

A close-up photograph of a person's hands gently cradling a small globe of the Earth. The globe shows the continents of Europe, Africa, and Asia. The background is a soft-focus field of bright yellow flowers, likely sunflowers, under a clear sky. The overall mood is positive and hopeful.

**Food for all  
in a  
changing world**

30 years European Federation of Food Science and Technology

# Foreword



## Food for all in a changing world

It is our great pleasure to present this booklet to you on the occasion of the 30th anniversary of EFFoST. More than 130 societies, institutes and universities all over Europe are affiliated to EFFoST, connecting more than 100,000 food experts. Consequently, it is the largest independent expert and stakeholder base in Europe with great responsibilities and challenges to serve the food science and technology community and ultimately to ensure availability of sufficient, safe, high quality food for all.

At this time the importance of food in tackling a number of major global challenges is recognized. We need a new 'food system' to feed nearly 9 billion people by 2050 ensuring not only food supply, but also public health, environmental and economical sustainability. 'Food for all in a changing world' is by no accident the newly established mission of EFFoST. To contribute in the best way, we need a strong and unified research community in Europe. Through collaboration, and a wide engagement of our members, EFFoST disseminates scientific results and promotes the development of young food scientists, who will help to shape the future food systems.

The European food industry contains many key multinational food companies acting in a global market. But 99 percent of European food companies are small medium enterprises (SMEs) which generate approximately 50 percent of the European food related revenue. Thus, EFFoST has an essential role in science and technology transfer to SMEs as evident by our newly established journal *Taste of Science* and wider participation in European research projects.

One of our key responsibilities is still the dissemination of scientific results, which will have a positive impact on consumer health and wellbeing, industrial competitiveness and environment. The annual EFFoST congress that breaks records in attendance every year is a major event. In addition, the international, peer reviewed official EFFoST journals *Trends in Food Science and Technology*, *Innovative Food Science and Emerging Technologies* and *Food Control*, are ranked among the top 10 food science journals.



Over the years EFFoST has also forged collaborations in specific areas that need action. We have formed interdisciplinary interactions such as the European Academy of Food Engineering (EAFE) with the European Federation of Chemical Engineering (EFCE), the Non-thermal Processing Workshop with IFT and Connect2Innovate. We work closely with other food related European organizations such as ILSI Europe, EUFIC and the ETP Food for Life to make heard the voice of the scientific community.

At a global level EFFoST is one of the five regional organizations of the International Union of Food Science and Technology (IUFoST). These organizations all contribute to the success of the world congresses and global visions and strategies for food science and technology.

We hope you enjoy the reading of this booklet. We will continue to work and stimulate knowledge sharing, thoughts and insights on exciting developments. EFFoST will continue to create activities that inspire us to further improve the food we eat, thereby enabling a sustainable and better quality of life!



Prof. Dietrich Knorr, President



Prof. Lilia Ahrné, President-Elect



Dr. Jeroen Knol, Managing Director

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The team of the EFFoST office in The Netherlands

## About EFFoST

The European Federation of Food Science & Technology (EFFoST) pushes the production of sustainable and healthy food by facilitating knowledge exchange. We enable food scientists and technologists, businesses in food and food-related areas and European policymakers to deploy new technologies and developments.

More than 130 societies, institutes and universities all over Europe are affiliated to the non-profit organisation EFFoST. With approximately 100,000 individual members in various European countries we are Europe's largest food science expert base and stakeholder group. EFFoST is the European group of the International Union of Food Science & Technology (IUFoST), which in turn is a full member of the International Council for Science (ICSU).

Our federation supports the further development of the field of food science and technology. There is a lot of expertise in food processing, microbiology, chemistry, physics, engineering and consumer and materials science. With joined forces these disciplines can create more innovation, especially in cooperation with food producers. Our activities include science and technology communication as well as dissemination of information and technology transfers. EFFoST puts additional emphasis on the involvement of SMEs and on fostering the next generation of food scientists and professionals. We also offer our knowledge and independent advice to the European Commission, so it can draw up an effective strategic research agenda.



# Food for all in a changing world

## Our vision

The growing world population, the changing climate, the reducing biodiversity and geopolitical and social tensions put pressure on the availability of agro resources and their safe transformation in food for all. Hence, food and nutritional security and sustainable food systems are key topics for the coming decennia. All creativity, knowledge, entrepreneurial spirit and sustainable innovation pathways should be mobilised to guarantee availability and access to food for the coming generations.



## Our ambitions

EFFoST wants to:

- Translate its mission and vision into concrete education, research and development activities in Europe.
- Make expert knowledge available and demonstrate that food science and engineering are crucial for feeding the world.
- Enable all food professionals to share their most creative thoughts in order to reach breakthrough solutions for more sustainable food systems.

## Our aims

EFFoST aims to:

- Provide a sound and independent European platform for all food professionals (students, researchers, entrepreneurs, policy makers, consumers) for the enhancement of food science and technology.
- Interact and form alliances with all related disciplines and bodies in food and associated sectors to efficiently speed up the needed changes
- Address the needs of professionals, such as job opportunities for young scientists, innovation pathways for SMEs, and transparent and clear expert knowledge for consumers.
- To create a European network for knowledge transfer and revealing the rich and diverse European food culture and the contribution to global value chains.

## Some of our guiding principles

- Food science and technology are broadly defined and range from nutrition to process engineering.
- We work closely with member societies and organisations to ensure that activities are synergistic and build on expertise and initiative at local levels.
- EFFoST is a flexible and pragmatic organisation. We rely largely on voluntary efforts and encourage our members to engage directly in our activities.



## IUFoST

The International Union of Food Science and Technology (IUFoST) is the global scientific organisation for food science and technology, representing over 300,000 members from more than 75 countries. IUFoST has five regional groupings: ALACCTA - Central and South America; EFFoST - Europe; FIFSTA - ASEAN countries; MENAFoST - Middle East and North Africa; and WAAFoST - West Africa. IUFoST is the only scientific organisation for Food Science and Technology elected by its scientific peers across disciplines into the International Council for Science (ICSU). IUFoST represents food science and technology to other international organisations.

IUFoST organises world food congresses, among many other activities, to stimulate the ongoing exchange of knowledge in scientific disciplines and technologies relating to the expansion, improvement, distribution and conservation of the world's food supply.

## EFFoST Structure

EFFoST's activities are run through a non-profit foundation, which was established in June 1999 under the laws of the Netherlands. The EFFoST office can be visited at Nieuwe Kanaal 9a in Wageningen, the Netherlands. The EFFoST foundation is governed by the Executive Committee. The Executive Committee consists of the officers and additional members of member organisations. The General Assembly is made up of delegates from the European IUFoST adhering bodies and has final authority over all general matters of policy and action concerning EFFoST.

## The foundation of EFFoST

The formation of a European group for food science and technology was first proposed by the late prof. John Coppock, President of the Institute of Food Science & Technology (IFST) in 1978-1979. The idea was to form a European association under the umbrella of IUFoST with additional objectives and activities. Specifically, the intention was to forge closer links between 'rank and file' scientists and technologists in Europe through their national organisations. The first EFFoST General Assembly was held during the first EFFoST Conference 'Cereals in the European Context' in July 1986.





# Executive Committee



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Technical University Berlin, Germany  
President  
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**Lilia Ahrné**  
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**Olga Martín Belloso**  
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**Brian McKenna**  
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**Huub Lelieveld**  
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**Viktor Nedović**  
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# **Towards safer, healthier and more consumer oriented food**

## **Food science and technology developments over the past 30 years**

As EFFoST reaches its 30th year, it is a good time to look back at the developments in the various food science and technology disciplines that have taken place over this period. All the hot topics have been promoted during the annual congresses hosted by EFFoST in the last three decennia. Many exciting new methods, techniques and insights have occurred in the areas of processing, packaging, food safety, consumer matters, ingredients and nutrition. Such as intelligent packaging, high pressure processing and pulsed electric field processing, personalised nutrition, functional ingredients and the rise and fall of e-numbers. This article gives an overview of all these developments and more and ends with a short glimpse into the future.



## PROCESSING

All processes that have been developed in recent years can be described as non-thermal processes. In other words, they do not rely on heating and cooling as so many of the longer established processes did. Consequently these result in a milder treatment of the food material with less destruction of heat labile components such as some vitamins and proteins.

### Membrane processes

The basic concepts of membrane processing were developed in the 1960s and used for water desalination and subsequently for milk and whey concentration. But widespread adoption of the concept as a separation process did not come until the 1980s. Membrane processing and its sub-sectors of reverse osmosis, microfiltration, ultrafiltration and nanofiltration, lets the food liquid or suspension pass at elevated pressure across a semi-permeable membrane. Depending on the membrane characteristics and the pressure applied, smaller molecules can permeate and pass through the membrane. Membranes can be selectively designed to allow molecules up to a certain molecular size to pass through while larger molecules are retained. Unfortunately, formation of deposits on the membrane surface results in a reduction in the flow of material permeating the membrane. This method is used in clarification, concentration, purification and fractionation of milk and milk products, fruit juices, wines and alcoholic beverages.

### High Pressure Processing

High pressure processing (HPP) is a cold pasteurisation technique, sometimes termed pascalization, and occasionally sterilization, that applies very high pressure to a food. The foods have to be pre-packed in flexible packaging which must be able to withstand high pressures without developing leaks. The pressures used are in the range of 300-600 megapascal. Usually the pressure is applied through water in a high pressure vessel. The food is not crushed as pressure is applied evenly to it from all directions. The high pressure can result in inactivation of many



microorganisms and enzymes. Consequently, the food product suffers from less adverse changes than when a heat processing technique is applied to achieve the same microbiological inactivation.

### Pulsed Electric Field

Pulsed electric field (PEF) is yet another 'cold' preservation process that is just about to be introduced into industrial food processing. It applies high voltage pulses to food placed between two electrodes. Typical voltages are in the range 20 to 80 Kilo-volt/ centimetre and the typical treatment can be less than 1 second. Being a cold process it avoids sensory damage and major changes to the physical properties of the food. PEF works by inducing changes in biological membranes, whether in bacteria or plants. This process is termed electroporation and not only causes microbial inactivation but also enhances extraction processes by altering the cell membrane characteristics in plants. Fruit juices and egg products are among the most likely pioneer foods.

### Extrusion cooking

Extrusion cooking was developed more than 30 years ago but its widespread introduction into the snack food, biscuit and breakfast cereal market is more recent. A dough is extruded through a narrow die using a tight-fitting screw impeller shaft in a cylindrical vessel. The wall of the cylindrical vessel may be heated but the conveying process will induce a form of frictional heating in the dough which can exceed a 100 degrees Celsius. However, the

high pressure in the cylinder prevents boiling of the water in the dough. On passing through the die, the dough experiences an instantaneous pressure drop back to atmospheric pressure coupled with instantaneous boiling and vapour production in the dough leading to an expansion or puffing process. The instantaneous boiling leads to a dry, puffed product. Hence its use in snack foods and breakfast cereals.

## PACKAGING

### Modified Atmosphere Packaging

Modified atmosphere packaging (MAP) involves modifying the atmosphere in a food package, commonly reducing oxygen concentration. This method inhibits microbial growth and extends the shelf-life of products. Normally it is applied to fresh or minimally processed foods.

### Active packaging and intelligent packaging

These terms are normally applied to packaging systems that have some functions to the normal ones of protecting the food and possibly extending its shelf-life. Active systems normally use packaging films that have differing permeability to the gases produced during the storage and deterioration of foods. Gases produced in this manner may be allowed to diffuse differentially through the packaging material and so maintain an in-package atmosphere that helps to extend shelf-life and increase food safety. Intelligent packaging goes a step further. The package may have sensors on it that can monitor the temperature history of the package and provide a visual indication to the consumer of the expiration of the product. Eventually this technique can replace expiry date stamping of products and reduce food waste. In addition radio frequency identification tags (RFID) can be incorporated to allow clients and consumers to electronically trace the origins of the product and find more product information.

### Incorporation of nanomaterials

Another extension to the active packaging concept is that of incorporating nanoparticles into the packaging film that act as antimicrobial agents and contribute to shelf-life extension. The most commonly used particles are nano-silver particles. Howev-







er, the migration of nano-silver particles from packaging film to the food and subsequent migration within the body has raised some toxicity concerns. Also there are some environmental issues. For these reasons other sorts of particles are currently being tested.

## FOOD SAFETY

Over the past 30 years, food safety issues have become prominent across Europe and have led to the establishment of many national food safety agencies in the 1990s, followed by the European Food Safety Authority (EFSA) in 2002. All national and European food safety control and regulation is exercised through these agencies. Without a doubt, they have resulted in a safer food supply and have greatly enhanced the science underlying food safety. In particular, the sciences of risk assessment and risk management have been developed over this period. Together with a larger emphasis on food control this has been the main factor behind the increased food safety. There have been many concerns that the increased control and regulation have resulted in slower or inhibited innovation but these are far out-weighted by the increased safety for consumers. Food crises are met with a faster response and a more scientifically focussed approach. In addition improved product tracking has led to more rapid product recall or withdrawal.

Predating these regulatory developments has been the widespread implementation of Hazard analysis and critical control points (HACCP) systems in the food chain. HACCP aims to eliminate or reduce biological, chemical and physical hazards from food production by adopting a systematic approach. With HACCP, the first step is to conduct a hazard analysis of the process, identify critical control points and establish limits for each control point, for example the product temperature at a particular location. Then a monitoring system is developed and corrective actions are determined. Crucial in the procedure is the monitoring of its effectiveness and detailed record keeping. For many production systems and food service operations, HACCP systems are now a legal requirement.

## CONSUMER MATTERS

One of the most apparent developments over the lifetime of EFFoST has been the emergence of the consumer as the main driver for change within the food sector. Consumers are now more conscious of healthy eating and environmental matters. They demanding that their foods are produced conform to their ethical principles. However, there is some conflict. There is an inherent demand for less processing while simultaneously many consumers seek more convenience and less meal preparation time for their foods. Food scientists have to address this issue by entering into a dialog with consumers. A safe, nutritious product needs cooking before consumption both to induce physical changes in the product and reduce or eliminate pathogenic organisms. In addition, food distribution and storage requires increasing the shelf-life and safety of the product. The cooking itself can occur either in the home or in the factory, or both. Eventually the consumer and the food scientist should reach an agreement on the exact way in which the cooking is realised.

## INGREDIENTS

The first major ingredient development was the e-number classification for food additives. Originally it was introduced, mainly in the 1970s, as a three digit classification system to avoid the use of long chemical names on restricted packaging space. It was



meant to be an aid to the consumer. However the system quickly lost consumer confidence and became synonymous with heavily processed foods and artificial additives. This was despite the fact that many naturally occurring ingredients have e-numbers, for example vitamin C (E300) and lycopene (E160d). Today, they are still usable and the classification is administered by EFSA. But a quick examination of food packaging shows how manufacturers are nowadays reverting to the use of full names for their ingredients.

More scientifically significant has been the development of functional ingredients. These are ingredients with an additional function beyond basic nutrition such as health enhancement or

disease prevention. Functional ingredients are now playing an important role in the prevention, management and treatment of chronic diseases. However, the use of health claims on food labels is strictly regulated. Other terms used in the functional ingredients area are probiotics (microorganisms that are believed to provide health benefits) and nutraceuticals (a range of ingredients manufactured primarily in the pharmaceutical industry that are believed to also provide health benefits). These developments have led to an intensive search for naturally occurring functional ingredients from plant and animal products. When isolated and concentrated, these ingredients can be added to foods. Exemplary of this search is the intensive 'mining' of milk for identification and extraction of functional ingredients such as bioactive peptides. These searches have been facilitated by the development of a wide range of sciences in the 'omics' category for example genomics, proteomics and metabolomics.





## NUTRITION

In tandem with the increasing focus of the European consumer on healthier eating, the increase in diet related diseases, especially obesity and type 2 diabetes, has led to very significant increases in dietary recommendations from agencies right across Europe. Thus, the recommendations of the food and nutrition agencies dating back to the time when EFFoST started bear little resemblance to those of today.

On the positive side there have been significant developments in the concept of personalised nutrition. Poor dietary choices can lead to unhealthy eating and weight gain and increase the prevalence of the diseases mentioned above. Studies have shown that individuals respond differently to various nutrients due to their physical and genetic characteristics. This, in turn, leads to the concept of personalised nutrition advice instead of the old fashioned a universal 'one size fits all' diet advice. Nowadays it is recognised that individual dietary advice is essential, but in the future the realms of genetic screening and use of individualised functional additives should be further explored in relation to personal nutrition.

Lastly, in the nutrition field, food science and technology need to address the need for an adequate protein supply for an increasing population. Insect derived protein dominates such discussion nowadays but other sources, including algae derived and marine sources will also need to be considered.

## NOW AND IN THE FUTURE

The main factors driving most of the developments over the past 30 years has been the consumer demand for safer, more nutritious, more natural, less processed but at the same time, more convenient foods. Many of these demands are inherently conflicting e.g. less processed is unlikely to improve safety. Consequently, the technological advances have been mainly aimed at using milder processing techniques but at the same time achieving enhanced safety.

A crystal ball to see the future would probably suggest that this theme will continue. Processes will become increasingly milder and as a result, will yield products closer to the natural food. Without doubt, some form of personalised nutrition will be developed but probably not totally personalised since eating is a social function rather than a solitary one. Packaging technology will see major advances and most of our food in 30 years will be in some form of smart package. The biggest change could well be in food distribution. Will the smart fridge or cupboard be placing online orders whenever necessary? Will the supermarket still perform its current function? The answer is most probably not. However, history would suggest that such musings are probably giving the wrong answers as technology continues to advance by orders of magnitude rather than in small increments. The one certainty is that food, and lifestyle will continue a rapid evolution.

Underlying all of this technological advancement is the expectation that by 2050 from the 8 to 10 billion people living on our planet approximately 6.5 billion will live in mega cities. We need to provide adequate and safe food for them, despite challenges in the production, processing, storage and distribution of foods with often limited or disrupted infrastructures and the lack of safe drinking water. In addition, a dramatic shift in eating habits and consumption patterns is expected to occur with most people eating away from home instead of eating at home.

This requires a radical reappraisal of food security as well as innovations on how safety strategies such as providing innovative transportation systems for food, finding alternative food production, processing and distribution systems and recycling and recovering drinking water. At the European level food waste, food consumption management, food chain integration and the development of sustainable food chain systems are clearly key priorities for the near future. Wasted food has to be recovered, converted and recycled into the food chain. Dietary changes need to be of highest priority including the use of new, alternative and proven healthy raw materials. Sustainable food systems can only be achieved by integrating all the relevant key players from the public and private sector. Further, only an inter- and intra-disciplinary approach among all related disciplines will prove successful. ★





# Collaborations

EFFoST has forged many collaborations, sometimes in specific fields of interest. There is a lot of expertise in food processing, microbiology, chemistry, physics, engineering, consumer and materials sciences. With joined forces these disciplines can create more innovation and enhance the field of food science and technology. Therefore, EFFoST also supports several special interest groups, who are functioning as forum and exchange network.



Contact person: Vincenzo Fogliano

## Connect2Innovate

The special interest group Connect2Innovate aims to increase the success rate of food technology innovation by improving communication between consumers, consumer scientists, food technology developers and other key players.



Contact Person: Henry Jäger

The failure rate in food innovations is high. Up to 70 or 80 percent of the food initiatives don't succeed. This is caused mostly by miscommunication. Involved key players each have their own language. On top of that, achieving consumer acceptance of new technologies is a very risky and fuzzy process.

The Connect2Innovate online network will address the main challenges which cause food innovation failure rates.

Connect2Innovate will help to:

- Improve communication between different participants in product development and commercialisation.
- Choose appropriate technologies.
- Understand consumer acceptance of new technologies and products.
- Avoid public rejection.

This is done by the formation of a multidisciplinary network of academia and industry partners, giving reflections from different disciplines and access to state-of-the-art scientific knowledge and hands-on practical examples.



## Young Scientists!

The Young Scientists Group wants to help overcome restraints and barriers in the food science path. We aim at improving networking, developing personal and professional skills and helping young scientists acquiring knowledge related to food science. Through us you will have the opportunity to learn and interact with more experienced food scientists from research institutions and the food industry worldwide.

*"Throughout our education, we learn from our professors, mentors and teachers from whom we gain and increase our knowledge on facts in food science. However, as soon as our jobs confront us with the task to solve realistic problems by ourselves, we have to deal with the challenge of searching and collecting information: how and where to find it and whom to ask? In science you have to work hard and be lucky but most of the time it is a matter of knowing which door to knock on. Inevitably we learn from our own success and failure and thus build up our expertise. Nevertheless, we should never forget that a helping hand is precious."*





Contact person: Olga Martín Beloso

Below are a few examples of the titles the NPD current members hold:

- Food safety engineer
- QA manager
- Research scientist
- Senior formulator
- Senior process engineer
- Thermal process manager

From the very beginning, the need of organizing specific workshops to share knowledge and discuss the findings was identified by both the NPD and EFFoST, thus starting a collaboration that is becoming stronger and stronger. A special workshop planning committee is appointed by the NPD and EFFoST to ensure that all workshops maintain the highest quality standards.

These workshops provide unique opportunities for the scientific community to facilitate worldwide development of nonthermal technologies. The location alternates between the US and the EU, and sometimes even elsewhere. The division also keeps its members posted on new developments in the field of nonthermal processing.

### Nonthermal Processing Division

The Nonthermal Processing Division (NPD) is a global interest group. In the middle of the 90's a group of members of the US-based Institute of Food Technologists (IFT) working in nonthermal processing technologies promoted the creation of the Nonthermal Processing Division (NPD), an area in which European groups were actively working.

The division members are employed by food processors, equipment manufacturers, ingredient suppliers, regulatory agencies, research institutions, and universities in North and South America, Europe, Asia, and the rest of the world. The members come from a wide range of backgrounds and perform a variety of functions for their organisations.



Contact person: Yrjo Roos

### European Academy of Food Engineering (EAFE)

The European Academy of Food Engineering (EAFE) was established to provide linkages of European scientists in the food engineering and technology arena. The EAFE mission is to:

- Contribute to relevant meetings and conferences to promote food engineering and technology.
- Contribute to effective networking of students, academics and researchers in food engineering and technology.
- Enhance food engineering and technology contributions, innovations and technology transfer to development, design, manufacture and distribution applications in research and industry.
- Advance education, research and publicity of food engineering and technology.
- Serve as link of food engineers and technologists in Europe to enhance collaboration with members of EFCE, other relevant organisations and internationally.

On the EAFE website you can find the contact persons from European countries.

[www.efacademy.eu](http://www.efacademy.eu)



Nonthermal Processing Workshop, Athens 2015





Contact person: Huub Lelieveld

### Global Harmonization Initiative (GHI)

A network of scientific organisations and individual scientists has launched a global initiative to promote harmonization of food safety regulations and legislation. Their aim is to eliminate hurdles and impediments to scientific advancement in food technology. It resulted in the founding of the Global Harmonization Initiative (GHI) in 2004 as a joint activity of the US-based Institute of Food Technologists (IFT) International Division and EFFoST. GHI's objectives are to facilitate discussion, globally, of the scientific issues that buttress the decisions made by individual governments and international regulatory bodies in order to achieve scientific consensus on such issues. GHI and its working group anticipate that elimination of regulatory differences will make it more attractive for the private sector to invest in food safety and R&D. Consequently this will strengthen the competitiveness of each nation's food industry and of the industries supplying the food sector. Harmonizing global regulations will aid in the uptake and application of new technologies. Also it will encourage the food industry to invest in technologies to ensure the safety and quality of the food supply for consumers.



Contact person: András Sebők

### NFTPs

The National Food Technology Platforms is an agro-industrial network born in 2007 with the European Technology Platform 'Food For Life'. It is based on the national institutions engaged on research, development and innovation on food, and promoted by the national federations of the Food and Drink Industry. The Food and Drink Industry is the first industry in Europe with more than 1,1 trillion euro turnover, 300 thousands companies which are mainly small and medium-sized enterprises (SMEs), and 4 millions employees. Conviviality, pleasure, tradition, taste and culture are still the main drivers of the demand, together with a very strong supplied technological evolution on sustainability, recipes and nutritional values, processing, safety and quality. Public private partnership of our platforms is helping the dissemination of the new knowledge and the technology transfer to our European SMEs and national companies. ★



### ILSI Europe

ILSI Europe is delighted to offer our congratulations to EFFoST on your 30th Anniversary! We also celebrated our 30th Anniversary in 2016. During these 30 years, both our organisations have developed and matured. And over the last few years, the bond between our organisations has been strengthened. We feel dynamic and energetic, ready to address upcoming scientific challenges.

Here at ILSI Europe we believe strongly in fostering collaboration. That's why we bring together the best scientists from industry, academia and the public sector to address issues of key concern in public health, and we regularly produce peer-reviewed publications which are published in top scientific journals.

Teamwork is at the core of ILSI Europe's philosophy, as seen from our tripartite approach to science. We are looking forward to tackling future challenges together, learning from each other, and we are already developing ideas on how to combine our knowledge. We believe that this cross-fertilisation of our different backgrounds and strengths will cause a garden of knowledge to bloom from which we can harvest the fruits of our research.

Again, I would like to congratulate EFFoST on your 30 years' worth of high-quality work to date, and I wish you many productive years to come. At ILSI Europe, we look forward to working together with you for another 30 years (or more!) to find solutions to key public health issues in nutrition and food science.

Yours sincerely,



★  
Prof. Dr. Diána Bánáti  
Executive and Scientific Director  
International Life Sciences Institute, Europe (ILSI Europe)





# European projects

EFFoST participates in many food related EU projects. We are responsible for the propagation of the knowledge gained in these projects. We have extensive experience in dissemination activities in EU funded projects. EFFoST has also developed publications and organizes events on topical issues of industrial relevance.

We are sustaining and creating a European network for knowledge transfer and use our existing network of food science and technology professionals to promote the project outcomes. Within EU projects we work closely with member societies and organisations to ensure that activities are synergistic and build on expertise and initiative at the local level. Furthermore, we work with governmental organisations such as the European Commission and the European Food Safety Authority. Our involvement in EU projects help us to achieve our ambitions and aims. Over the past 10 years EFFoST has been involved in 14 EU funded projects working with more than 200 universities, research organisations, SMEs, and large food companies.

The **NanoPack** project (2016-2019) will demonstrate a solution for extending food shelf life by using novel smart antimicrobial surfaces, applied in active food packaging products. It will run pilot lines in operational industrial environments to manufacture commercially feasible antimicrobial polymer films, accepted by consumers.



The **OLEUM** project (2016-2020) will generate innovative, more effective and harmonized analytical solutions to detect and fight the most common and emerging frauds and to verify the overall quality of olive oils.

[www.oleum.eu](http://www.oleum.eu)



**KATANA** (2016-2018) supports European SMEs and start-ups in the agri-food value chain to access knowledge, technology, capital and markets in order to respond to the global competitive environment.

[www.katanaproject.eu](http://www.katanaproject.eu)



**INNO-4-AGRIFOOD** (2016-2018) will stimulate online collaboration for innovation amongst the SMEs active within the European agri-food ecosystem. The project will enhance the service portfolio and practices of innovation intermediaries and SME support networks across Europe.

[www.inno4agrifood.eu](http://www.inno4agrifood.eu)



The **FieldFOOD** project (2015-2018) will demonstrate the successful and real-scale introduction of Pulsed Electric Field (PEF) technology in the processing of plant based foods. Therefore, the use of PEF in producing fruit juice, tomato products, wine, cider and olive oil will be analyzed and optimized. To these ends flexible and portable low-cost pulse generators will be designed.

[www.fieldfood.eu](http://www.fieldfood.eu)



The **EU FooD-STA** project (2015-2017) will establish an independent 'EuFooD-STA Centre' to enhance innovative education & training for students, targeted towards the needs of the industry. It will also enhance innovative continual professional development (CPD) for academic and company staff by facilitating experience exchange.

[www.food-sta.eu](http://www.food-sta.eu)



Inno4agrifood Amsterdam 2016





The **MyNewGut** project (2013-2018) researches the interactions within a living organism, its lifestyle and the microbiome's role in the development of diet and brain-related disorders. The project will also develop micro-biome-based dietary intervention strategies, food ingredients and prototypes to reduce the effects of diet related disorders.

[www.mynewgut.eu](http://www.mynewgut.eu)



My New Gut Bologna 2015

## TRADEIT

**TRADEIT** (2013-2016) is a collaboration between researchers, traditional food SMEs, technology providers, food associations. Its objective is to strengthen regional economies and the competitiveness of SMEs. Support is being provided through a structured programme of events for SMEs and food researchers.

[www.tradeitnetwork.eu](http://www.tradeitnetwork.eu)



The **MUSE-Tech** project (2013-2016) will bridge the gap between state of the art sensing technologies and industrial Process Analytical Technology (PAT) applications to achieve a more efficient control of food processes to improve quality assurance and to reduce manufacturing costs and food waste.

[www.musetech.eu](http://www.musetech.eu)



TRADEIT project dinner in The Netherlands



The **CONNECT4ACTION** (2011-2014) project intends to improve the communication between consumers, consumer scientists, food technology developers, and other key players, in order to improve the success of food technology development and commercialisation in Europe.

[www.connect4action.eu](http://www.connect4action.eu)



TRADEIT & Taste of Science Bragança 2016



The **RECAPT** project (2011-2014) supported processes leading to closer collaboration in the management of innovations along the food supply chain.

[www.recapt.org](http://www.recapt.org)



MUSE-Tech Barcelona 2013



The **EXAIRDEC** project (2010-2012) developed an innovative contaminated air purification solution for food preparation applications. This effectively decontaminates the waste air emitted during the different food preparing processes.



The project **NovelQ** (2006-2011) focused on processing methods for the production and distribution of high-quality and safe foods. Thirty-six project partners joined forces in this integrated project which was designed to stimulate incremental innovations in novel food processing and packaging.

[www.novelq.org](http://www.novelq.org)



The **Track\_Fast** project (2009-2013) identified the training and career requirements of future European food scientists and technologists. The project implemented a European strategy to recruit the next generation FST leaders.

[www.trackfast.eu](http://www.trackfast.eu)





# Conferences



View on Sitges, Spain

Every year EFFoST organises a well visited international conference that is broad in subjects and full in programme. The EFFoST International Conference is an important scientific event that brings together researchers, scientists, engineers, policy makers, professionals and students from multidisciplinary food related fields. The conferences inspire a cross fertilization of new knowledge, ideas and applications. Also it promotes networking and collaboration and it enhances academia and industry synergism in the quest for sustainable food innovations for the global economy and society. Each year the conference has a different theme and is held in a different country in Europe.

## 31st EFFoST International Conference in Sitges, 2017

The next EFFoST International Conference will be held in Sitges, Spain from 13-16 November 2017 under the theme: Food Science and Technology Challenges for the 21st Century - Research to Progress Society. The conference will explore solutions to current and future challenges such as food safety and security, waste reduction and sustainability, analytical techniques, novel technologies, functional foods, nutrition and health, gastronomy, entrepreneurship, open innovation & strategic alliances and knowledge transfer management.



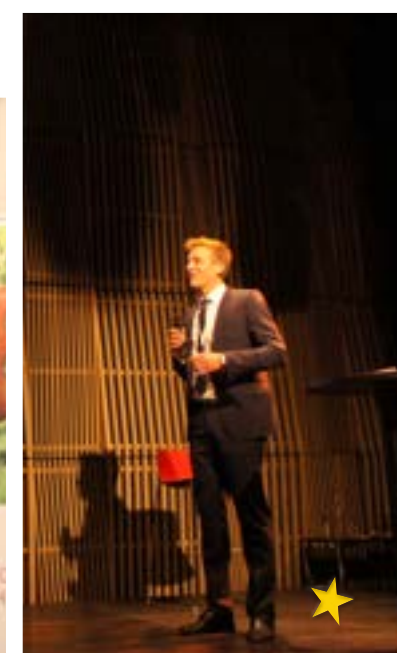
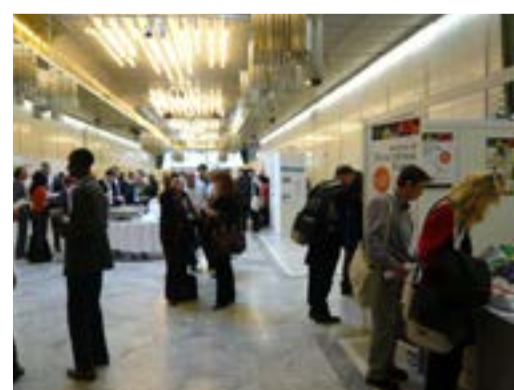
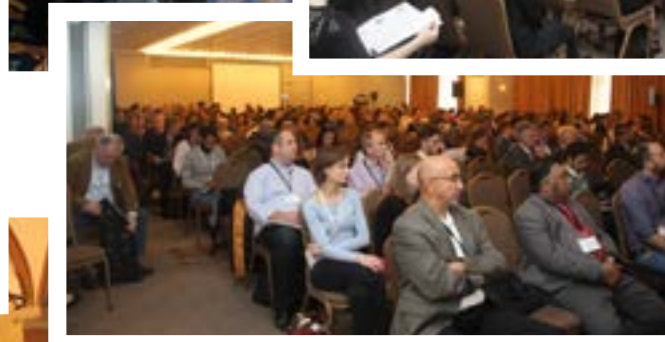
## 30th EFFoST International Conference in Vienna, 2016

The 30th EFFoST International Conference was held in Vienna, Austria from 28-30 November 2016. The theme was 'Targeted Technologies for Sustainable Food Systems.' The conference was organized by the University of Natural Resources and Life Sciences (BOKU) on behalf of EFFoST. The 30th EFFoST International Conference explored solutions to current and future challenges such as food and water security, sustainable agriculture, food safety, convenience and health derived from the targeted application of appropriate food- and bio-processing technologies also taking into account economic and ethical aspects.

Martijntje Vollebrecth of Wageningen UR Food and Biobased Research, The Netherlands on the advantages of attending the EFFoST International Conference:

*"Face to face meeting with persons in food research; knowing each other enhances cooperation. Feedback on own research from people with much knowledge about the topic, or with a new view on the topic. Talk with people from food research fields outside my own to learn more about their field and for example seeing a presentation about a new subject or talking about a poster."*









# Awards

EFFoST offers different awards to recognize the invaluable contribution of individuals or organisations to food science and technology and to encourage students. The goal of granting these awards is to make the excellent work done by people in food science and technology more widely known and to support their career. Currently, EFFoST has three award categories: Student of the Year, Lifetime Achievement Award and Science to Society Award.

## Student of the Year Award

To support and encourage the next generation of food scientists, EFFoST and Cargill organise a yearly award for MSc and PhD students in food science or food technology in Europe. Students can take part in the competition by submitting an abstract of their final thesis or PhD research. Six shortlisted nominees will have free access to the EFFoST International Conference, including hotel and travel costs. The three final winners will receive an amount of money ranging from € 250 tot € 1500. Also they will be invited to visit Cargill's European Research & Development Centre in Belgium where they can interact with the technologists and scientists working here.

## The Lifetime Achievement Award

The Lifetime Achievement Award of EFFoST gives recognition to individuals whose lifetime work has contributed significantly to enhancing European competences in food science and technology. Nominations will be assessed in terms of overall impact on competences in the European food industry to produce safe, high quality and varied foods that meet the needs of consumers.

## Science to Society Award

EFFoST has introduced a new award, the Science to Society Award. This award gives recognition to individuals or organisations whose work has advanced understanding and appreciation of the value of food science and technology to society.

The first award was awarded in 2015 to the International Union of Food Science and Technology (IUFoST) for their Global Food Safety Curricula Initiative. This initiative with many academia and other partners identifies gaps in food safety curricula, builds capacity, and establishes and harmonizes core competencies at university and graduate levels. The Global Food Safety Curricula Initiative is an ambitious project which will add to the power of education, ensuring food safety on a global level.



Prof. Rickey Yada, President of IUFoST accepting Science to Society Award



Student visit at Cargill Vilvoorde 2011

*Didier Bonnet, Global Food Research Leader of Cargill*

"By sponsoring the EFFoST Student of the Year Awards, we are able to acknowledge the outstanding results that students are making and continue to encourage their development in this industry. Cargill is proud to be partnering with EFFoST and to invest in the future of food science."



## Winners of the Student of the Year Award

2007 Kristina Radovic, University of Split, Croatia (1<sup>st</sup> prize)

2007 Ivana Vrhovac, University of Zagreb, Croatia (2<sup>nd</sup> prize)

2007 Yuan Li, Wageningen University, The Netherlands (3<sup>rd</sup> prize)

2007 Grigor Badalyan, Yerevan State University, Armenia (4<sup>th</sup> prize)

2007 Abishek Gupta, Wageningen University, The Netherlands (5<sup>th</sup> prize)

2008 Kai Reineke, Technical University of Berlin, Germany (1<sup>st</sup> prize)

2008 Hasmik Hayrapetyan, Wageningen University, The Netherlands (2<sup>nd</sup> prize)

2008 Rielle and Jolet de Ruiters, Wageningen University, The Netherlands (3<sup>rd</sup> prize)

2008 Milena Savic, University of Belgrade, Serbia (4<sup>th</sup> prize)

2009 Artem Parseghyan, Yerevan State University, Armenia (1<sup>st</sup> prize)

2009 Darko Dimitrovski, St. Cyrill and Methodius University, Macedonia (2<sup>nd</sup> prize)

2010 Aimee McKernan, University College Dublin, Ireland (1<sup>st</sup> prize BSc/MSc)

2010 Matija Boban, University of Zagreb, Croatia (2<sup>nd</sup> prize BSc/MSc)

2010 Cristèle Delsart, Université de Bordeaux, France (1<sup>st</sup> prize PhD)

2010 Sabrina Cox, Dublin Institute of Technology, Ireland (2<sup>nd</sup> prize PhD)

2011 Elisa Luengo, Universidad de Zaragoza, Spain (1<sup>st</sup> prize)

2011 Sara Rød, University of Copenhagen, Denmark (2<sup>nd</sup> prize)

2011 Rizwan Shukat, AgroParisTech, France (3<sup>rd</sup> prize)

2011 Filippo Acerbi, University of Milan, Italy (4<sup>th</sup> prize)

2011 Claudia Tröger, University of Reading, UK (5<sup>th</sup> prize)

2012 Lien Vermeir, University of Gent, Belgium (1<sup>st</sup> prize BSc/MSc)

2012 Ana Arias-Mendez, CSIC, Spanish National Research Council, Spain (2<sup>nd</sup> prize BSc/MSc)

2012 Jessica Newman, University College Dublin, Ireland (1<sup>st</sup> prize PhD)

2012 Björn Surowsky, Technical University of Berlin, Germany (2<sup>nd</sup> prize PhD)

2013 Sara Bussler, Technical University of Berlin, Germany (1<sup>st</sup> prize BSc/MSc)

2013 Yousef Joubran, Technion - Israel Institute of Technology, Israel (2<sup>nd</sup> prize BSc/MSc)

2013 Christian Hertwig, Technical University of Berlin, Germany (3<sup>rd</sup> prize BSc/MSc)

2013 Veronica Valli, University of Bologna, Italy (1<sup>st</sup> prize PhD)

2013 Laura Salvia Trujillo, Universitat de Lleida, Spain (2<sup>nd</sup> prize PhD)

2013 Kathleen Boons, KU Leuven, Belgium (3<sup>rd</sup> prize PhD)

2014 Dafna Meshulam, Technion - Israel Institute of Technology, Israel (1<sup>st</sup> prize BSc/MSc)

2014 Sebastian Kerbstadt, Hochschule Osnabrück, Germany (2<sup>nd</sup> prize BSc/MSc)

2014 Riccardo de Leo, University of Modena and Reggio Emilia, Italy (3<sup>rd</sup> prize BSc/MSc)

2014 Biniyam Kebede, KU Leuven, Belgium (1<sup>st</sup> prize PhD)

2014 Rian Timmermans, Wageningen UR, The Netherlands (2<sup>nd</sup> prize PhD)

2014 Yu Fu, Aarhus University, Denmark (3<sup>rd</sup> prize PhD)

2015 Konstantinos Thymiatis, Aristotle University of Thessaloniki, Greece (1<sup>st</sup> prize BSc/MSc)

2015 Dilara Konuk, Izmir Institute of Technology, Turkey (2<sup>nd</sup> prize BSc/MSc)

2015 Natalie Chiu, University of Nottingham, UK (1<sup>st</sup> prize PhD)

2015 Valerie Pietsch, Karlsruhe Institute of Technology, Germany (2<sup>nd</sup> prize PhD)

2015 Valérie Vancauwenberghe, KU Leuven, Belgium (2<sup>nd</sup> prize PhD)

2015 Yifat Cohen, Technion - Israel Institute of Technology, Israel (3<sup>rd</sup> prize PhD)



*Kai Reineke, Technical University of Berlin, Germany (1st prize 2008)*

*"The nomination for the EFFoST Student of the Year Award allowed me to participate at the annual EFFoST conference and to present the results of my thesis towards a broad audience from academia and industry. The open minded atmosphere and the exchange of ideas during this meeting substantiated my decision to start with a PhD. During another EFFoST meeting I got in touch with GNT where I am now working in the R&D department. Hence, the EFFoST Student of the Year Award was a cornerstone in my scientific career."*



*Lifetime Achievement Award winner Walter Spiess*

## Winners of the Young Scientist Award

2003 Dr. Ann van Loey, Belgium

2007 Dr. Xavier Malcata, Portugal

## Winners of the Outstanding Achievement Award

2004 Dr. Dietrich Knorr, Austria

## Winners of the Lifetime Achievement Award

2004 Prof Peter Lillford, United Kingdom

2009 Prof Xavier Malcata, Portugal

2010 Prof Brian McKenna, Ireland

2011 Mr Lyndon Driscoll, United Kingdom

2011 Mr Huub Lelieveld, The Netherlands

2012 Prof Herbert Buckenhüskes, Germany

2013 Prof Dietrich Knorr, Austria

2013 Prof Kata Galic, Croatia

2014 Prof Walter Spiess, Germany

## Winner of the Science to Society Award

2015 International Union of Food Science and Technology (IUFoST), Canada







# Publications

EFFoST issues three scientific journals in collaboration with the academic publishing house Elsevier: Innovative Food Science and Emerging Technologies, Trends in Food Science & Technology and Food Control. EFFoST also issues Taste of Science, a free online magazine about innovation in the food industry. The leading New Food Magazine is also affiliated with EFFoST. And besides the magazines, EFFoST also issues a series of scientific publications, EFFoST Critical Reviews.



## Innovative Food Science and Emerging Technologies

Innovative Food Science and Emerging Technologies (IFSET) is an official scientific journal of EFFoST. The journal provides original contributions on new developments in food science and emerging technologies of high scientific quality and impact. The work described is innovative either in the approach or in the methods used. Also the results are strongly significant for the science community or the food industry. The articles make a clear contribution to further the understanding of a given science and technology area, and help clarify, when possible, whether or not it could be adopted by the food industry.

Innovative Food Science and Emerging Technologies publishes research and review articles dealing with engineering, scale-up, safety, sustainability, kinetics and mechanistic aspects of promising food processing technologies. The journal also addresses novel combinations of more than one technology and innovation and advances in all branches of food science, including food biotechnology, nutrition and material science.

*Innovative Food Science and Emerging Technologies (IFSET) is issued by the academic publishing house Elsevier. Editor: Dietrich Knorr  
[www.journals.elsevier.com/innovative-food-science-and-emerging-technologies](http://www.journals.elsevier.com/innovative-food-science-and-emerging-technologies)*



## Trends in Food Science & Technology

Trends in Food Science & Technology (TIFS) is an official journal of EFFoST and the International Union of Food Science and Technology (IUFoST). Trends in Food Science & Technology is one of the premier international peer-reviewed journals publishing critical reviews and commentaries of current technology, food science and human nutrition. Its role is to fill the gap between the specialized primary journals and general trade magazines by focusing on the most promising new research developments and their current and potential food industry applications in a readable, scientifically rigorous way. Issues include a selection of reviews, commentaries, conference reports, book reviews and a calendar of upcoming conferences, courses and exhibitions. It does not publish research papers.

*Trends in Food Science & Technology (TIFS) is issued by the academic publishing house Elsevier. Executive editor: Paul Finglas  
[www.journals.elsevier.com/trends-in-food-science-and-technology](http://www.journals.elsevier.com/trends-in-food-science-and-technology)*



## Food Control

Food Control is an international journal that provides essential information for those involved in food safety and process control. The work described is innovative either in the approach or in the methods used. Also the results are strongly significant for the science community or the food industry. Food Control includes original research papers, authoritative reviews, short communications, comment articles that report on new developments in food control, and position papers.

*Food Control is issued by the academic publishing house Elsevier. Editor-in-Chief: Geoffrey Campbell-Platt  
[www.journals.elsevier.com/food-control](http://www.journals.elsevier.com/food-control)*





### Taste of Science

Taste of Science is a free online magazine about innovation in the food industry. The magazine keeps small and medium-sized food producers posted on trends, new scientific knowledge and technological developments. Food production is challenged with a fast-growing world population and resource scarcity. On top of tasty and safe foods, consumers want food to tell a story, have natural ingredients and be prepared in a transparent and sustainable way. Taste of Science presents solutions that enable food producers to meet these demands.

The magazine provides insight, inspires, facilitates decision-making on innovation and involves its readers in EU projects. It covers developments in for example technology, health, food safety, traceability, sustainability and marketing. Also changes in EU legislation, subsidy, regional protection and interviews with inspiring entrepreneurs can be found in Taste of Science. In short, everything that can help food entrepreneurs to survive in the increasingly competitive European food market.

*Taste of Science is issued by EFFoST and European Union project TRADEIT. Editors: Editors: Jeroen Knol, Helena McMahon and Mariëlle Ramaekers. [www.tasteofscience.com](http://www.tasteofscience.com)*



### New Food Magazine

New Food Magazine is the leading bi-monthly magazine and essential reading for anyone involved in the European food and beverage industry. New Food Magazine covers the major topics that impact on this sector, including food safety, packaging, hygiene, processing, legislation and analytical techniques. Leading industry experts write about new technologies and developments.

*New Food Magazine is affiliated with EFFoST. EFFoST members receive the print editions, which appear 6 times a year, for free. [www.newfoodmagazine.com](http://www.newfoodmagazine.com)*

## EFFoST Critical Reviews

Some topics deserve attention but do not easily fit into existing publications such as regular scientific journals and scientific book series. For a journal there simply is too much information and for a book not quite enough. Expanding it to a full-sized book would dilute the messages that deserve attention. Reducing it to fit a journal would make it incomplete. This is why EFFoST decided to initiate a new series of publications, EFFoST Critical Reviews. The reviews are issued in collaboration with the academic publishing house Elsevier.

### Securing safe water supplies. Comparison of applicable technologies - EFFoST Critical Reviews #1

This 90- page review discusses the availability of potable water in the world and technologies to make water safe, in particular in difficult circumstances. This review covers technologies that are applicable everywhere, in disaster areas as well as in developing and developed countries. It compares a variety of purification systems. There is a growing evidence base on targeting water quality improvements to maximize health benefits by improving water supply, sanitation and hygiene. Better tools and procedures to improve and protect drinking-water quality at the community and urban level, for example, through Water Safety Plans include the availability of simple and inexpensive approaches to treat and safely store water at the household-level. This book is the result of a thorough study of the global situation by the authors as part of the EU-Project NovelQ.

*'Securing safe water supplies. Comparison of applicable technologies' is edited by Erik Voigt, Henry Jäger and Dietrich Knorr.*



### Transparency for sustainability in the food chain. Challenges and research needs - EFFoST Critical Reviews #2

This 100- page review lays out the key issues and challenges in food safety, food quality, chain integrity, the link with consumers and the technological base of tracking and tracing systems. This succinct volume brings readers up to speed on the state-of-the-art in these areas and on the research trends in specific domains. Food scandals and deficiencies in consumer communication have drawn increasing demands for food policies that ensure food safety and quality. Further, consumers increasingly expect that food production processes limit negative impacts on the environment and consider social concerns.

Moving toward improved transparency requires action by stakeholders of the food chain but also knowledge on where and how to move. Researchers and professionals working in food sourcing, regulation, safety and distribution, will benefit from this clear overview.

*'Transparency for sustainability in the food chain. Challenges and research needs' is edited by Gerhard Schiefer and Jivka Deiters.*

### Governing nano foods. Principles-based responsive regulation - EFFoST Critical Reviews #3

Food which nanotechnology has impacted or to which nanotechnology is applied is referred to as nanofood. From the treatment of the soil in which a crop plant is grown to the caring of a food, nanotechnology is a growing factor in the food supply. At this point however there is no definitive, effective global method for regulating the use of nanotechnology as it relates to the food supply.

Legislation on nanotechnologies is still evolving, as is understanding what data is needed for effective and appropriate risk assessment associated with nanotechnology impacted foods. Due to the emerging nature of nanotechnology and its role in the food supply, case-by-case studies are the current norm, but the need for wide-scale testing and broad-based regulatory standards is urgent.

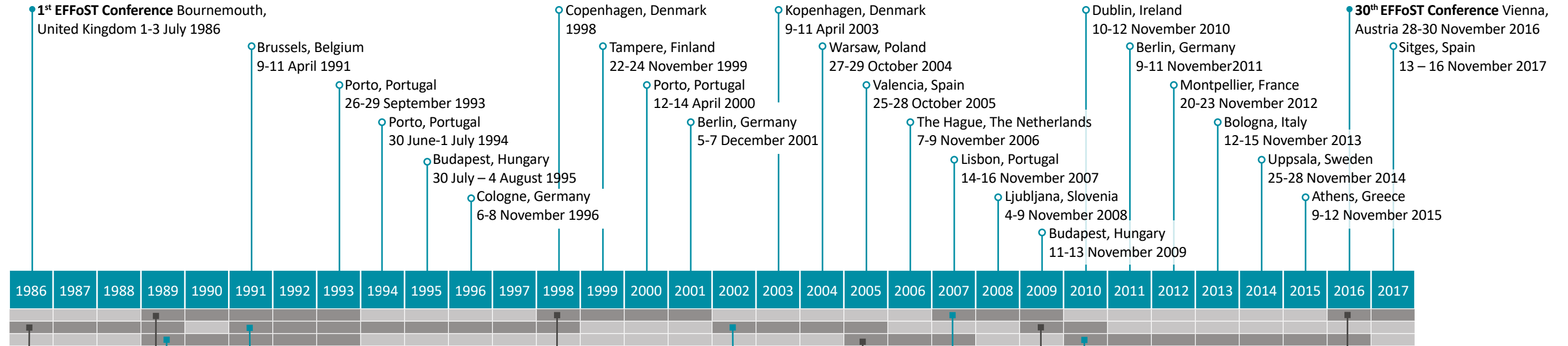
This 100-page review is based on an EFFoST study designed to provide a comparative study of nanofood regulations in order to guide regulation development in this rapidly expanding market.

*'Governing nano foods. Principles-based responsive regulation' is edited by Bernd Meulen, Harry Bremmers, Kai Purnhagen, Nidhi Gupta, Hans Bouwmeester and L. Leon Geyer.*





# EFFoST Timeline



 <p><b>Dr. Salvador Barber Moncada</b> Valencia, Spain First President 1986-1989</p>	 <p><b>Prof. Pekka Linko</b> Helsinki, Finland Vice President 1989-1993</p>	 <p><b>Prof. Augusto Medina</b> Porto, Portugal President 1989-1993</p>	 <p><b>Prof. Walter Spiess</b> Vienna, Austria Vice president 1991-1995 President 1993-1998</p>	 <p><b>Prof. Huub L.M. Lelieveld</b> Bilthoven, the Netherlands President 1998-2001</p>	 <p><b>Dr. Thomas Ohlsson</b> Gothenburg, Sweden President 2002-2005</p>	 <p><b>Prof. Brian McKenna</b> Dublin, Ireland President 2005-2007</p>	 <p><b>Peter Raspor</b> Ljubljana, Slovenia President 2007-2009</p>	 <p><b>Prof. Brian McKenna</b> Dublin, Ireland President 2009-2010</p>	 <p><b>Prof. Dietrich Knorr</b> Berlin, Germany President 2010-2016</p>	 <p><b>Prof. Lilia Ahrné</b> Copenhagen, Denmark President 2016-Present</p>
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# Member Organisations

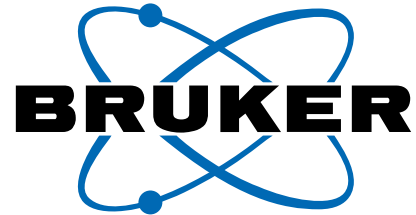
More than 130 universities, research institutes, associations and societies have become member societies of EFFoST. These organisations are not only informed about the latest news and upcoming activities, but also use our platforms to promote their activities. Organisations are welcome to become a member of Europe's largest federation for food science and technology.





# Sponsors

Several companies support the goals, ambitions and activities of EFFoST. Our sponsors underline the importance of an independent European platform for innovation, knowledge transfer and the enhancement of food science and technology. These companies are also willing to invest in the new generation of food scientists.



# Colophon

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## Editors

Dietrich Knorr  
Lilia Ahrné  
Brian McKenna  
Olga Martín Beloso  
Jeroen Knol

## Contributors

Many people have contributed to the activities of EFFoST in the past 30 years. Their contributions have led to this overview of EFFoST achievements presented in this booklet. Especially, Huub Lelieveld who has been the driving force for keeping EFFoST going even in difficult times and Wilma Methorst, Chief Administrator of EFFoST during 2006-2016.

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30 YEARS  
EFFoST

Celebrating the 30th anniversary of the European Federation of Food Science and Technology (EFFoST), we took the opportunity to show what EFFoST has achieved and where the organisation currently engages in activities.

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