed V-Agdal (Morocco)
- Centre de Biotechnologie Technopole de Borj-Cedria (Tunisia)
- Istitut de l'Olivier (Tunisia)
- Consejo Superior de Investigaciones Científicas (Spain)
- Central Science Laboratory (UK)
- Food Industrial Research and Technological Development Company (Greece)
- Agricultural Research Organisation (Israel)
- Faculty of Agricultural, Food and Environmental Quality Sciences, Hebrew University of Jerusalem (Israel)
- Israel Olive Oil Board (Israel)
- RTD Talos (Cyprus)
- Microform Formazione & Multimedia (Italy)
- Consorzio Technapoli (Italy)
- Planta Piloto de Ingeniería Química (Argentina)
- Universidade Católica de Brasília (Brazil)

The popular image of a Mediterranean family sitting down to a traditional meal inevitably includes pouring a hefty amount of raw, extra virgin olive oil over a number of dishes. The benefits of olive oil are well documented. Recognised by nutritionists worldwide as the best vegetable oil on the market, it can, in fact, help in the prevention of a variety of health-related diseases.

In a global survey, however, the production, trade and consumption aspects of olive oil were only marginal (3%) compared with others in the category. In a similar survey on the consumption of olive oil in the EU, it came in at a staggering fourth place, beaten by rapeseed, soya bean and sunflower oils as our preferred purchases, with palm, corn and peanut oils trailing behind as our least favourite. So, then, which of these are good and which are bad for our health?

TARGETING OIL

The answer, unfortunately, is a mix of scientific facts and speculation. For example, it has been proven, although it is not widely recognised, that the presence of linolenic acid in soya bean oil decreases the serum level of cholesterol. However, the theory that palm oil could be detrimental to our health, especially for the cardio-circulatory system, because of the high contents of saturated fatty acids, is a controversial one that requires further study.

Furthermore, while the majority of edible oils have maintained a consolidated presence for centuries, some, such as palm oil, have only recently appeared on our supermarket shelves. Extracted from the palm fruit *Elaeis guineensis,* this oil is not produced in the EU, but imported from Malaysia and Indonesia. Collective quality and safety guarantees must come from the scientific research world as well as the producers of the oils.

The Mapping and Comparing Oils (MAC-Oils) project brings together an impressive consortium of personnel from EU, Mediterranean and Latin American countries, to focus on the individual and comparative properties of eight oils: olive, argan, soya bean, corn, sunflower, peanut, rapeseed and rice, through specific thematic ateliers. Beyond just the risks and benefits, the project partners are comparing and evaluating each of them on chemical properties, extraction, conservation and packaging methods, as well as the problems and perspectives of cultivation.

THE LITTLE BLACK BOOK

A simple and readable consumer guide is being produced as part of the project to encourage awareness of the nutritional properties, either in raw or cooked form, and the effect of their uses on our health. A second handbook is aimed at supporting and informing SMEs across the globe currently producing the eight target oils. Additionally, a dedicated website is operational during and beyond the two-year life span of the project for the dissemination and archiving of information. The final phase of MAC-Oils is the realisation of an international conference, which fulfils the important role of sharing information and stimulating continued engagement.

Acronym: MAC-OILS

Full title: mapping and comparing oils

Contract n°: 043083

Web site:
www.nut.uoa.gr/hector

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EU contribution:
€ 593,108

OTAG

TRACE AND TRACK PRACTICE FOR BEEF QUALITY

LIST OF PARTNERS

- Institut de recherche pour l'Ingénierie de l'Agriculture et de l'Environnement (France)
- Centre de Coopération Internationale de Recherche Agronomique pour le développement (France, Brazil, Argentina, French Guyana)
- Empresa Brasileira de Pesquisa Agropecuária (Brazil)
- Université de Laval, Laboratoire de Géomatique agricole, Faculté de Foresterie et de Géomatique (Canada)
- Programa Cooperativo para el Desarrollo Agro-alimentario y Agro-industrial del Cono Sur (Uruguay)

Recent cases of animal diseases have cast a shadow over the traditional festivity of dinner parties. Table talk has taken a tumble from light banter, characteristic of good conversation, to concerns over meat safety and quality.

With beef sales falling along with consumer confidence, the OTAG consortium was formed to meet global challenges for managing emerging risks in beef production, with respect to policies of the EU and the so called Southern Cone Countries (South American countries, below the Tropic of Capricorn).

The aim is to provide the industry with new methods for sustainable beef production, emphasising alternative health practices to keep animals healthy and costs low. To keep tabs on the situation, animal-tracking systems have been introduced so that the source of any diseased cattle could be more readily identified, thereby limiting the chances of a wider spread of any infection.

KEEPING TRACK OF BEEF

The tracking system follows the movement of meat through all stages of processing. This means that beef on supermarket shelves can be traced back through distribution to production and packaging and even to the slaughterhouse, should it be required. This process is a major step forward in guaranteeing safer foods.

Consumers can feel more comfortable knowing that tomorrow's dinner has been monitored from birth to the retailer. To make this path shorter and clearer, innovative tools and methods for recording reliable and accurate data on the origin and primary production of beef at the farm level have been put in place. Besides condition, mobility, origin, and quality of meat, OTAG also monitors the environmental conditions of the grazing land.

The system takes advantage of emerging technologies, such as geo-informatics, as well as knowledge and expertise from consortium members, and integrates them into a Geo-decisional Prototype System. By inputting data, such as production practices, pasture condition, environmental characteristics and related land use, bovine production risk management can be assessed. The software, which is easily accessible over the Internet, will comprise both a risk management tool and a database of bovine production best practices. As such, it can support decision-making and problem solving, providing almost instantaneous answers to complex questions.

BETTER COLLABORATION, MORE EFFECTIVE RISK MANAGEMENT

The interaction of experts and user groups will promote knowledge transfer and harmonisation of practices with EU regulation and Southern Cone players.

The adoption of a better traceability system provides a competitive advantage, creating a niche market. The traceability information is recorded by authorised individual operators throughout the beef production chain of Southern Cone Countries. Through research and technological development, new windows of opportunity are opening to global trade.

To root out the potential problems and pitfalls in today's industry, OTAG has begun carrying out an in-depth analysis of current practices throughout the beef production chain. The identification of these obstacles allows the system to develop new knowledge and information on sustainable beef production practices and food safety. In the information era, acquiring knowledge is an asset for generating wealth. In the food industry, gathering information along the supply chain is essential for ensuring good health.

Acronym: OTAG

Full title: operational management and geodecisional prototype to track and trace agricultural production and vitality

Contract n°: 043134

Website:
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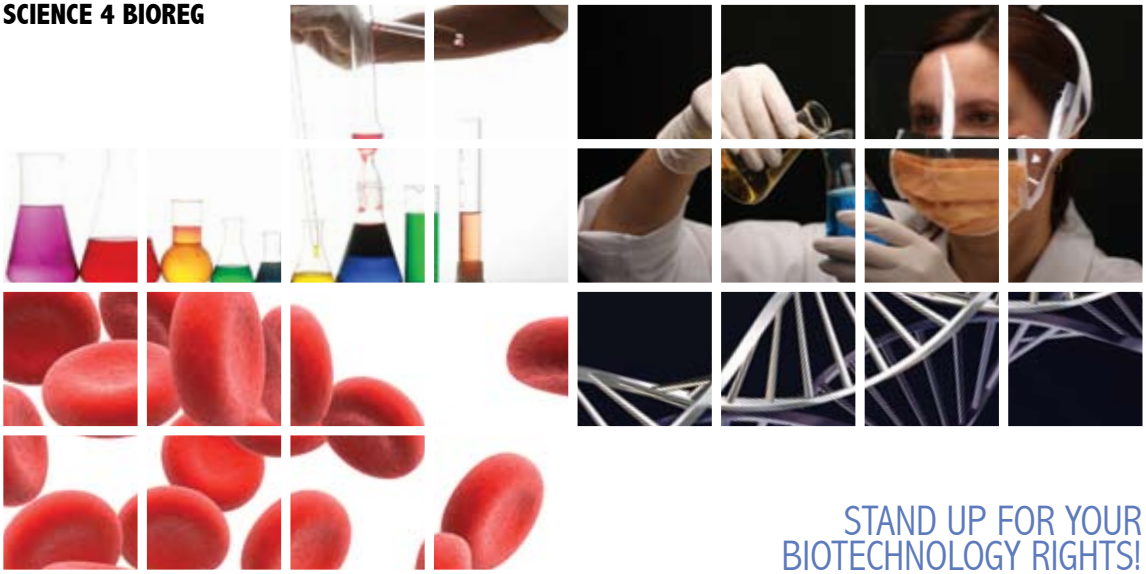
EU contribution:
€ 300,576

SCIENCE 4 BIOREG



STAND UP FOR YOUR BIOTECHNOLOGY RIGHTS!

LIST OF PARTNERS

- Delft University of Technology (The Netherlands)
- Foundation for Public Research and Regulation (The Netherlands)
- Horizons (Belgium)
- Ghent University (Belgium)
- Cambridge Biomedical Consultants (UK)
- Forum for Agricultural Research in Africa (Ghana)
- Black Sea Biotechnology Association (Bulgaria)
- Institute of Cell Biology and Genetic Engineering (Ukraine)
- Institute of Plant Breeding, University of the Philippines Los Baños (Philippines)
- Association for Strengthening Agricultural Research in Eastern and Central Africa (Uganda)
- Kummer EcoConsult (Switzerland)
- National Hellenic Research Foundation (Greece)
- Brazilian Agriculture Research Corporation (Brazil)
- Federal Biological Research Centre for Agriculture and Forestry (Germany)
- Faculty of Medicine, University of Chile (Chile)

Interviews carried out in the 25 EU Member States in autumn 2005 revealed that in the event of a serious food risk, Europeans would most trust the information provided by consumer groups (32%), their doctor (32%) and scientists (30%). Though the survey shows that the actions of public authorities are generally well received by citizens, they rank behind the top three most trusted sources with a result of 22%.

The Science 4 BioReg consortium has therefore undertaken a two-fold mission to avert future possible misunderstandings between citizens and their political leaders concerning the biosafety and agricultural biotechnology sectors. One activity will be to provide better information to policymakers, regulators and the public about the objectives and progress in public research of life sciences in agricultural biotechnology. The other activity will be to inform and involve public researchers in relevant discussions on international agreements and regulations on biotechnology and biosafety.

REACH OUT…

Bilateral exchange within these life science sectors is key to reducing the growing gap between the public and its perceptions of science and risk on the one hand, and the public sector with its regulatory policies on the other. This is important at a time when developments in the public research sector in modern biotechnology are closely dependent on the design and implementation of the regulatory framework for genetically modified crops at national, regional and global levels.

Developing countries in particular are counting on modern biotechnology to solve current problems in food and feed production, healthcare and environmental protection. Drawing up more sound and science-based EU biotechnology policies with safe and workable regulatory frameworks — that are at the same time predictable, transparent and balanced — will contribute to establishing a stronger public research base. This, in turn, will make Europe more attractive to private investment in research and innovation.

… AND CONVINCE PUBLIC SECTOR SCIENTISTS TO GET INVOLVED!

Science 4 BioReg supports the development of the European Research Area by offering a forum for the public research sector. The Public Research and Regulation Initiative (PRRI) is a worldwide initiative by and for public researchers. The initiative's steering committee consists of highly qualified and experienced scientists and experts from all over the world. All of them are working on a voluntary basis to provide sustainable involvement of public researchers. Science 4 BioReg will guarantee that larger target groups are informed about recent developments. It will also ensure that the public research sector has at least a minimal presence in all relevant biosafety and agricultural biotechnology meetings.

As well as these activities carried out in the framework of a Specific Support Action, PRRI is also seeking additional funds to bring larger numbers of public researchers to international negotiations and other relevant meetings. The project is also reaching out to non-English speaking public researchers and coordinating its activities with the Biosafety Research Communication Network (Biosafenet).

Thanks to the activities of the Science 4 BioReg project, international and regional agreements such as the Cartagena Protocol on Biosafety, related European Union directives and regulations, as well as the Århus Convention, are no longer mysteries to public researchers.

Acronym: SCIENCE 4 BIOREG

Full title: global involvement of public research scientists in regulations of biosafety and agricultural biotechnology

Contract n°: 43012

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€ 601,500

SUSTAINAQ

HIGH STANDARDS FOR FARMED FISH

LIST OF PARTNERS

- Norwegian Institute of Fisheries and Aquaculture Research, Fiskeriforskning (Norway)
- Institute for Marine Resources and Ecosystem Studies (The Netherlands)
- French Research Institute for Exploitation of the Sea (France)
- University of Split, centre for sea studies (Croatia)
- Research Institute for Fisheries, Aquaculture and Irrigation (Hungary)
- Dunarea de Jos University of Galati (Romania)
- University of South Bohemia Ceske Budejovice, Research Institute of Fish Culture and Hydrobiology (Czech Republic)
- Wageningen University (The Netherlands)
- Polish Academy of Sciences, Institute of Ichtyobiology and Aquaculture (Poland)
- Trabzon Central Fisheries Research Institute (Turkey)
- Villmarksfisk (Norway)
- Maring d.o.o. (Croatia)
- Kaviar House (Romania)
- Ida Gida Tarimsal Uretim vedis Palazarlama (Turkey)
- Shubunkin Fish Production Limited Liability Company (Hungary)
- Innoflex for Technical development and Constructing in Aquaculture (Hungary)
- Comité Interprofessionnel des Produits de l'Aquaculture (France)
- CHRIST CHRIST (Poland)
- Kilic Su Urunleri Uretimi Ihracat-Ithalat ve Tic. (Turkey)

Increased awareness of the benefits of including seafood as part of one's diet has led to a boom in the consumption of fish. Unfortunately, this has meant a reduction in global fish population stocks. Aquaculture is, therefore, being relied on more and more to provide a steady supply of fish and to assist in curbing the threat of over-fishing. The SUSTAINAQ project aims to ensure that aquaculture products are environmentally sound, sustainable and, above all, safe for human consumption.

Farmed seafood production has risen worldwide to more than 40 million tons, from around 3 million tons in 1970, compared to the total estimated wild catch of about 90 million tons. Aquaculture products supply more than 8 billion meal portions per year.

NO REDUCTION IN SAFETY

Aquaculture is able to provide the nutritionally aware market with a previously expensive healthy food. It is of increasing importance, therefore, to ensure that growing demand does not lead to a reduction in safety and quality of the food provided. Recirculation Aquaculture Systems (RAS) may provide production platforms to do just that.

The fish farming industry is now in better shape than ever before, feeding more people, creating more jobs and with a better environmental record. But, as fish farming increases in importance as a provider of food, more care needs to be taken to secure the production of safe, high quality products.

Modern technology may control potential damage to the environment, securing the health of the stock, reducing waste and limiting potential escapees of farmed fish to wild fish stock. Sometimes, however, rising costs can have a limiting effect. Recirculation systems have proved successful in providing an economically sound process, whereby farms can organise production and also control escapees and potentially damaging effluent. At the same time, the viability of the aquaculture and the environment can be secured.

WHO WILL BENEFIT?

Because RAS has low water requirements and produces a low volume of effluent water, it is probably the type of land-based aquaculture production that interferes least with the environment. Water can be drawn from a variety of sources, such as open waters or boreholes. The effluent can be treated before discharge or can be used for agricultural purposes while its effect on the environment can be completely controlled and even eliminated.

Eastern European countries are facing challenges related to water use conflicts, wastes and maintaining breeder stocks of endangered fish species. Therefore, these countries may be the biggest beneficiaries of improved farming practice through the introduction of RAS.

The overall objective of this project is to identify factors that are restricting the sustainable production of seafood in Europe. This is to be achieved by establishing a consortium of aquaculture research partners and aquaculture SMEs across Europe.

Acronym: SUSTAINAQ

Full title: sustainable aquaculture production through the use of recirculation systems

Contract n°: 43150

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For further information on food quality and safety:

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