ILSI Europe

25 years towards public health

International Life Sciences Institute

ILSI Europe

1986-2011 ILSI EUROPE 25


1986-2011 ILSI EUROPE
25

Content

ILSI Europe 25 Years

Introduction
from the past and present Presidents

DR. IB KNUDSEN

Danish Institute for Food and Veterinary Research
President of ILSI Europe from March 2008 to March 2011

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University of Kaiserslautern, Germany
President of ILSI Europe since March 2011

In 2011, ILSI Europe celebrates its 25th year as an important player in the science-based evaluation of safe and nutritious food in Europe.

In 1986, the European science, safety and nutritional assessment of foods were still in their infancy. The Scientific Committee on Food of the European Commission had been in operation for 12 years. Yet it still was in an early stage of establishing science-based guidelines for safety assessment of food additives, flavourings, packaging materials and contaminants.

ILSI Europe was established in 1986 as a forum for scientists from academia, industry and governments to discuss and evaluate cutting-edge progress in knowledge on food safety and nutritional science. ILSI Europe was soon recognised as providing an important contribution to the improvement of the scientific basis for food safety and nutrition in Europe, and its new concept was widely welcomed.

ILSI Europe's tri-partite network is funded mostly by membership fees paid by European food industries. The Directorate General for Reseach and Innovation of the European Commission also contributes financially to the work of ILSI Europe through funding of scientific projects with ILSI Europe as coordinator or partner.

with quite different commercial interests, the likelihood of any company furthering individual interests in a particular outcome of a scientific assessment is rather remote. The common interest of the European food industry to support ILSI Europe in the first 25 years of its existence has always been to contribute to food safety in a proactive manner.

Overall, ILSI Europe has had 25 successful years, attracting more than 300 European scientists annually to contribute their expertise on food safety and nutrition in the ongoing work of its task forces and expert groups, plus annual involvement of several hundred additional scientists in its workshops and symposia.

ILSI Europe has a major role to play in the advancement of the science base on food safety and nutrition, and serves as a forum for networking and cooperation among European scientists in these fields. Thus, ILSI Europe uses the best scientific knowledge available to support the efforts of the European Commission, national authorities and the food industry in providing the European consumer with safe and healthy food.

ILSI Europe has a major role to play in the development of the science base on food safety and nutrition in Europe.

This way of financing ILSI Europe naturally raises the question about the objectivity of its scientific work, i.e. a potential bias in its scientific work invoked by the financial link to the food industry. To overcome any suspicion regarding vested interests potentially reflected in its scientific output, ILSI Europe operates under strict rules of conduct regarding openness, transparency, disclosure of interests and prohibition of lobbying. Moreover, all publications are extensively peer-reviewed to ensure their quality and strictly scientific scope. With more than 60 member companies

The past successes of ILSI Europe give us confidence that it will be able to pursue its important scientific mission regarding food safety and nutrition with similar success in the years to come. ■

Introduction from the Chairman

MR. REG FLETCHER

Kellogg Europe
Chairman of the ILSI Europe Board of Directors

If past performance is the best predictor of future achievement, ILSI Europe will continue to play an increasingly pivotal role in helping to ensure a healthy and safe food supply for European citizens.

Twenty-five years ago when ILSI Europe first came into existence, the world was a different place. The Single European Act had only recently been signed, with the objective of establishing a Single Market by December 1992, and the European Food Safety Authority would not come into existence for another 10 years. For many Europeans, food additives and chemical residues in foods were a growing concern but, in general, confidence in the quality and safety of the European food supply was relatively high. However, the seeds of the BSE (bovine spongiform encephalopathy) epidemic in cattle had already been sown.

Since that time, food-related threats, such as BSE, foot and mouth disease, dioxins and *Escherichia coli* 0157 have played a role in undermining public confidence in the food supply and in all parties involved in its delivery. An ever-increasing ability to measure minute concentrations of compounds with potentially deleterious effects at much higher levels, also contributes to this undermined confidence. In addition, the growing prevalence of obesity in most European countries has placed a greater focus on the need to re-adjust the energy balance equation. An important consequence of these major factors has been greater recourse to the precautionary principle, which states that where an activity raises threats of harm to human health, precautionary measures should be taken, even if a cause-and-effect relationship has not been not fully established scientifically.

A major challenge to all guardians of food-related public health, whether the food industry, academic researchers or regulators, is how to ensure the highest standards of food safety, based on a sound assessment of the best available and most relevant science. This can only be done by combining the considerable wealth of experience and understanding that each party can bring, in order to provide a clear perspective of the risks in relation to the benefits, based on sound and impartial science.

For the last 25 years, ILSI Europe has pursued a clear mission to identify and address crucial scientific issues related to nutrition, food safety and the environment. It has done this by engendering meaningful dialogue and cooperation between scientists from academia, government and industry on issues of public health interest and mutual concern. Today, ILSI Europe stands as a major contributor of peer-reviewed scientific information of the highest integrity to the scientific community, international organisations and regulatory agencies.

For the last 25 years, ILSI Europe has pursued a clear mission to identify and address crucial scientific issues related to nutrition, food safety and the environment.

Looking forward, we face increasingly complex and challenging issues, which will require new approaches and novel solutions. Nanotechnologies alone present a panoply of new and complex questions, which will require multidisciplinary cooperation from scientists from all sectors and disciplines. In conclusion, after 25 years of outstanding achievements, made possible by the synergy of literally hundreds of the most capable scientists in Europe, the work of ILSI Europe will be even more important in our future environment. ■

About ILSI Europe

The International Life Sciences Institute Europe plays a catalytic role in identifying and addressing crucial scientific issues related to nutrition, food safety and the environment.

MISSION AND VALUES

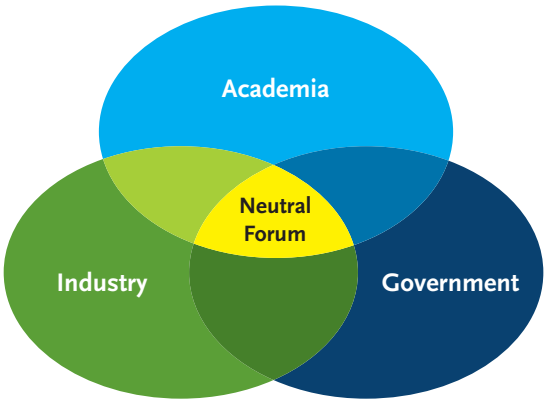
ILSI Europe is a part of a non-profit, worldwide foundation established in 1978 to advance the understanding of scientific issues relating to nutrition, food safety, toxicology, risk assessment and the environment. It was created in 1986 to focus on the specific needs defined by the Institute's European partners. Its mission is to improve the well-being of the general public through the advancement of science. ILSI Europe brings together scientists from industry, academia and government to jointly provide the best available fact-based, objective science on key public health issues.

ILSI Europe's main goals are to:

- Play a catalytic role in identifying and addressing crucial scientific issues related to nutrition, food safety and the environment
- Provide coherent scientific answers to issues of public interest through scientific programmes that are of mutual concern to industry, government and academia
- Support an active publication programme for the dissemination of scientific information to the broadest possible audience, including the scientific community, international organisations and regulatory agencies.

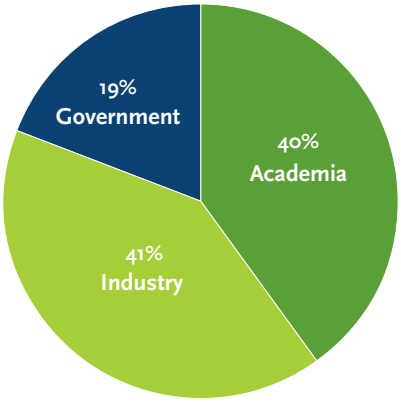
NEUTRAL FORUM

ILSI Europe pursues its goals by providing a neutral forum between academia, industry and governments, aiming to reach consensus on topics related to nutrition and food safety.



In 2010, ILSI Europe collaborated with 245 non-industry organisations, including universities and national scientific institutes, as well as national, European and international governmental organisations. The proportion of scientists from academia, industry and government who were involved in ILSI Europe activities is shown below:

Distribution of ILSI Europe external collaborators in 2010



ILSI Europe collaborates with high-level scientists all over the world. In 2010, ILSI Europe experts and representatives from member companies originated from 24 different countries.

ILSI EUROPE: A KEY PARTNER

Serving all stakeholders – industry members, academic scientists and government representatives – in a neutral, impartial and objective way, ILSI Europe is a major resource for consensus-driven scientific information related to food and health, building the bridge between science and today's public health challenges.

ILSI Europe is a major resource for consensus-driven science that addresses today's public health challenges.

- For **the scientific community**, ILSI Europe provides a neutral forum to share views and experiences, and to develop new helpful perspectives with counterparts from government and industry.
- For **regulatory institutions**, ILSI Europe offers concise and balanced scientific information that can support the development of regulatory and health policy.
- For **national, European and international institutions**, ILSI Europe is a reliable resource for providing answers to nutrition and food safety issues.
- For **educational institutions**, ILSI Europe offers a wide range of publications on issues related to nutrition, food safety, toxicology and the environment.
- For **the public**, ILSI Europe promotes the development of safer and healthier food products and supports an integrated scientific approach to food-related issues.
- For **the food industry**, for both big and small companies, ILSI Europe is an efficient and cost effective platform for pooling intellectual and financial resources in order to identify, address and reach scientific clarity on important common issues and challenges confronting the private sector, working in collaboration with scientists from academia and governmental institutions.

ILSI is affiliated with the World Health Organization (WHO) as a non-governmental organisation (NGO), and has specialised consultative status with the Food and Agriculture Organization (FAO) of the United Nations.

ILSI Europe is a member of the stakeholder consultative platform of the European Food Safety Authority (EFSA).

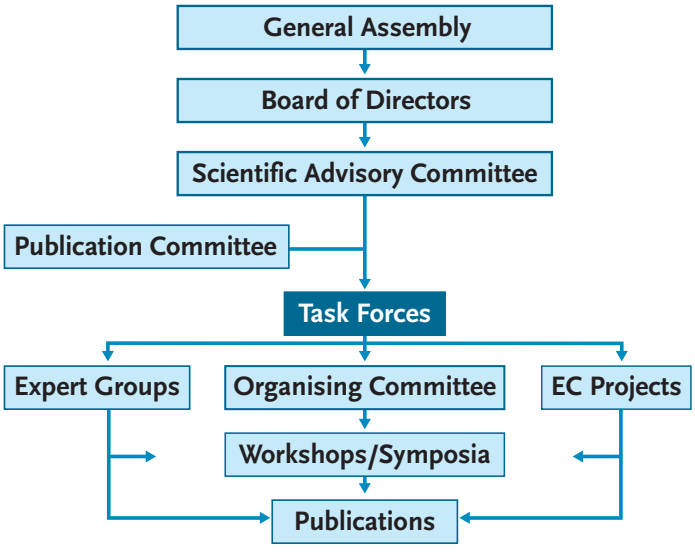
STRUCTURE

The General Assembly is the ultimate decision-making body on which all member companies are represented. The General Assembly elects the Board of Directors.

The Board of Directors is moderated by the Chairman and is the managing body of the Institute. To ensure a balanced input, it is composed of an equal number of member company representatives and of scientists from academic institutions. It approves (i) the scientific programmes, (ii) the appointment of Scientific Advisory Committee members and (iii) the proposals of new task forces following advice of the Scientific Advisory Committee.

The Scientific Advisory Committee (SAC) is composed of a maximum of 20 experts with at least 50% coming from the non-industry sector. It is chaired by the President of ILSI Europe. The members are elected by the Board of Directors according to their relevant expertise, their prestige and availability for active contribution.

ILSI Europe's structure



The aims of the Scientific Advisory Committee are to:

- Review the scientific programme of ILSI Europe, including the new activities with respect to their scientific validity, coherence within ILSI Europe's programme, feasibility and urgency of the issues
- Provide scientific guidance to the task forces
- Identify emerging issues to be addressed by the task forces

ILSI Europe's operating structure ensures a balance of scientific perspective in all of its activities.

The Publication Committee is composed of members from academia and industry with experience in publishing, writing and editing. It coordinates the peer-review process and ensures the quality of ILSI Europe publications in the *ILSI Europe Concise Monographs Series* and in the *ILSI Europe Report Series*.

Please note that the full list of ILSI Europe's publications is available on www.ilsi.eu and most of the publications can be freely downloaded.

Task Forces are the working bodies that initiate, undertake, develop and manage all projects. Task forces are mainly composed of industry member representatives. They address their topics through expert groups, literature reviews, workshops, conferences and projects funded by the European Commission (EC) that identify, evaluate and advance the understanding and resolution of scientific issues. All task force activities result in publications that are widely distributed. ILSI Europe's publications make no recommendations; rather, they present consensus as to the best current status of scientific data.

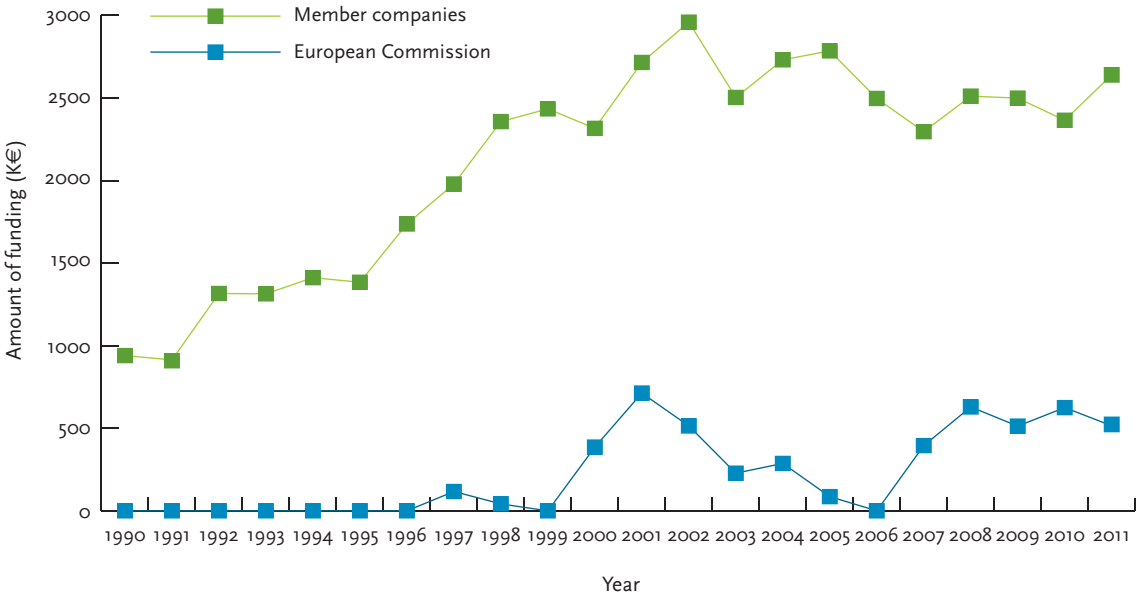
Expert Groups are created by the task forces and comprise at least 50% non-industry scientists to ensure a balanced input. They write most of ILSI Europe's publications. Scientists are welcome to apply for an expert position.

ILSI EUROPE FUNDING

ILSI Europe is funded primarily by its industry members; it also enjoys the support of the European Commission and manages European Commission funded projects. ILSI Europe's membership is open to all companies in the food and food-related industries, as well as companies engaged in the manufacture of medicinal products and products for human consumption, and producers of ingredients used in these industries.

To find out more about ILSI Europe, please go to the website www.ilsi.eu.

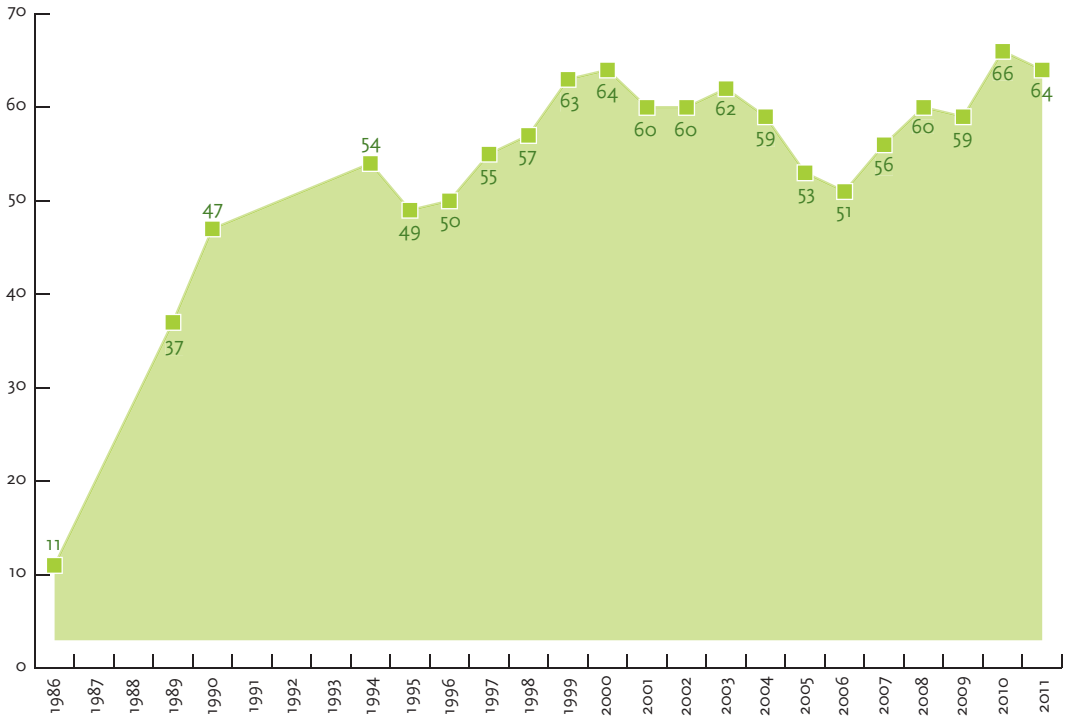
ILSI Europe Financial Statistics



ILSI EUROPE MEMBERS

In 2011, ILSI Europe benefited from the support of 64 member companies. ■

Number of supporting members companies



2011 ILSI EUROPE'S MEMBERS

- Abbott Nutrition
- Ajinomoto Europe
- Barilla G. & R. Fratelli
- BASF
- Bayer CropScience BioScience
- Beverage Partners Worldwide
- Bionov
- Biosearch Life
- Bunge Europe
- Campbell Soup Company
- Cargill
- Chiquita Brands International
- Clasado
- Coca-Cola Europe
- Colloïdes Naturels International
- Cosucra Groupe Warcoing
- Danisco
- Danone
- Dow Europe
- DSM
- DuPont de Nemours
- Firmenich
- Givaudan
- H J Heinz
- Institut Mérieux
- International Nutrition Company
- Kellogg Europe
- Kikkoman Foods Europe
- Kraft Foods Europe
- Lallemand SAS
- Luigi Lavazza
- Mars
- Martek Biosciences Corporation
- McDonald's Europe
- McNeil Nutritionals
- Mead Johnson Nutrition
- Merck Consumer Healthcare
- Monsanto Europe
- National Starch
- Naturex
- Nestlé
- PepsiCo International
- Pfizer Consumer Healthcare
- Premier Foods
- Procter & Gamble
- Puratos Group
- Red Bull
- Roquette Group
- Royal FrieslandCampina
- Rudolf Wild
- Schwabegroup
- Sensus
- Seven Seas
- Solae Europe
- Soremartec Italia – Ferrero Group
- Südzucker/BENEO Group
- Syngenta Crop Protection
- Swiss Quality Testing Services
- Tate & Lyle
- Tereos-Syral
- Tetra Pak Research
- Ülker Bisküvi
- Unilever
- Yakult Europe

Task Force Activities

Task forces are the working groups that initiate, undertake, develop and manage all projects. They are grouped in four clusters.

The Marker Initiative in Nutrition Research is an activity that involves several ILSI Europe task forces.

For more and updated information about the ILSI Europe task forces and their achievements, visit: www.ilsi.eu

Assessment of Benefits and Risks

Addition of Nutrients to Food

BACKGROUND AND OBJECTIVES

The task force was created in 1996 within the context of EC regulations on fortification of foods and the need to understand how adding nutrients to food impacts population health.

ACHIEVEMENTS

In 1997, a first workshop was organised to discuss safe addition of nutrients. It led to the publication of a report identifying the major factors that need to be taken into account in order to address this question.

Subsequently, the task force published a paper in the *European Journal of Nutrition* (2003) that described for the first time how a safe level of addition of micronutrients can be derived from certain factors specific to each nutrient. This became the seminal publication for all subsequent models in this area.

In 2004, the task force proposed a novel method of risk-benefit analysis for micronutrient consumption. This balanced the risk of inadequate intake with the risk of over-consumption at the population level.

Since then, the task force has produced four more publications, including mapping of the incidence of high-end intakes in European countries 'Intake of selected nutrients from foods, from fortification and from supplements in various European countries' (*Food and Nutrition Research*, 2009) and the proceedings of a workshop organised in 2008 in Gubbio, Italy on 'Micronutrient Landscape of Europe on Comparison of Intakes and Methodologies with Particular Regard to Higher Consumption'. This resulted in the 'Gubbio Model', a significantly revised and improved formula to define the safe level of addition on the basis of actual consumption patterns in countries with the highest intakes of fortified foods and supplements.

IMPACT

The task force has made a major contribution to the scientific underpinning of public health in relation to food fortification and food supplements. A wide range of stakeholders, including the European Commission and EU Member States, have shown particular interest in the results of these activities.

UPCOMING PUBLICATIONS

A publication on 'Mapping low intakes of micronutrients across Europe' will soon be available in a peer-reviewed journal. This work sets out to compile existing data available on the prevalence of low micronutrient intakes in Europe and the associated risk to health in population subgroups in order to map low intake of micronutrients across Europe. This will be the first time that data from a wide range of national dietary surveys has been compiled and compared using the same measures of inadequate intake.

A publication on 'Is there a need for specific dietary reference values (DRVs) for Vitamin K2?' has as its main objectives to:

- Investigate whether there is a need for specific dietary reference values for vitamin K2.
- Identify gaps in current knowledge to signal future directions of research (general and specific), which will contribute to insight on intakes and on issues related to vitamin K2 intake in vulnerable population groups.

Emerging Technologies for Efficacy Demonstration

BACKGROUND AND OBJECTIVES

This task force, which started in 2007, has the aim of generating interest, understanding and acceptance of the opportunities being provided by new technologies in the field of nutrition, such as nutrigenomics and functional imaging. Another aim is to explore possibilities and to make use of these new techniques to demonstrate the effect of biologically active substances in humans for claim substantiation.

ACHIEVEMENTS

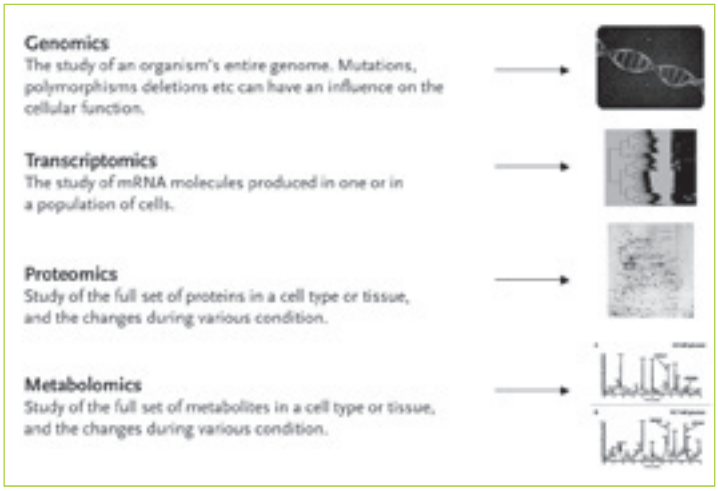
In 2009, the task force organised a workshop bringing together experts from academia, industry and international institutions to promote interactive discussions and advance the knowledge of emerging technologies and their role in product development. The results of this workshop were published in the *ILSI Europe Report Series* in the same year. The discussions during the workshop showed that some of these new technologies were at that time still in their infancy, while others were already more advanced. It also concluded that new technologies, like imaging and nutrigenomics, proved to be of importance in nutritional research, for example in the weighing of evidence for supporting health claims on food and in the discovery and validation of biomarkers.

In 2010, the Emerging Technologies Task Force held a brainstorming session on applications of nutrigenomics in human nutritional intervention studies. This session initiated a review paper on nutrigenomics, which was published in *Molecular Nutrition and Food Research*. The paper describes how 'omics' technologies have been used in human intervention studies in the past and lists human trials that used a nutritional compound and 'omics' technologies. In addition, it summarises the knowledge gained in the past and states how far we have come with regards to all nutrigenomics technologies.

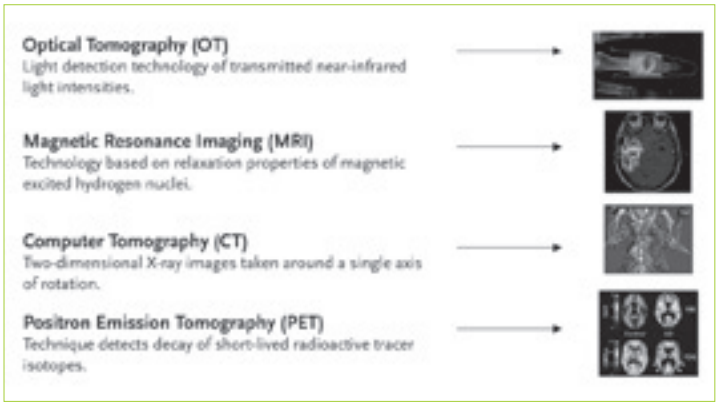
NEW ACTIVITY

The literature screening performed for the nutrigenomics review paper revealed that much research has been done on nutrigenetics, investigating the influence of certain variations in the genome in the response to nutrients. In the past, such interplay between genes and nutrients was not often taken into account when human study results were analysed. Thus, reported studies that did not stratify the study population according to its genetic background should be re-evaluated retrospectively to distinguish between responders and potential non-responders to certain nutrients. As the field of nutrigenetics attracts more and more attention, the task force will commission the writing of a state-of-the-art review on human nutrigenetics. Such a review paper will summarise the current knowledge on the ways that genetic variations can influence the metabolism of certain nutrients and micronutrients.

Omics' Technologies



Clinical Imaging Technologies



Food Intake Methodology

BACKGROUND AND OBJECTIVES

The task force was established in 1995 as the 'Food Chemical Intake Task Force'. Its main objective was to establish recommendations for the estimation of human intake through the diet of food chemicals, additives and contaminants and to improve the basis for calculations and comparisons. In 2007, the scope of the task force was broadened to develop and evaluate methodologies to accurately quantify food intake and the exposure to food constituents and the name was changed to the Food Intake Methodology Task Force.

ACHIEVEMENTS

In 1995, the task force organised a workshop on 'Food Additives Intake: Scientific Assessment of the Regulatory Requirements in Europe'. The main conclusion from this workshop was that ILSI Europe could be instrumental in facilitating comparative studies aimed at identifying and validating methods for extrapolating from household food consumption survey data to food consumption by individuals.

The task force is developing web-based guidelines on exposure and intake assessment in the form of a wiki site, which was reviewed at a workshop on 'GUIDEA – Guidance for Dietary Intake Exposure Assessment' in Geneva in November 2011. It is intended to develop this work into materials for future training courses. This will be the first wiki site developed by ILSI Europe.

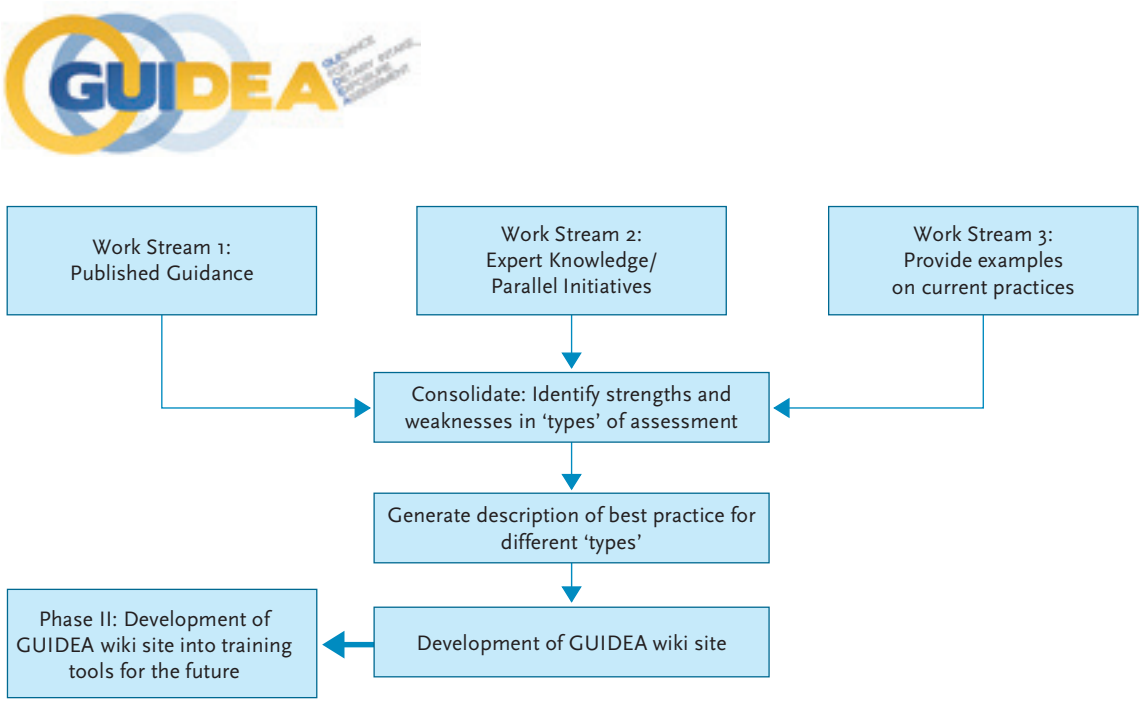
IMPACT

A recent example of impact is the sharing of a manuscript with EFSA in response to their call for scientific data on food colours to support the re-evaluation of all food colours authorised under EU legislation. This article (*Food Additives and Contaminants*, 2010) focuses on the use of retailer fidelity cards as a novel way of analysing food colour intake.

FUTURE ACTIVITIES

The GUIDEA wiki site will be further developed into training tools for the future, based on the outcome of the workshop that took place in November 2011.

The task force is considering initiating a new activity on methodological issues related to dietary intake surveys in 2012.



Functional Foods

BACKGROUND AND OBJECTIVES

The concept of functional foods derives from the awareness that specific components of the diet can bring benefits beyond those of basic nutrition. Ongoing key objectives are:

- Providing guidelines for a standardised approach to prove the efficacy of foods and food components and to weigh the scientific evidence
- Providing guidelines on how to conduct human intervention studies according to Good Nutritional Practice
- Providing 'best common practice' guidelines on how to design human intervention studies
- Providing criteria for validation of markers in the area of cardiovascular health
- Providing detailed information on the variety of types of functional foods and drinks, with perspective on oral aspects.

ACHIEVEMENTS

In 1999, the Functional Foods Task Force successfully completed the European Commission funded project FUFOSE, which provided scientific evidence that specific nutrients positively affect physiological functions and reduce the risk of certain diseases. Building on the results from this project, the task force initiated the European project PASSCLAIM (2001–2005) that offered a practical scientific framework for the assessment of scientific dossiers supporting claims, taking into account industry and regulatory perspectives.

IMPACT

The task force continues to provide national and international institutions with timely scientific input in anticipation of regulatory developments. The work carried out by the task force and its expert groups is widely disseminated through publications for different audiences: from articles in peer-reviewed journals to Concise Monographs for the general public.

MAJOR ACTIVITIES

Good Clinical Practices Applied to Nutrition

The main goal of this project is to establish a reliable, functional and realistic quality system for nutritional intervention studies involving human subjects. Studies performed according to such a system will result in proof of safety and efficacy of foods and food products that is of high quality, reliable, ethical and retraceable.

International Symposium on Health Benefits of Foods – From Emerging Science to Innovative Products

In 2011, the task force organised the 3rd ILSI Europe International Symposium in the series of functional foods symposia. The overall objective of this event was to review and debate recent advances in substantiation of health benefits of foods, covering the establishment but also the communication of innovative nutrition science.

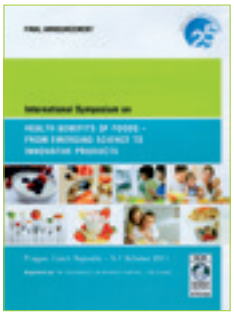
Beyond PASSCLAIM – Guidance to Substantiate Health Claims on Foods

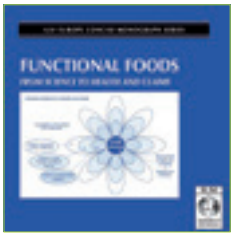
This ILSI Europe publication draws upon the individual reports and overall consensus report of the European project PASSCLAIM. It is composed of two papers resulting from parallel sessions at a workshop in Nice in December 2009. The first paper focuses on 'Guidelines for the design, conduct and reporting of human intervention studies to evaluate the health benefits of foods' and provides a marvellous platform for developing measures to support research governance and integrity in the area. The second paper, 'Standardised approach towards proving the efficacy of foods and food constituents for health claims', brings to a focus a particularly important dilemma, the heart of which is how the evidence substantiating a claim is to be applied. These two papers will facilitate the understanding of the mechanistic schema to guide the assessment, presentation and analysis of available evidence in the development and substantiation of health claims in public health nutrition.

Identification of Criteria for Validation of Markers in the Area of Cardiovascular Health

As a complementary activity to the ILSI Europe Marker Initiative in Nutrition Research, this expert group will make an inventory of markers in the field of cardiovascular health and will try to identify the criteria of validation for some of them.

The expected impact is a thorough insight on criteria used to select broadly used markers and consequently a better understanding of how various markers could be used in translational nutrition research. This work will serve as a basis for a consensus workshop on criteria for marker validation from other areas in nutrition research.





Novel Foods and Nanotechnology

BACKGROUND AND OBJECTIVES

The task force aims to review how novel foods (and ingredients) and new processing techniques should be evaluated scientifically from both safety and nutritional viewpoints. The task force was established as the Novel Foods Task Force in the early 1990s to address safety issues around food biotechnology. The following ten years focused on the safety assessment of genetically modified organisms (GMOs) and resulted in a number of scientific publications. To complement this work, the task force organised scientific workshops to present and discuss its work with a broader audience.

After these successful initial years, the task force broadened its remit and carried out projects on the history of safe use and on post-market monitoring of novel foods. By this time, a new technology had emerged: nanotechnology. The task force accepted the new challenge, changing its name to the Novel Foods and Nanotechnology Task Force (recognising food applications for nanotechnology as novel foods) and setting up an expert group on the safety assessment of nanomaterials in food applications.

ACHIEVEMENTS

Over the years, the task force responded to a variety of challenges, filling knowledge gaps associated with new technologies. Since its creation, the task force has produced 11 publications, ranging from a Concise Monograph explaining the basics of food biotechnology more than 15 years ago, to an article on 'The application of post-market monitoring to novel foods' that was published in *Food and Chemical Toxicology* in 2008. The task force successively addressed various issues related to the safety assessment of novel foods; a paper published in 2007 aimed for instance to assist food safety professionals in the safety evaluation and regulation of novel foods and foods derived from genetically modified organisms, by describing the practical application and use of the concept of 'history of safe use'.

Workshop on the Safety Assessment of Nanomaterials in Food

This three-day workshop took place in May 2011 and provided a good platform for discussion and review of

the draft guidance document developed by the expert group, with about 50 leading experts from academia and industry, national authorities and representatives from the EC and EFSA. The workshop consisted of plenary sessions and discussions in working groups that focused on the following topics:

- Selection criteria to classify nanomaterials using a decision tree
- Tiered approach for hazard identification and characterisation
- Methodology for risk assessment
- Applications and examples

The main outcome of the workshop was that the expert group document was confirmed as an appropriate approach. The article was subsequently accepted for publication in *Food and Chemical Toxicology*.

FUTURE ACTIVITIES

What will be the next challenge? A new technology? A gap created by the evolving Novel Foods Regulation? Animal cloning? Allergenicity of novel foods? Life cycle assessment of nanomaterials? Whatever the challenge, the task force is in a strong position to bring together experts in the appropriate fields to tackle these questions.

IMPACT

The task force has been key in developing approaches for the safety assessment of novel foods, often involving key opinion formers in their expert groups.

The publications from the task force are widely cited and members of the task force and expert groups have often been invited to present the work at international conferences.

The subsequent impact is that these approaches are widely considered by regulators and expert groups in the assessment and regulatory approval of novel foods across the world as well as in Europe.

Risk Analysis in Food Microbiology

Task Force

BACKGROUND AND OBJECTIVES

This task force was created in 1993 to advance the scientific basis of microbiological risk assessment (MRA). Its objectives are to contribute to the development of a conceptual framework and an agreed terminology for microbiological risk assessment, and to develop and improve tools to manage safety hazards and risks in food production systems.

ACHIEVEMENTS

The task force has been instrumental in holding the following workshops:

- *1993: Workshop on Minimum Infective Dose*
  This workshop contributed to the increased knowledge and understanding of Food Safety Objectives (FSO).
- *1998: Mini-workshop on Microbiological Risk Assessment (MRA)*
  This workshop led to the organisation of a satellite session at Food Micro 99 on the same topic. The session provided a balanced introduction to the field of MRA.
- *2003: Workshop on the Impact of Food Safety Objectives on Microbiological Food Safety Management, with the International Commission on Microbiological Specifications for Foods (ICMSF)*
  This workshop provided a forum for detailed consideration of the FSO concept. It brought together a wide range of stakeholders and provided a stimulus to further developments of the FSO concept by encouraging an active exchange of views.
- *2005: Workshop on Microbiological Risk Assessment (MRA) in Food Safety Management, with the International Association for Food Protection (IAFP)*
  The workshop showed that more governmental decisions in the future would increasingly be based on MRA, and that food producers should be trained in understanding the concept. It also showed that consistent, good MRA practices and consideration of the characteristics that enhance the validity and utility of any type of MRA are equally important to the advancement of this field.
- *2011: Workshop on Microbiological Risk Assessment – Application of Omics Technology*
  The workshop (with 72 participants) provided a forum for omics experts and risk assessors to discuss omics technologies and data, as applied to risk analysis and risk management. The workshop identified the need for 'case studies' to bring together microbiological quantitative risk assessment as well as 'Omics' experts. A summary article was submitted to a peer-reviewed journal.

Including the workshops, reports and proceedings, the task force has successfully published 14 publications over the years.

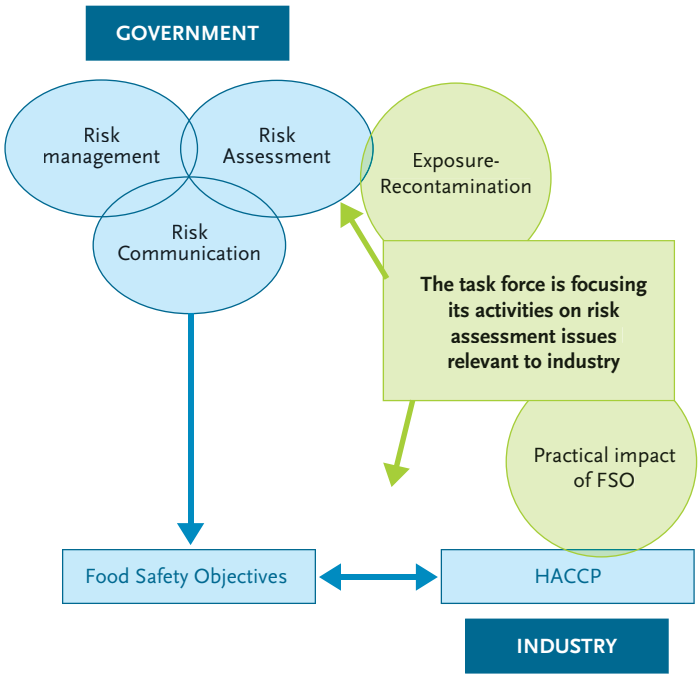
FUTURE ACTIVITIES

In 2012, the task force is considering initiating new activities on 'License to Produce', which will focus on aspects related to 'historical based risk assessment', history of timescale and decision analysis. Other activities will be follow-up from the Omics workshop and development of an industrial MRA Concise Monograph that could serve as a single source of reference to explain MRA in the context of 'fit-for-purpose'.

IMPACT

The Concise Monograph on the Hazard Critical Analysis Control Point (HACCP) has been widely used a training tool by academia and industry; it has been translated into seven languages, ensuring its worldwide dissemination.

The task force has been collaborating with the International Association for Food Protection (IAFP) in organising the food safety symposia in Europe, with inputs in various sessions to disseminate the results of their activities.



Risk Assessment of Chemicals in Food

BACKGROUND AND OBJECTIVES

Risk assessments are conducted to establish the safety significance of chemicals in food and are essential to ensure that chemicals present in food will not harm the consumers. Therefore, the assessment processes must be robust, transparent and based on the best available science.

The main aim of the task force is to improve approaches and tools to assess the risk of food chemicals. This includes development of approaches that take into account variability and uncertainty of data, and that integrate human, animal, *in vitro* and *in silico* data.

The task force also aims to develop a structured approach to weigh possible health risks and benefits resulting from food consumption.

ACHIEVEMENTS

The task force was involved, as partner and coordinator, in three recent EC-funded projects: FOSIE, SAFEFOODNET and BRAFO.

FOSIE (2000–2003)

A multidisciplinary European network was set up to critically assess the current knowledge in risk assessment and to examine the science base for new qualitative and quantitative methodologies used in assessing risks from chemical substances in the food chain.

The aim was to provide consensus on the ways in which risk assessment should be conducted and of the research needed to improve the process.

SAFEFOODNET (2005–2006)

The aim of SAFEFOODNET was to harmonise and integrate the infrastructures and activities of the new European member countries and associated candidate countries in the field of chemical food safety with those of old member states and to develop an expert network in the field of chemical food safety.

BRAFO (2007–2010)

The aim of the BRAFO project was to develop a framework that allows quantitative comparison of human health benefits and risks of foods and food compounds based on a common scale of measurement. This was based on the evaluation of changes in the quality and/or duration of life, with final quantification using an approach such as the quality-adjusted life year (QALY) or disability-adjusted life year (DALY). The methodology developed was sufficiently transparent to serve as a reference for the harmonisation of the evaluation methods used within the EU.

3-MCPD esters

The task force planned a joint follow-up activity after the workshop organised in February 2009 with the Process-Related Compounds and Natural Toxins Task Force. The follow-up activity focused on reviewing an inventory of indirect and direct methods of analysis of MCPD and glycidyl esters. The resulting report was presented and discussed at a workshop in November 2011. The outcome will be published in a peer-reviewed journal.

IMPACT

This task force critically reviews risk assessment methods and develops new tools to integrate risks and benefits, and to exploit *in silico* models for risk assessment. These new tools will improve the efficiency of public health decision making.

FUTURE ACTIVITY

Chemical risk assessment in the absence of adequate toxicological information

It appears likely that the food sector will increasingly face cases of emerging issues associated with chemicals for which little toxicological data are available. Because such cases could evolve into crises resulting in loss of consumer confidence in the food supply, these issues need to be managed properly.

An expert group is collecting and reviewing the results of the available toxicity prediction models and will integrate them into a tiered approach involving Quantitative Structure–Activity Relationship (QSAR), chemical grouping and read-across approaches.

Risk Assessment of Genotoxic Carcinogens

BACKGROUND AND OBJECTIVES

In 2002, the Risk Assessment of Genotoxic Carcinogens Task Force was created to address the presence of unavoidable levels of genotoxic carcinogens in food. The objective of the task force is to pursue international consensus on how to evaluate the risk of genotoxic carcinogens present in food (and by extension other matrices) through the review, development and assessment of quantitative risk assessment methodologies.

ACHIEVEMENTS

The first major achievement of this task force was the organisation of a joint conference with EFSA and WHO to discuss new approaches to the risk assessment of genotoxic carcinogens in food (EFSA/WHO international conference on the 'Risk Assessment of Compounds that are both Genotoxic and Carcinogenic – New Approaches', November 2005 in Brussels).

Responding to a recommendation of this conference, the task force set up an expert group to evaluate the margin of exposure (MoE) approach through defined case studies and to better define the level of health concern associated with a certain MoE. The outcome of this expert group was published as a supplement in *Food and Chemical Toxicology* in 2010, with a summary article and 12 case studies of genotoxic and carcinogenic chemicals that could be present in food. A key finding of this work was the importance of relevant data selection along with the need to describe and justify the strength of the data used to calculate the numerical MoE if the results of the MOE approach are to be trusted and of value to risk managers. An outline framework for calculating an MOE was proposed in order to help ensure transparency in the results.

A guidance document on how to select the most appropriate data sets to be used in benchmark dose modelling for MoE calculations is now being prepared for publication by a new expert group of the task force. Particular focus is on the biological relevance of an observed animal tumour type for humans, data quality and modelling considerations and how to report uncertainty around the calculated MoE numerical value. Following publication of this guidance, a second conference will be planned to revisit where we stand with respect to the assessment of compounds that are both genotoxic and carcinogenic.

IMPACT

The work of the task force and its expert groups continues to broaden our knowledge base for the risk assessment of genotoxic carcinogens through scientific evaluation of available data and review of current methodologies. By working in close collaboration with national and international agencies, the task force contributes to the harmonisation of risk assessment procedures.

Harmonisation of cancer risk assessment procedures

Collaboration with

ANSES
EFSA
RIVM
UK FSA
US FDA, US EPA
WHO/IPCS

Threshold of Toxicological Concern (TTC)

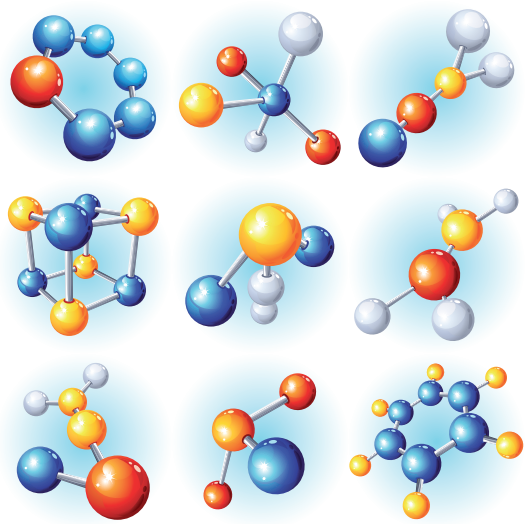
BACKGROUND AND OBJECTIVES

In the early 1990s, the US Food and Drug Administration (FDA) introduced the Threshold of Regulation (ToR), which was applied to food contact materials. The ToR exempts substances that come into contact with foods from being listed as food additives if they migrate into foods at levels that result in no appreciable risk to human health. The ILSI Europe Packaging Materials Task Force and the Acceptable Daily Intake Task Force saw the potential of this concept and decided to investigate its application to food. In this context, ILSI Europe established in 1996 the Threshold of Toxicological Concern (TTC) Task Force that became one of the first European groups to develop a sound scientific basis for justifying the concept and proposing a possible threshold value for food.

ACHIEVEMENTS

The first publication of the task force dates back to 2000 and provided a practical tool for assessing the need for toxicity testing. One year later, the task force published the report of a workshop aiming at communicating the principles and assumptions of the TTC concept to a wider audience and providing scientific support for validation of the concept.

Later, another expert group examined the TTC principle for its wider applicability in food safety evaluation and concluded that the TTC principle could be applied for low concentrations in food of chemicals that lack toxicity data. The approach was also expanded from a single exposure limit to a tiered approach and the use of a decision tree to apply the tiered TTC principle was proposed.



IMPACT

Since its inception, the task force aimed at further developing the underlying science of the TTC concept and promoted its acceptance and application. Currently, the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and EFSA apply the TTC concept to assess the safety of flavouring substances for food.

EFSA has set up a working group to further investigate the application of the TTC concept and published a draft Opinion in July 2011. The European Commission has requested the Non-Food Scientific Committees to further investigate the application of the TTC concept. The Committee for Medicinal Products for Human Use (CHMP) has based their 'Guideline on the Limits of Genotoxic Impurities in Pharmaceuticals' on the work of this task force.

The task force also published a Concise Monograph in 2005 enabling a wider dissemination of the TTC concept.

In 2011, the task force published a new paper in *Food and Chemical Toxicology* exploring whether the TTC concept could enable a more pragmatic risk assessment of unknown substances that were previously not detected in food.

FUTURE ACTIVITIES

The challenges for the future will be:

- To communicate the principles and assumptions of the TTC concept to a wider audience
- To provide guidance on the application of the TTC concept to a broad range of chemicals and extend it beyond food
- To update and expand the toxicological databases supporting the TTC values
- To further develop tools and software that will promote consistency and transparency in the way that TTC is applied (e.g., for binning chemicals into the appropriate tier)

With a wider acceptance of the TTC concept, government, industry and consumers will benefit from:

- Recognising that exposures lower than the TTC levels do not pose any safety concern
- A decrease in the use of laboratory animals
- More efficient use of financial and human resources in both industry and governments
- A practical risk assessment tool correlated to more and more sensitive analytical techniques ■

Societal Aspects

Consumer Science

BACKGROUND AND OBJECTIVES

Food choice and dietary behaviour are among the most important lifestyle factors determining human health and well-being. It is therefore of utmost importance to the food industry, public policymakers and consumer representatives to better understand the reasons behind consumers' food choices. This led to the creation of the Consumer Science Task Force in 2003. It aims to provide a better understanding of consumers' food perceptions and behaviours in order to support consumers in making well-informed and healthier food choices.

ACHIEVEMENTS

Consumer understanding of health claims

The aim of the European legislation on nutrition and health-related claims was to regulate the scientific substantiation of health claims and to take into account the consumer perspective, particularly consumer understanding of claims. To explore this issue and to outline a process for supporting consumer understanding of claims an expert group wrote a paper that was reviewed at a multidisciplinary workshop that took place in May 2006. The article was published in the *British Journal of Nutrition* in 2007, and the summary report of the workshop was published in the *ILSI Europe Report Series*. The summary report makes recommendations about evidence and about the research process that could be undertaken to support the practical application of the legislation. It also gives detailed guidance to producers about the kind of research data that would need to be collected to support submissions.

Food choice, energy balance and its determinants: views of human behaviour in economics and psychology

In response to the growing concerns over obesity, the task force created an expert group to determine which of the many changes in the environment consumers react to, and how. The expert group paper is being prepared that describes three dominant economic and psychological approaches. It is concluded that only the three approaches taken together can give sufficient insight into the various mechanisms determining food intake and physical activity, and that such a broad view is necessary for understanding the ways in which commonly advocated policy instruments can affect energy-related behaviour.

Consumer response to novel agri-food technologies: implications for predicting consumer acceptance of emerging food technologies

New food technologies have in several cases been regarded as risky, e.g. genetically modified organisms. To understand consumer-perceived risk, an expert group reviewed studies on consumer perception of risk regarding seven food-related technologies associated with different levels of public acceptance. The study was published in *Trends in Food Science and Technology* in 2011 and shows that the issue of consumer acceptance of food technologies, and their applications, needs to be addressed early in technology development. By understanding how people assess risks and benefits, industry, decision makers and regulatory agencies can engage more meaningfully with the public to support them in making informed decisions about the acceptability of novel technologies.

Consumer-relevant risk communication: How to facilitate informed decision-making by consumers regarding acceptance of emerging food technologies

Building on the conclusions of the previous expert group on risk and benefit perception of new technologies, the task force started another activity on risk communication. This activity aims to provide a systematic analysis of risk communication in the area of food technology. An important outcome will be the development of concrete and actionable best practices for a risk communication strategy focused on consumer priorities as well as on technical information about risk assessment.

IMPACT

The task force helps further an understanding of how consumers react, how they assess risks and benefits and how they make choices. This will allow industry, decision makers and regulatory agencies to be able to engage more meaningfully with the public to inform and support them in making appropriate informed decisions. ■

TECHNOLOGY CHARACTERISTICS	CONSUMER CHARACTERISTICS
Intrinsic issues	
Characteristics of the technology may generate negative societal responses. Is it perceived to be 'unnatural', uncontained or uncontrollable?	Individual and cultural differences can be identified in consumers' responses to these characteristics.
Risk assessment and risk management	
Are regulatory systems relevant to human and environmental health perceived to be inadequate?	Different individuals prioritise different potential (perceived) technology outcomes (e.g. related to human health, environmental impact, animal welfare or employment creation)
Need and benefit	
Is there an identified societal need for the technology?	Do individuals consider specific applications to be useful to themselves and others within society?
Regulatory transparency	
Is there a clear, transparent and robust regulatory framework to manage and control the technology?	Societal, cultural and historical factors influence people's trust in the regulatory framework.
Associations and complexity	
Is the new technology perceived to be similar to existing technologies and applications?	The new technology may activate existing attitudes about (food) technologies and related issues.
Societal involvement and its impact	
Have key stakeholders and end-users been involved in regulation, policy and commercialisation strategies?	What is the impact of societal engagement on the trust in policy and acceptance of the novel technology?

Key issues in consumer acceptance and rejection of food technologies

Food Chain

Task Force

Emerging Microbiological Issues

BACKGROUND AND OBJECTIVES

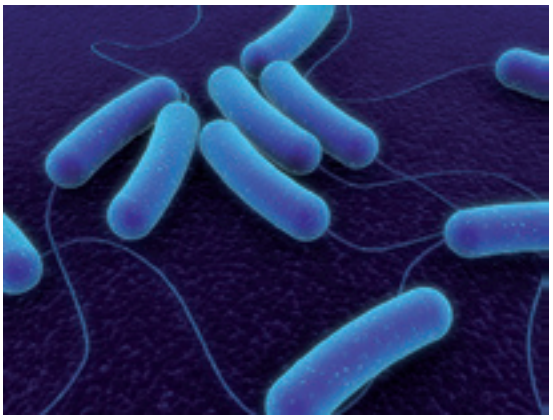
The ILSI Europe Scientific Committee on Microbiology was created in 1988 with the aim of promoting discussion between microbiologists in academia, government and industry in Europe. The objective was to promote development of common approaches and to provide impartial advice to industry and government on microbiological safety issues.

In 1993, the ILSI Europe Scientific Committee on Microbiology created two task forces: Risk Analysis in Food Microbiology and Realistic Standards for Pathogens. In 1998, the latter task force was renamed as Emerging Pathogens and later, in the early 2000s, assumed the name of Emerging Microbiological Issues. The role of this task force was to provide a forum for debate and comment on emerging and re-emerging microbiological issues on the safety of foods.

In 2010, the task force successfully identified water as an emerging global issue. The group initiated a new activity on 'Water and Sanitation Perspectives' in collaboration with eight other ILSI branches (India, Japan, Korea, Mexico, North Andean, South Africa, South Andean, Southeast Asia Region) and with the technical support of WHO and FAO.

ACHIEVEMENTS

The task force has been successful in producing over ten publications covering various organisms such as *Campylobacters*, *Salmonella* Typhimurium, *Mycobacterium avium*, animal-borne viruses, and many others.



IMPACT

Task force publications are widely read and disseminated inside and outside Europe, for example, by the US National Advisory Committee on Microbiological Criteria for Foods. They are used as reference texts for promoting and sharing best practice in the food industry and facilitate a proactive response to emerging food safety issues.

The task force has been collaborating with the International Association for Food Protection in organising the food safety symposia in Europe, during which they have sponsored various sessions to disseminate the results of their ongoing activities.

FUTURE ACTIVITIES

The task force maintains a list of potential future activities, which they discuss at each meeting and prioritise on the basis of emerging scenarios and priorities. Some of the proposed activities concern factors influencing emergence of pathogens with regard to *Listeria*, *Legionella*, microbial antibiotic resistance in the food chain, new technologies, pathogenic *Clostridia*, transmissible spongiform encephalopathy (TSE) and *Vibrios*.

Environment and Health

BACKGROUND AND OBJECTIVES

The mission of this task force is to contribute to the understanding of the risks to human health and the environment that result from food production and food processing, and to promote best practices to manage these risks. It addresses scientific issues related to the assessment and control of the agricultural and industrial impact on the environment and promotes the sustainable use of natural resources.

ACHIEVEMENTS

Two expert groups supported by this task force recently published two reports. The first report focused on identifying the environmental water requirement of crops in order to analyse the sustainability of these crops in various countries of origin and to suggest potential ways to improve their sustainability. The second report reviewed how existing EU legislation and industry best practice policies operate to ensure the safety of food and feed chains and how this affects the risks posed by food crops for non-food use (FCNFU), including crops that have been genetically modified for industrial use. For comparison, information was collated on international non-food crop approval policies in Canada and the USA.

IMPACT

- This task force initiated a very topical activity that provided recommendations for safety evaluation of food crops for non-food use.
- The activity 'Sustainable Water Management for Crops' addressed relevant issues related to the actual water demands and future perspectives in the terms of water availability.
- The task force produced a number of publications related to the use and quality of water, involving close collaboration with experts from WHO.

FUTURE ACTIVITIES

The past initiative on sustainable use of water management for oil crops provided a basis to guide companies, but there is a need for a more comprehensive framework that considers each stage of food production, from farm to fork, with regard to water sustainability. A new activity is about to start on a framework for establishing and mitigating the impact of crop production on water quality and water use – using sugar as an example. The project goal is to produce a detailed framework for the food industry that will assist the industry in becoming routinely engaged in the process of improving water efficiency and to identify the pitfalls and problems that need to be avoided. There are many existing frameworks and initiatives to consider water in agriculture but few that consider water use from agriculture through to the food industry raw material leaving the factory gate. The goal is, therefore, to apply the best of existing procedures to the production of sugar from sugar cane and sugar beet to provide a practical and easy-to-use methodology for improving water efficiency.

Packaging Materials

BACKGROUND AND OBJECTIVES

On 25 May 1987, the first meeting of the Working Group on Packaging Materials took place, which makes this task force one of the oldest at ILSI Europe.

The group evolved into the Packaging Materials Task Force and aims to identify food packaging issues of common interest to members. These are addressed by facilitating debate in meetings and symposia and by commissioning research projects. In addition, the task force also aims to:

- Advance the science related to the safety and quality of packaged foods and identify future development needs
- Provide informative and comprehensive scientific documents covering essential aspects of packaging materials

ACHIEVEMENTS

Since 1996, the Packaging Materials Task Force has organised four symposia on food packaging with the following general objectives:

- To look at the advances being made in the science related to the safety and quality of packaged foods
- To disseminate results of on-going research
- To examine implications for the future

In November 2012, the 5th International Symposium on Food Packaging will take place in Berlin, Germany.

Furthermore, the task force has started a series of publications on different packaging materials, giving a brief overview of the most important aspects of each material, for example, chemistry, toxicology, legislation and environment. Materials considered so far include polyethylene terephthalate, polystyrene, polypropylene, polyethylene, polyvinyl chloride, paper and board and metal packaging for foodstuffs. So far, nine reports have been published, the latest covering 'Multilayer Packaging for Food and Beverages'.

IMPACT

The International Symposia on Food Packaging, which take place every four years, provide a unique platform to discuss the science of the safety and quality of food packaging with experts from government, academia and industry.

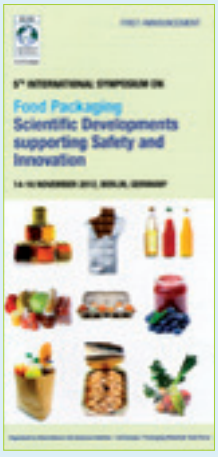
The report series on packaging materials is widely used in the academic sector for teaching students and in the industry sector as a valuable source of information that provides a concise overview of the different packaging materials.

FUTURE ACTIVITIES

Since its creation, the task force has seen major changes in the way that food is produced and retailed, which has resulted in an increasing sophistication in food packaging. To assure the safety of the consumer the interactions between food and food packaging need careful evaluation. Following new developments and responding to the changing environment will remain a continuous challenge.

The task force started a project addressing the potential risks resulting from nanotechnology applications in food contact materials. The output of this activity will be a review article compiling available information including characterisation, quantification, migration behaviour and environmental and regulatory issues. The work of the expert group will be presented to a broader audience at a workshop, which will take place in February 2012 in Brussels.

For the near future, nanotechnology used in food packaging, the so-called Non-Intentionally Added Substances (NIAS) and organisation of the next international symposium on food packaging will be the major topics in the work programme of this task force.



This three-day conference will be structured around four concept areas:

- Nanotechnology and emerging technologies
- Sustainable food contact materials
- Risk assessment of complex mixtures
- Effects of food processing and packaging treatments

The purpose is to cover a wide range of food contact materials including plastics, paper and board, cans, wood, cork, as well as coatings, adhesives and inks.

Process-Related Compounds and Natural Toxins

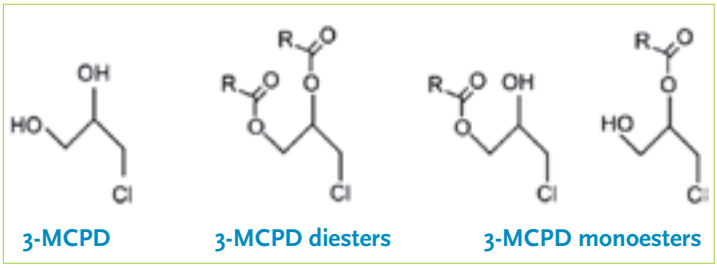
BACKGROUND AND OBJECTIVES

In the early 2000s, this task force was established in the wake of the acrylamide issue. In collaboration with the ILSI North America Technical Committee on Food Toxicology and Safety Assessment and its Subcommittee on Acrylamide, the task force prepared a framework contributing to the risk assessment of acrylamide in food. In 2005, the scope of the task force was broadened to compounds formed during processing, followed by a merge in 2009 with the Natural Toxins Task Force to create the Process-Related Compounds and Natural Toxins Task Force. The mission of this task force is to maintain and improve public health by advancing the scientific understanding of such substances and the magnitude of their impact on the potential risks and benefits to human health. The main areas of focus include consideration of toxicity, exposure, mitigation impact and analytical aspects, providing a neutral forum for exchange of information and debate.

ACHIEVEMENTS

The task force was instrumental in publishing articles on 'Human exposure and internal dose assessments of acrylamide in foods' in *Food and Chemical Toxicology* (2005) and on 'Risk–benefit considerations of mitigation measures on acrylamide content of foods - a case study on potatoes, cereals and coffee' in the *British Journal of Nutrition* (2008). In this article, the potential effect of mitigation measures on the overall margin of exposure (MoE) was assessed by modelling different exposure scenarios. The relatively small impact of the selected potential mitigation measures on the overall MoE was highlighted especially for high intake consumers. In the case of simultaneous exposure to more than one compound as a result of a mitigation measure, there is a need to balance these potential risks against the risk of potential acrylamide exposure. In this respect, the usefulness of a simultaneous exposure model as a potential tool for acrylamide risk–benefit analysis was demonstrated.

The task force planned a joint follow-up activity after the workshop organised in February 2009 with the Risk Assessment of Chemicals in Food Task Force. The follow-up activity focused on reviewing available information on analytical methods, creating an inventory of indirect and direct methods. For this an expert group was formed in 2010 to address analytical issues related to determination of MCPD and glycidyl esters.



3-MCPD | 3-MCPD diesters | 3-MCPD monoesters

This group prepared a report that was presented and discussed at a workshop in November 2011. The outcome will be published in a peer-reviewed journal. In addition the proceedings of the workshop will be published in the *ILSI Europe Report Series*.

In 2010 the task force published two reviews, one article on 'Beneficial aspects of food processing' in *Molecular Nutrition and Food Research* and a report on 'Evaluation of agronomic practices for mitigation of natural toxins' in the *ILSI Europe Report Series*. The first manuscript reviews beneficial aspects of food processing with the main focus on cooking and/or heat treatment, including other food processing techniques (e.g. fermentation). This study concluded that knowledge on processed foods should be used in epidemiological studies, that there is a need for databases to estimate the intake of compounds from processed foods, and a need for a better understanding of the relevance of *in vitro* results for human health. The second study investigated the influence of agronomic practices on the content of mycotoxins and plant toxins. As a result, a guidance document was prepared on Good Agricultural Practices (GAP) to reduce the toxin level in plants.

IMPACT

The framework on risk assessment of acrylamide was widely used to compare and rank mitigation measures. It served as a tool for risk assessors and managers to help in risk management decision making. It was also used by stakeholders as a basis for education and communication to food processors and consumers.

FUTURE ACTIVITIES

The task force has initiated a new activity on food plant metabolites of mycotoxins (masked mycotoxins) and also organised a workshop in Brussels in November 2011 to review a manuscript addressing analytical issues related to determination of MCPD and glycidyl esters in food products. ■

Diet, Health and Disease

Task Force

Dietary Carbohydrates

BACKGROUND AND OBJECTIVES

In the 1990s, ILSI Europe published three Concise Monographs on carbohydrates and fibres, looking at their metabolism and impact on health. The need to update these Concise Monographs arose as the scientific knowledge in this area advanced and carbohydrates were no longer seen solely as a source of energy. The Dietary Carbohydrates Task Force was therefore created in 1999 and its first goal was to update the scientific knowledge on dietary carbohydrates and dietary fibres.

In parallel, more and more data were becoming available on the relationship between the glycaemic response and health, but its significance remained far from clear. Thus, the task force decided to commission several new activities that finally led to a new Concise Monograph aimed at improving understanding of the importance of glycaemia on health. Later an expert group was set up to better understand the glycaemic impact of ingestion of carbohydrate foods on health in healthy subjects.

The task force also works on addressing crucial aspects of the Codex definition of dietary fibre, with an emphasis on the scientific basis for and benefits of a single worldwide definition. This is being done in collaboration with other ILSI branches.

The aim of the Dietary Carbohydrates Task Force is to increase insight into the effects of carbohydrates on health and particularly to answer the questions:

- What are the effects of differences in glycaemic response on health and disease, and what are optimal ways to measure such responses?
- What are the physiological and health benefits of natural and synthetic non-digestible carbohydrates and fibres?
- How does the postprandial stage influence health in different population groups?

These activities and a wide dissemination of the results can help industry, food authorities and consumer to produce, label and choose foods that can help maintain or improve health.

ACHIEVEMENTS

- A meta-analysis on 'Glycaemic Response and Health' commissioned by the Task Force was first presented at the Public Health and Nutrition Congress in 2006 and at the Federation of European Neuroscience Societies (FENS) Congress in 2007. It was also reviewed during a workshop organised in 2006, the proceedings of which were then published in the *American Journal of Clinical Nutrition* (2008).
- A session was jointly organised with the ILSI North America Carbohydrates Committee during the 9th Vahouny Symposium in June 2010 to clarify the issues relating to the definition of dietary fibre. A publication summarising the main outcome was disseminated to the participants of the Codex Committee on Nutrition and Foods for Special Dietary Users (CCNFSDU) meeting in November 2010 in Santiago de Chile. This publication was also translated in to Spanish and Portuguese.

FUTURE ACTIVITIES

This task force aims to increase understanding of the relationship between carbohydrates and health. This is also done by interaction and collaborations with other ILSI branches, for instance through the Carbohydrates Forum organised each year during the ILSI Annual Meeting, which is a platform to foster an exchange on the scientific activities relating to carbohydrates within ILSI globally.

IMPACT

The task force generated a unique insight into the health effects of glycaemic index and glycaemic load thanks to a workshop organised in Nice in 2006.

A Pre-Codex session was organised in 2008 around the definition of dietary fibre, during which WHO acknowledged the help of ILSI in facilitating the discussion.

Eating Behaviour and Energy Balance

BACKGROUND AND OBJECTIVES

This task force was created in March 2006 as the Appetite Regulation Task Force. In 2011, it was decided to broaden its scope in order to raise awareness and understanding of the physiological and behavioural determinants of energy balance, including appetite control and energy utilisation.

Promoting satiation and prolonging satiety are potentially important factors for weight maintenance and also for managing overweight and obesity. One action the food industry can take is to develop new products that can help the consumer control energy intake. A thorough understanding of how to demonstrate the benefits of enhanced satiety via robust methodologies and appropriate behavioural and physiological measures is key to scientifically substantiating appetite-related claims.

ACHIEVEMENTS

The task force is currently producing an authoritative inventory and evaluation of the evidence behind the consumer benefits of enhanced satiety and appetite control. Psychological and behavioural processes, such as habit, learning and adaptation, can also shed light on how these elements can contribute to long-term weight management. This is expected to be published in 2012.

The outcome of the expert group on 'Satiety claims: what do consumers really think?' will be a peer-reviewed publication that aims to fill a gap in authoritative, independent and objective evidence on consumer understanding of satiety-related claims.

IMPACT

In March 2010, two papers were published in *Obesity Reviews*:

The first, 'Appetite control: methodological aspects of the evaluation of foods' demonstrates how and what to measure in terms of scientifically demonstrating satiety.

The second paper, 'Gastrointestinal targets of appetite regulation in humans', investigates whether gut (satiety/hunger) hormones can be used to substantiate or support appetite-related health claims.

Food Allergy

BACKGROUND AND OBJECTIVES

The Food Allergy Task Force was created in June 1995 to support food allergen risk assessment and risk management. Specifically, the main questions addressed include:

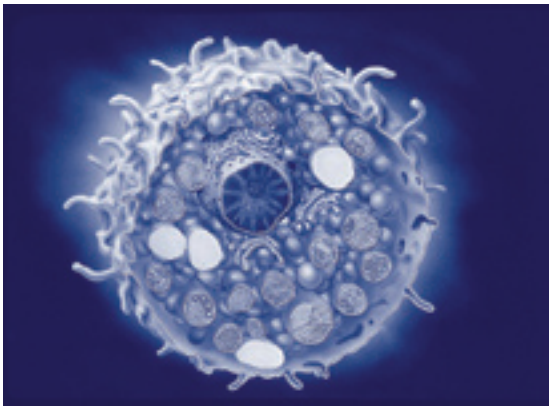
- What determines whether a food allergen is of public health concern?
- Can thresholds be applied to food allergens and how?
- How can better understanding of allergens help improve both risk assessment and risk management of allergens in food?
- What is the impact of various food processing methods in the allergenicity of a food or ingredient?

RECENT ACHIEVEMENTS

The Food Allergy Task Force hosted an international symposium on the 'Frontiers in Food Allergen Risk Assessment' in October 2010, in Nice, France, in collaboration with EuroPrevall, UK FSA (Food Standards Agency), ILSI HESI PATC (Health and Environmental Sciences Institute, Protein Allergenicity Technical Committee) and FARRP (Food Allergy Research and Resource Program), and with the participation of EAACI (European Academy of Allergy and Clinical Immunology). The programme covered the global prevalence of food allergies, including the new data emerging from the EuroPrevall EC project. New and emerging perspectives of allergen management were explored, for example, thresholds in clinical settings, thresholds in foods using common matrices, modelling approaches and using thresholds in practical settings.

The event was considered to be a great success with a unique combination of highly distinguished scientists from 25 countries from all over the world (including the USA, Canada, Japan, China, South Africa and Australia).

The output of the symposium was a summary report, primarily of the discussion-generated output that highlighted the main conclusions and identified research gaps and how we can progress with food allergen management using existing and emerging evidence. This report was published in the *ILSI Europe Report Series* in September 2011.



IMPACT

The task force has helped identify the criteria for defining food allergens of public health importance, characterise the minimum eliciting dose, generate awareness of the need for a Europe-wide Allergic Reaction Registry and provide the impetus to get one started, build global partnerships by collaborating closely with the European Commission, FARRP and leading scientists and clinicians in the field. This work is making a very positive contribution to the safety of allergic consumers and has confirmed ILSI Europe as a respected partner in the science of food allergen risk assessment.

FUTURE ACTIVITIES

Within the context of 'thresholds', the aim of the task force in the near future is to develop a consensus on quantitative action levels for use in the management of allergenic foods and to establish clear, agreed and reasonable standards in this area, which will benefit allergic consumers as well as food manufacturers.

The Food Allergy Task Force also aims to increase understanding of the impact of different types of processing on the allergenic potential of several food constituents and ingredients.

Metabolic Imprinting

BACKGROUND AND OBJECTIVES

Metabolic imprinting refers to the effects of diet during pregnancy and infant feeding on the development of chronic diseases in later life. Increasing evidence suggests that maternal and infant nutrition influence ('imprint' or 'program') the development of endocrine dysfunctions such as diabetes, metabolic syndrome, atherosclerosis, hypertension, cancer, mental functions, food allergy and intolerance. Started in 2006, the Metabolic Imprinting Task Force aims to provide insights into the effects of diet and its components on the different phases of metabolic imprinting, particularly with respect to metabolic and immunological disorders, including both disease and health endpoints.

ACHIEVEMENTS

A workshop was organised in autumn 2007 in Florence, Italy, to map out the available data on this fast-emerging scientific field and investigate technologies and methodologies used to study this topic, such as biomarkers and the human or animal models. The workshop outcome has been compiled into a review paper that was published in the *British Journal of Nutrition* (2010). This paper reviewed the data available on the link between metabolic imprinting and future health risks, such as cardiovascular diseases, obesity, bone health, cognition, immune function and diabetes. The paper also investigated technologies and methodologies used to study this topic, such as biomarkers and the use of human and animal models.

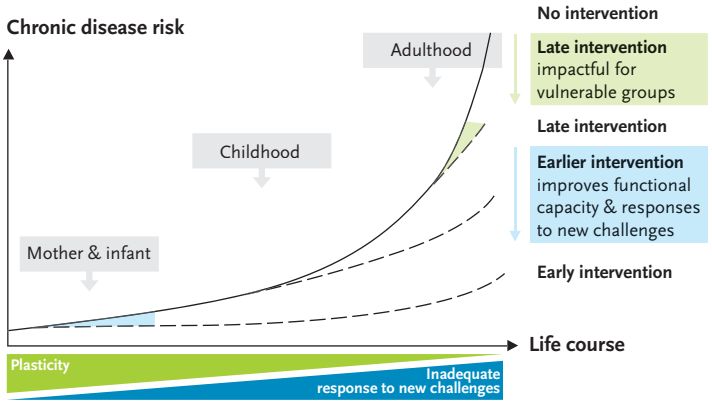
In September 2009, a roundtable workshop was held, inviting scientific experts, clinicians and health practitioners with different backgrounds. This workshop aimed to produce a multi-disciplinary review of the effects on later health outcomes of pre- and post-natal nutrition of infants with obese mothers. The timing of this workshop coincided with the publication and adoption of the new Institute of Medicine (IOM) guidelines on gestational weight gain, which showed that the link between mothers' health and diet and offspring perspectives is still very poorly understood. The outcome of the workshop was published in *Pediatric Research* (2011). The consensus viewpoint of the workshop identified gaps and gave recommendations for future research on gestational weight gain, gestational diabetes, and research methodologies. The evidence available on short- and long-term health impact for mother and child currently favours actions directed at controlling pre-pregnancy weight and preventing obesity in women of reproductive age.

CURRENT ACTIVITY

The task force organised a workshop entitled 'Maternal Obesity, Diet and Developmental Programming' in Brussels in October 2011. About 40 European experts from academia, industry representatives and governmental bodies actively participated. The workshop aimed at identifying the key outstanding questions in the area of early life nutritional determinants of offspring obesity and its metabolic complications, and at defining the optimal methodological approaches to answer these questions. It was a great opportunity to learn from the strengths and limitations of the different mother–child studies represented. A paper addressing how to improve mother–child study designs and how to make the best use of existing data will be submitted to a peer-reviewed journal early in 2012. New knowledge will then be available for policy makers to answer urgent questions and generate future recommendations for maternal and early-life nutrition in prevention of obesity and its complications.

IMPACT

The task force has the overall aim of contributing to the health of women and children by understanding the nutritional links between circumstances in early life and adverse health factors in later life. It has focused in particular on obesity in pregnancy because there is an alarming rise in obesity amongst pregnant women worldwide. The task force aims to build insights to foster the development of recommendations for specific target groups like obese mothers and to better understand what could be done to improve the health of all women of reproductive age to benefit future generations.



Early intervention: high potential benefit. From Godfrey et al. Trends in Endocrinology and Metabolism 2010;21(4):199-205

Metabolic Syndrome and Diabetes

BACKGROUND AND OBJECTIVES

The Metabolic Syndrome and Diabetes Task Force was formed in 2007, broadening the scope of the former Type-2 Diabetes Task Force, with the focus to:

- Provide an in-depth understanding of the potential genetic and environmental risk factors that predict the development of the metabolic syndrome and type 2 diabetes
- Investigate the interactions between the classical and novel components of the metabolic syndrome
- Determine the efficacy of improving diet and lifestyle habits for the management, prevention and possibly the reversal of metabolic syndrome, diabetes and its related complications.

ACHIEVEMENTS

In 2005, the task force produced a Concise Monograph on type 2 diabetes that provided basic recommendations for the general population to reduce the risk of a growing epidemic. It also provided an overview of the nutritional aspects to be taken into account when counselling people with diabetes and prediabetic conditions. The Concise Monograph continues to be widely distributed.

Before this, the task force published an article in the *British Journal of Nutrition* (2004) on 'Diet composition and the risk of type 2 diabetes: epidemiological and clinical evidence' that assessed the relationship between lifestyle and the risk of type 2 diabetes. The expert group showed that lifestyle factors that probably increase the risk of type 2 diabetes are being overweight and physical inactivity. However, recent epidemiological evidence has shown that the risk of type 2 diabetes is also associated with diet composition, particularly with:

- Low fibre intake
- High *trans*-fatty acid intake and a low ratio of unsaturated-to-saturated fat intake
- Absence of excess of alcohol consumption

Low-grade inflammation has been linked to cardiovascular disease among other health outcomes. It is one feature of the metabolic syndrome and often seen in the overweight and obese population. Within the remit of this task force, a systematic review on the impact of nutrition and dietary factors on low-grade inflammation has been published as a supplement in the *British Journal of Nutrition* (2011).

IMPACT

In 2010, ILSI Europe organised a pre-congress meeting at the International Congress on Obesity in Stockholm, that featured metabolic dysfunction among other topics.

FUTURE ACTIVITY

A new activity is currently underway to address the nutritional management of post-prandial glycaemia. The purpose is to provide a state-of-the-art overview on the role of nutrition in post-meal glucose management, in the context of metabolic syndrome and diabetes.

Nutrient Requirements

BACKGROUND AND OBJECTIVES

Originally, the task force (initiated in July 1999) was known under the name of Nutritional Needs of Children and looked into the nutritional needs of healthy children and adolescents in Europe, in order to help establish dietary guidelines for a healthy childhood and adolescence. The task force was renamed as Nutrient Requirements in 2005 to reflect its expanding focus to cover all population groups. Expanding to other vulnerable groups allowed the task force to contribute to the harmonisation of dietary recommendations in Europe.

The task force provides state-of-the-art scientific evidence on how nutrients intake affects nutrients status and related health outcomes, thereby contributing to a broader understanding of the methodologies behind setting nutrient recommendations.

ACHIEVEMENTS

Expert groups have reviewed available data on the current dietary recommendations, dietary intake and nutritional status in children and adolescents in Europe. A key highlight of this review was the urgent need to harmonise concepts, definitions and methodologies on nutrient reference values. Another activity focused on the role of digestible carbohydrates in the diet of infants and toddlers by examining current intakes across Europe, their role in the development of food preferences and in food choices and the consequences of excess or insufficiency. Jointly with the Addition of Nutrients to Food Task Force, the need for specific reference values for vitamin K2 is debated in an upcoming publication.

EURRECA

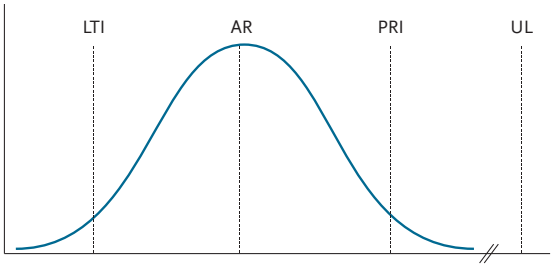
To address the issue of harmonisation a concerted action by scientific societies and government agencies from all parts of Europe was required. To achieve this goal, the task force successfully applied for a 5-year Network of Excellence (NoE) under the EU Sixth Framework Programme. The topic was 'Nutrient status and requirements of specific population groups', with a budget of €13.2 million. The EURRECA (EURopean micronutrient RECommendations Aligned) Network of Excellence has been established to identify and develop methodologies to standardise the process of setting micronutrient recommendations. The task force is participating as observer in the Steering Committee of EURRECA. Task force members benefit from the outcomes of EURRECA via its publications but also from the Network itself through the interactions with key scientists in field.

IMPACT

A joint workshop with WHO convening nutrient recommendation-setting bodies has been organised to achieve a sustainable dissemination and implementation of EURRECA results. Different types of instruments (including best practice guidelines, digital learning material, online databases and decision trees) have been identified, developed and made freely available on the EURRECA website (www.eurreca.org).

FUTURE ACTIVITIES

Enormous amounts of effort have been expended by different groups of scientists through the EURRECA Network of Excellence but there are still some research gaps that need further investigation, such as the relationship between intake, status and health for micronutrients of concern in vulnerable groups and the biomarkers of micronutrient status and disease risk. The task force is currently looking at the variation in requirements for different fibre sources and the possibility of making recommendations as to the optimum balance of fibre.



Definitions used to indicate different points of the dietary reference values. LTI: lowest threshold intake; AR: average requirement; PRI: population reference intake; UL: tolerable upper intake level

Nutrition and Immunity

BACKGROUND AND OBJECTIVES

The Nutrition and Immunity Task Force was initiated in 1994 to clarify mechanisms by which nutrition affects immune function. Because the immune system appears to be extremely sensitive to nutritional deficiencies, the task force also aimed to identify minimal intake levels for optimal immune function in order to aid development of practical dietary guidelines to reduce the risk of chronic diseases. A decade ago this task was taken over by the Nutrient Requirements Task Force.

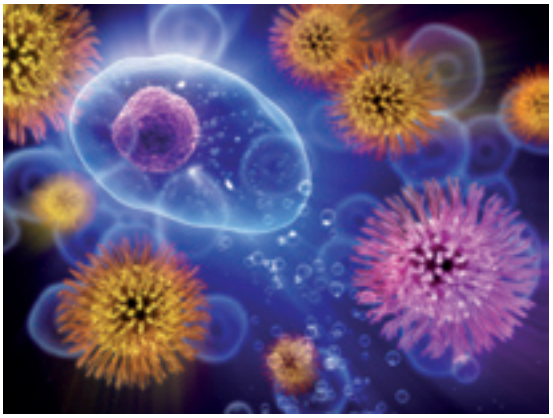
The current objective of the task force is to improve understanding of how nutrients affect immune function in healthy people, which markers are most indicative of optimal immune function, and how the effects of nutrition on immune function impact on health.

ACHIEVEMENTS

An update of the Concise Monograph on 'Nutrition and immunity in man' from 1999 was published in 2011. The new edition has a special focus on the effect of nutrition on the reduction of disease risk. It includes recent insights on distinct immune functions and summarises effects of pro- and prebiotics, fatty acids and vitamins on these functions.

Regulated inflammatory responses are essential to maintain homeostasis and remain healthy. However, inflammatory responses that fail to regulate themselves can become chronic and contribute to the perpetuation and progression of disease. An extensive review commissioned by the task force details the molecular and cellular processes underlying distinct chronic inflammatory conditions and summarises the evidence for the impact of dietary components such as long chain omega-3 fatty acids, antioxidant vitamins, plant flavonoids, prebiotics and probiotics on these inflammatory processes. The review, 'Inflammatory disease processes and interactions with nutrition', was published in the *British Journal of Nutrition* (2009).

Another review commissioned by the task force summarises the immune function assays commonly used as markers in human intervention studies and evaluates their biological relevance. 'Markers to measure immunomodulation in human nutrition intervention studies' was published in the *British*



Journal of Nutrition (2005). The aim of the review was to define a set of relevant markers of immune functions that can be used to scientifically substantiate an improved resistance against infections. A range of *in vivo, ex vivo* and *in vitro* measures is explained and scored for their suitability to assess dietary modulation of immune function. The paper concludes that combining clinical endpoints with a set of markers with high and medium suitability is the best approach for measuring immunomodulation in human nutrition intervention studies.

NEW ACTIVITIES

A similar exercise is currently on-going to evaluate markers of inflammation for their suitability. To date, clear recommendations on which markers of inflammation to use and how to interpret changes or patterns are missing. The heterogeneity of the tools used to assess the relationship between clinical symptoms and the markers of inflammation is a significant limiting factor for the progress of knowledge on the impact of nutrition on chronic inflammatory responses. In particular, the task force would like to gain a better insight into good predictive markers of chronic inflammation.

The task force is also working on a joint project with the Probiotics Task Force. The aim of the exercise is to provide relevant markers for measuring immunomodulation that has been induced by dietary interventions in the general population.

Nutrition and Mental Performance

BACKGROUND AND OBJECTIVES

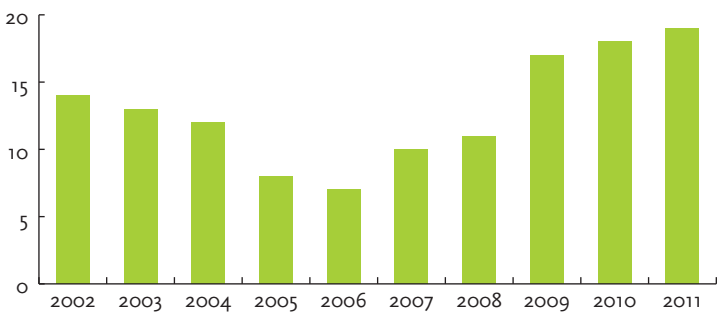
What we eat, or refrain from eating, may have an important impact on our cognitive abilities. Two of the key areas where diet is thought to play an important role on our mental performance are (i) optimising neurodevelopment in infants and children and (ii) preventing neurodegeneration and cognitive decline during aging. These are the main focus for the Nutrition and Mental Performance Task Force that started in 2002.

The mission of the task force is to advance and disseminate scientific knowledge on the effects of diet and food components on mental performance. The primary objective of the task force is to review current methodologies to assess mood and cognitive function, and to identify knowledge gaps in this area. The ultimate aim is to standardise such methodologies and to come up with methodologies that will enable the measurement of the effects of food components and diets on mood and cognitive functions. Whenever possible, the task force addresses underlying physiological effects on brain metabolism and mental functions.

ACHIEVEMENTS

The task force has commissioned a review on how current methods are applied to different healthy subgroups. The strengths, weaknesses and knowledge gaps of current methods were identified. Of particular interest was the applicability of these methods in daily life, and potential modifications to increase their applicability. The results were published together in the *European Journal of Nutrition* (2005) as one review article with general information on tests to measure cognitive functions and factors affecting mental performance, and two review articles on the ageing group.

The number of members in the Nutrition and Mental Performance Task Force since its start in 2002



The study was later extended to children. The results were presented as a methodology review article that provides a wide description of the current methodological tests to determine the influence of food compounds on children's cognition and as two review articles on the effect of the diet and micronutrient status on cognition and on behavioural problems in children, including aspects of diet that could affect hyperactivity and autism. The three articles were published together in the *European Journal of Nutrition* (2008).

Next, the task force organised a workshop on 'Nutrition and brain function: methodologies for assessing nutrition long-term effects' in Brussels in November 2009. The specific aim of the workshop was to contribute to a better understanding of the current methodological limitations and emerging opportunities in the assessment of long-term nutritional effects on brain function and cognitive performance, and to help guide future methodology in this area. The workshop found that demonstrating cognitive improvement following nutritional intervention would benefit from better study design, better statistical modelling, and validated biomarker and cognitive outcome measures. A comprehensive overview of the topics and discussions related to this workshop were published in *Nutrition Reviews* (2010).

NEW ACTIVITIES

A new activity zooms in on one methodological topic: the use of various brain imaging techniques as diagnostic and/or early efficacy markers to predict the long-term effects of nutrition on brain functioning. This activity will summarise the imaging technologies used as markers for brain function in human intervention studies and evaluate their biological relevance, sensitivity and practical feasibility.

Furthermore, the task force has started a new activity within the Marker Initiative in Nutrition Research project. The expert group will identify criteria for validation of markers of cognitive function with a basis in broadly used and established biological and psychological markers of cognition.

Prebiotics

BACKGROUND AND OBJECTIVES

As a result of the research that followed the publication of the prebiotic concept 15 years ago, it has become clear that specific prebiotic food products or ingredients that cause a selective modification in the gut microbiota's composition and/or activity and thus strengthen normobiosis could either induce beneficial physiological effects in the colon and extra-intestinal compartments or contribute towards reducing the risk of dysbiosis and associated intestinal and systemic pathologies.

The new approach emphasises the link between 'selective stimulation of growth and/or activity of one or a limited number of specific bacteria genus/species' and 'health benefit(s)' by specific ingredients. This task force was created in 2008 to provide the basis for assessment of the physiological efficacy of prebiotic ingredients in their own right.

The objectives of the task force are to:

- Agree on a working definition of the prebiotic concept
- Collate the evidence for the physiological effects of prebiotics, which may have an impact on microflora and on the host
- Identify criteria for substantiation of prebiotic efficacy
- Improve assessment of the consequences of a change in microflora on health outcomes, e.g. application of new technologies

ACHIEVEMENTS

An extensive review has been published in the *British Journal of Nutrition* (2010), explaining the prebiotic concept and giving details on the related metabolic and health effects.

Prof. Gibson and Prof. Rowland at the Nutrition Society Annual Meeting, Edinburgh, June 2010

IMPACT

The task force has shown its potential, through a consensus agreement of experts, to put in place sound foundations for prebiotic functional foods in Europe. This has been achieved thanks to the extensive review and a wide dissemination at the following meetings:

- International Scientific Conference on Probiotics and Prebiotics (IPC 2010; Kosice, Slovakia, June 2010),
- Nutrition Society Annual meeting (Edinburgh, UK, June 2010)
- International Scientific Association for Probiotics and Prebiotics (ISAPP) Conference (Barcelona, Spain, August 2010).
- European Gastroenterology Week (UEGW; Barcelona, Spain, October 2010)

CURRENT ACTIVITIES

From the different functions that contribute to gut health, the task force decided to elucidate the microbial metabolism and fermentation aspects by commissioning an expert group to study how to link changes of microbial fermentation and metabolism to specific targets and physiological effects. This included looking at markers for demonstrating the possible health effects of dietary modulations such as those achieved with prebiotics.

Prebiotics Supplement of the British Journal of Nutrition

Together with the Probiotics Task Force, a Concise Monograph has been commissioned containing science-based answers to questions on modulating the gut microbiota by dietetic intervention with probiotics and prebiotics in a balanced and complementary way.

FUTURE ACTIVITIES

The task force will continue to drive the science on prebiotics with regard to following questions:

- Which of the physiological health benefits are causally linked with a particular composition of the gut microbiota or selective changes therein? What are the related protocols and markers available and validated?
- Which observed benefits are not linked to a particular composition of the gut microbiota or to selective changes therein but are the consequences of other mechanisms of the product that is claimed to have a prebiotic effect?

Probiotics

BACKGROUND AND OBJECTIVES

This task force was created in 2005 as probiotics started to become an area of growing interest within the scientific community, for consumers and for the food industry, thanks to their potential functional and health benefits. Indeed, in the early 2000s, many European laboratories started studying gut microbiota, its regulation and its relationship with the host, as well as the benefits of specific strains of probiotics and of various probiotic-containing products. The European Commission also funded different programmes related to gut flora and probiotics (ProEuHealth, the Food, GI-tract Functionality and Human Health Cluster). The issue was also addressed in the PASSCLAIM publication by the Gut Health Working Group.

The creation of this task force had the objective of providing the scientific community with guidelines for the assessment of the effects of probiotics, including a review of their physiological effects. Another goal was the dissemination of scientific information on the physiology of the gut flora, on well-established benefits and on new scientific issues in this area (interaction between the gut and intestinal flora and between resident and transient flora). Overall, the task force aims to provide a better understanding of the interaction between the gut and intestinal flora, and tries to shed light on the 'cross-talk' between humans and microbes.

ACHIEVEMENTS

Following a workshop held in Montreux, Switzerland in 2008, a series of five articles was published in early 2010 in the *Journal of Nutrition* on how to substantiate evidence on the beneficial effects of probiotics. This work has been extensively presented during nutrition and regulatory congresses and meetings since 2010.

IMPACT

The work of the task force is contributing to the scientific understanding and underpinning of health claims regulations.

Slide from the presentation of Prof. Ger Rijkers during the International Probiotic Conference (IPC) in Kosice, Slovakia in June 2010

CURRENT AND FUTURE ACTIVITIES

The task force commissioned an expert group to look specifically at markers of immune modulation following a dietary intervention in the general population. This specific activity is being carried out jointly with the ILSI Europe Nutrition and Immunity Task Force and builds on their work published in the *British Journal of Nutrition* in 2005.

The task force has now started an activity focusing specifically on the impact that probiotics have on the gut barrier function, as this was one of the first effects of a probiotic to be reported in humans. This work is handled by a team of European experts who will look at intestinal barrier impairment and how different microbiota changes can impact on gut physiology and homeostasis (and thus contribute to co-morbidities), including how probiotic administration might influence these changes.

In order to inform the lay audience about its area of research, the task force is also involved in preparing a Concise Monograph together with the Prebiotics Task Force to clearly explain the concepts of both probiotics and prebiotics.

Weight Management in Public Health

BACKGROUND AND OBJECTIVES

The Weight Management in Public Health Task Force is focused on the issue of obesity from the wider perspective of social, cultural and economic determinants of diet and lifestyle and their implications for public health.

The task force targets gaps in scientific knowledge across the European region and for different demographic groups, and sponsors intervention programmes to tackle obesity in young people.

ACHIEVEMENTS

Monitoring and surveillance of obesity trends in Europe

This collaborative project between ILSI Europe, WHO Europe and the Free University of Amsterdam mapped trends in obesity across Europe over time.

The output includes a series of colour-coded maps, and the report highlights the methodological differences in data collection between countries. This project will have an impact on future monitoring schemes in the EU by highlighting the need for comparative and age-adjusted data.

Concise Monograph on 'Healthy lifestyles: nutrition and physical activity'

First released in 1999, an update to this Concise Monograph will be published in 2012. The new edition includes such 'hot topics' as appetite and satiety, metabolic syndrome and obesity and summarises the evidence for optimising diet and lifestyle for healthy living.

TAKE 10! Intervention in Children

The task force has commissioned a pilot intervention study on increased physical activity in primary school children in the UK that is based on the TAKE 10! programme in the USA. The programme embeds 10-minute bursts of activity within the academic curriculum. It positions ILSI Europe as an action-oriented contributor in tackling the obesity epidemic in children, and strengthens collaborations with public health bodies and policy makers, including the EU Diet, Physical Activity and Health platform.

Determinants of childhood obesity in Europe

An expert group identified more than a dozen factors contributing to the development of childhood obesity. The work shows that major changes have occurred in lifestyles, dietary intake and the psychological value of food. The results were presented at the European Congress on Obesity (ECO) and FENS meetings in 2011.

Dissemination

- A comprehensive review of public health approaches to obesity in Europe was published in the *European Journal of Pediatrics* in 2000 that describes individual country approaches and multi-country collaborative programmes.
- A review of interventions on the prevention of overweight and obesity in children and adolescents was published in *Obesity Reviews* in 2006. This paper helped identify effective approaches for obesity prevention by looking at successful and unsuccessful interventions in Europe.
- The task force has hosted various symposia and consensus conferences at professional scientific meetings, for example, ECO, FENS, the International Congress on Obesity (ICO) and the International Congress of Nutrition (ICN), to inform and connect with researchers, policy makers and health professionals.

FUTURE ACTIVITIES

Portion size initiative

This new activity will track changes in portion size in selected European countries. Depending on the available data, the task force is interested in exploring changes in energy intake from meals and meal components, number of meals, and the contribution of pre-packed foods to total intake to better understand the role of portion size on population changes in body weight.

Follow-up on determinants of obesity

With the starting point on determinants already identified, the task force plans to set up an expert group with the aim to examine one or a few of these factors in more detail.

Dietary exposure assessments using data from retailer fidelity cards

The task force is exploring the use of retailer fidelity cards as a source of data on dietary exposure. This is a horizontal ILSI Europe activity initiated by the Food Intake Methodology Task Force.

Biomarkers for body weight management

The task force will collaborate with the Marker Initiative in Nutrition Research project to identify relevant biomarkers for body weight management. ■

Marker Initiative in Nutrition Research

BACKGROUND AND OBJECTIVES

ILSI Europe has coordinated initiatives on markers that date back to the EU concerted action FUFOSE (1995–1997), which established definitions and basic concepts such as evidence-based nutrition for scientific substantiation of health benefits of foods and particularly recommended the use of markers.

Ways to develop valid study designs and to identify, validate and use markers to explore the effects of diet on health were further dealt with in the PASSCLAIM project (2001–2004), also supported by the EU.

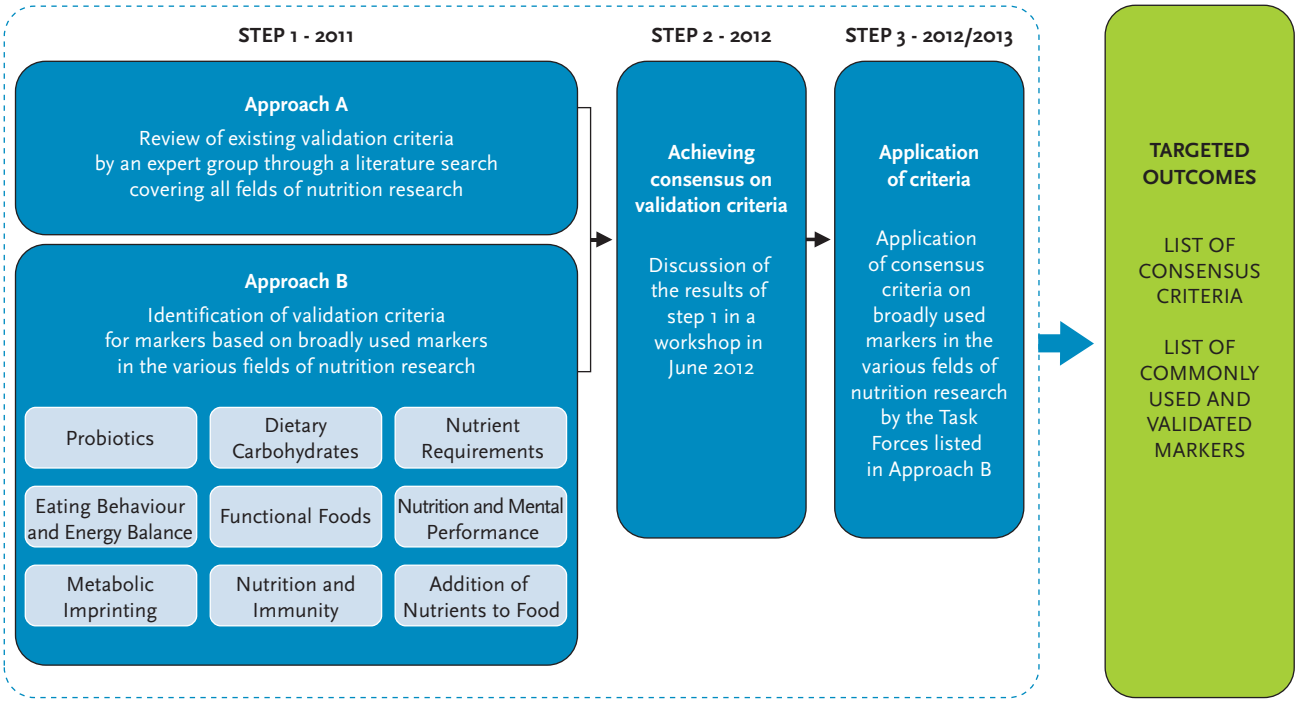
The EC-funded project BRAFO (2007–2010) developed a framework that allows quantitative comparison of human health risks and benefits of foods and food compounds based on a common scale of measurement; markers were used as one example of measurements.

Another EC-funded project called EURRECA (2007–2012) is creating best practice guidelines on markers of micronutrient status with the aim of identifying the best way to measure micronutrient intake.

The outcome of these projects has supported the development of the EU Regulation on Nutrition and Health Claims (EC 1924/2006); however, it is recognised that a crucial cornerstone for this process has not yet been clarified: how to select appropriate markers in nutrition research? ILSI Europe has thus decided to start a 3-year transversal initiative, the Marker Initiative in Nutrition Research, with the purpose of publishing a proposal for consensus criteria for selecting adequate markers of health in the field of nutrition research.

The aims of the Marker Initiative are:

- To identify consensus criteria for selecting adequate markers in nutrition research
- To identify consensus markers to use in different fields of nutrition research



STRUCTURE OF THE INITIATIVE

This 3-year initiative is built on three sequential steps:

Step 1: Review of existing criteria

The first step consists of two parallel approaches. The first group gathers experts working on the methodological and theoretical concept of marker selection or qualification. Their aim is to identify 'evidence-based' criteria for selecting markers via a literature review. In parallel, a series of expert groups from various ILSI Europe task forces will review some commonly used markers in their field of research and try to identify and understand the criteria that make these markers adequate in practice.

Step 2: Defining consensus criteria

The aim of the second step is to achieve consensus on which criteria to use for selection of adequate markers, based on scientific literature and use in practice as identified in step 1. In June 2012, a workshop will be organised by ILSI Europe to serve as a platform for discussion.

Step 3: Application of consensus criteria

The last step consists of an evaluation of the applicability of the consensus criteria. These criteria will be applied to the commonly used markers, as defined in approach B of step 1 (or other if relevant), as proof of concept.

IMPACT

By creating a list of common criteria, it will be possible to offer the field of nutrition research guidelines for better selection of the appropriate markers from those in current use, and also provide recommendations for the development of future markers. By presenting a list of markers fulfilling these criteria it will be possible to gather comparable data in future studies. This will facilitate the compiling and reusing of data and knowledge to ensure the supremacy of a science-based nutrition.

EXPECTED RESULTS

The first aim of this initiative is to define harmonised criteria for selecting the most appropriate markers for a nutritional intervention. Then, a list of markers that fulfill these consensus criteria will be drawn up for each specific domain of research (cognition, cardiovascular health, etc.). While working for these achievements, it is also expected to identify research needs and gaps. The output of this activity will be published in a peer-reviewed journal. ■

Projects funded by the European Commission

Since its creation, ILSI Europe has coordinated five European Commission funded projects and has been involved in ten other projects within the Fifth, Sixth and Seventh Framework Programmes.

PROJECTS COORDINATED BY ILSI EUROPE

4th Framework Programme

5th Framework Programme

6th Framework Programme

OTHER PROJECTS IN WHICH ILSI EUROPE HAS BEEN INVOLVED

6th Framework Programme

DIETS2 - Dieticians Improving the Education and Training Standards

Diogenes - Diet, Obesity and Genes

EuroFIR - European Food Information Resource

EuroPrevall - The Prevalence Cost and Basis of Food Allergy in Europe

HEATOX - Heat-Generated Food Toxicants: Identification, Characterisation and Risk Minimisation

MoniQA - Monitoring and Quality Assurance in the Food Supply Chain

NewGeneris - Newborns and Genotoxic Exposure Risks

Safefoodnet - Chemical Food Safety Network for the Enlarging Europe

VEG-I Trade - 'Veg-i-Trade: Impact of Climate Change and Globalisation on Safety of Fresh Produce - Governing a Supply Chain of Uncompromised Food Sovereignty'

7th Framework Programme

COSMOS - Integrated In Silico Models for the Prediction of Human Repeated Dose Toxicity of Cosmetics to Optimise Safety

Functional Food Science in Europe - FUFOSE

EC CONCERTED ACTION 1995–1997

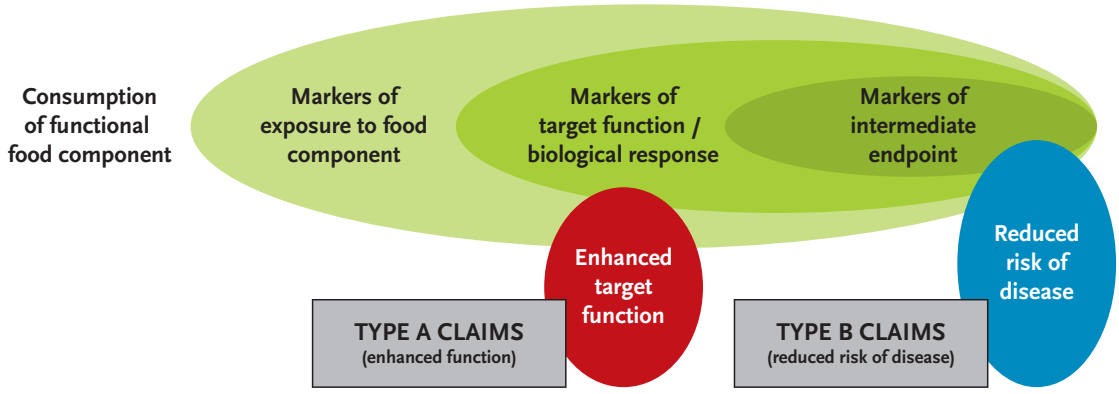
BACKGROUND AND OBJECTIVES

The goal of the concerted action was to use a science-based approach to reach consensus on concepts of functional foods in Europe by drawing on the expertise of a European network of scientists from several disciplines. Over the three years, the scientists assessed the basis for evidence that specific nutrients positively affect physiological functions. Until then, the approaches used for functional food science had been mostly product- or food component-driven, and were likely to be influenced by local, traditional and cultural characteristics. A science-based function-driven approach was considered preferable, because the functions and their modulation are universal.

ACHIEVEMENTS

The outcomes of the project were collated in a consensus document stating the following:

- The food industry has unique opportunities to improve public health through the development of products (functional foods) that not only are nutritional in the traditional sense, but have additional activity that can lead to an improved state of health and well-being and/or reduction in risk of disease.
- Foods can be regarded as functional if they can be satisfactorily demonstrated to affect beneficially one or more target functions in the body beyond adequate nutritional effects in a way relevant to an improved state of health and well-being and/or reduction of risk of disease. Functional foods must remain foods and they must achieve their effects in amounts that could normally be expected to be consumed in a diet. They are not pills or supplements.
- A function-based, rather than a product-based, approach has been proposed whereby the scientific basis of functional foods can be linked to the communication of their benefits to the public. The ability to communicate these benefits is essential for the successful development of functional foods and their role in improving public health.
- Scientific understanding of the way in which components affect body processes involved in health and well-being enables the development of markers that could register the impact of the new food products and could also be used in their safety assessment.
- Evidence from human studies based on markers relating to biological response or on intermediate endpoint markers of disease could thus provide a sound scientific basis for messages and claims about functional food products. Two types of claims are proposed that would relate directly to these two categories of markers: enhanced function claims and reduced risk of disease claims.
- Support is needed for integrated interdisciplinary research programmes to solve the key scientific and technological challenges and to exploit the scientific concepts in functional food science. ■



Food Safety in Europe - Risk Assessment of Chemicals in Food - FOSIE

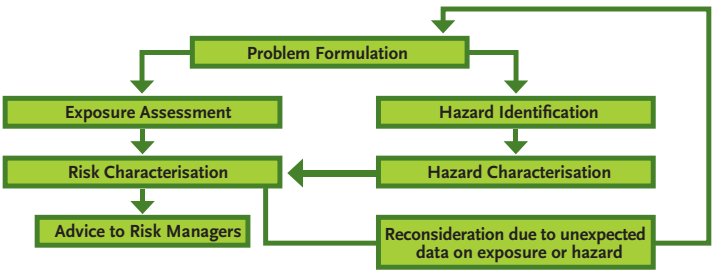
EC CONCERTED ACTION 2000–2003

BACKGROUND AND OBJECTIVES

The safety of our food supply is a shared responsibility, from farm to fork, of the agricultural, food processing and related industries, regulatory authorities and consumers. As part of this safety assurance it is essential to assess the potential risks posed by food and its constituents.

The objective is to explore means of improving the principles applied to, and scientific basis of, risk assessment with respect to food additives and contaminants, micronutrients and nutritional supplements, macronutrients and whole foods.

The Risk Assessment Paradigm



ACHIEVEMENTS

The risk assessment paradigm consists of hazard identification, hazard characterisation, exposure assessment and risk characterisation and has been addressed in two steps:

1. Six critical review papers were prepared in the fields of hazard identification, hazard characterisation and exposure assessment. Each paper addressed for the various food categories, current methods, reliability and limitations, identification of knowledge gaps and research needs. These papers were published as a special issue of *Food and Chemical Toxicology* in 2002 and cover the following topics:

- Hazard identification by methods of animal-based toxicology
- Methods of *in vitro* toxicology
- Hazard characterisation of chemicals in food and diet: dose-response, mechanisms and extrapolation issues
- Mathematical modelling and quantitative methods
- Assessment of intake from the diet
- The contribution of epidemiology to risk assessment of chemicals in food and diet

2. As a final step, the output of these papers was integrated into a holistic appraisal of the scientific basis for the characterisation and quantification of risk in the food area and was published in *Food and Chemical Toxicology* (2003).

In this final paper, the experts identified various areas that required either further developments in methodology or improvements in background scientific knowledge to strengthen the outcome of the overall process of risk characterisation. The identified research needs were grouped as follows:

- Structured approaches to risk assessment
- Methodology of hazard identification
- Methodology of intake estimation
- Assessment of critical endpoints
- Increased use of mechanistic knowledge
- Use of critical endpoints in determining guidance values for food chemicals
- Use of probabilistic approaches and categorical regression
- Risk/benefit

To address these gaps and research needs a multidisciplinary approach is needed. ILSI Europe has since addressed several of these topics.

CONCLUSIONS

Risk characterisation is an iterative process and is the final step in a risk assessment bringing together the information gathered in the first three steps. Hence, the output depends on:

- The question to be addressed
- The nature of the substance
- The available data
- The nature of the hazard

The advice to risk managers may differ depending on problem formulation, data availability, uncertainty in the interpretation of toxicity and intake data, and the nature of the compound or substance. ■

Process for the Assessment of Scientific Support for Claims on Foods - PASSCLAIM

passclaim

EC CONCERTED ACTION 2001–2005

BACKGROUND AND OBJECTIVES

Much attention is being paid to health claims on foods, including claims of enhanced function, reduction of disease risk and nutrient function. Many food products on the market contain claims about health effects beyond the simple provision of nutrients. One important basis for claims is the increasing number of reports on the effects of dietary components on body functions. However, there was no scientific consensus on how claims based on these reports should be evaluated at European level. With this background, ILSI Europe initiated the Concerted Action 'Process for the Assessment of Scientific Support for Claims on Foods' (PASSCLAIM). PASSCLAIM has set principles for assessing the scientific support of health claims.

In 2003, the European Commission proposed its Regulation on Nutrition and Health Claims, which states that scientific substantiation of claims made on foods should be the main aspect to be taken into account for the use of claims. This regulation already recognised PASSCLAIM as a considerable work that should be taken into account when assessing claims.

STRUCTURE OF THE PROJECT

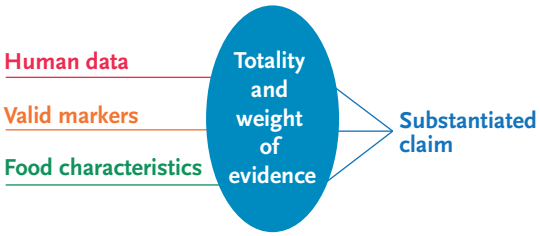
In order to meet the project objectives, eight expert groups were set up involving experts from academia, regulatory bodies and the food industry and involved 24 countries. Representatives of public interest groups were also approached. One group critically evaluated existing approaches to the scientific substantiation of claims. Seven of the expert groups reviewed the scientific basis for claims in various areas of health and disease, with a focus on markers:

- Diet-related cardiovascular disease
- Bone health and osteoporosis
- Physical performance and fitness
- Synthesis and review of existing processes
- Insulin sensitivity and diabetes risk
- Diet-related cancer
- Mental state and performance
- Gut health and immunity

ACHIEVEMENTS

Through an iterative process of discussion in expert groups and workshops, a set of criteria that define the requirements for assessing the quality of scientific data reporting the impact of foods and food components on health and well-being have been proposed and progressively refined. These criteria are schematised below and described in the table page 44.

PASSCLAIM



IMPACT

- The criteria provide a scientific framework that will facilitate the assessment of scientific support for claims on foods.
- This, in turn, will enable the compilation of guidelines on the preparation of submissions for regulatory review and approval of claims on foods.
- By establishing a robust standard for the quality of scientific data submitted in support of health claims, the criteria provide a basis for the harmonisation of the regulatory review and approval of such claims.
- The compliance of data submissions with the criteria will provide consumers with the assurance that claims based on the data are well founded and justified.
- By establishing a standard for the data to be submitted in support of claims, the criteria will provide the agri-food industry with a stable frame within which new products can be developed to meet consumer needs and expectations for foods with benefits for health and well-being.
- Systematic use of the criteria will engender a more informed use of scientific data in support of claims. ■

Projects funded by the European Commission

SCIENTIFIC SUBSTANTIATION CRITERIA DEVELOPED BY PASSCLAIM

1) The food or food component to which the claimed effect is attributed should be characterised.

2) Substantiation of a claim should be based on human data, primarily from intervention studies. The design of these studies should include the following considerations:

(a)	Study groups should be representative of the target group
(b)	Appropriate controls
(c)	An adequate duration of exposure and follow-up to demonstrate the intended effect
(d)	Characterisation of the study groups' background diet and other relevant aspects of lifestyle
(e)	An amount of the food or food component consistent with its intended pattern of consumption
(f)	The influence of the food matrix and dietary context on the functional effect of the component
(g)	Monitoring of subjects' compliance concerning intake of food or food component under test
(h)	The statistical power to test the hypothesis

3) When the true endpoint of a claimed benefit cannot be measured directly, studies should use markers.

4) Markers should be:

- Biologically valid in that they have a known relationship to the final outcome and their variability within the target population is known
- Methodologically valid with respect to their analytical characteristics

5) Within a study, the target variable should change in a statistically significant way and the change should be biologically meaningful for the target group, consistent with the claim to be supported.

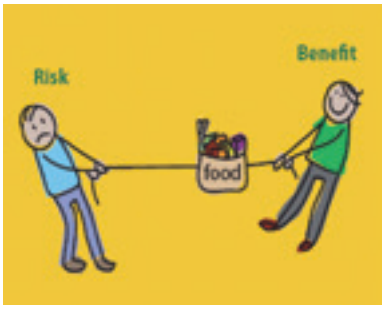
6) A claim should be scientifically substantiated by taking into account the totality of the available data and by weighing of the evidence.

Risk Benefit Analysis of Foods - BRAFO

SPECIFIC SUPPORT ACTION 2007–2010

BACKGROUND AND OBJECTIVES

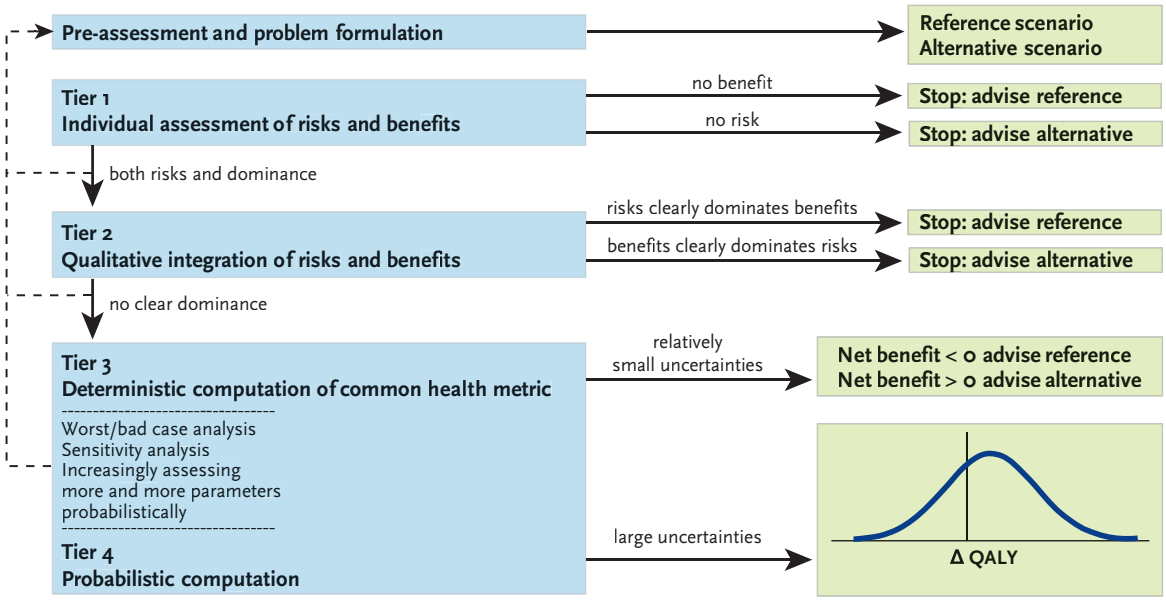
The primary aim of this specific support action was to develop a framework that allows the quantitative comparison of human health risks and benefits in relation to foods and food compounds by the development of a common scale of measurement, which takes account of quality of data and severity of effect.



The Risk Assessment of Chemicals in Food Task Force has been successful with a Specific Support Action of 643,000 Euros for 40 months (September 2007 to December 2010). This project was coordinated by ILSI Europe and was made up of five organisations from four different Member States: Germany, the Netherlands, Belgium and the United Kingdom.

METHODOLOGY

A methodology group including the future case study leaders reviewed and assembled the methodologies available for quantitative comparison of human health risks and benefits of foods and food compounds. This group integrated the methodological findings in their area and developed a framework. The BRAFO tiered approach (framework) assessed the benefits and risks of changing from the reference scenario to an alternative, resulting in a statement about which scenario is preferred in terms of net health effects. This framework was expedited by its use on a number of selected examples of foodstuffs and food components, for example fish, folic acid and acrylamide. Three case studies were conducted: Natural Foods, Dietary Intervention and Heat Processing. The three case study groups applied the framework and showed that the BRAFO methodology is applicable to a wide range of foods and food components. In BRAFO's final year, a consensus group looked at the applicability of the framework and provided guidance on how to use it.



A flow chart of the BRAFO tiered approach for health risk–benefit assessment of different dietary scenarios (reference and alternative). The formulation of the benefit–risk question may be iteratively refined in consultation with the risk manager or policymaker as the assessment progresses, as indicated by the dashed arrows on the left side of the figure

CASE STUDIES

The three main areas of the application of the BRAFO methodology to the case studies were:

- Natural Foods (soy protein and farmed salmon)

Natural Foods - Benefits vs. Risks

BENEFITS	RISKS
Oily fish (ω-3 PUFA) • Lower risk of coronary heart disease • Healthy development of foetuses and infants	**Oily fish (dioxin, methylmercury)** • Cancer development • Developmental changes in the foetus
Soy (proteins, isoflavones) • Reduced risk of prostate cancer • Reduced risk of osteoporosis	**Soy (isoflavones)** • Increased risk of breast cancer

- Dietary Interventions (folic acid, saturated fatty acids vs. monounsaturated fatty acids, saturated fatty acids vs. carbohydrates, low calorie sweeteners and water chlorination)

Dietary Interventions - Benefits vs. Risks

BENEFITS	RISKS
Folic acid • Prevention of neural tube defects • Reduced risk of cardiovascular disease	**Folic acid** • Pernicious anaemia via masking of vitamin B12 deficiency
Fat replacement agents **Intense sweeteners** • Lower caloric intake • Lower body mass index • Lower risk of becoming overweight	**Fat replacement agents** **Intense sweeteners** • Lower plasma carotenoid levels • Anal leakage discomfort • Residual risk above acceptable daily intake

- Heat Processing of Foods (acrylamide, benzo(a) pyrene and heat treatment of milk)

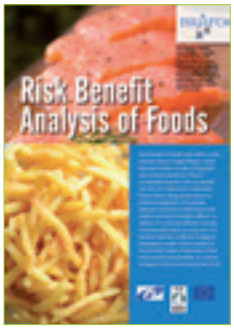
Heat Processing - Benefits vs. Risks

BENEFITS	RISK
Temperature • Reduced risk of microbial spoilage • Extended product shelf life	**Temperature** • Formation of harmful chemicals during heat treatment of foods (e.g. acrylamide, benzo(a) pyrene, heterocyclic aromatic amines)

APPLICABILITY

During the final and conclusive workshop, the draft document prepared by the BRAFO Consensus work package was presented and discussed. The aim of this group was to knit together the work performed by the different expert groups. It established the extent to which the BRAFO methodology applied to the case studies was broadly applicable across various benefit and risk categories, based on the experience obtained from the case studies. Priority was given to the harmonisation of the approaches identified by applying the framework to the specific case studies. This group is finalising a paper addressing a number of outstanding issues related to benefit–risk assessment of foods, such as exposure assessment, level of evidence, which biomarkers to use and when, how to deal with animal data or uncertainty factors (particularly when using QALY or DALY methodology) and, finally, how to extrapolate data to different populations.

ACHIEVEMENTS



The BRAFO work package activities developed a framework that allows quantitative comparison of human health risks and benefits of foods and food compounds based on a common scale of measurement. The approach is based on the evaluation of changes in the quality and/or duration of life using a system that allows weighting of data quality and severity of effect, with quantification using QALY- or DALY-like methodology. The framework also considered how risks and benefits are interrelated. It was intended that the methodology developed should be sufficiently transparent to serve as a reference for the harmonisation of the evaluation methods used within the EU and more widely in international evaluations.

The results will be published in *Food and Chemical Toxicology*. ■

European Micronutrient Recommendations Aligned - EURRECA

EURopean micronutrient RECommendations Aligned

NETWORK OF EXCELLENCE 2007–2012

BACKGROUND AND OBJECTIVES

Micronutrient recommendations represent the amount judged necessary to avoid deficiency in virtually all individuals within a population group. There is currently no standard approach for deriving micronutrient recommendations, and large variations exist across Europe, causing confusion among consumers, food producers and policy-makers. More aligned information could influence dietary behaviours and potentially lead to a healthier population. Therefore, dietary reference values based on scientific evidence are essential for the development of public health nutrition policies.

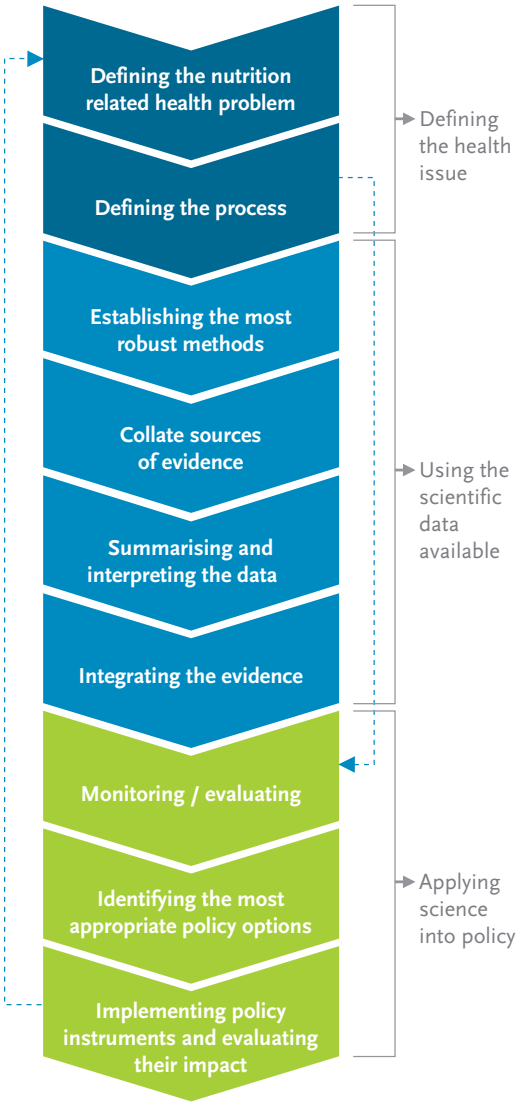
Funded by the European Commission, EURRECA (EURopean micronutrient RECommendations Aligned) is a Network of Excellence that develops building blocks to harmonise European micronutrient recommendations. Coordinated by ILSI Europe, the Network includes 35 partners comprising more than 200 individual scientists from 17 European countries, with a budget of €13.2 million spread over 5.5 years (2007–2012).

EURRECA APPROACH

EURRECA is developing methods and applications to guide Nutrient Requirement Setting Bodies through the process of setting micronutrient reference values. The EURRECA approach is crystallised into its micronutrient requirement process flowchart. The flowchart outlines the ideal process for deriving dietary reference values in a transparent, systematic and scientific way. It should be considered as a guide for checking that all options have at least been considered, rather than all being absolutely essential for deriving requirements. The nine steps of the flowchart can be clustered into three groups: (i) defining the health issue, (ii) using the scientific data available and (iii) applying science to policy.

Defining the health issue

Defining the problem in terms of nutrition and health includes the identification of health endpoint(s), population group(s) and micronutrient(s) of concern. EURRECA has developed a methodology to prioritise micronutrients based on the availability of new scientific evidence, public health relevance and heterogeneity of recommendations. Within EURRECA, eight micronutrients have been included for further investigation: iodine, folate, iron, riboflavin, selenium, zinc and the vitamins B12 and D. Population groups covered include infants (0–12 months), children and adolescents (1–18 years), adults (19–64 years), elderly (65+ years), pregnant and lactating women, as well as people with low incomes and immigrants. EURRECA has also identified, compared and evaluated existing published recommendations for 29 micronutrients in and outside Europe, which are now collected in a user-friendly web-based tool (Nutri-RecQuest) freely accessible on www.eurreca.org. Once the health issue has been characterised, a committee should be established to address it. The remit of the committee, the choice of the committee members as well as the criteria on which to base the requirements and/or recommendations need to be carefully defined.

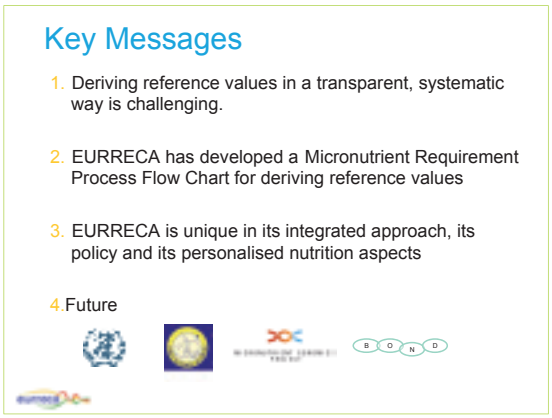


EURRECA micronutrient requirement process flowchart

Using the scientific data available

EURRECA has developed and adopted common concepts, definitions and terminologies, and best practice methodologies for measuring micronutrient intakes and for using biomarkers of status. Once the best practice methodology has been agreed, scientific data are collected to estimate the micronutrient requirements. Two different approaches are explored by EURRECA. The association approach addresses the dose–response relationship between dietary micronutrient intake and body micronutrient status, and the effect of the intake and status on health outcomes. The second approach is the factorial approach, which addresses micronutrient losses and maintenance, absorption/bioavailability, and additional requirements for specific life stages, to give factorial estimates of micronutrient requirements. Based on these approaches, a series of systematic literature databases were built. EURRECA also explores the area of individual variability, e.g. effects of polymorphisms on micronutrient metabolism, metabolomics and elucidation of biological networks, to better understand the interplay between micronutrients and health at an individual level.

The current quantitative methodologies used to derive requirements do not generally integrate all of the intake, status and health data. EURRECA has developed a framework to combine a maximum amount of all available quantitative evidence into one model. The integration of the evidence has also to accommodate systematic variations (between study) originating from: (i) differences in study quality, (ii) study population, (iii) micronutrient dose, and (iv) other population characteristics (growth, pregnancy, lactation, etc.).



EURRECA key messages

Applying science to policy

The derivation of micronutrient requirements into recommendations is not undertaken by EURRECA. It is the responsibility of decision- and policy-makers to set the most appropriate recommendations based on the current situation in a country or region and their public health priorities. However, EURRECA has developed the Health-Behaviour-Policy (HBP) Framework to guide policy-makers in integrating nutrition science with other types of scientific evidence (economics, social and consumer science etc.) and non-scientific evidence (policy, institutional and wider context). After the implementation of a policy, impact assessment enables the assessment of changes in the nutrition situation due in part or wholly to a nutrition policy. This evaluation may lead to the identification of a new problem, in which case the cycle would be re-initiated.

FUTURE

The EURRECA micronutrient requirement process flowchart will be presented to European Nutrient Requirement Setting Bodies during a workshop in April 2012. To guarantee the use of EURRECA outputs by scientific researchers, policy makers and other stakeholders in the near future, these valuable evidence-based results will also be publicly accessible on www.eurreca.org. After the funding period, the Network will continue working through four components: (i) the Early Nutrition Academy (ENA), focusing on the young population groups; (ii) a Centre for Evidence-Based Public Health Nutrition to combine research and training; (iii) a close collaboration with the Micronutrient Genome Project (MGP) and Biomarkers of Nutrition for Development (BOND); and (iv) an EU Master of Advances in Nutrition.

IMPACT

The EURRECA activities have delivered databases, best practices and systematic reviews of literature, case studies and methods. These outputs have been disseminated via different channels, such as scientific articles (about 110 published since 2007) and presentations at key events and exhibitions (about 65 in 2010). Over the years, EURRECA has built strong collaborations with stakeholders and scientists in the field (e.g. EFSA, WHO, NIH, UNICEF, NuGO, EuroFIR). Within the ILSI family, ILSI Southeast Asia Region and the ILSI branches based in South America take advantage of EURRECA to adopt a similar approach in their countries.

For more information, visit www.eurreca.org ■

ILSI Europe's Key Achievements and Impact

In its first quarter century, ILSI Europe has coordinated the efforts of thousands of scientists from academia, government and industry to jointly apply scientific expertise to improve public health. On an annual basis, hundreds of scientists from the food safety and nutrition sector participate in its task forces, expert groups, EC-funded projects, workshops and symposia.

PUBLICATIONS

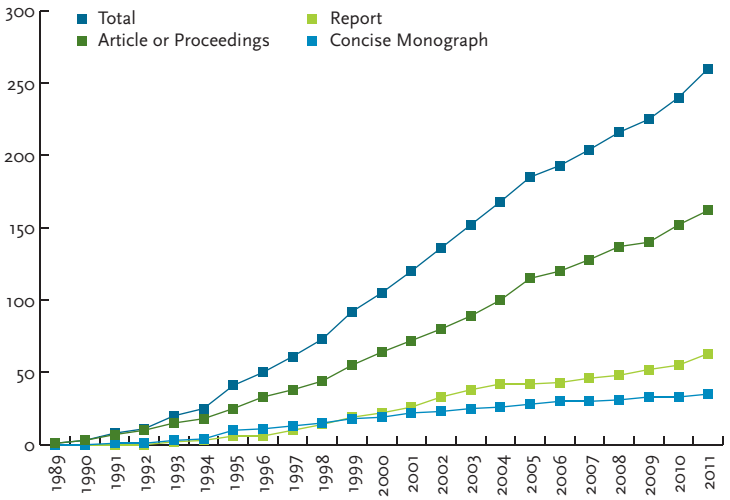
ILSI Europe has produced 260 publications over the 25 years of its existence. These include highly specialised scientific papers in peer-reviewed journals as well as publications in its own peer-reviewed series:

- 55 Reports, including workshop reports and dedicated studies on a particular theme. For example, thus far nine reports have been published on packaging materials and an equal number on specific pathogens.
- 33 authoritative and comprehensive reviews in the Concise Monograph series. For instance, six Concise Monographs have been published related to carbohydrates over the past 20 years.

A total of 89 newsletters and newsflashes describing the publications, events and collaborations were issued to a primary audience comprised of around 6000 recipients. Anniversary brochures reflect the activities, membership, finances and staff evolution over the years.

Various layouts of the ILSI Europe Newsletter in June 1987 (very first issue), March 1993, May 1994, November 1995 and autumn 2011 (electronic Newsletter)

Cumulative number of publications (per type of publication)



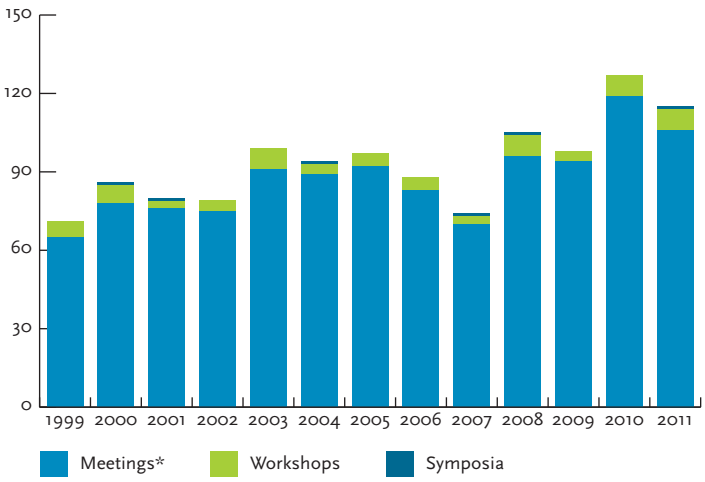
ILSI Europe publications have been widely cited all over the world within the scientific literature and by governmental as well as non-governmental organisations, including EFSA, the European Commission, FAO, WHO, Codex Alimentarius and the European Medicines Agency. Several articles have received the merit of the most cited publications of the year.

Our philosophy of making our publications freely available through our website www.ilsi.eu ensures easy availability for all, including developing nations and students.

KEY EVENTS

- ILSI Europe regularly organises workshops (six per year on average) and international symposia. Held every four years, the symposia on packaging materials are internationally recognised as a scientific forum to discuss the science that ensures the safety and quality of food packaging. The symposia on functional foods address international developments on science and health claims. They usually attract more than 300 participants. Every year, ILSI Europe also holds its General Assembly where the highlights of the past year are reviewed, and where high-level experts are invited to address hot topics related to nutrition and food safety.

Number of meetings



* *Meetings include task force and expert group meetings, meetings related to the preparation of workshops and symposia, and European projects*

- ILSI Europe is frequently invited to organise scientific sessions or present the results of its activities in major scientific congresses worldwide, for example, FENS, Eurotox, ICO, ECO, IAFP and many others.
- In 2005, EFSA and WHO held an international conference with the support of ILSI Europe on 'Risk Assessment of Compounds that are Both Genotoxic and Carcinogenic'. The three organisations prepared background documents prior to the conference suggesting approaches on how to assess the potential risks of the presence in food of substances that are both genotoxic and carcinogenic. More than 100 participants discussed these various approaches and concluded that the margin of exposure (MoE) approach appears to be the most suitable for this type of compound. As a follow-up of the conference, ILSI Europe explored further the application of the MoE approach by preparing 12 case studies, which were published as a supplement in *Food and Chemical Toxicology* in 2010.

A BROAD GEOGRAPHICAL REACH

Translations have been commissioned for 28 of the ILSI Europe publications into 12 languages, the HACCP Concise Monograph holding the record with seven translations.

Collaboration with Central and Eastern Europe

The Central and Eastern Europe Task Force has established close collaborations with WHO, FAO, EC, and national institutes, ministries and universities in Central and Eastern Europe. In total, 12 workshops were organised in this region. This increased the outreach of the scientific programme and created a dialogue to assist in providing a scientific source for further developing harmonised food laws and regulations. Several years after the task force disbanded, it is still in the position of supporting Central and Eastern European scientists from 18 different countries to participate in high-level scientific congresses or trainings by offering grants.

Carbohydrates

To increase the understanding of carbohydrates' effects on health, for over a decade the Dietary Carbohydrates Task Force has been advancing science related to the glycemic response, the postprandial phase and dietary fibre.

- For about 30 years the definition of dietary fibre has evolved until consensus was reached in the Codex meeting of the CCNFSDU in 2008, Cape Town. To provide scientific input for this meeting, ILSI Europe organised a Pre-Codex session in order to help the discussion move forward to a consensus, and this facilitating approach was acknowledged by WHO during the plenary session.
- More recently, and in collaboration with the Carbohydrates Committee from ILSI North America, the Task Force presented the 'Implementation Issues of Codex Dietary Fiber Definition' at a joint ILSI Europe–ILSI North America session during the 9th Vahouny Symposium in June 2010 in Bethesda, Maryland (USA). The resulting publication was disseminated to the Codex delegates of the November 2010 meeting. In order to reach a broader audience and as the definition of a dietary fibre is a worldwide concern, the paper has been translated into Spanish and Portuguese.

- These results were also presented at the II Latin American ICC Cereal Conference 'Keys for Cereal Chain Innovation' in Santiago, Chile in April 2011.
- A particular interaction exists between ILSI Europe and the other ILSI branches around the world regarding carbohydrates. In order to share their knowledge and be informed of the issues that the other branches are facing in this area, a Carbohydrates Forum is held each year at the ILSI Annual Meeting.

Threshold of Toxicological Concern (TTC)

ILSI Europe´s involvement in the TCC dates back to the end of the 1990s, following the establishment by the US FDA in 1995 of the Threshold of Regulation for Indirect Food Additives. The TTC is a principle that refers to the possibility of establishing a human exposure threshold value for all chemicals, below which there is no significant risk to human health. This concept is now applied by the joint FAO/WHO Expert Committee on Food Additives (JECFA) and EFSA to assess the safety of flavouring substances for food. Throughout the years, ILSI Europe has continuously expanded its work on TTC. With its new involvement in the EC-funded project COSMOS, which is investigating the application of TTC to cosmetics, ILSI Europe is now looking at the use of TTC for other routes of exposure such as skin contact.

Functional Foods

ILSI Europe has become a worldwide leader in the functional foods area amongst its peer ILSI branches and international and national governments in South America and Asia thanks to its extensive programme, mainly funded by EC DG Research. The ILSI Europe functional foods programme of activities stretches over almost 15 years and includes 15 publications. The projects address the scientific basis of the beneficial effects of foods on an improved health and the practicalities of how to address these developments.

Micronutrients

Gradually, worldwide reach is becoming possible with the EURRECA Network. EURRECA aims at facilitating and making transparent, systematic and sustainable the scientific alignment of deriving micronutrient requirements. EURRECA aligns the evidence on requirements for the selected priority micronutrients by adding expert knowledge (eminence) to the results (evidence) produced by modelling data of dose–response studies, classical nutrition studies and bioavailability studies. A EURRECA flowchart has been developed. All nine steps of the flowchart will be developed from a methodological point of view and six micronutrients selected for case studies. A final 5-year report will explain the flowchart step by step. In addition, results have been reported in about 200 scientific publications. EURRECA's sustainability will be pursued through the uptake of the EURRECA methodology and data by many Nutrient Requirement Setting Bodies in Europe, South America and Asia.

eurreca
EURopean micronutrient RECommendations Aligned

Water Initiative

Water was identified as an emerging global issue. In 2010, the Emerging Microbiological Issues Task Force initiated a new activity on 'Water and Sanitation Perspectives' in collaboration with eight other ILSI branches (India, Japan, Korea, Mexico, North Andean, South Africa, South Andean and South-East Asia Region) and with the technical support of WHO and FAO. The activity kicked off in March 2011, focusing on 'the quality of water used in the production of fresh produce'. The expert group is currently developing guidance needed for irrigation of food crops with wastewater in a range of different settings and social conditions.

Collaboration with other ILSI branches

ILSI is a global organisation comprising 14 regional or country-specific branches. ILSI Europe has continuously increased its collaborations and exchange with its sister organisations in order to build on knowledge and findings. A global trend over the last few years is the increasing number of invitations received by ILSI Europe´s staff to present the

results of key projects to ILSI branches (including ILSI Southeast Asia, Japan, India, Mexico, North Andean, Brazil and South Korea) or at international conferences.

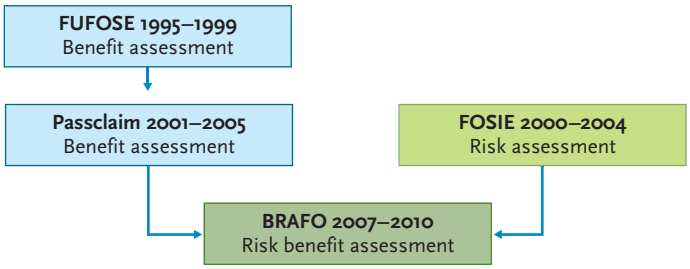
QUICK REACTION TO CRISES

- The detection of acrylamide in carbohydrate-rich foods and the suggestion that it is formed during high temperature processes triggered a lot of research on how to reduce its formation. Although several exposure estimations have been put forward, a systematic review of key information relevant to exposure assessment was lacking until ILSI Europe created the Acrylamide Task Force, which published a review on the risk assessment of acrylamide in food (including data from 31 countries worldwide) within 6 months. The paper was made available in December 2004 to JECFA as supporting data on risk assessment. This activity was followed by a publication covering risk–benefit considerations of mitigation measures on acrylamide content of foods, including case studies on potatoes, cereals and coffee.
- The assessment of the health significance of dietary exposure to 3-MCPD esters is complex. In order to ensure both the application of the best science and the optimisation of resources, it is essential to facilitate a thorough review of the situation. Therefore, two ILSI Europe Task Forces organised a workshop in February 2009 in Brussels in collaboration with the European Commission (EC) to review all available data required for risk assessment. More than 70 participants from 20 countries, including experts from regulatory bodies (DG SANCO, EU Member States and US FDA), risk assessment organisations (EFSA, UK FSA and the German Federal Institute for Risk Assessment, BfR), academia and industry participated in the workshop. Publication of the summary report in the *ILSI Europe Report Series* took place in October of the same year. The follow-up activity focuses on reviewing available information on analytical methods, creating an inventory of indirect and direct methods. The manuscript was reviewed at a workshop in 2011 and will be published in a peer-reviewed journal. The summary report of the workshop will be published in the *ILSI Europe Report Series*.

CROSS-FERTILISATION BETWEEN TOPICS

- Through the coordination of four EC-funded projects, ILSI Europe has shown its capacity to build on projects findings. This efficient cross-fertilisation originated from FOSIE (Food Safety in Europe), which was set up to critically assess current knowledge in risk assessment and to examine the science base for new qualitative and quantitative methodologies for use in assessing risks from chemical substances in the food chain. Simultaneously, ILSI Europe was also coordinating the EC Concerted Action on FUFOSE (Functional Food Science in Europe). A couple of years later, the FUFOSE conclusions and principles were taken to the next logical stage, i.e. application of the principles in the EC-funded project PASSCLAIM (Process for the Assessment of Scientific Support for Claims on Foods). FUFOSE assessed the scientific basis that specific nutrients

positively affect physiological functions. Ways to develop valid study designs and to identify markers to explore the effects of diets on health were further dealt with in the PASSCLAIM project. The last step was for ILSI Europe to combine the findings of these three initiatives into a new project (BRAFO) funded by the European Commission looking at the overall risk benefit analysis of foods. BRAFO developed a tiered methodology for assessing the benefits and risks of foods and food components, utilising a quantitative, common scale for health assessment in higher tiers.



- Despite being an essential component of any risk–benefit assessment, there is a clear lack of reliable methodology in the development and evaluation of methodologies to accurately quantify food intake and the exposure to food constituents. The Food Intake Methodology Task Force has initiated a horizontal activity known as GUIDEA (Guidance for Dietary Intake Exposure Assessment) with eight other task forces within ILSI Europe (Addition of Nutrients to Food, Emerging Microbiological Issues, Metabolic Imprinting, Nutrient Requirements, Process-Related Compounds and Natural Toxins, Risk Analysis in Food Microbiology, Risk Assessment of Chemicals in Food and Risk Assessment of Genotoxic Carcinogens). Initiated in 2009, this horizontal activity is working towards producing guidance for planning, conducting, reporting and interpretation of intake and exposure assessments. The outcome of the project will be a web-based application complemented by a scientific article published in a peer-reviewed journal. It is also envisaged to use the online application as a basis for future training courses.
- ILSI Europe is convinced that global health promotion and disease prevention can only be achieved with evidence-based nutrition, relying on accurate data. Indeed, in the past, the Functional Foods Task Force of ILSI Europe has contributed to the approach on how to substantiate health claims on foods. Both the FUFOSE and PASSCLAIM projects have substantially contributed globally to this discussion as their outcome has supported the development of the EU Regulation on Nutrition and Health Claims (EC 1924/2006). However, a crucial cornerstone for this process has to be clarified: marker validity is an important element in the scientific substantiation of health benefits and there is still a need to define what is an adequate marker in nutrition science. Therefore, in 2011 ILSI Europe initiated a transversal activity supported by multiple task forces with the purpose of both identifying consensus criteria for validation of markers, as well as consensus markers for different fields of nutrition research. Understanding why markers can be considered as valid is a common concern, and ILSI Europe is well aware that many different initiatives have started to assess and solve this question; therefore we are paying close attention to the work of others to avoid duplication of efforts and to preserve the spirit of harmonisation that has guided this initiative since its inception. ■

A look to the Future by the Executive Director

DR. NICO VAN BELZEN

Executive Director
ILSI Europe

Twenty-five years ago, ILSI Europe's founders sought to implement in Europe a successful model of cooperation between academia, government and industry scientists that was pioneered in the USA in 1978. Today, ILSI Europe is one of the largest of ILSI's fourteen regional branches around the world.

In 1986, many people were worried about a nuclear winter. Fortunately a large-scale nuclear war did not happen; indeed, the nuclear winter scenario may have helped to reverse the nuclear arms race. Today, many people worry about global warming and time will tell whether their concern will generate sufficient action to mitigate the rising temperatures, or to adapt to them. Current worries that are closer to ILSI Europe's remit include the risk of obesity and non-communicable diseases, unwanted chemicals in food, food-borne pathogens and novel food technologies.

How will the relationship between diet, lifestyle and public health be viewed 25 years from now?

New research data, especially those generated by 'biomics' (genomics, metabolomics and so on), will be translated into increased understanding of the impact of diet and lifestyle on human physiology. The concept of health will be expanded to include not only the physiological healthy state, but also the resistance to perturbation of it.

We may expect that the prevalence of obesity will be less than it is today, due to better education, better opportunities and more incentives to achieve a balanced diet and lifestyle. These will also decrease non-communicable diseases, ort at least postpone them until later in life.

Unwanted chemicals will still be present in our foods, albeit at lower concentrations. Fortunately, millions of years of evolution have allowed our bodies to adapt to many of them. Control of food-borne pathogens will improve due to technological progress. New pathogens (not necessarily food-borne) will be discovered, and explain some of our current mysterious illnesses.

We will better understand the microbial communities living in our gut and on our skin, and will have found ways to modulate them to increase the health benefit of the symbiosis.

Novel food technologies that are controversial today will have become more accepted, provided that they pass adequate safety evaluation.

To address the health issues outlined above, continued cooperation between academia, government and industry is essential. Experience has demonstrated that human progress benefits from partnership, so natural selection will favour its survival.

In its next quarter century, ILSI Europe aims to increase the impact of its work on public health initiatives. To this end, we will strengthen our scientific partnership with European and global public health-related organisations, leveraging our leading role in the worldwide ILSI organisation. We will improve the visibility of ILSI Europe, also beyond the scientific audience, and strengthen our membership base. The quality of our work and its integrity will always remain a priority.

We will embrace the future. As Albert Einstein said, it will come soon enough.

We will embrace the future. As Albert Einstein said, it will come soon enough. ■

Thank you

We would like to thank all the people that have been involved in ILSI Europe's activities. Their scientific knowledge and their commitment have greatly contributed to the success of ILSI Europe over the past 25 years.

In particular, we would like to acknowledge the work done by:

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We also thank the ILSI Europe staff whose hard work and dedication is the foundation of the success of the Institute in its first 25 years.

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