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ILSI Europe’s charter of values

The charter of values identifies the values on which ILSI Europe bases its identity and that, in both its strategic choices and its everyday activities, must guide the conduct of personnel in their relationships with all the stakeholders.

ILSI Europe is committed to act according to the following four values:

- **Integrity**: ILSI Europe embodies the basic stance of our relationship with society and our stakeholders. We commit ourselves to honesty and compliance with applicable laws and ILSI Europe principles, policies and highest ethical standards.

- **Excellence**: ILSI Europe constantly strives to excellence in our scientific impact by positioning ourselves at the forefront of scientific knowledge and working with state of the art methods. We support a sustainable food system that embraces innovation as a key factor to maintain and improve safe food for all.

- **Transparency**: ILSI Europe strives for the highest transparency regarding our activities and in our relations to internal and external stakeholders.

- **Inclusiveness**: ILSI Europe embraces diversity and fairness by fostering collaboration and aiming for open and fact-based dialogue by promoting a tripartite approach.
Foreword
From ILSI Europe’s President, Prof. Wim H.M. Saris

2018 has been a key year for ILSI Europe both in terms of scientific achievements and in shaping the organisation for the future. This annual report gives you an overview of our scientific portfolio and key accomplishments over the past year.

With the highest scientific excellence and integrity, ILSI Europe’s work aims to provide evidence-based science to improve human health and well-being. To achieve this, ILSI Europe strives in publishing open access peer-reviewed publications in highly renowned journals in the fields of nutrition and food safety. Experts work led to eleven publications in 2018 and four in the first months of 2019. Over the past four years, ILSI Europe scientific outputs have been widely recognised as the number of citations has increased by more than 10 fold.

In addition, ILSI Europe organised twelve international scientific events to promote key scientific activities or to debate and discuss ongoing scientific projects during workshops. Our renowned and progressively more popular events reached out to a broad network of experts, bringing together key stakeholders with a wide variety of knowledge, from public and private sectors as well as national and international authorities. For instance, the Food Allergy Symposium gathered 100 experts during two days in Madrid in April 2018.

In 2018, we continued our commitment to the European Union Research & Innovation. ILSI Europe is currently involved in 5 international EU-funded projects. Among them, the newest Horizon 2020-funded project ‘SWEET’ examines the impact on health, obesity, safety and sustainability of sweeteners and sweetness enhancers. In this project, ILSI Europe is acting as Innovation Manager, responsible for stakeholder engagement and dissemination.

All these achievements were possible thanks to the great work done by more than 500 experts from different fields in life sciences and by ILSI Europe dedicated staff. This vast network of experts brings a unique diversity of perspectives and contributes to paving the way towards sustainable solutions to address current and upcoming challenges for consumers and food industry.

In spring 2018, the Board of Directors (BoD) took the decision to execute an external audit of the organisation in order to evaluate the organisational efficiency. On basis of this external audit, the BoD approved in October a transformation programme including several organisational and way of working projects that are or will be implemented in the coming year to prepare ILSI Europe for future success. In the context of this organisational transformation, ILSI Europe has decided to terminate the mission of Prof. Diána Bánáti as Executive and Scientific Director, and I would like to take the opportunity to thank her for her efforts over the past 6,5 years.

I am looking forward to a bright future for ILSI Europe to advance research and innovation in nutrition and food safety. Undeniably, future successes will only occur by strengthening existing partnerships and building new ones.

Warmest regards,
Prof. Wim H.M. Saris

Warmest regards,
Prof. Wim H.M. Saris
Founded in 1986, ILSI Europe fosters collaboration among the best scientists from industry, academia and the public sector to provide evidence-based scientific solutions and to pave the way forward in nutrition, food safety, consumer trust and sustainability. To deliver science of the highest quality and integrity, scientists collaborate and share their unique expertise in expert groups, workshops, symposia and resulting publications.

ILSI Europe is funded primarily by its industry members. It also enjoys the support of the European Commission when participating as a partner in EU-funded projects. Academic experts involved in our activities contribute through their voluntary work. ILSI Europe’s membership is open to all companies active in the food or food-related sector, as well as companies engaged in the manufacture of medicinal products and products for human consumption and producers of ingredients used in the food supply chain.

**Vision**

We strive for sustainable, safe and nutritious food solutions for a healthier world through a multi-stakeholder and science-based approach.

**Mission**

- We foster collaboration between relevant stakeholders;
- We identify existing and emerging challenges in food, nutrition and health, and we facilitate proactive practical solutions;
- We deliver science of the highest quality and integrity;
- We communicate and disseminate our scientific output widely.

All ILSI Europe activities are conducted under the supervision of the Scientific Advisory Committee. Composed by a maximum of 20 experts including more than 50% from the public sector, the Scientific Advisory Committee plays an important role in reviewing all activities with respect to their scientific validity and coherence with ILSI Europe’s programme, with the support of external academic reviewers. The Scientific Advisory Committee also provides scientific advice to the Board of Directors which comprises a maximum of ten directors representing ILSI Europe’s member companies and at least an equal or greater number of public sector scientists.
Events – 2018

**SYMPOSIUM**
Frontiers in Food Allergy and Allergen Risk Assessment and Management
18th-20th April 2018 – Madrid, Spain

**SYMPOSIUM**
Nutrition for the Ageing Brain: Moving Towards Clinical Applications
30th-31st August 2018 – Madrid, Spain

**WORKSHOP**
Holistic Approaches to Develop Alternative Strategies for Animal Testing
6th-7th September 2018 – Brussels, Belgium

**SEMINAR**
Process-Related Compounds and Natural Toxins
18th September 2018 – Parma, Italy

**WORKSHOP**
How Can Bioassays Help to Assess the Suitability & Applicability of TTC as a Prioritization Tool for Unidentified NIAs in FCMs
8th-9th November 2018 – Brussels, Belgium

**WORKSHOP**
The Role of Gut Derived Short Chain Fatty Acids in Human Health
26th-29th November 2018 – Brussels, Belgium

**SESSION**
The 7th Beneficial Microbes Conference Pre- and Probiotics for Lifelong Human and Animal Health
26th – 28th November 2018
Amsterdam, The Netherlands

**EU Project Related Events 2018**

**WORKSHOP**
SUSFANS
4th Stakeholder Workshop
5th-6th June 2018

**WORKSHOP**
SUIT4FOOD
ERASMUS+ PROJECT
19th-23rd March 2018

**INTERNATIONAL CONFERENCE OF EUROPEAN EFFORT PROJECT**
Antimicrobial Resistance in the Food Chain – From Science to Policy
26th-28th November 2018, Utrecht, NL
Over **500** experts currently involved in ILSI Europe’s activities

**12** International Scientific Events

**8** sponsored talks/posters at international congresses/conferences

**11** Peer-reviewed publications

**5** EU-funded projects
Over the past four years, ILSI Europe scientific outputs have been widely recognised as the number of citations has increased by more than 10 fold.

Participants at events in 2018

- Non-Industry (incl. Academia, NGO’s, Research Organisations): 64%
- Private Sector: 27%
- International & National Authorities: 9%

* Number of citations of the papers published since 2014.
ILSI Europe Experts in 2018

ILSI Europe Annual Report 2018
<table>
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<tr>
<th>Country</th>
<th>Industry Experts*</th>
<th>Non-Industry Experts**</th>
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<td>SERBIA</td>
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<td><strong>TOTAL</strong></td>
<td>234</td>
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* Includes company representatives from the BOD, SAC, TF and EG.

** Includes Non-industry experts from the BOD, SAC, TF and EG.
How ILSI Europe works
ILSI team, Task Forces and Expert Groups

ILSI Europe’s international team is responsible for the overall organisation, coordination and accomplishment of the tasks and activities entrusted to the committees, task forces and expert groups.

Task Forces initiate, develop and manage scientific projects. They reach their goals and address their issues through expert groups, partnerships in European-Union funded projects, workshops, webinars and conferences. Task forces comprise representatives of interested member companies and non-industry experts acting as scientific advisors.

Expert Groups carry out the work. The output of their work is published primarily in peer-reviewed journals and disseminated at conferences. Task forces nominate the experts and the experts groups are comprised of at least 50% scientists from academia and the public sector.

List of Task Forces

Food Safety
- Alternatives to Animal Testing in Food Safety, Nutrition and Efficacy Studies
- Authenticity of Food
- Dietary Intake and Exposure
- Food Allergy
- Microbiological Food Safety
- New Approaches to Chemical Risk Assessment for Foods and Food Ingredients
- Nutrient Intake Optimisation
- Packaging Materials
- Process-Related Compounds and Natural Toxins
- Threshold of Toxicological Concern

Nutrition
- Dietary Carbohydrates
- Early Nutrition and Long-term Health
- Eating Behaviour and Energy Balance
- Health Benefits Assessment of Foods (former Functional Foods)
- Nutrient Density
- Nutrition, Immunity and Inflammation
- Nutrition and Mental Performance
- Obesity and Diabetes
- Prebiotics
- Probiotics
- Qualitative Fat Intake

Consumer Trust and Sustainability
- Consumer Behaviour Determinants
Preparation & Submission of a New Activity Proposal (NAP)
TFs/SAC/BOD/Members/Scientists

Verification of the NAP
(for relevance regarding ILSI Europe’s portfolio and if not new TF proposal)
ILSI Europe Office

Selection of Reviewers
(SAC and External Reviewers)
SAC President/ILSI Europe Office

NAP Review
SAC and External reviewers

Compilation Reviewers Comments
(Anonymous)
ILSI Europe Office

NAP Authors to revise the NAP
TFs/SAC/BOD/Members/Scientists

Ensure proper answer to reviewers
ILSI Europe Office

NAP Final Approval
SAC

BOD: Board of Directors
NAP: New Activity Proposal
SAC: Scientific Advisory Committee
TFs: Task Forces

ILSI Europe
SAC
NAP authors
Reviewers
FINANCIAL FIGURES 2018

Revenues

- Private Sector (91%)
  (Including membership dues and task forces assessment)
- European Projects (6%)
- Events Registration Fees (3%)
- Interest Income (0.15%)

Expenses

- General Administration (79.6%)
  (Including staffing costs)
- Scientific Activities (13.8%)
- Communication (2.6%)
- Governance (2.1%)
- Publications (1.9%)
## MEMBER COMPANIES IN 2018

<table>
<thead>
<tr>
<th>Company Name</th>
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<tr>
<td>Abbott Nutrition</td>
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<td>Ajinomoto</td>
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<td>Arla Foods</td>
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<td>Ausnutria</td>
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<td>Barilla G&amp;R Fratelli</td>
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<td>BASF SE</td>
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<td>Bunge Loders Croklaan</td>
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<td>Caelus Health</td>
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<td>Cargill</td>
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<td>Cosucra Groupe Warcoing</td>
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<td>Danone Nutricia Research</td>
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<td>Dow Europe</td>
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<td>DSM</td>
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<td>DuPont Nutrition &amp; Health</td>
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<td>FrieslandCampina</td>
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<td>General Mills</td>
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<td>Givaudan International</td>
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<td>Indoor Biotechnologies</td>
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<td>Lucozade Ribena Suntory</td>
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<td>Luigi Lavazza</td>
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<td>PepsiCo International</td>
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<td>Pierre Fabre Dermo-Cosmétique</td>
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<td>Yili Innovation Center Europe</td>
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Food safety focuses on the science related to keeping and assuring our food supply is safe. ILSI Europe is working on a number of key topics in this area, such as food allergy, microbiological food safety, (natural) contaminants, packaging, low dose effect and the identification of new tools to assess the safety of foods.

23 million people in Europe fall ill from foodborne diseases every year.

World Health Organization (WHO), 2015
ToxCast Data on Food Chemicals (p.25)
Micronutrient-Food Matrix Interactions (p.26)
Application of Adverse Outcome Pathways (AOPs) (p.26)

Erasmus+ Programme SUIT4FOOD (p.27)

In Vitro Bioassays for Food Contact Materials Safety (p.28)
7th International Symposium on Food Packaging (p.28)
Guidance on Food Packaging Materials (p.28)

Holistic Approaches to Develop Non-Animal Testing (p.29)

VITAL® 2.0: Suitability of Analytical Methods (p.29)
Tolerable Risk in Food Allergy (p.29)
Carcinogen Dose-Response Database for Threshold of Toxicological Concern (TTC) (p.25)
Uncertainty in Threshold of Toxicological Concern (TTC) (p.24)

11 to 26 million Europeans are estimated to suffer from food allergy
1 in 10 people worldwide fall ill after eating contaminated food

Food Allergy
Low Dose Effect

EU PROJECT

Packaging

Alternatives to Animal Testing

ILSI Europe Annual Report 2018

* Pawankar R, Canonica GW, ST Holgate ST, Lockey RF, Blaiss M: The WAO White Book on Allergy (Update. 2013).
Nutrition

The burden of disease associated with poor nutrition continues to grow in Europe. Meeting nutritional requirements is critical to manage health and well-being. Ensuring our society is doing this in a sustainable manner is increasingly important in order to keep the growing global population well-nourished and healthy. Poor diet, overweight and obesity contribute to a large proportion of non-communicable diseases (NCDs), resulting in decreased quality of life. Nutritional education to prevent and manage NCDs is one of the cores of ILSI Europe’s activities.

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Food Intake Assessment Methodology

- Additive Occurrence & Brand Loyalty (p.38)
- Evaluation of New Methods for Dietary Intake Assessment (p.38)
- Preferred Approaches for Quantifying the Impact of Modifying Nutrients Intakes (p.39)

Nutrient Status of Population Groups

- Health Effects of Saturated Fats (p.34)
- Nutrient Density (p.34)

Nutrition Security & Societal Aspects

- Nudging Towards Healthier Food Choices (p.45)

Millions of Europeans suffer from nutrient deficiency

Food Intake Data

- Iodine Intake in Europe (p.40)
- Adequacies of Omega-3 and Omega-6 PUFA Intakes (p.39)

EU PROJECT

FIT4FOOD 2030 (p.45)

Malnutrition is associated with diminished cognitive function

NUTRIENT STATUS OF POPULATION GROUPS

HEALTHY AGEING

ENERGY BALANCE

GLYCAEMIA & INFLAMMATION

EARLY LIFE NUTRITION

FIT4FOOD 2030
NCDs are the leading cause of death, disease and disability in Europe

WHO, 2015

Gut-Brain Axis has impact on health and chronic disease

ILSI Europe Annual Report 2018
FOOD SAFETY

Microbiological Food Safety
• Control Options for Viruses in Food Processing - Completed
• Process Validation Protocols
• EU Project EFFORT - Completed

Contaminants
• Mineral Oil Risk Assessment
• Reactions & Potential Mitigation of Mycotoxins During Food Processing

Low Dose Effect
• Uncertainty in TTC
• Carcinogen Dose-Response Database for TTC - Completed

Packaging
• In Vitro Bioassays for Food Contact Materials Safety
• Best Practices for Identifying and Quantifying Unknown Migrants from Food Contact Materials - New*
• Adhesives for Food Packaging Applications - Completed
• International Food Packaging Symposia

Food Allergy
• Tolerable Risk in Food Allergy
• Verifying Vital® 2.0 Reference Doses: Suitability of Analytical Methods

New Approaches for Food Safety
• ToxCast Data on Food Chemicals
• Application of Adverse Outcome Pathways
• Micronutrient-Food Matrix Interactions
• Next-Generation Sequencing - Completed
• Authenticity of Food
• Erasmus + Programme SUIT4FOOD

NUTRITION, DEVELOPMENT & HEALTHY AGEING

Energy Balance
• Physical and Sensory Attributes to Improve Satiety
• Adaptation to Changes in Satiety - Completed
• EU Project SWEET
• NWO Project Satisfaction - Completed

Glycaemia & Inflammation
• Post-Prandial Glycaemic Response in Children
• Reduction of Post-Prandial Glycaemia
• Metabolic Syndrome Studies

Nutrient Status of Population in Groups
• Nutrient Density
• Health Effects of Saturated Fats
• Review of the evidence base for targeted protein recommendations – New*

Early Life Nutrition
• Gestational Diabetes & Diet - Completed
• Early Bacterial Colonisation
• Determinants of Immune Competence

Healthy Ageing
• Effect of Food Component Interactions on Brain Functions
• Nutrition for the Ageing Brain
• Plant-Based Ingredients & Cognitive Performance

NUTRITION SECURITY & SOCIETAL ASPECTS

• Nudging Towards Healthier Food Choices
• EU Project FIT4FOOD2030
• EU Project SUSFANS - Completed

GUT MICROBIOTA & HEALTH

Prebiotics
• Structure-Function Relationship for Prebiotic Compounds

Probiotics
• Mechanism of Probiotic Action - Completed

Biochemical & Immunological Markers of Nutrition
• Glycaemic Exposure Markers in the Non-Diabetic Population
• Efficacy Markers of Diabetes Risk

BIOMARKERS & FUNCTIONAL EFFECT MEASUREMENTS

• Omega-3 and Omega-6 PUFA Intakes, Ratios and Health Effects
• Iodine Intake in Europe

Oral & Gut Microbiota
• Oral & Systemic Health Resilience
• Microbiome Human Study Research Guidance
• Short Chain Fatty Acid Production for Health

Alternatives to Animal Testing
• Holistic Approaches to Develop Alternative Strategies
**EXPOSURE & INTAKE ASSESSMENT**

Food Intake Assessment Methodology
- Additive Occurrence & Loyalty
- Evaluation of New Methods for Dietary Intake Assessment - **Completed**
- Preferred Approaches for Quantifying the Impact of Modifying Nutrient Intakes

Food Intake Data
- Omega-3 and Omega-6 PUFA Intakes, Ratios and Health Effects
- Iodine Intake in Europe

**NUTRITION SECURITY & SOCIETAL ASPECTS**

Nutrition Security & Societal Aspects
- Nudging Towards Healthier Food Choices
- EU Project FIT4FOOD2030
- EU Project SUSFANS - **Completed**

**GUT MICROBIOTA & HEALTH**

Prebiotics
- **Structure-Function Relationship for Prebiotic Compounds**

Probiotics
- **Mechanism of Probiotic Action - Completed**

Oral & Gut Microbiota
- Oral & Systemic Health Resilience
- Microbiome Human Study Research Guidance
- Short Chain Fatty Acid Production for Health

**BIOMARKERS & FUNCTIONAL EFFECT MEASUREMENTS**

Biochemical & Immunological Markers of Nutrition
- Glycaemic Exposure Markers in the Non-Diabetic Population
- Efficacy Markers of Diabetes Risk

*New activities to start in 2019*
Scientific Portfolio
Food Safety

Contaminated food can cause more than 200 diseases – ranging from diarrhoea to cancers. The World Health Organization (WHO) estimates that every year foodborne and waterborne diarrheal diseases cause thousands of deaths worldwide. One might assume that most of these diseases occur elsewhere in the world, but we know that foodborne diseases are also a major cause of illness in the EU. Disease-causing bacteria, viruses, chemicals and other threats to health can enter the food supply at many points along the supply chain, including food production, processing, distribution, storage, preparation and retail. Food safety is the science of protecting our food supply from contamination, figuring out how we can minimise the risks to public health. ILSI Europe is working on a number of key topics in this area, such as food allergy, microbiological food safety, (natural) contaminants, packaging, low dose effect and the identification of new tools to assess the safety of foods.
Microbiological Food Safety

Whereas the health benefits associated with regular consumption of fresh food are well established, an increasing proportion of reported outbreaks of foodborne illness occur each year. Over 320,000 human cases are reported annually in the European Union, but the real number is likely to be much higher. ILSI Europe is addressing current challenges in microbiological food safety and proposes new approaches to reduce food safety risks along the food chain.

Control Options for Viruses in Food Processing – Completed

Enteric viruses occur frequently and are likely to be the most under-recognised cause of foodborne illness. Unfortunately, enteric viruses are recalcitrant to most methods used to prevent their entry into the food chain, as well as those used to inactivate them in foods and the production/processing environment. The purpose of this activity is to review control options for viruses via food processing, use that information to discuss the need for and future of setting virus-specific performance objectives, and to provide recommendations for future research. The results of this activity were published in the International Journal of Food Microbiology in August 2018. A roundtable discussion on the paper will be held during the IAFP European Symposium on 24-26 April 2019 (Nantes, FR).

Process Validation Protocols

Currently, there are no generic protocols to guide manufacturers and ensure that all relevant aspects are considered, when undertaking a validation. There is a great interest in the food industry to perform validation in a manner which would be accepted by all parties involved (e.g. authorities, consumers). ILSI Europe aims to build a reference document with general guidelines supported by examples to be offered to the industry to understand how to validate the process to reduce the microbiological hazard associated with the products and processes to acceptable levels.

Set up by the Microbiological Food Safety Task Force

EU Project EFFORT
Ecology from Farm to Fork of microbial drug Resistance and Transmission – Completed

Antimicrobial resistance (AMR) is a major threat to global public health today. The European Centre for Disease Prevention and Control (ECDC) estimates that AMR leads to 25,000 deaths annually and the related costs are over €1.5 billion. Defining the boundaries between the use of antimicrobials in animals and humans and the environment is extremely challenging. EFFORT is studying the complex epidemiology and ecology of antimicrobial resistance in animals, the food chain and the environment. EFFORT results will support future evidence based policies, and the prioritisation of risk management options along the food chain. ILSI Europe has conducted a literature review on the determination of the conditions to which bacteria are subjected throughout the food chain and we were highly involved in dissemination activities. ILSI Europe also organized the final EFFORT conference in coordination with Utrecht University and ARTTIC.
Contaminants

Consumers are exposed on a daily basis to naturally occurring contaminants and process-related compounds (PRCs), both of which can be potentially harmful. ILSI Europe designs and implements programmes that help us to understand how these compounds are formed, improve how we detect and measure them and effectively assess their safety implications.

Mineral Oil Risk Assessment: Knowledge Gaps and Roadmap

There is uncertainty about the exposure to mineral oils, how/what to measure and characterise, and ultimately what this exposure means in terms of consumer safety. There is consensus between multi-sector stakeholders for a need to address knowledge/data gaps on mineral oils. This activity will bring tripartite stakeholders together to share knowledge and define how best to address the knowledge gaps, including sources of exposure (both dietary and non-dietary), current analytical methodologies, approaches to risk assessment and potential mitigation risk management measures. A workshop is scheduled early February 2019 to discuss aspects on analytics, exposure assessment and hazard characterization and risk assessment.

Set up by the Process-Related Compounds and Natural Toxins Task Force and the Packaging Materials Task Force

Reactions and Potential Mitigation of Mycotoxins During Food Processing

Mycotoxins are toxic, secondary metabolites produced by fungi that significantly affect the quality, safety and yield of important crops used worldwide for food and feed. The activity originally reviewed options to optimise or introduce additional food processing in order to reduce mycotoxin contamination of food and feed. The final goal was to minimise food and feed losses while maximising the safe use of crops. In order to further increase the impact of this work and to ensure an efficient use by food industry of the outcomes of this work, a follow-up activity was set up aiming to provide practical guidance for industry in order to mitigate mycotoxin in foods. It will result in clear recommendations how processes should be used depending on the type of food produced.

Set up by the Process-Related Compounds and Natural Toxins Task Force

Low Dose Effect

Depending on the levels we are exposed to, some chemicals found in food might be harmful to our health. Scientists generally assume that such effects are proportional to the dose: the more you are exposed to them, the more likely it is that an effect will occur. However, some studies have shown that even very low doses could potentially have a harmful effect to humans. In order to establish what a safe dose is; the Threshold of Toxicological Concern (TTC) states that, at sufficiently low enough exposure, the associated risk related to the consumption of substances used in food contact articles may be deemed negligible. This concept is particularly useful for regulators and industry when assessing the potential health risks associated with certain substances where specific toxicological data are lacking.

Uncertainty in Risk Assessment: A Comparison of TTC versus Chemical-Specific Approaches

The TTC approach is an alternative to animal testing used for safety assessments. It predicts the toxicity of a given substance based on existing knowledge from similar substances. As for all approaches, there is some uncertainty associated with the assumptions on which the approach relies. Describing and communicating the confidence and uncertainty in a safety assessment will improve the understanding by risk managers of the reliability of an assessment and will help in taking decisions on whether actions are necessary to reduce exposure. At the same time, confidence in the appropriateness of risk management decisions will also increase. This activity aims to compare the uncertainty of the TTC approach with that of the default animal
testing approach, to understand the degree of confidence in safety assessments based on the current TTC. The project might also identify aspects of TTC which can be improved to reduce uncertainty.

**New Approaches for Food Safety**

Risk assessors are now tending to move from the more traditional hazard characterization approaches (typically using laboratory animals) towards new cellular and molecular methodologies complemented by computational toxicology. There’s a need to better understand human biological pathways and networks, and how they are affected by exposure to chemicals and microbes. In this context, toxicity testing is undergoing a fundamental change as new tools and technologies are allowing the integration of modern biology into the testing process (e.g. toxicogenomics, metabolomics, bioinformatics, systems biology, systems toxicology and computational toxicology). These new advances could greatly reduce the cost and time required to conduct chemical safety assessments, and significantly reduce animal testing by utilising “in vitro” assays and new predictive tools.

**Carcinogen Dose-Response Database for TTC – Completed**

This 18-month project, which concluded in January 2018, aimed to generate a curated, publicly-available database on cancer potency data for genotoxic and non-genotoxic carcinogens. The activity leveraged the work already done by ILSI Europe’s TTC Task Force, including the recent evaluation of the Cancer Potency Database. The project has advanced the state-of-the-art in cancer potency TTC in a number of ways: the database has extended existing datasets through data harvesting and collaborations with key stakeholders (e.g. US FDA); the database is expandable and freely available via the CEFIC Toolbox and from a web-based centralised TTC database site (COSMOS TTC database); current approaches to categorise genotoxic and non-genotoxic carcinogens have been updated and expanded to include further information on genetic toxicity; knowledge of current Points of Departure (e.g. TD50, BMDL) has also been extended by further data harvesting and analysis, the output of which is captured in the database.

**ToxCast Data on Food Chemicals**

A high throughput screening programme of chemicals for potential toxicity (ToxCast) was performed by the US Environmental Protection Agency (EPA). This activity aims to exploit the ToxCast programme data for food chemicals and explore whether there are any opportunities for their use in the safety risk assessment of food chemicals. The intention is to build on work in which food-relevant chemicals were identified within the ToxCast programme. This activity will draw conclusions on the extent to which the chemical structure, use category and toxicological profile of food-relevant compounds can be used to assess their safety for human consumption and handling.
Application of Adverse Outcome Pathways (AOPs)

With the paradigm shift in toxicology testing towards more mechanistically-informed approaches, the Adverse Outcome Pathway (AOP) framework is of special interest. The AOP concept is relatively recent and has yet to be implemented in human health risk assessment. By definition, AOPs are chemically-agnostic and represent a qualitative description of a biological process that, when overwhelmed, will lead to an adverse outcome. For most AOPs information on quantitative understanding of the key event relationships is not available. It is also a challenge to address these relationships in experimental work. Moreover, there is currently no formal guidance on the application of AOPs to the assessment of individual chemicals. This activity aims (i) to understand the coverage of existing AOPs for food ingredients/foods and (ii) to identify the necessary additional information to enable AOPs to be implemented for quantitative risk assessment and regulatory use. Overall, the objective is to provide guidance for industry and risk assessors in the food sector to maximise the utilisation of emerging toxicological science that is more human relevant and less animal-dependent. In the frame of this activity, a workshop to discuss the potential use of AOPs for hazard identification, risk and safety assessment of food additives is scheduled end February 2019.

Set up by the New Approaches to Chemical Risk Assessment for Foods & Food Ingredients Task Force

Micronutrient-Food Matrix Interactions

Optimal micronutrient intake remains a challenge throughout the world and adding micronutrients to food is one way to improve micronutrient intake. Insufficient or excessive micronutrient intake might lead to more profound health consequences, in particular for infants and young children since their diet tends to be less diverse. Micronutrients can interact with other components of the food, potentially causing inadequate or excessive intake. This expert group assesses the methods used to study these micronutrient interactions and will develop a framework via case studies of relevant micronutrients (iron, zinc and calcium). The relevance and quality of those methods used to assess micronutrient interactions will be evaluated, for example in animal and human testing (in vivo), in cell lines (in vitro) and in computational methods (in silico). The framework will provide guidance for an effective assessment of micronutrient bioavailability.

Set up by the Nutrient Intake Optimisation Task Force

Next-Generation Sequencing – Completed

Next-Generation Sequencing (NGS) tools are novel methods to define DNA sequences. NGS tools are fast evolving techniques that are already applied in many different fields spanning from epidemiology, outbreak investigations, antimicrobial resistance, ecology and evolution of microorganisms. However, there is a lack in
communication and understanding on how NGS tools are, and should be, used and interpreted by regulators when they investigate food safety incidents. ILSI Europe aims to investigate how NGS can contribute to the improvement of risk assessment and risk management options in microbiological food safety and aimed to provide guidance to industry in the use of these tools and on how to analyse and interpret the results. The inputs provided by this expert group will help steer the research in this area to exploit the potential of NGS tools and improve food safety.

Set up by the Microbiological Food Safety Task Force

Food Fraud & Food Authenticity

As global food systems have become more complex, the traceability of food components becomes increasingly complicated and the pre-existing prevention and mitigation techniques do not unequivocally ensure the quality and safety of foods. Unfortunately, this creates opportunities for increasing unintentional (affecting food authenticity) and deliberate contamination (food fraud) of foods. Issues regarding food authenticity and fraud that have hit the headlines over the recent years are horsemeat, mislabelling of fish, honey, nuts, spices containing illegal and sometimes toxic dyes, melamine in milk and infant formula, olive oil and wine. These cases greatly impact consumer trust and, in some cases consumer health. Food authenticity breaches are estimated to cost the food industry globally €30 billion per year in seized and withdrawn products from the market and it is prompting public health concerns. With representatives from quality scheme organisations, food fraud alert systems, food industry, academia and government organizations, ILSI Europe aims to assess existing solutions to ensure food authenticity and combat food fraud. Additionally, the activity is identifying the gaps between currently existing solutions that allow for opportunistic breaches in the security of the food chains. Based on these two pillars, a guidance document for an integrated, holistic approach to increase the effectiveness of food fraud detection, prevention and to minimise health hazards will be developed.

Set up by the Authenticity of Food Task Force

Erasmus+ Project – SUIT4FOOD

This ERASMUS+ training programme brings together international experts from seven different European countries. The consortium involves experts on sustainable intervention technologies, food legislation, science communication and entrepreneurship. The main aim of the project is to develop a programme for autonomous initiatives on problem based studies of complex food treatment and analysis techniques suitable for different food matrices. The programme provides tailored, interactive training to the participants – degree level students enrolled in European universities, but originating from around the world. It will build on their experiences and disseminate also to the public at popular science events, information on the benefits of different techniques to ensure food safety for the protection of consumer health.
Packaging

Two thirds of the packaging waste of European citizens is related to food packaging. It’s important to find a good balance between the benefits of packaging in terms of food safety and its impact on the environment. A careful evaluation of food contact materials and their interactions with food is needed to ensure both the safety of consumers and to minimise potential environmental impact.

In Vitro Bioassays for Food Contact Materials (FCMs) Safety

There is an urgent need to better understand the actual safety significance of food contact materials (FCM) as a source of chemical exposure in humans. According to European legislation, migration from food packaging must be safe. There is therefore an urgent need to better ensure a safe migration of chemicals from FCMs to ensure food safety. In vitro bioassays (biological assays) may play a role in the assessment of complex mixtures of chemicals migrating from FCM. Therefore the aim of this activity is to clarify the roles, availability and reliability of bioassays for packaging safety assessment. The activity is developing a transparent guidance document that could be widely applicable and should contribute to safer packaging products, and help to increase consumers’ trust. The outputs of this activity were reviewed during a workshop organised in November 2018, and the most relevant bioassays, their limitations and relevance in the context of packaging safety were discussed.

Set up by the Packaging Materials Task Force

Guidance on Food Packaging Materials

A series of guidance reports are produced, integrating recent scientific and regulatory developments on specific materials and addressing the complexity and diversity of these materials for food packaging applications. The latest report on Adhesives for food packaging applications has been published in November 2018. This report gives an overview of the different types of adhesives used as specific food contact materials in various packaging, and increases the knowledge around adhesives in food contact applications. The reports target the supply chain for food packaging and packed foodstuffs and guide stakeholders in their safe use.

Set up by the Packaging Materials Task Force

7th International Symposium on Food Packaging

ILSI Europe’s International Symposia on Food Packaging are held every four years and are internationally recognised as scientific fora to discuss the scientific developments supporting safety and innovation in food packaging. These multi-disciplinary meetings are of particular interest to those active in issues associated with the safety and quality of food packaging: e.g. food scientists, chemists, toxicologists, mathematicians, physicists, packaging specialists, as well as risk assessors, control authorities, and regulators. They bring together those involved in basic studies, those responsible for bringing innovations to the market place, and those in charge of ensuring the safety and quality of food contact materials. The 7th symposium will be held in November 2020.

Set up by the Packaging Materials Task Force
Food Allergy

Up to 20 million European citizens – almost 5% – suffer from food allergies, and this trend is continuing to rise in both developed and developing countries, especially among children. Minimising the risk from allergenic foods is a shared responsibility of all stakeholders involved (e.g. food manufacturers, retailers, caterers and regulators). ILSI Europe aims to foster international collaborations to address the current challenges relating to food allergies.

A Framework to Help Define Tolerable Risk in Food Allergy

Stakeholders increasingly accept that zero risk is unachievable in complex systems like food production. What is tolerable, both in terms of how many are affected and in what way, must therefore be defined if risk management objectives are to be put in place and their effectiveness monitored. An expert group will convene together relevant stakeholders to consider and define what constitutes tolerable risk in the context of allergic reactions to food attributable to Unintended Allergen Presence (UAP) and decisions on the use of Precautionary Allergen Labelling (PAL). This consideration will not only focus on the incidence of reactions and their characteristics (symptom severity), it will also include factors such as quality of life considerations. The expert group will identify possible benchmarks from other areas of food safety with similar manifestations of risk (e.g. microbiology). The expert group will then try to develop a consensus on a framework within which tolerable risk arising from UAP can be defined. Where possible, it will attempt to define such a framework in quantitative terms, which can be translated to risk analysis.

Set up by the Food Allergy Task Force

Verifying VITAL® 2.0 Reference Doses: Suitability of Analytical Methods

ILSI Europe significantly contributed to the VITAL scientific expert panel and the development of reference doses for food allergens. Reliable analytical methods are a pivotal requirement for the introduction and adoption of reference doses in the EU. This expert group is investigating the suitability of current analytical methods to reliably measure proposed allergens at concentrations resulting from the use of VITAL®2.0 reference doses in relevant food matrices. This work will identify gaps in technology and knowledge and suggest ways to bridge those gaps and identify areas for further research. The conclusions may serve as a basis to prepare guidance for the analytical community, industry and regulatory stakeholders, and patient groups.

Set up by the Food Allergy Task Force
Alternatives to Animal Testing in Food Safety, Nutrition & Efficacy Studies Task

A lot of debate has surrounded the use of animal studies in nutrition and food safety, especially regarding identifying when they are mandatory and when they can be replaced by alternative methods. There is a global call from regulatory and governmental bodies (e.g. JRC and EFSA) and also from animal welfare stakeholders to ensure that animal testing is reduced and used only when necessary. The development of new alternative methods to animal testing offers new opportunities for food safety, nutrition and efficacy studies.

Holistic Approaches to Develop Non-Animal Testing

During the last decade, a shift in the mind-set of experts in toxicology and related sciences has been noticeable towards a science which is no longer only based on deterministic whole-animal approaches. The different stakeholders in nutrition and food safety are however currently not aligned on when animal studies are mandatory or when they can be replaced by alternative approaches. Through a holistic approach, this activity aims to identify existing methodologies that can be applied to the current regulatory frameworks, which continue to address the scientific question at hand, whilst avoiding the use of animals. Case studies across the fields of food safety, nutrition and efficacy studies will be used to illustrate this approach. This activity resulted in a workshop in September 2018 to discuss the case studies and develop a roadmap (gap analysis) for future situations.

Set up by the Alternatives to Animal Testing in Food Safety, Nutrition and Efficacy Studies Task Force
Despite better standards of living and improved medical care, the prevalence of obesity and linked non-communicable diseases (NCDs) has grown. Once considered a problem only in high-income countries, more and more people are now classed as being overweight or obese in low and middle-income countries, particularly in urban settings. Around 366 million people worldwide have diabetes, and this figure is projected to reach 552 million by 2030, or one adult in every ten. These non-communicable diseases and the health complications that they cause can result in decreased quality of life, massive healthcare costs and ultimately premature death. Thus, there is an urgent need to find cost-effective strategies for their prevention and management. Preventive measures, like nutritional education, may limit this dramatic rise in chronic metabolic diseases, and therefore, reduce their impact on the health and longevity of the overall population.
Glycaemia & Inflammation

High concentrations of blood glucose and slightly upregulated inflammatory markers have been observed in obese subjects and in type 2 diabetics. Managing glycaemia and low-grade inflammation through dietary interventions and lifestyle habits may help in preventing obesity, diabetes and cardiometabolic dysfunctions.

Health Relevance of Lowering Post-Prandial Glycaemia in Children and Adolescents through Diet

Diets that produce smaller excursions in postprandial plasma glucose and insulin concentrations are associated with a wide range of health benefits, including improved insulin secretion and sensitivity, and thus enhanced glycaemic control. However, in childhood, the immediate benefits of lowering blood glucose excursions may be relatively small, but longer term effects can be potentially large when adopted and sustained over a lifetime. This activity aims to create a clear consensus on two main questions: i) Are glycaemic index or other glycaemic response data in adults applicable to pediatric populations? ii) What is the impact of glycaemic index or other glycaemic response data on health outcomes in children?

Set up by the Obesity & Diabetes Task Force

Reduction of Post-Prandial Glycaemia

There is a general belief that reductions in postprandial (post-meal) glucose and insulin levels (PPG and PPI, respectively) are likely to reduce the risks of several non-communicable diseases such as diabetes or cardiovascular disease in the general population. However, a scientific consensus on this is missing. ILSI Europe is quantifying the health impact of reduced PPG and PPI through drugs and diet. The aim is to provide practical guidance on how to quantify the effects of the foods consumed on blood glucose levels and the associated health impact.

Set up by the Dietary Carbohydrates Task Force

Metabolic Syndrome Studies

It is estimated that currently 30 to 40% of the European population suffer from the metabolic syndrome, defined as a cluster of the most dangerous heart attack risk factors: diabetes and prediabetes, abdominal obesity, high cholesterol, dyslipidemia and high blood pressure. Although there is considerable evidence to indicate that diet has an impact on individual components of the metabolic syndrome, research approaches to test their interactions and their potential cumulative effect are lacking. ILSI Europe is now investigating how diet affects the risk factors of metabolic syndrome and how these then affect the risk of cardiovascular diseases and diabetes.

Set up by the Obesity & Diabetes Task Force

Early Life Nutrition

The next generation is expected to have a shorter life expectancy than the current generation, due in part to the obesity epidemic. As nutrition influences the overall long-term health of infants, scientists can now identify risk factors for short- and long-term health consequences, such as obesity, but also inflammatory conditions (such as allergies), auto-immune disorders or common infections, at the earliest stages of life (pregnancy and infancy).

Set up by the Dietary Carbohydrates Task Force

Gestational Diabetes and Diet – Completed

Gestational Diabetes Mellitus (GDM) occurs when a glucose intolerance of any degree appears during pregnancy. It’s estimated that 2-6% of all pregnancies in Europe result in GDM and the numbers are much higher in Asia. High maternal weight is associated with a higher risk of GDM. ILSI Europe conducted a literature review to investigate how diet and lifestyle can be used in order to treat GDM. This project resulted in 2 publications, a first one published in Diabetes Care in July 2018 and a second one that will be published in Acta Diabetologia in 2019.

Set up by the Early Nutrition & Long-Term Health Task Force and the Obesity & Diabetes Task Force
Early Bacterial Colonisation and Potential Implications Later in Life

Early bacterial colonisation seems to impact on metabolic, immunological and cognitive functions. ILSI Europe is evaluating the current body of evidence with regards to early colonisation of bacteria from the placenta and breast milk and its influence later in life, especially related to metabolic health outcomes. A second objective will be to establish how to influence colonisation during gestation and lactation through the mother’s and infant’s nutrition. This activity may provide insights for future innovation and nutrition guidelines for pregnant and lactating mothers as well as infants. Set up by the Early Nutrition & Long-Term Health Task Force

Determinants of Immune Competence Across Lifespan

While the importance of a well-functioning immune system for health outcomes is recognised, the critical nutrients supporting optimal immune development in the first years of life as well as the impact of early-life nutrition on later life immune competence are still under debate. This activity is intended to explore the interaction between nutrition and immune system in early life. Markers relevant for the avoidance or mitigation of IgE-mediated food allergy should be determined based on the examination of relevant signalling pathways. Subsequently, the influence of early life nutrition on unfavourable health outcomes later in life will be evaluated. It is intended to provide nutritional recommendations for an optimal performing immune system throughout life. Set up by the Nutrition, Immunity & Inflammation Task Force
Nutrient Status of Population Groups

Our bodies need a combination of several key nutrients to maintain good health. The evaluation of nutrient intake and status of the population is an essential step for setting nutrient recommendations.

Nutrient Density

Besides sedentary lifestyle, the widespread use of energy-dense/nutrient-poor food items may be the main reason for weight gain. Previous attempts to cope with the pandemic of obesity (e.g. low cholesterol/fat/sugar campaigns) did not result in the desired effects on a public health level. Furthermore, the effort to reduce people's energy intake might impair their nutrient balance, leading to potential insufficient or deficient status. Considering the beneficial impact of a nutrient dense/low energy diet on health, a more holistic approach through the nutrient density concept could help to rebalance diets and, ultimately, to reduce the incidence of obesity-related NCDs.

Set up by the Nutrient Density Task Force

Health Effects of Saturated Fats

Traditionally saturated fatty acids have been flagged as unhealthy, but recent data are challenging the old dogma that the intake of all saturated fatty acids must be limited to reduce risk of cardio-vascular diseases. Recent studies have shown that different saturated fatty acids cause different health effects. Moreover, saturated fatty acids in the diet come in various types of food and different effects are seen among these food sources. Through a systematic review, ILSI Europe aims to critically analyse the relation between different types and sources of saturated fatty acids and their health effects. The results of this activity will provide an evidence-based perspective on future trends for health and potential risk and benefits associated with individual fats and evidence-based data could be used to improve food quality and drive future strategies in food reformulations and processing in Europe.

Set up by the Qualitative Fat Intake Task Force

Healthy Ageing

The world’s population is ageing; improvements in health care in the past century have contributed to this trend. However, an increasing number of people are now affected by non-communicable diseases, including dementia, a costly condition because of its social, economic and health dimensions. Preventative dietary recommendations tailored to the specific needs of the elderly are needed to help in maintaining the body’s functions during ageing. ILSI Europe aims to tackle gaps in scientific knowledge in the field of healthy ageing.

Effects of Food Component Interactions on Brain Functions

Effects of food on brain functions are mostly seen from nutrient combinations, rather than from isolated nutrients. Although available information related to individual food bioactives and their effects on brain function is currently expanding, clear guidance and evidence for a multicomponent combination approach is lacking. However, effects of nutrients could possibly be seriously underestimated by disregarding potential interactions with other components. The aim of this activity is to increase understanding and raise awareness of the interactions of food components on brain functions, and to generate consensus on how these should help guide research. This activity will provide clear substantiation and evidence when designing future studies aiming at investigating the impact of multi-component combinations on brain functions. This project is expected to deliver a peer-reviewed publication that provides robust guiding principles on good scientific practice for the study of multi-component interventions for brain health.

Set up by the Nutrition & Mental Performance Task Force

Nutrition for the Ageing Brain

There exists a wealth of data related to how nutrients, food components and whole diets impact cognitive ageing. ILSI Europe organised a first workshop on ‘Nutrition for the Ageing Brain’
in 2014 to discuss and debate the potential for maintaining cognitive function via diet. It came out that health conditions like certain NCDs to faster brain ageing and an increased risk of dementia. Also, there are massive opportunities for nutritional products and optimal diets which need to be translated into clear preventative guidelines to maintain cognitive function during ageing. ILSI Europe organised a second workshop in 2016 which focused on new avenues and challenges for cognitive ageing and nutrition research as well as functional aspects and strategies. The proceedings were published in Ageing Research Reviews in January 2018. The third event in this series was organised in Madrid in August 2018, focusing on clinical applications. 

Set up by the Nutrition & Mental Performance Task Force

Plant-Based Ingredients and Cognitive Performance

There is increasing interest in plant-based ingredients that may improve cognitive performance and prevent or reverse cognitive function decline during adulthood. Despite several reviews in this area which focus on specific compounds and/or ingredients, a collective review of these ingredients and their mechanisms of action is missing. This activity has brought together a group of experts to summarise and evaluate the current literature relating to plant-based ingredients and cognitive performance; to consider combinations of ingredients/compounds (in the context of a normal diet) and their potential synergies in a systematic review. This review will provide guidance on the ingredients upon which future research activities should focus on, as well as exploring the limitations of existing research to identify knowledge gaps that need to be addressed related to plant-based ingredients and cognition.

Set up by the Nutrition & Mental Performance Task Force

Energy Balance

An optimal diet must satisfy the basic human requirements for energy and nutrients. An excess of food intake results in energy being stored as adipose tissue, or fat. On the other hand, insufficient energy intake over sustained periods is almost always accompanied by an insufficient intake of many micronutrients, which again results in poor body performance. A stable body weight indicates a steady energy balance. Many guidelines and healthy food products have been developed to help consumers with appetite control and energy balance. ILSI Europe works on topics relating to satiety benefits, for example investigating how to measure them and how to substantiate them for health claims.

Physical and Sensory Attributes to Improve Satiety

Satiety is impacted by many food parameters: physico-chemical characteristics and sensory attributes, which are often inter-related. Physical-chemical characteristics are those
food characteristics which can be measured by laboratory instruments. Sensory attributes are those food characteristics related to sensorial experience, measured by a person. These parameters are also main drivers of food appreciation, which itself can influence satiety. An expert group is systematically reviewing which key food physical characteristics and sensory attributes improve satiety most, taking into account food appreciation.

Set up by the Eating Behaviour & Energy Balance Task Force

Adaptation to Dietary Influences on Satiety – Completed

How long should research studies run in order to increase confidence in the sustained efficacy of interventions with supposed appetite-related benefits? There needs to be a balance between carrying out studies for a ‘sufficiently’ long period to support efficacy, against the costs, feasibility, and subject retention and compliance issues arising with longer clinical testing periods. ILSI Europe’s expert group reviewed the literature on testing satiety effects over sustained exposures and, from this, suggested evidence-based guidance on appropriate exposure durations and best study designs for investigating effects of diet/food on satiety and energy intake. The results of this activity were published in Obesity Reviews in June 2018 and will be presented at the 26th European Congress on Obesity (ECO 2019) in April 2019.

Set up by the Eating Behaviour & Energy Balance Task Force

EU Project SWEET

In the past years, sweeteners and sweetness (flavour) enhancers (S&SEs) have become useful ingredients to lower sugar content of food products. However, information is lacking about new and emerging S&SEs in terms of efficiency, safety... The EU Horizon 2020 funded project SWEET aims to examine the barriers and facilitators to the use of S&SEs and examine the likely risks & benefits of using them to replace sugar in the diet in the context of health, obesity, safety & sustainability. As Innovation Manager, ILSI Europe will organise several stakeholders’ events throughout the course of the project.

NWO Project Satiation

Elucidating the Neurocognitive Mechanisms Controlling Satiation – Completed

It has been shown repeatedly that foods which can be consumed quickly are implicated in the overconsumption of energy. People also often eat while they are being distracted. This type of “mindless” or “distracted” eating has been shown to be causally related to the overconsumption of food. This overconsumption is associated with both a lack of mastication (chewing) and/or a lack of oro-sensory (taste) signalling which weakens the cephalic phase responses that determine meal termination (i.e. satiation). It is thus hypothesized that altered aspects of oral processing and decision-making are underlying disrupted satiation responses during quick and mindless eating. The aim of this project is to investigate the mechanisms linking oro-sensory exposure, mastication and attention to satiation, and relate these lab measures to daily eating behaviour. Gaining such an understanding may ultimately lead to the development of products or strategies that enhance healthy choices and eating behaviour. ILSI Europe coordinates dissemination efforts to ensure that the knowledge delivered by the project is distributed effectively to achieve optimum economic and societal benefit.
Exposure & Intake Assessment

The food that we eat may contain contaminants alongside nutrients and food additives.

Dietary intake and exposure assessments are important factors of any risk and benefit analysis for food. ILSI Europe aims to be a global center of expertise in this field so as to improve the estimates of dietary intake and to contribute to more relevant nutrition recommendations and safety assessments. Furthermore, when nutrients are added to food we might not assimilate or absorb them correctly due to potential interactions with other parts of the diet. ILSI Europe is willing to understand more about what is on our plates and how we are affected by it.
Food Intake Assessment Methodology

As the saying goes, “we are what we eat” but how well do we really know the composition of our food and more importantly, how much of it do we actually ingest? Assessing the exposure of individuals to the many different substances in food (whether they are intentionally or non-intentionally added) is a key component of any risk-benefit assessment for ensuring safe and beneficial foods for the consumer. Within this frame, ILSI Europe evaluates and develops methods for estimating intakes of nutrients, food additives, chemical and microbiological contaminants, and other substances in the diet. By developing more realistic intake and exposure estimates of what Europeans eat, ILSI Europe aims to contribute to more adjusted nutrition recommendations and safety assessments.

Occurrence of Additives and Brand Loyalty

Many chemicals such as additives, flavours, enzymes and food contact materials are proven safe and their safety limits approved for use in foods. Most of these approvals though rely on the assumption that all foods in a category where the substance is permitted will contain that substance at the maximum permitted levels. This is obviously not true as food manufacturers utilise such additives provided they are necessary in a given product and at various concentrations well below the maximum allowed. This distorts the exposure assessment and does not allow for a realistic long-term exposure modelling. Such modelling should reflect the patterns of food intake, including the effect of consumer loyalty on individual consumption behaviour, the food composition, the proportion of foods in a given category that contain the chemical, and its concentration. In collaboration with key experts in the fields of consumer science, intake modelling and exposure regulations, the task force will be organising a workshop (May 2019) in order to clarify the current issues and source the suitable answers. This activity will also review the available information and assess the potential methods for incorporating occurrence data & quantitative information about consumer loyalty into realistic exposure models.

Set up by the Dietary Intake and Exposure Task Force

Evaluation of New Methods for Dietary Intake Assessment – Completed

Many new tools and applications are being developed to assess the diets of individuals and for research aims. However, these new technologies for diet assessment vary widely in terms of sources and quality of data. This activity helps us to better understand the relative features (uses, limitations, applicability in research and appropriateness for different populations and food categories) of specific new tools and applications currently available for dietary intake assessment. The project also provides guidelines and criteria for developers that will lead to improved quality of dietary intake assessment tools. The output of this activity will be published in the journal Nutrients in 2019.

Set up by the Dietary Intake & Exposure Task Force
Identifying Preferred Approaches for Quantifying the Impact of Modifying Nutrient Intake

A range of dietary changes in nutrient and food intake are recommended to promote optimal health and to prevent diseases like obesity. To help consumers meet these recommendations, food manufacturers and retailers have been encouraged to adapt the nutritional composition of their products. Have these changes shown a positive impact? Have they been effective and useful? ILSI Europe is identifying preferred modelling approaches to estimate the impact of changes in nutritional composition of foods in context of economic and health impact. Moreover, ILSI Europe is addressing how to better communicate the measured health impact to consumers, as these may have a further, motivational benefit, by focusing more on improved quality of life rather than reduced risk of disease.

Set up by the Health Benefits Assessment of Foods Task Force (former Functional Foods Task Force)

Food Intake Data

Food intake data can be used to build dietary guidance and evaluate the risks associated with foodborne hazards. Harmonised and standardised methods used for obtaining food intake data are crucial to produce accurate and reliable estimates of total dietary intake and recommendations for optimised intakes.

Omega-3 and Omega-6 PUFA Intakes, Ratios and Health Effects

Intake of polyunsaturated fatty acids (PUFAs), such as omega-3 and omega-6 PUFAs play a key role for health: from the development of the central nervous system to the reduction of risk of cardiovascular diseases. However, does the European population meet nutritional requirements in terms of PUFA s? Are the requirements aligned across EU countries?
ILSI Europe has reviewed the current omega-3 and omega-6 PUFA intakes across Europe in vulnerable groups (i.e. pregnant and lactating women, infants, children, adolescents and the elderly) and compared the results with current recommendations. The first manuscript of this activity has now been published in the Annals of Nutrition and Metabolism. In a second and third publication in this activity’s series, the importance of ratios versus absolute amounts and the relationship between arachidonic acid and health outcomes will be discussed. 

Set up by the Nutrient Intake Optimisation Task Force and the Early Nutrition & Long-Term Health Task Force

Iodine Intake in Europe

Dietary iodine intake is required for healthy thyroid function. The adverse effects of iodine deficiency – such as goitre, cretinism, intellectual impairments, growth retardation, neonatal hypothyroidism, increased pregnancy loss and infant mortality – are well known and are easily corrected with salt iodisation. However, worldwide, still more than two billion people are at risk of iodine deficiency. This number may increase in the coming years due to current health strategies to decrease salt intake. This expert group will review current iodine intakes across Europe and compare results with the current recommendations. The focus will be on the high-risk groups of the population, among which the female sub-groups will be of high interest for this study. The expert group will also discuss iodine fortification of different food strategies/policies in the different countries, and explore the potential impact of these on iodine intake.

Set up by the Nutrient Intake Optimisation Task Force
In 300 B.C., Hippocrates already anticipated the importance of gut health for overall health with his famous quote “all disease begins in the gut”. An unhealthy gut contributes to a wide range of diseases including diabetes, obesity or inflammatory diseases. As the gut microbiota varies from individual to individual, its manipulation has become a target for the improvement of host health. Thus, functional food products are directed towards digestive health, with prebiotics and probiotics probably being the most common worldwide. Prebiotics and probiotics contribute to the host gut health by distinct, as well as complementary, mechanisms of action. So far, many potential health benefits of probiotics and prebiotics have been documented. However, better comprehension of the relationship between the human gut and the intestinal flora is needed. ILSI Europe is involved in a wide range of activities: from a better understanding of the mechanisms of actions to supporting the scientific substantiation of health claims.
Prebiotics

A prebiotic is a food ingredient selectively stimulating growth and/or the activity of microbial species inhabiting the host, and that confers health benefits to the host. Some prebiotics occur naturally in foods such as chicory, cereals, agave and milk; however, most foods contain only trace levels. The Japanese were the first to recognise the value of fermentable oligosaccharides during the 1980s. However, it was not until 1995 that the prebiotic concept for modulation of gut microbiota was introduced. ILSI Europe is at the forefront of this scientific field, being one of the first to further develop the concept of prebiotic effects.

Structure-Function Relationship for Prebiotic Compounds

Prebiotic compounds show a wide variability in terms of structure and their effects on the gut ecology (microbiota composition and activity) and so consequently of beneficial effects on the host. An ILSI Europe expert group aims to identify the specific characteristics of prebiotic structure that have effects on the gut ecology. The activity is intended to produce recommendations on how to better design research with respect to unambiguous physiological effects of prebiotic compounds.

Set up by the Prebiotics Task Force

Probiotics

Probiotic bacteria are defined as living microorganisms which, when administered in adequate amounts, confer a health benefit to the host. These properties explain why consumers, the scientific community and the food industry show an increasing interest in the wide family of probiotics. How can we measure these potential health benefits? ILSI Europe is working with the best experts to analyse the latest science and specific examples of the probiotic benefits.

Mechanisms of Probiotic Action – Completed

Despite a lack of approved health claims in the European Union for probiotics in human nutrition, there is a general consensus in the probiotic scientific community that specific probiotic strains have documented health benefits and that some health benefits can even be considered a general characteristic. However, their mechanisms of action often remain unclear. In this activity, experts reviewed the current state-of-the-art in understanding mechanisms of probiotic action and discussed future developments and research gaps. They introduced the concept of a translation pipeline that connects mechanistic insights to probiotic efficacy. This concept will support the selection and development of improved probiotics. The resulting publication will be published in Current Opinion in Biotechnology in 2019.

Set up by the Probiotics Task Force
Oral & Gut Microbiota

Scientists have long taken an interest in the effects of diet on human gastrointestinal microbiota composition, as it is becoming increasingly acknowledged that the gut microbiota play a major role in the absorption and metabolism of key nutrients as well as non-nutrients and gastrointestinal health. Furthermore, the resilience of the ecology of the oral system is a major factor in maintaining oral health, which has an important effect on life quality. The impact of poor oral hygiene goes far beyond caries and hard tissue damage, since there is increasing evidence of a link between oral and systemic health (e.g. type 2 diabetes or cardiovascular diseases). It is unclear, however, if this link is causal or because of a common mechanism related to chronic inflammation.

Oral & Systemic Health Resilience

New evidence suggests that oral health has influenced not only overall quality of life, but also systemic health. This activity prepares three systematic reviews, creating a scientific evidence base for subsequent clinical confirmation of health claims both on oral and systemic health. They determine factors, which contribute to a healthy oral ecology (resilience) and explore the relationship between oral and systemic health. Set up by the Health Benefits Assessment of Foods Task Force (former Functional Foods Task Force)

Microbiome Human Study Research Guidance

The microbiome research field currently experiences issues with study repeatability, comparable outcomes and inconclusive results across studies due to variations in study design and methods applied to characterise the microbiome and confounders such as diet and geography. The current activity will produce recommendations for the specific design and conduct of human intervention studies to investigate the i) effects of the gastrointestinal microbiota/microbiome on the metabolism and bioavailability of nutrients and non-nutrients, ii) effects of diet on the microbiota/microbiome composition and activity, and iii) effects of diet-induced changes of the microbiota/microbiome on human health. In addition, the activity will identify specific confounding factors that should be considered in relation to microbiome related outcomes and propose ways to optimise study design and methodologies to achieve physiologically meaningful results. Set up by the Health Benefits Assessment of Foods Task Force (former Functional Foods Task Force)

Short-Chain Fatty Acids for Health (SCFA)

Short chain fatty acids (SCFA) production is considered as (part of) the mechanism by which prebiotics exert beneficial effects on gut health, systemic physiological effects, and metabolic function. Increasing SCFA production and a more saccharolytic fermentation have thus been widely considered as a health benefit. Nevertheless, academic and commercial researchers are seeking consensus on the health benefits of colonic SCFA production. Achieving more clarity on this subject will also support policy makers in assessing benefits of prebiotics and dietary fibre consumption for the consumer. An expert group investigated and evaluated the current scientific knowledge on SCFAs as a health benefit/biomarker by providing coherent evidence of their beneficial action(s). In a workshop held in November 2018, an enlarged panel of multidisciplinary experts discussed preliminary conclusions of the expert group in order to obtain a consensus view on microbial SCFA formation as a benefit for human physiology. Set up by the Prebiotics Task Force
Nutrition Security & Societal Aspects

Consumer science, societal aspects and sustainability are ever-expanding fields. If we do not know enough about consumer behaviour, risk perception and the drivers influencing consumer preferences, then we cannot learn how to effectively encourage consumers to choose healthier diets and more sustainable practices. Societal aspects and sustainability are linked together with consumer science as it is becoming more and more important to provide enough, healthy and safe food to a growing population. Consumer preferences are also determined by environmental and societal aspects. Therefore, all these topics have to be considered through a more holistic approach.
Nudging Towards Healthier Food Choices

Unhealthy food choices and related behaviours are currently driving increased rates of obesity in Europe, with concomitant increases in the incidence of NCDs. Several strategies are used to move consumers towards healthier choices. One among them is nudging, a concept promoting the idea that positive reinforcement and indirect suggestion will influence the decision-making of groups and individuals in a more sustainable way than other interventions. The proposed activity aims to review the existing evidence base regarding short and long-term impacts of nudging, and to identify gaps in knowledge where these exist. Suggestions for further research will be made where appropriate. Ultimately, this project will lead to a greater understanding about the potential role of the psychological and cultural determinants of food choice in the context of nudging theory.

Set up by the Consumer Behaviour Determinants Task Force

EU Project FIT4FOOD2030

To support the European Commission in the development and implementation of the FOOD 2030 policy framework and its action plan, FIT4FOOD2030 aims to establish a sustainable multi-stakeholder, multi-level platform, mobilizing a wide variety of stakeholders at the level of cities, regions, countries, and Europe. Further, the role of research and innovation in bringing about changes in the EU food systems will be assessed. ILSI Europe supports the project in investigating trends, barriers and showcases in the EU innovation sphere, in disseminating the project work and in building the FOOD2030 Platform.

EU Project SUSFANS

The EU agri-food sector now delivers an amazing variety of products from all over the EU and the globe to consumers, creates convenience, innovates, cushions risks to producers and creates jobs in rural and urban areas. Access to safe and nutritious food is not however guaranteed for all Europe’s consumers as quality and safety have sometimes been compromised, and there is an increasing awareness of food poverty across some sections of society. Environmental concerns have also escalated. Maintaining agri-food’s beneficial services in the face of ever-changing economic, social, political and environmental conditions will be increasingly challenging. To gauge what policy reforms may best serve the upcoming challenges, a new conceptual approach is needed that explicitly shows how the food that is produced better matches consumption needs and maintains health. Strengthening food and nutrition security (FNS) in the European Union is a key objective of the Horizon 2020 SUSFANS ‘Metrics, Models and Foresight for European SUStainable Food And Nutrition Security’. This project offers stakeholders a new and exciting opportunity to participate in investigating the impact of policies on consumer choice and subsequent implications for nutrition and public health in the European Union. ILSI Europe was responsible for Stakeholder interaction and scenario review in coordination with the University of Oxford and Wageningen University and Research.
Biomarkers & Functional Effect Measurements

A balanced diet should provide sufficient levels of nutrients to meet the metabolic requirements of an individual. Diet can also bring additional physiological and psychological benefits beyond the widely accepted nutritional value. Markers are used to measure these effects. Biomarkers are defined as an objective indicator used to measure biological processes, or responses to an intervention. For example, HbA1c, a glycated protein found in red blood cells, can give indication on diabetes complications (e.g. cardiovascular disease, nephropathy, neuropathy, and retinopathy). Reports of biomarkers are abundant in the scientific literature; however, the appropriate use of numerous biomarkers is under debate. As a consequence many health claim dossiers have been rejected due to the lack of supporting evidence based on validated markers to prove the potential health effects to be claimed. Therefore, there is an urgent need to identify consensus criteria to be used for validating biomarkers in different fields of nutrition research.
Biochemical markers are analysed at both the cellular and molecular level by means of chemical tests which indicate for example the presence or absence of an enzyme, or the magnitude of low grade inflammation. In nutrition sciences, many markers are used, based mostly on experience and traditional usage but without a proper framework of definitions or criteria to evaluate these markers for their intended purpose. There is a need to develop validated criteria for the selection of biomarkers. An agreed set of valid markers would clearly benefit nutrition scientists.

Characterisation of and Criteria for Glycaemic Exposure Markers in the Non-diabetic Population

Maintenance of blood glucose concentrations within the normal range is beneficial for health. One accepted marker to evaluate blood glucose concentrations is glycated haemoglobin A1c (HbA1c). However, HbA1c requires several months to be assessed and is only relevant for diabetic patients, not for the general population. ILSI Europe is evaluating alternative markers and their potential endorsement for use in the non-diabetic population.

Set up by the Dietary Carbohydrates Task Force

Efficacy Markers of Diabetes Risk

Markers to test for the presence of diabetes in diabetic populations are well known and well established. However, there is as yet no clear advice on which markers can indicate the risk of diabetes in people who do not have diabetes yet. This activity examines insulin secretion and resistance as indicators of diabetes risk, and reviews all types of markers for these functions, focusing on glucose tolerance, insulin sensitivity and beta-cell function. An additional advantage is that there could be non-invasive ways to measure these, minimising stress for the patient, or for faster detection to prevent diabetes onset.

Set up by the Obesity and Diabetes Task Force
Publications in 2018

Foodborne Viruses: Detection, Risk Assessment, and Control Options in Food Processing

Packaging Materials 10: Adhesives for Food Packaging Applications

Gestational Diabetes Mellitus and Diet: A Systematic Review and Meta-analysis of Randomized Controlled Trials Examining the Impact of Modified Dietary Interventions on Maternal Glucose Control and Neonatal Birth Weight

Systematic Review of the Evidence for Sustained Efficacy of Dietary Interventions for Reducing Appetite or Energy Intake

Recommendations for Characterization and Reporting of Dietary Fibers in Nutrition Research

A workshop on ‘Dietary Sweetness – Is It an Issue?’

Dietary carbohydrates: a review of international recommendations and the methods used to derive them

How does Dose Impact on the Severity of Food-Induced Allergic Reactions, and Can this Improve Risk Assessment for Allergenic Foods?

Exposure Assessment of Process-Related Contaminants in Food by Biomarker Monitoring

Poor cognitive ageing: Vulnerabilities, mechanisms and the impact of nutritional interventions

ILSI Europe’s Food Allergy Task Force: From Defining the Hazard to Assessing the Risk from Food Allergens
Publications in 2019

The Use of Next Generation Sequencing for Improving Food Safety: Translation into Practice

Usual dietary treatment of gestational diabetes mellitus assessed after control diet in randomized controlled trials: subanalysis of a systematic review and meta-analysis

Evaluation of New Technology-Based Tools for Dietary Intake Assessment – An ILSI Europe Dietary Intake and Exposure Task Force Evaluation
Alison L. Eldridge, Carmen Piernas, Anne-Kathrin Illner, Michael J. Gibney, Mirjana A. Gurinović, Jeanne H.M. de Vries, and Janet E. Cade. *Nutrients* 2019, 11, 55.

Understanding Mode of Action can Drive the Translational Pipeline Towards more Reliable Health Benefits for Probiotics
What’s upcoming for ILSI Europe in 2019

ILSI Europe’s Events

WORKSHOP
Mineral Oil Risk Assessment: Knowledge Gaps and Roadmap
6th-7th February 2019 – Brussels, Belgium

WORKSHOP
The Use of AOPs in Safety Evaluation of Food Additives
26th-27th February 2019 – Brussels, Belgium

Webinar
www.ils.ie
The Integration of Omics in Microbiological Risk Assessment
Save the Date: 27 March 2019
17.30-18.30 CET, 10.30-11.30 CST
Upon registration only - Attendance is free

ILSI Europe Annual Symposium 2019
3 April 2019
Crowne Plaza Brussels - Le Palace
www.ils.ie

IAFP’s European Symposium on Food Safety 2019
25 April 2019
ILSI Europe Roundtable Discussion
Foodborne Viruses: Detection, Risk Assessment, and Control Options in Food Processing
Organised by the Microbiological Food Safety Task Force

The Potential for Incorporating Data on Occurrence and Consumer Intake Patterns into Dietary Exposure Models
Dublin, 14 May 2019
International Events

ILSI Europe is actively participating (by e.g. having a booth in the exhibition area and organising several sessions) at IAFP 2019, EUROTOX 2019 and FENS 2019.

Upcoming Activities

New Task Force on Microplastics – ILSI Europe will address relevant health issues associated with microplastics accumulation in the food chain, how the detection of microplastics in foods or beverages could be optimised, and how the risk of human contact with microplastics in food could be reduced.

New Joint Nutrition Cluster activity on ‘Gut-Brain Axis’ – A joint webinar on the ‘Gut-Brain Axis’ aims to discuss & debate existing knowledge on the gut-brain interaction, and how relevant signalling pathways are modulated through nutrition and ageing. It is intended to summarise the conclusions and lessons learned derived from different scientific perspectives in an ILSI Europe Concise Monograph.

New activity on ‘Best practices for untargeted migrants screening’ – NIAs are present in all FCMs and there is no accepted methodology on how to perform the sample preparation, analysis, or how to identify and more importantly quantify the migrants. The current situation may lead to uncertainty about the safety of FCMs. This activity aims to provide best practices for identifying and quantifying unknown migrants from FCMs.

Evidence Base for Population Targeted Protein Intake for Muscle Health. It strives to understand the evidence base for protein intake in physically active and inactive adults and elderly population in relation to muscle health and will focus on the impact of protein quality, quantity and intake pattern.

EU Project Related Events 2019
Organisational Structure

ILSI Europe STAFF

General Assembly

Board of Directors

Scientific Advisory Committee

Task Forces (22)*

Expert Groups (45)*

* Numbers for 2018
Keep up-to-date with all the latest activities from ILSI Europe by checking out our website at www.ilsi.eu, connecting with us on LinkedIn and following us on Twitter.