

COUNTRY REPORT



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Reports on the organisations of research programmes, funding bodies and research institutes in 16 European Countries

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SUSFOOD COUNTRY REPORT

Update 2014*

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Reports on the organisations of research programmes, funding bodies
and research institutes in 16 European Countries

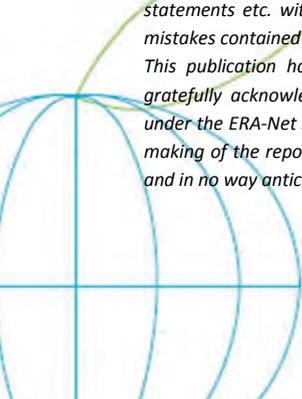
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This publication presents reports on the funding structure, research programmes and research organisations in 16 European countries involved in the SUSFOOD ERA-Net.

Authors and Editors of the particular country reports are representatives of the organisations involved in the SUSFOOD ERA-Net. The SUSFOOD partners created the reports to the best of their knowledge, but cannot claim completeness.

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Foreword

In 1987, the report of the UN World Commission on Environment and Development (or Brundtland Commission) indicated that sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs”. Yet 25 years later, we have not achieved this goal.

Food production is at the core of the bioeconomy and also affects all three pillars of sustainability (environmental, economic and social) in both positive and negative ways. Hence food innovation (products, processes, systems and social innovation) that enhance productivity/efficiency are required to make the entire bioeconomy viable, by freeing up resources (land etc.) for other uses that in turn can contribute to energy production and products from biological sources.

The European food and drink industry is the largest manufacturing sector in Europe. Despite its prominent position, globalisation has increased the pressure on all aspects of this sector. A competitive food and drink industry can and must play an important part in driving the EU towards becoming the most competitive, knowledge-based economy in the world.

The food and drink industry puts sustainable growth at the heart of its business model. It does so not only because this makes good business sense, but also because of the unique relationship which the industry has with the environment, on which it relies for a continuous, adequate supply of safe and high quality raw materials. Ensuring green growth therefore, not only helps safeguard the Earth’s limited natural resources but also secures the long-term competitiveness and prosperity of Europe’s food and drink industry, of which more than 90% are small and medium sized enterprises.

Several aspects contribute to the development of food sustainability amongst which is the improvement of research, innovation, skills and knowledge transfer across all aspects of production, storage, distribution, consumption and waste.

The SUSFOOD ERA-NET, whose strategic goal is to reinforce the scientific cooperation between EU members and associated states in order to maximise the contribution of research to the development of more sustainable food systems, plays a fundamental role in linking all contributors to make our world more sustainable.

The broad scope of SUSFOOD, which covers food production from beyond the farm gate until consumption, makes it a unique project.

This country report is the first result of the mapping process within the SUSFOOD ERA-Net, and comprises the national ministries, funding bodies and research organisations dealing with food science from all SUSFOOD partner countries.

FoodDrinkEurope, the representative body for Europe's food and drink manufacturers, is proud to contribute to the success of SUSFOOD and is looking forward to seeing the research results contributing to innovative business solutions.

Beate Kettlitz
FoodDrinkEurope



Preface

The SUSFOOD ERA-Net (<https://www.susfood-era.net/>), a partnership between 25 institutions from 16 countries, aims to support food-related research as well as the research and innovation communities who work on food chain sustainability beyond the farm gate. It takes account of existing pre-farm gate initiatives and addresses three main domains: 1) valorisation of food and food products, 2) engineering the food chain for resource efficiency and 3) consumer preferences and behaviour. It specifically focuses on understanding how food demand can be managed, which is a challenge for the entire food system.

SUSFOOD defines sustainability in the food area as a food system that supports food security, makes optimal use of natural and human resources and respects biodiversity and ecosystems for present and future generations, which is culturally acceptable and accessible, environmentally sound and economically fair and viable, and which provides the consumer with nutritionally adequate, safe, healthy and affordable food.

To achieve its goal, SUSFOOD takes the following actions: we construct an overview of the existing research, launch transnational calls and develop a transnational research agenda. This research agenda promotes an inter-disciplinary approach including social sciences and includes the competitiveness and innovation perspective. To map the European research and to offer to its research community an open forum and a partnering tool, SUSFOOD has launched an open web based archive, the Meta Knowledge Base (MKB). By cross-analyzing the posted research projects, the MKB will give a first attempt for mapping the current state of the scientific research in Europe to increase the sustainability of food systems from production to consumption.

This book is based on the MKB data. It gives an overview of the research landscape throughout the 16 SUSFOOD Member States: research institutes, funding bodies, and national research programmes. This book is more than just a snapshot of the current European research in the field of the sustainability of the food chain. It forms the basis for future SUSFOOD actions designed to build and implement a common research strategy at the European level. Our goal was to provide a valuable resource for researchers, policy-makers and other stakeholders. Public research teams, industries and SMEs can also use this book as a basis for networking and finding research partners for SUSFOOD actions.

Beatrice Darcy- Vrillon
Coordinator for SUSFOOD

Marie Russel
Project Manager for SUSFOOD



Acknowledgements

The SUSFOOD ERA-Net began in December 2011. Our goal was to identify the overlaps in food-related research and bridge the existing research gaps. This project thereby contributes to more sustainable food production and consumption in the future. This mapping of the current research landscape and infrastructure is the first workpackage in the SUSFOOD ERA-Net. This country report is the result of the first mapping step. It contains a list of research institutions, funding and research programmes within the 16 partner countries of SUSFOOD.

Unlike other ERA-Nets' country reports, this report is based on the information collected in an online database instead of data gathered via questionnaires. This database, the Meta Knowledge Base (MKB), was designed by DASTI and ILVO, who are partners in both the ERA-Nets ICT-AGRI and SUSFOOD. The MKB was designed for mapping purposes in both ERA-nets and has since been implemented in several more. This mapping tool is a continuously updated freely accessible database for users and by users, filled with all kind of information (institutes, researchers, projects, etc.) gathered by national SUSFOOD partners as well as European researchers.

This Meta Knowledge Base and the first analysis of the submitted data in the form of this country report are the work of many people. We therefore have many people to thank for their contribution. First of all, we wish to thank both Koen Mertens (ILVO) and Iver Thysen (DASTI) for the creation of the first version of the SUSFOOD Meta Knowledge Base. The database was later updated to its current version, <http://susfood-db-era.net>, by Iver and Morten Thysen (DASTI). Thanks to all of you for your great work!

All of the national SUSFOOD partners were closely involved in the Meta Knowledge Base and the mapping analysis. During a two-day workshop in May 2012 in Ghent (Belgium) and many questionnaires, all of the partners helped us decide what kind of information we wanted to collect with the database, helped decide how to design the classification systems based on keywords, and discussed and decided all the features that the database should have. Afterwards, all the SUSFOOD partners shared the huge task of submitting national information into the database while simultaneously contacting, informing and motivating all kind of stakeholders about the benefits of the database. It was more difficult than expected to motivate the researchers to participate, but the mighty efforts of all the SUSFOOD partners have yielded 623 registered users. We heartily thank all of our SUSFOOD partners and their colleagues (text editors, photographers, former SUSFOOD co-workers, and so many others) for all their time and effort. Thank You!

Katrien Broekaert
SUSFOOD WP1

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General introduction

Context of SUSFOOD

According to the European Commission's "Europe 2020 strategy", the vision for the European Union is to achieve a sustainable future, to ensure more jobs and better lives. Some of the key elements for the future of Europe are sustainability, innovation, economic growth and competitiveness, a high employment rate and societal and territorial cohesion. The grand challenges that Europe is facing require sustainable solutions in areas such as: (1) Food security to ensure enough food for the world's growing population, (2) Sustainable food production to address the tightening supplies of energy, water, natural resources and climate change, (3) Knowledge transfer between all stakeholders to support uptake and use of innovative approaches, (4) Food and health to improve and guarantee the quality of life of an aging society, (5) Change of markets and approaches to new economy to move towards a more resilient and sustainable food economy and (6) Managing the food demand to contribute to food security.

The ERA-Net SUSFOOD proposes a way to coordinate and establish trans-national activities within this area ranging from primary production (post-harvest) to consumption of food.

To make the future food chain more sustainable, a multidisciplinary and holistic research approach is needed based on the social, economic, environmental and technological sciences. This holistic approach must involve the use of the most advanced methods of new and/or cross-cutting technologies and also implies use of the most advanced methods of the social sciences. Meeting the demands of sustainable food production and consumption will require innovation and efficient research management to ensure a coordinated effort by European research groups and transfer of knowledge and technology to the industry (particularly SMEs).

In order to improve sustainability of the entire food supply chain, scientists must be innovative and continuously improve methods for food production at the post farm-gate level, including technology and management. SUSFOOD contributes to a coordinated effort of European research groups to address these issues through a holistic approach. SUSFOOD bridges the gap between knowledge creation and application by ensuring the transfer of its results to the European food industry, particularly SMEs. In this way SUSFOOD will support the "Innovation Union", one of the flagships of the "Europe 2020 strategy".

The aims and objectives of SUSFOOD

The strategic goal of the SUSFOOD ERA-Net is to reinforce the scientific cooperation between EU Member and Associated States in order to maximise the contribution of research to the development of more sustainable food systems. The concept of SUSFOOD is to foster coordination of network participants' research programmes, through a need-

driven approach based on four steps, each one contributing on its own to strengthen the cooperation, while simultaneously providing the basis for the design of the next stages.

- Exchange of information and mapping to improve mutual acquaintance, networks, and share of best practices
- Strategic orientation of research programmes to eliminate overlapping, maximise impact and identify knowledge gaps and novel issues via the mapping analyses based on the data in the Meta Knowledge Base
- Joint activities to consolidate and harmonise partnership and outline a common vision and agenda
- Two calls for research proposals enforce the research towards sustainability in the food production to consumption.

SUSFOOD aims for a better coordination of research programmes between European partners, in-depth and durable cooperation in form of transnational joint activities, implementation of joint research projects and design and development of common methodologies. In addition, SUSFOOD should lead to long term contribution to structuring the European Research Area and uptake activities for bringing the experience, methods and tools into use throughout and beyond Europe.

The SUSFOOD Scope

The scope of SUSFOOD is divided into 4 domains which are in turn subdivided into different sub-domains.

- Valorisation of food and food products
- Engineering of the food production chain
- Consumer preferences and behavior
- Horizontal issues / Holistic view

The focus of SUSFOOD starts just beyond the farm gate or fishing boat. It stays in close relation with primary production and extends downstream (industrial transformation and production, retail and consumer steps).

SUSFOODs' achievements thus far

The SUSFOOD ERA-Net builds on and accelerates the work of the SCAR Collaborative Working Group that was launched in Denmark in 2010. SUSFOOD develops a durable focused network of national research funders in Member and Associated States of the EU. The purpose is to share information, coordinate activities and work towards a common research agenda and mutual research funding activities in the field of sustainable food production and consumption.

SUSFOOD's main achievements to date, within less than two years, are threefold:

- In September 2012, SUSFOOD launched an open web based archive to map European food research (Meta Knowledge Base or MKB). The MKB offers a freely accessible database, an open forum and partnering tool to the whole research community. This database is therefore intended to become a forum



for the exchange of information and best practices between Member States and candidate countries for the EU and also for launching transnational calls and joint trans-national calls with other relevant activities such as other ERA-NETs.

This MKB also forms the basis of the first mapping analysis about the research structure in the European partner countries. Together with the second and final mapping analysis (an overview of overlaps and gaps within the current European research) at the end of the ERA-Net, SUSFOOD aims to contribute to a better coordination between partners' research programmes by monitoring of participating countries' research programmes; identification of complementary areas, research gaps and synergies; redesign of research programmes in order to eliminate duplication of overlapping initiatives and address priority research topics and knowledge gaps

- SUSFOOD has launched a first call which had an enormous success with 98 submitted pre-proposals. Nine proposals were funded for a total amount of 10 Mio€. The second call for 7.6 Mio € was launched in spring 2015, 37 pre-proposals were submitted of which 6 projects will be funded.
- SUSFOOD has delivered a strategic research agenda based on identification of priorities, gaps and opportunities in European food research programmes concerning sustainable food production and consumption (see summary, pages 21-22). This SRA is a longterm contribution to structuring the European Research Area thanks to establishment of a common vision on agricultural and food research with a post-harvest focus, and uptake activities for bringing the experience, methods and tools gained by SUSFOOD into use all over and beyond Europe, including non-participating countries.

SUSFOOD Partners

SUSFOOD is a collaborative and support action of 25 partners originating from 16 countries in Northern, Southern and Eastern Europe. INRA France coordinates the project. All the partners and national contacts are listed below.



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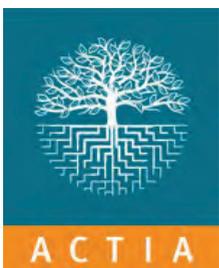
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The SUSFOOD Meta Knowledge Base (MKB)

The philosophy behind the Meta Knowledge Base: the creation of a MKB in the ERA-Net ICT-AGRI(2009-2013)

Mapping of the relevant research area with identification of gaps and overlaps has been a standard task in most ERA-Nets. The purpose is to establish an overview of the state-of-art in the research area in question, which then can lead to the development of a Strategic Research Agenda (SRA) which illustrates how research gaps are filled and overlaps are avoided. The mapping has been performed in different ways by ERA-Nets: paper questionnaires, online questionnaires and bibliographic studies. The MKB idea was born during the mapping phase of the ICT-AGRI ERA-Net(2009-2014).

ICT-AGRI used online questionnaires with storage of the information in a database, which can be kept up to date with new and changing information. The process started with an online database with information about research organisations and funding agencies of relevance for ICT and robotics in agriculture with data being provided by the ICT-AGRI partners.

At this point it was recognised that the ERA-Net's requirements for searching knowledge is similar to the requirements researchers and developers have when they are preparing a new project. In combination with the obvious difficulty for the ICT-AGRI partners to identify the relevant knowledge, the similarity with requirements in R&D community lead to the basic philosophy of the Meta Knowledge Base - **for users by users**. This online database has obvious benefits for the members of the R&D community and they gladly used it.

The intention was to fill the database with short descriptions of knowledge about a given subject, which often could be a review of several R&D projects, accompanied with links and references to the original sources of information. Hence the name Meta Knowledge Base (MKB).

The SUSFOOD Meta Knowledge Base

The ICT-AGRI MKB was a very successful tool. Therefore, when SUSFOOD started, we chose to build further on that foundation. At this time, the MKB had generated considerable interests from other ERA-NETS. It was therefore decided to develop a transferable and modifiable MKB template, which can be implemented in other ERA-Nets and similar projects and modified to meet the needs of the individual project. Therefore the SUSFOOD partners chose to use the open-source Content Management System Drupal™ as a foundation. Drupal has gained considerable use because of its extensive possibilities for modifications and its support from numerous developers, who contribute with extensions to the core system.

To create an online database useful for all kind of stakeholders, a suitable classification system had to be created. The classification systems' main purpose was to ensure that a

relevant research project (posting) would be found by a search. A rich classification system is very useful to allow different ways of searching for a given subject. When a knowledgeable person performs a search, irrelevant search hits can easily be filtered out from the description of the research project.

Therefore, the choice of the keywords was very important. These keywords were intended to describe postings (research projects posted by researchers), research programmes, etc. in the MKB. They are also used to quickly find certain items of interest by SUSFOOD partners and other users of the MKB. To achieve such a classification system, intensive brainstorm sessions with all partners were organised to acquire a set of keywords that encompass the whole SUSFOOD scope. The gigantic number of keywords generated threatened the userfriendliness of the database. Therefore, many keywords were combined under a larger more global (main) keyword that could be used in the database. In the MKB these main keywords are described on the screen via mouse-overs.

Despite the effort of all SUSFOOD partners via the input of organisations, both research and funding bodies and the active promotion of the database towards the research community, the interest of researchers to register and actively contributing to the database via postings (abstract of their research projects) started off very slowly.

Because of the slow progress in filling the MKB, we decided to start the work on the Strategic Research Agenda (SRA) at the same time as the mapping exercise. This led to a revision of the methods of work within SUSFOOD. The mapping, previously based on keywords, was now mainly focussed on the eight research areas defined in the SRA (see page 20). However, for the sake of completeness, the keywords are still used and this makes it possible to create a database with projects within the whole scope of SUSFOOD.

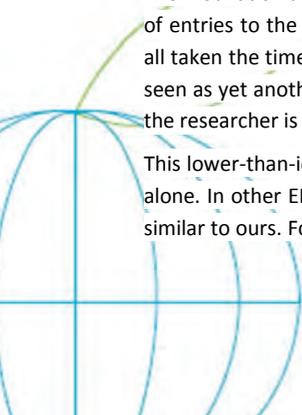
One year after its launch, the SUSFOOD MKB was updated with a new layout and some new features such as:

- The Country pages, displaying all organisations (both research and funding) with expertise, contact data and registered users in each SUSFOOD country.
- A partnering tool, which was made available for facilitating consortium-building and preparation of other international projects.

The MKB future

The motivation among researchers and developers has not resulted in massive submission of entries to the MKB. The researchers recognise the values of such a tool, but have not all taken the time to describe and submit their own knowledge. Such data entry might be seen as yet another request for providing information that steals time from the real work the researcher is supposed to be doing.

This lower-than-ideal participation in the MKB may be viewed as a failure, but we are not alone. In other ERA-Nets that used other methodologies for mapping, success rates were similar to ours. For the future, a more efficient way for ERA-Nets to gain insight in current



work in the European Research Area could be to search in databases that the researchers are obliged to fill in, such as databases used internally in the various research organisations. The developments within Open Data Repositories are crucial in this respect and will be explored in the future.

Despite the modest success of its original purpose, the MKB has proved extremely valuable in many other respects. Practical work in SUSFOOD has clearly shown that online tools are indispensable for efficient performance of the various tasks within this ERA-Net project. The SUSFOOD MKB has therefore been developed as a central internet-based resource for multiple purposes, including:

- Registration of professionals involved in an aspect of food science, with emphasis on sustainable food production and consumption beyond the farm gate all the way to the consumer. (At the time of publication, 623 registered users are listed in the MKB).
- Profiles of organisations and professionals via an easy to use “Country page”.
- Search facilities via keywords or specific research areas for identifying organisations, professionals and ongoing projects. At the time of publication 466 research projects (postings) are listed in the MKB.
- Closed rooms for user groups including partner search, e.g. for preparation of collaboration and applications for projects

But an MKB can also be used for much more, like in the ICT-AGRI 2 ERA-Net (2014-2018), where the MKB is used as the project website, with features such as:

- Online consultation with stakeholders during the elaboration of the Strategic Research Agenda
- Electronic submission system for transnational calls, which in combination with the search facilities proved very efficient for establishing new consortia
- Administration system for online handling of calls by the funding agencies, which provided a very cost-efficient administration of the transnational calls
- Online monitoring of funded projects
- Project website for dissemination of information and results about the ERA-Net
- Facilities for electronic submission of newsletters to registered users and subscribers
- Closed area for internal project administration and communication, including calendar, meeting preparation, task inventory, mailing lists, and document archive.

At the time of writing, a full version of the Drupal MKB has been implemented as the project homepage for the COFASP and ICT Agri (2) ERA-Nets and the mapping module is implemented for the SUSFOOD and ERA-CAPS ERA-Nets. The first versions of the modules for call administration and application submission is being implemented for the CORE Organic Plus ERA-Net.



Executive Summary of the SUSFOOD Strategic Research Agenda (SRA)

SUSFOOD has the vision: ***All food chain partners contribute to achieving sustainable*, secure and resilient food systems which feed the world and make sustainable choices the easy and preferable choices for consumers.***

*SUSFOOD defines sustainability in the food area as: ***“A food system that supports food security, makes optimal use of natural and human resources and respects biodiversity and ecosystems for present and future generations, which is culturally acceptable and accessible, environmentally sound and economically fair and viable, and which provides the consumer with nutritionally adequate, safe, healthy and affordable food”.***

The SRA embraces sustainability within a global context. The global food system is challenged by increased demand for quantity and quality of food to meet the population growth of 7 billion today to 9 billion by 2050, and at the same time to meet changes in the socio-economic and demographic structure of the population. These challenges include an increased middle income group demanding more protein-rich food; increased pressure on the natural resources, like water and energy; climate changes; demand for more nutritious and safe food for all; and for food to be affordable by all. The food and drink sector contributes to the global economy and job opportunities. In 2011, the food and drink industry generated in Europe an annual turnover of 1,017 billion euros and generated 4.25 million jobs. This makes it the largest manufacturing sector in Europe.

The SUSFOOD SRA takes into account other relevant SRAs for sustainable production and consumption, why this SRA focus on food chain sustainability beyond the farm gate or beyond the fishing boat, e.g. processing, packaging, transport, retailing, food services, storage and consumer activities. However, SUSFOOD reaches out to the primary production on issues as methods and metrics for assessment and policies.

The SUSFOOD SRA strive to have the highest impact on i) food security, ii) pressure on natural resources as water and energy adapting to climate change, iii) innovation and knowledge transfer, iv) food and health and v) sustainable food economy, including employment and job creation.

The strategy for how research can have an impact to address these core challenges has a multipronged approach. This includes establishment of a Meta Knowledge Database (MKB), providing information on funding and research institutions, recent and ongoing research programmes and an identification of the following eight key research areas where research gaps exists:

- Public policy coherence
- Innovation in food processing technologies
- Redesign input, waste and side flow strategies to increase resource efficiency and provide added value in food products and processing, manufacture etc.

- Interdisciplinary research approach to innovative of food products and use of new raw materials for food products
- Harmonisation of the methods and metrics for integrated assessment of sustainability of food products and food patterns
- Connection between stakeholders and food systems
- Understanding of consumer behavior and food choices
- Integration of information systems for personalized and sustainable choices

Each research area is broken down into a number of concrete research subjects.

The eight research areas should be seen in a holistic manner, as outcome of each research area may challenge other research areas. To stress the importance of a holistic approach, the SRA points at the cross-cutting issues i) localisation of activities and ii) equity and ethics, which both need to be addressed as an integral part of each research area.

The implementation of the SRA is initiated by two SUSFOOD calls, maintenance of the MKB, dialogue with national institutions; private as well as governmental, and with EU institutions.

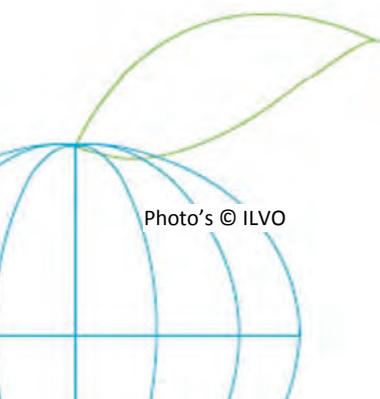


PART I

National country reports on funding and research landscape



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COUNTRY REPORT BELGIUM

Authors:

ILVO: Katrien Broekaert, Hendrik De Ruyck, Lieve Herman



Introduction

Belgians love to eat well and hold quality in high regard. The food industry in Belgium reflects these cultural tendencies. The food manufacturing industry represents nearly one-third (28%) of Belgium's manufacturing companies and employs 87,000 people. This large industrial group is pivotal to the manufacturing industry as a whole. Its primary subsectors are the meat industry and the dairy, chocolate, sugar and beverage sectors. It is also interlinked with other economic sectors like agriculture, the retail trade, pharmaceuticals, the chemical industry, packaging and logistics.

Like much of the Belgian economic landscape, the Belgian food industry is characterised by primarily small and medium sized enterprises (SMEs). Only 300 of Belgium's 5,245 food companies have more than 50 employees; the great majority (4,500) employ less than 20 people. The remainder of the food companies in Belgium are the largest multinationals and leading national enterprises. The small players compete by bringing high quality products and brands to the market. This mix of companies brings every possible taste and preference to the Belgian market.

High-quality Belgian food products are appreciated not only by the Belgians, but by other countries as well. Exports represent nearly half of the turnover of the Belgian food industry, for a total value of 19.5 billion euros. Belgium's most prominent trading partners are France, the Netherlands, Germany, the United Kingdom and Italy, with a niche market in the US for products such as beer and chocolate. Approximately 73% of Belgium's manufactured food exports go to the abovementioned European countries. These same trading partners are also our most important suppliers. Belgium's efficient food industry can process large quantities of imported raw materials and intermediate goods that are manufactured and then distributed either within Belgium or to other countries.

Research and innovation is attaining increasing importance in Belgian food companies. One out of three companies works to develop new products, and one out of two invests in organisational and processing innovationsⁱ. Support for this innovation culture is provided by a centre of excellence for food manufacturing in each of Belgium's three regions: Flanders FOOD, WAGRALIM (Wallonia) and the Brussels-Capital Region's food cluster.

Flanders is the region with the highest number of food research institutions. Several universities and university colleges collaborate to form knowledge centres for Food Science, Nutrition and Health such as Food2Know (Knowledge Centre for Food Science, Nutrition and Health) and LForCe (Leuven Food Science and Nutrition Research Centre). These centres, which mainly target interdepartmental research issues, represent the majority of the food-related research facilities in Flanders.

But research is also happening outside of the knowledge centres. Large companies perform research in their research and development laboratory units and the regional

governments also sponsor food science research. One example of innovative research in Flanders is a food processing pilot plant, the Food Pilot, where innovative food products, equipment, manufacturing setups, etc. can be tested on pilot scale. ILVO, the Flemish Government's Institute for Agricultural and Fisheries Research, provides on-site support for the manufacturing processes tested in the Food Pilot.

This SUSFOOD Country Report for Belgium presents a comprehensive listing of the food-related research and funding currently available in Belgium. More organisations and up-to-date information can be found on the online Meta Knowledge Base at <http://susfood-db-era.net>.

Ministries and public services

■ The Agricultural and Fisheries Policy Area of the Government of Flanders

Address: Ellipsgebouw, Koning Albert II-Laan 35, bus 40, 1030 Brussel

Website: <http://lv.vlaanderen.be>

The Flemish Ministry of Agriculture and Fisheries is responsible for

- The Department of Agriculture and Fisheries
- Agency of Agriculture and Fisheries (IAA)
- Institute for Agricultural and Fisheries Research (ILVO)
- Flemish Centre for Agro- and Fisheries Marketing (VLAM)
- Strategic Advisory Board for Agriculture and Fisheries (SALV)

■ Government of Flanders– Department of Economy, Science and Innovation (EWI)

Contact : Peter Spyns **Email:** peter.spyns@ewi.vlaanderen.be **Phone:** +32 (0)2 553 00 46

Address: Ellipsgebouw, Koning Albert II-laan 35 bus 10, 1030 Brussels

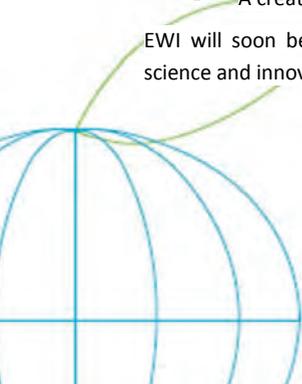
Website: <http://www.ewi-vlaanderen.be>

The Department of Economy, Science and Innovation (EWI) prepares, monitors and evaluates policy in the Economy, Science and Innovation policy area. Their main aim is to develop Flanders into one of the most advanced and prosperous regions in the world.

They strive to promote:

- Excellence in scientific research,
- An attractive and sustainable business climate and,
- A creative, innovative and entrepreneurial society.

EWI will soon become the Flemish government's knowledge centre for the economy, science and innovation.



- **General Operational Directorate for Economy, Employment and Research (DGO6)**

Address: *Place de la Wallonie 1, 5100 Namur (Jambes)*

Website: <http://www.wallonie.be>

The General Operational Directorate for Economy, Employment and Research (DGO6), part of the Ministry of the Walloon Region, is the legal agency in charge of funding applied research for new technologies and energy for industries, academia and research centres, as well as related international scientific co-operation. It is therefore the key advisory body for the Walloon Regional government authorities regarding research and innovation policy.

- **Belgian Federal Agency for the Safety of the Food Chain (FASFC)**

Address: *CA Botanique - Food Safety Center, Boulevard du Jardin Botanique 55, 1000 Brussels*

Website: <http://www.afsca.be>

The Belgian federal agency for the safety of the food chain (FASFC) is a federal executive agency with authority over the entire Belgian nation.

It sets the operational standards applicable to businesses and integrates all official monitoring and inspection services for the food chain. In accordance with the federal law dated February 4, 2000, the FASFC is responsible for setting, implementing and enforcing measures related to the analysis and the management of risks that may affect consumer health.

Funding bodies and research programmes

The Belgian research system is highly decentralised, with responsibilities for research policy and funding assigned to the regions and the communities. Several regional governments carry out these tasks with complete autonomy as follows:

- **Regions (Flanders, Wallonia, Brussels-Capital:** responsible for research related to economic development purposes (technological development and applied research)
- **Communities (Flemish-, French- and German-speaking):** responsible for education and fundamental research. However, due to its small size, the German-speaking community does not have a research policy.
- **Federal state:** responsible for research areas requiring homogenous execution at the national level and research in execution of international agreements
- **Own research programmes:** some research institutions have their own research programmes, whose resources can be autonomously assigned (for example, University BOF grants).

Most of the national research programmes are competitive, meaning that researchers/institutes can apply for all programmes. All national research programmes may cover food related research topics.

National research institutes are also encouraged to take part in European research programmes, with an emphasis on collaboration with SMEs. Outside of specific international research programmes, the cooperation with international partners is encouraged by opening all national (federal) research programmes for participation of research teams of other EU Member States.

- **The Belgian Science Policy (BELSPO) - The Belgian Federal Government**

Contact: Christina Mathieu **Email:** Christine.Mathieu@belspo.be

Address: Avenue Louise 231 Louizalaan, 1050 Brussels

Website: <http://www.belspo.be>

The Belgian Science Policy's mission has four main parts: (1) progressing towards the Barcelona objective (devoting 3% of the GDP to research and development), (2) participating in job creation and well-being through innovation, (3) optimising the management of the Belgian research area, and (4) fighting against climate change. The 2,800 employees of the Federal Science Policy department make a significant contribution to meeting these objectives.

Through the major research programmes under their management, BELSPO can also offer the government reliable, validated data. Using this data, the government can make well-informed decisions in areas such as sustainable development, climate change, biodiversity, energy, health, mobility and the information society.

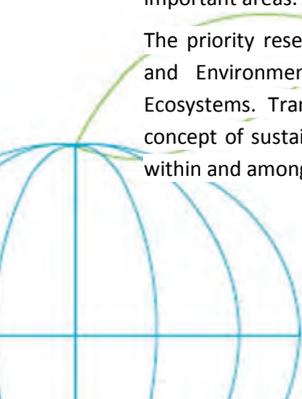
The Federal Science Policy represents almost 30% of the entire Belgian public research budget. However, only little food related research is funded via this organisation.

Instruments: Calls for proposals

Food related research programme by BELSPO: Science for Sustainable Development (SSD)

The priority research areas of the present research programme are linked to the national and international context. A comprehensive set of priority research areas was chosen because of the need to address the complex, global, interrelated problems underlying sustainable development policy. This choice is a response to strategic needs, at different levels of the government, for policy-supportive research. It also responds to the challenge of maintaining and developing national scientific expertise in complex and strategically important areas.

The priority research areas include: Energy, Transport and Mobility, Agro-Food, Health and Environment, Climate, Biodiversity, Atmosphere and Terrestrial and Marine Ecosystems. Transversal research is also done to better translate/operationalise the concept of sustainable development. Such transversal and generic research is necessary within and among the priority areas.



The goal of the research actions is to support specific decision-making in relation to both sector-related and transsectoral problems. The research must take the interactions between the priority research areas into account so it can respond to common and complex problems.

Of the 171 funded projects in total, 11 were in the Agro-Food field.

Duration of the research: 1/1/2006 - 31/12/2012

Budget: 61M EUR

- **The Belgian Federal Government - Federal Public Service – Health, Safety of the Food Chain and Environment (FASFC) (FOD- FPS)**

Contact: Ria Nouwen **Email:** ria.nouwen@health.belgium.be

Address: Eurostation II, Victor Hortaplein, 40 bus 10, 1060 Brussel

Website: <http://www.health.belgium.be/>

Instruments: Annual thematic and free calls for proposals

The thematic calls for proposals are based on from the needs of the Federal Food Agency (FASFC), current problems in the food chain and the advice of a scientific committee.

- **Government of Flanders - Department of Economy, Science and Innovation (EWI)**

Contact: Monika Sormann **Email:** monika.sormann@ewi.vlaanderen.be

Address: Koning Albert II-laan 35 bus 10, 1030 Brussels

Website: <http://www.ewi-vlaanderen.be>

Flanders has several instruments to fund fundamental and strategic basic research by Flemish public research institutes, such as universities and university colleges. The EWI Department coordinates and evaluates these financial mechanisms.

The allotment of the specific grants, allowances, etc. is performed by the research facilities themselves or by the agencies belonging to EWI (AO, IWT, FWO). In addition, the Flemish government also funds the *2012-2015 Policy Research Centre Programme*.

The policy research centres focus on problem-driven short-term research as well as fundamental long-term basic research. Research themes are determined according to the Flemish government's priorities and the theme's policy relevance.

EWI's task further includes knowledge transfer, providing scientific services, compiling data, unlocking data sources and data analysis. By recognising and funding the Policy Research Centres, the Flemish government strives to:

- Structural research funding for priority policy themes
- Stability of research within a clearly established contractual framework
- A scientific basis for policy through the structural integration of research into the policy and administration cycle
- Promotion of the multidisciplinary aspect within research of relevance to policy

- Accessibility of available knowledge and transfer of that knowledge to the Flemish government

Through this initiative, a number of high-ranking Flemish research groups can also develop a critical mass of knowledge. For the first time these groups now also have sufficiently long-term structural funding. They can help young researchers to write a doctoral thesis. Unlike other programmes, the Policy Research Centre programme is not intended to only finance research. The government also expects clear, usable results.

Annual budget: €9.2 M EUR (for the entire Policy Research Centres Programme).

At the time of writing, November 2014, the Flemish funding structure is being reorganized and might differ from the old structure as listed below.

Enterprise Flanders (Agentschap Ondernemen) (AO)

Belongs to: *Department of Economy, Science and Innovation (EWI)*

Email: info@agentschapondernemen.be **Phone:** +32 (0)2 227 60 42

Address: Koning Albert II-laan 35 bus 12, 1030 Brussel

Website: www.agentschapondernemen.be

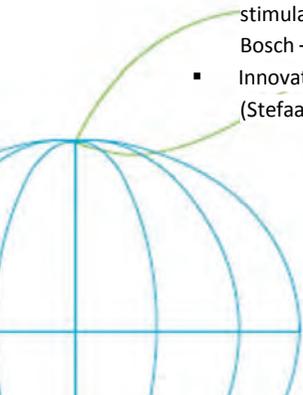
Enterprise Flanders (Agentschap Ondernemen) is a government agency, charged with the economy and enterprise policy in Flanders, the Dutchspeaking northern part of Belgium. In close collaboration with their sister-organisation *Flanders Investment & Trade* they help foreign entrepreneurs and investors to establish or expand a business in Flanders.

Entrepreneurs can receive assistance concerning financing channels, subsidies and permits. The Enterprise supports the start-up, growth and continuation of enterprises and helps searching for business accommodations in close cooperation with many partners with the stimulation of entrepreneurship as a common goal.

Every year, Enterprise Flanders subsidises for more than 200 M € for the enhancement of the Flemish economy and sustainable employment. This via direct support to enterprises, via the support of projects to enhance entrepreneurship or an entrepreneur friendly environment.

Some examples of funded projects in the FOOD sector:

- Food losses - Promotor FEVIA Flanders (Claire Bosch – cb@fevia.be)
- Foodinofra (Product and process innovation in the food industry through stimulation of open pilot infrastructure) – Promotor FEVIA Flanders (Claire Bosch – cb@fevia.be)
- Innovative hub for the Agro-food industry – Promotor POM- West-Flanders (Stefaan Matton – stefaan.matton@west-vlaanderen.be)



Institute for the Promotion of Innovation through Science and Technology (IWT)

Belongs to: *Department of Economy, Science and Innovation (EWI)*

Contact: *Marianne Claessens* **Email:** MCL@iwt.be **Phone:** + 32 (0)2 432 42 09

Address: *Ellipsgebouw, Koning Albert II-laan 35, bus 16, 1030 Brussel*

Website: <http://www.iwt.be>

IWT, the governmental agency for the Promotion of Innovation through Science and Technology, helps Flemish companies and research centres to accomplish their research and development projects. IWT offers them financial funding, advice and a network of potential partners in Flanders and abroad. IWT also supports the Flemish Government in its innovation policy.

IWT finances R&D projects

To stimulate innovation in Flanders, the Flemish Government assigns IWT a budget to finance research and development (R&D) by and for Flemish companies. All types of companies are eligible for R&D funding, even if their innovative projects are non-technological.

Companies can apply for R&D funding throughout the year. IWT evaluates the applications based on multiple criteria. During these evaluations, equal value is attached to the quality and the valorisation of the research and/or development. IWT has a separate SME programme, specifically tailored to the needs of the SME.

IWT funds Flemish knowledge centres and researchers

Research performed by individual researchers and knowledge centres is essential to Belgium's knowledge economy. These investigations are often the basis for concrete, innovative applications. But research requires funding. Therefore, all Flemish research institutions and knowledge centres can contact IWT for needed financial support. IWT offers four types of subsidy and grant programmes:

- Strategic Basic Research (SBO)
- Post-Graduate Grants (SB)
- Post-Doctoral Research Fellowships (IM)
- Applied Biomedical Research (TBM)

IWT supports collaboration in innovation

Collaboration is an important aspect of Flemish innovation policy. Collaboration enables companies and knowledge centers to tackle common technological issues efficiently. It also allows them to develop their internal know-how. IWT offers funding and advice to any form of collaboration that supports innovation.

Total Budget: 310 M EUR

Research programmes funded by IWT:

Personal mandates:

- *Strategic Basic Research (SBO)*

PhD grants for scientific research for young scientists. Their PhD should handle a subject of strategic basis research and it should have the potential to be implemented into/ contribute to the industry. **Yearly open call:** June - September

- *Post-doctoral Research Fellowships – innovatie mandaten (IM)*

These fellowships are focused on post-doctoral researchers who wish to valorise their results for industry. The aim of these grants are to bridge the distance between scientists and industry. **Yearly open call:** October - March

R&D (“O&O”) programme:

- *Baekeland-mandate*

For PhD research done in close collaboration with industry. **Yearly open call:** October - March

- *R&D company projects (“O&O bedrijfsprojecten”)*

An “O&O” project is an individual research and development project that is accomplished by one or multiple large companies, with or without a research partner. This implies that the project addresses upcoming important issues for the company.

Duration: two years, can be expanded to three years when part of an international project.

Budget per project: minimum: 100.000 EUR, maximum: 3 M EUR. Any project can apply for a basic financial support percentage, which can be expanded depending on the circumstances. Basic support of development projects: 25%. Research projects: 50%.

Thematic initiatives:

- *Innovation Platforms (LS)*

Straightforward initiatives, such as “Competence Poles”, strategic initiatives or thematic research programmes, often need a coordination platform.

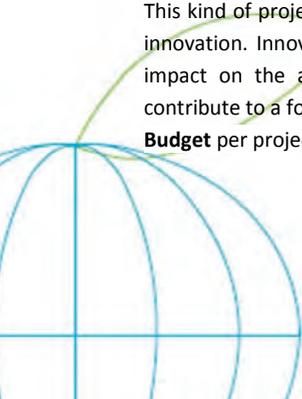
Focus: Research organisations, service organisations

Duration: Max. 4 years **Maximal budget** per project: 640,000 EUR

- *SME feasibility study (KMO haalbaarheidstudie)*

This kind of project should give a better view on the possibilities and the feasibility of an innovation. Innovation can be interpreted as "something new for the SME with a clear impact on the activities." All kind of knowledge-building activities that substantially contribute to a following innovation trajectory can apply for this support.

Budget per project: 50,000 EUR



SME – innovation project (KMO innovatieproject)

With this programme, SMEs can apply for direct financial support from IWT for studies and projects concerning the development of innovative products, processes, services and other concepts.

Sprint projects

A sprint project is a new kind of financial support system by IWT. These rather small development projects allow mid-size companies to gain new knowledge with the focus on an important innovation. The companies able to apply for such projects are larger than KMO's and smaller than the companies able to apply for large scale R&D ("O&O") projects. **Maximum annual budget** per project: 250,000 EUR

Tetra projects

The aims of Technology Transfer (Tetra) projects are to:

- Increase the innovation capacity of companies or enterprises of the social services sector,
- Increase the basic knowledge of the universities and university colleges in order to improve education and social services.

Yearly open call: November – February

VIS trajectories

The most important aim of a VIS-trajectory is to start from a concrete problem or opportunity from a collective of companies and to provide short term innovative solutions that clearly result in an economic surplus value.

Focus: SMEs and larger companies **Yearly open call:** July – November

Scientific Research Foundation - Flanders (FWO)

Contact: Olivier Boehme **Email:** olivier.boehme@fwo.be **Phone:** +32 (0) 2 512 91 10

Address: Egmontstraat 5, 1000 Brussels

Website: <http://www.fwo.be/>

The FWO's mission is to stimulate and support groundbreaking fundamental research in all areas of science at the universities in the Flemish Community, including collaboration agreements between Flemish universities and other research institutes.

The FWO funds excellent and promising researchers as well as research projects following an interuniversity competition and an evaluation by national and international experts.

The only criterion is the outstanding quality of the researcher and research proposal.

The funds that the FWO makes available for fulfilling its obligations come primarily from the Flemish Government and the Federal Government (EWI), the National Lottery and other benefactors. Within the policy lines of the political authorities, the FWO is scientifically completely autonomous when selecting and evaluating those benefiting from fellowships and grants. Calls are announced each year during a specific period.

PhD fellowships

The FWO aims to provide young and promising researchers with every opportunity to do a PhD under the best possible circumstances. The PhD fellowships represent the most important funding channel for achieving this objective.

These fellowships are intended for young researchers who are doing their PhD on a fundamental research topic. There is no restriction in terms of topic. The FWO employs a strictly bottom-up approach, in which the researcher can choose the topic of his/her research.

Each year sees an influx of 214 new PhD fellows, who are appointed for a period of 2 x 2 years (the second two years is contingent upon a favorable evaluation). In 2010, 21.4% of applications were approved.

Postdoctoral fellowships

The postdoctoral fellowships from the FWO are intended to help researchers who already have a PhD to develop an independent research career.

Individual grants (several research grants for small equipment)

Young or established researchers (up to the maximum level of Professor) can apply for a Research Grant, with supplementary grants available for small equipment purchases.

Research projects

The objective of the FWO's research projects is to advance fundamental scientific research based on the initiative of researchers from all disciplines. The research projects constitute an important tool with which to stimulate collaboration between different research teams.

Bench fees, equipment and personnel grants are made available to teams of researchers for conducting scientific high-value projects at the centre of scientific interest. Special attention is given to projects that position their own research within a wider scientific arena with an interuniversity approach.

Flanders Food (FF)

Contact: Erwin Lamot **Email:** Erwin.Lamot@flandersfood.com **Phone:** +32 (0)2 788 43 64

Address: Kunstlaan 43 (4th floor), 1040 Brussel

Website: <http://www.flandersfood.com>

Flanders' FOOD (FF) is the innovation platform and Competence Pole for the food sector. FF helps companies to increase their competitive position via innovation. Flanders' FOOD aims to serve as the link between the food industry and research institutions. Via its activities and services FF brings companies, government and research facilities together in a national and international network. Flanders' FOOD is a non-profit corporation, an initiative of the food industry supported by the Flemish Government. FF initiates collective calls and feasibility studies as the main applicant for a consortium of companies when applying for IWT grants. Flanders' FOOD is funded by IWT and the industrial sector.

Collective calls for proposals

Yearly open calls are launched, with specific topics (needs) from the industry. Research organisations can also prepare proposals based on their own expertise. Both proposals should lead to the collective research programmes because research institutions are asked to make additions to the industry proposals based on their own expertise.

Both open calls are yearly launched in the fall and follow a strict procedure.

FF feasibility studies

Flanders' FOOD feasibility studies are supported by groups of companies that wish to accomplish a concrete plan or project based on a common vision. The initiative should be important to SME's as well as larger companies. The applicant is required to contribute at least 20% of the total project budget.

■ General Operational Directorate for Economy, Employment and Research (DG06)

Contact: Pierre Villers **Email:** pierre.villers@spw.wallonie.be **Phone:** +32 (0) 81 33 31 11

Address: Place de la Wallonie 1, 5100 Namur (Jambes)

Website: <http://www.wallonie.be>

The General Operational Directorate for Economy, Employment and Research (DG06) is in charge of allocating regional public funds to three broad categories of actors:

- Universities and university colleges: for research projects whose aim is to support socio-economic development of the region
- Research centres: for applied research and technology diffusion activities towards companies in the region
- Innovative companies: for research and innovation projects

The funds are allocated via a number of different programmes targeting these actors, and described under the templates of the research programmes. For public research organisations, this consists mainly of grants, while for the companies the majority of funds are allocated in the form of reimbursable loans.

The DG06 has several departments addressing different target organisations. The Department of Technological Development addresses industrial research and experimental development, SME research support and R&D support. The Department of Research Programmes' mission is to improve the scientific and technical level of research centers, universities and high schools. The department funds research in universities, university-level institutions and research centres and ensures the participation of the Walloon Region in federal and international research programmes.

The DGO6 funds only projects from Wallonia.

Budget for 2010 (not only food related), includes but is not limited to:

- 18,3 M EUR for industrial research projects
- 52,7 M EUR for research clusters
- 6,14 M EUR for collective research

▪ Scientific Research Fund (FRS – FNRS)

Contact: Freia Van Hee **Email:** freia.vanhee@frs-fnrs.be

Website: <http://www.frs-fnrs.be>

The FRS-FNRS has six instruments to support researchers to perform and advertise their research work and to help create and support networks for exchanges with other researchers. Six instruments are available:

- Funding for researcher training
- Funding of research projects (including equipment, personnel and operation)
- Funding to organise conferences, congresses, scientific meetings
- Funding for attending conferences outside of Belgium
- Support for the creation of networks of researchers, contact groups
- Funding of scientific publications (journals and books)

The researchers and laboratories funded by the FRS-FNRS are located in academic institutions. The FRS-FNRS provides financial support for several research programmes in all disciplines.

The grants are only given to the French speaking community in Belgium.

- Ministry of Research and Innovation of Brussels Capital Region (Innoviris)

Contact: Beata Bibrowska **Email:** bbibrowska@innoviris.irisnet.be **Phone:** + 32 (0) 2 600 50 22

Address: Domaine de Latour de Freins, Engelandstraat 555, 1180 Brussel

Website: <http://www.innoviris.be>

Formerly known under the acronym IRSIB (*Institute for the Encouragement of Scientific Research and Innovation in Brussels*), Innoviris is an administrative organisation whose mission is to promote and support technological innovation through the funding of research and development projects (prototypes) developed by companies and research organisations based in the Brussels area.

All sectors of the Brussels economy are concerned by technological innovation and may benefit from financial aid. The Brussels strategy to promote research aims not only to stimulate economic development through innovation, but also to respect ethical values and improve well-being in the Region.

Alongside traditional research sectors, such as the aeronautics and chemical industries, we also fund other key sectors in Brussels life: ICT, agri-food, green technologies, energy-saving projects and sustainable development in general.

Research programmes of Innoviris:

Various funding packages are available for research organisations and companies.

PhD grants:

Research organisations based in the Brussels-Capital Region may benefit from financial support for projects.



Regional programmes:

These are mainly programmes designed to support research activities carried out in universities and higher education institutes. They concern projects of public interest presenting a regional dimension as well as targeted projects that focus on emerging themes.

RDI programmes

With this programme, the aim is to increase the competitiveness of Brussels industries by supporting research, development and innovation among companies in the Region.

Contact: Sebastian Serrano

Spin-Off in Brussels

The programme called *Spin-Off in Brussels (SOIB)* aims to favour the creation of new enterprises in the Brussels-Capital Region. It is designed for universities and higher education institutes to help create academic spin-offs, or for enterprises or collective research centers to help create industrial spin-offs or spin-outs.

The projects submitted must target the economic promotion of research results, mainly through the development of a marketable product, procedure or service. Every product must lead to the creation of an enterprise based in the Brussels-Capital Region.

Young innovative enterprises

In order to encourage innovation among young technological enterprises, in 2011, the Minister of the Brussels-Capital Region in charge of Scientific Research launched a new instrument called "Young innovative enterprises". This package aims to finance the implementation of a strategic innovation plan (PSI) via a programme covering a maximum period of three years.

This action is designed for small enterprises. It helps to finance up to 100% of a maximum amount of €300,000, the costs related to the PSI such as staff, operating, investment and sub-contracting costs.

Research institutes

Research in food sciences is conducted by various lab units located in most of the Belgian universities and other research institutes. The majority of the research organisations working with food are listed below, but many faculties of science or veterinary science also have some units working with food related issues. For a complete listing of research organisations performing food-related research, go to the online SUSFOOD Meta Knowledge Base (<http://susfood-db-era.net>).

- **The Belgian Scientific Institute for Public Health (WIV-ISP)**

Address: Rue Juliette Wytsmanstraat 14, 1050 Brussels

Website: <https://www.wiv-isp.be>

The Belgian Scientific Institute for Public Health (WIV-ISP) provides support for public health policy through scientific research, expert opinions and divisional tasks. On the basis of scientific research, WIV-ISP formulates recommendations and solutions with respect to priorities for a proactive health policy at the Belgian, European and international levels. WIV-ISP assesses the status of health and health indicators on the basis of scientific methods which it approves, develops and analyses within a certified quality framework. WIV-ISP develops advanced solutions for the diagnosis, prevention and treatment of current and emerging diseases, as well as the identification and prevention of health risks, including those resulting from the environment.

The WIV-ISP has several general directorates:

Communicable and Infectious Diseases

Contact: Michaël Kalai – michael.kalai@wiv-isp.be

The operational directorate for communicable and infectious diseases is responsible for the detection, early and rapid identification, and microbiological monitoring of existing and (re-) emerging communicable and infectious agents, and for preventing and treating these diseases.

Food, medicines and consumer safety

Contact: Joris Van Loco – joris.vanloco@wiv-isp.be

The mission of the operational directorate for food, medicines and consumer safety is to carry out analytical chemical research to promote public health. Advanced analytical equipment is used to detect the presence of chemical substances in food, consumer perishables and the environment.

Public Health and surveillance

Contact: Herman Van Oyen – herman.vanoyen@wiv-isp.be

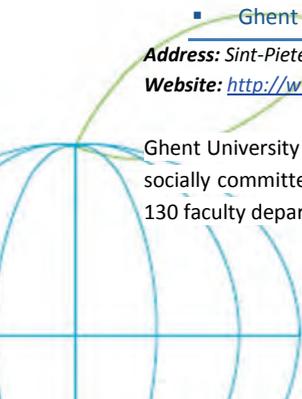
The operational directorate for public health and surveillance provides reliable, practical and impartial information on the health of the Belgian population. This epidemiology and toxicology center studies factors that should improve health and the risks for public health.

- **Ghent University (UGent)**

Address: Sint-Pietersnieuwstraat 25, 9000 Ghent

Website: <http://www.ugent.be/>

Ghent University (UGent) is one of the major universities in Dutch-speaking Europe. It is a socially committed and pluralistic university with a broad international perspective. Over 130 faculty departments in 11 faculties offer high-quality courses in science.



The main research players in the food area within the scope of SUSFOOD are listed below; others can be found in the online SUSFOOD Meta Knowledge Base. Many of these units are also part of the Knowledge Centres for Food Science, Nutrition and Health (Food2Know).

Faculty of Bioscience Engineering - Department of Agricultural Economics

- **Agro-food marketing and consumer behaviour**

Contact: Wim Verbeke – Wim.verbeke@UGent.be or aqecon@UGent.be

Website: <http://www.ugent.be/bw/agricultural-economics/en/research/researchprojects/ongoing-research/overview.htm#aqro-food-marketing-and>

This department studies the marketing challenges in agricultural production, and the resulting agricultural and food products, within the Belgian, European and global context. Consumer behaviour is the point of departure for these studies. Research questions pertain to the role and impact of personal, product-related and environmental factors, such as communication and labelling on contemporary consumers' opinions, perceptions, attitude and choices.

The research themes are about consumer acceptance of technological innovations in the food chain, trends and changes in food and dietary choice and, the impact of ethical and sustainability concerns of individuals in their role as consumer and citizen.

The research team is active in several European research consortia in the area of food consumer science.

Faculty of Bioscience Engineering - Department of Biochemical and Microbial Technology

- **Centre of Expertise - Industrial Biotechnology and Biocatalysis (InBio.be)**

Contact: Wim Soetaert - Wim.Soetaert@UGent.be

Website: <http://www.inbio.be/>

The Laboratory of Industrial Microbiology and Biocatalysis is active in the field of industrial biotechnology. Industrial Biotechnology ('white' biotechnology) is the application of biotechnology for industrial production and processing of chemical substances, materials and bio-energy. Industrial microbiology mainly uses micro-organisms and their enzymes to make useful products, such as bulk and fine chemicals, food ingredients, pharmaceutical ingredients, bio-fuels, bio-plastics, etc. By relying on the use of renewable resources as raw materials, it can reduce our dependency on increasingly expensive petroleum, contribute to attaining the Kyoto objectives by reducing greenhouse gas emissions, and provide significant support for European agriculture by creating new markets for agricultural commodities.

- **Laboratory of Microbial Ecology and Technology (LabMET)**

Contact: Tom Van de Wiele - Tom.Vandewiele@UGent.be

Website: <http://labmet.uqent.be/>

The research mission of the Laboratory of Microbial Ecology and Technology (LabMET) is to gain better insight in the microbial-ecological processes which occur in complex mixed microbial cultures and to understand how these processes can be managed, steered and applied in numerous environmental and industrial applications. In the specific field of gastrointestinal microbiology, LabMET developed the so-called Simulator of the Human Intestinal Microbial Ecosystem (SHIME), a 5-step continuous reactor which simulates the different parts of the human gastrointestinal tract. By applying a combination of conventional and molecular microbial methods and physicochemical analyses with a number of bioassays, the use of this model allows to obtain a complete evaluation of the passage of food compounds, pharmaceuticals and contaminants through the gastrointestinal tract. This is done by means of characterisation of the microbial community, their metabolic activity and their interaction with both the ingested compounds and with the human host. The intestinal research focuses on functional foods, eco-toxicology and the metabolic activation of biologically active molecules such as phytoestrogens. Moreover, LabMET is involved in the study of a number of specific disease states (e.g. obesity and Crohn's Disease) in which a disturbed bacteria-host cross-talk plays a crucial role.

Faculty of Bioscience Engineering - Department of Food Safety and Food Quality

- **Food Chemistry and Human Nutrition Research Group (NutriFOODchem)**

Contact: Bruno De Meulenaer – Bruno.Demeulenaer@UGent.be

Website: <http://www.foodscience.uqent.be/nutriFOODchem>

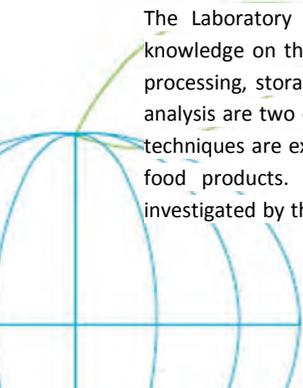
Research clusters: Microbial ecology, mycotoxins, phytochemicals, protein chemistry, lipid oxidation, child and maternal nutrition, adolescent nutrition, nutrition policies, packaging etc.

- **Laboratory of Food Microbiology and Food Preservation (LFMFP)**

Contact: Frank Devlieghere - Frank.Devlieghere@UGent.be

Website: <http://www.foodscience.uqent.be/LFMFP>

The Laboratory of Food Microbiology and Food Preservation focuses on gathering knowledge on the microbial behaviour in food products during harvesting/slaughtering, processing, storage, distribution and preparation. Predictive microbiology and microbial analysis are two essential areas of this research. Mild preservation and decontamination techniques are examined to prolong the shelf life and to increase the microbial safety of food products. Packaging is one of the most important preservation techniques investigated by the laboratory. Quality assurance systems are implemented and analysed



to enhance microbial food safety and quantitative data are collected in view of exposure assessment to allow more accurate microbial risk evaluations. The laboratory is accredited for the analysis of the most important microbiological parameters. Due to the economic interest, special attention is given to the mechanisms of microbial spoilage of food products.

- **Laboratory of Food Technology and Engineering (FTE)**

Contact: Koen Dewettinck - Koen.Dewettinck@UGent.be

Website: <http://www.foodscience.ugent.be/FTE>

The Laboratory of Food Technology and Engineering focuses on the innovative development of foods on a microstructural level. This approach is the answer to the consumer demand for new products that are tasty, satisfying, health-promoting, convenient and inexpensive. Moreover the research must create added value to by-products and therefore contribute to overall socio-economic welfare. Research topics include: structure-function relations of food components, food microstructure formation and breakdown, sensory attributes, fat crystallisation, fat processing and modification, chocolate and confectionery processing, stability of complex food systems, drying and fluidised bed processing, coating and microencapsulation of bio powders, valorisation of bio actives and (micro-) nutrients from by-products.

- **Pack4Food**

Contact: Peter Ragaert - Peter.Ragaert@UGent.be

Website: <http://pack4food.be/>

PACK4FOOD is a consortium composed by knowledge centers, network organisations and companies with the support of IWT entitled: "Innovation via a global approach of packaging material, filling system and food product". The objective of the project is to give an adequate multidisciplinary support to the packaging and the food industry concerning the packaging of food products. The interaction between packaging materials, food products and filling systems is very important to achieve requested shelf life of products. The support is developed by giving advice about current problems, as well as by spreading know-how about new technologies (newsletters, seminars, website, training). This results in both problem-solving and innovative solutions for the packaging industry and food industry.

Faculty of Bioscience Engineering - Department of Sustainable Organic Chemistry and Technology

- Flavour Chemistry

Contact: Christian Stevens - Chris.Stevens@UGent.be.

In the flavour laboratory, we study the formation of aroma compounds and contaminants as a result of the Maillard reaction (nonenzymatic browning) in food. The interaction with melanoidins (brown-coloured polycondensation products) is also studied. This lab has extensive expertise in the analysis of essential oils, alcoholic beverages (aroma, cork taint) and volatile fungal metabolites.

Faculty of Sciences - Department of Biochemistry and Microbiology

- Laboratory for Protein Biochemistry and Biomolecular Engineering (L-ProBE)

Contact: Bart Devreese - Bart.Devreese@UGent.be

Website: <http://www.lprobe.ugent.be/>

The L-ProBE Laboratory has a long standing experience in protein analysis, both at the structural and functional level. The group has vast experience in isolation, purification and characterisation of proteins from microbial, plant and food component origins. Recent research has studied antimicrobial peptides, bacterial proteases and proteomics of food products.

Analyses: Chromatography, Proteins, HPLC, Physicochemical analysis, Spectroscopy, Proteomics

Special Equipment: 2D-PAGE, Protein Sequencing, ESI mass spectrometry (Q-TOF and Q-TRAP), MALDI-TOF/TOF mass spectrometry

Faculty of Pharmaceutical Sciences - Department of Bioanalysis

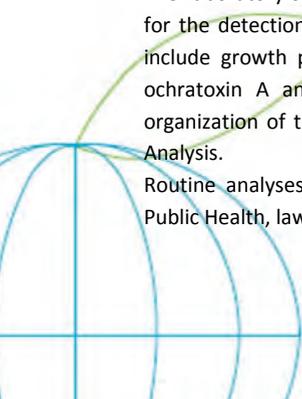
- Laboratory of Food Analysis

Contact: Sarah de Saeger – Sarah.Desaeqer@UGent.be

Website: <http://www.ugent.be/fw/en/research/bioanalysis/foodana/>

The Laboratory of Food Analysis specialises in the development of analytical methodology for the detection and quantification of foreign substances in various food types. These include growth promoters, sulfonamides, tetracyclines and mycotoxins like aflatoxins, ochratoxin A and T-2 toxin. It has gained an international reputation through its organization of the International Symposium on Hormone and Veterinary Drug Residue Analysis.

Routine analyses for forbidden growth promoters are carried out for the Ministry of Public Health, law courts and the food distribution sector.



Since 1996 the laboratory is accredited (EN ISO 17025) by BELAC (formerly Beltest). The laboratory is partner in Food2Know. The laboratory is also part of the Forensic Institute of Ghent University (FIUGent), established in December 2007 as a result of the long-standing collaboration between the Department of Forensic Medicine and 3 laboratories of the Faculty of Pharmaceutical Sciences. The laboratory is also partner of association research group 'MYCOTOXINS and TOXIGENIC MOULDS' (MYTOX).

- **Ghent University Association (AUGENT)**

Email: info@AUGent.be **Phone:** +32 (0) 9 264 82 24

Website: <http://www.augent.be>

Ghent University Association (also referred to as AUGent) was established on April 29, 2003. Ghent University Association makes special efforts to arrive at a higher education area with a whole range of higher education study programmes; ample room for knowledge and investigation; lifelong learning and a general diversity policy. The Association achieves its goals in close consultation and in consensus with its four member institutions:

- University of Ghent
- Artevelde University College
- Ghent University College (Hogent)
- University College of West Flanders (HoWest)

University College Ghent (Hogeschool Gent) – Department of Biosciences and Food Science

Contact: Lieve Vermeire – lieve.vermeire@hogent.be

Website: [http://pure.hogent.be/portal/en/organisations/vakgroep-natuur-en-voedingswetenschappen\(8ea20414-81a2-46ee-b1e2-03e51b88cea1\).html](http://pure.hogent.be/portal/en/organisations/vakgroep-natuur-en-voedingswetenschappen(8ea20414-81a2-46ee-b1e2-03e51b88cea1).html)

Expertise: food microbiology, fermentation, etc.

Katholieke Universiteit Leuven (K.U. Leuven) and its Kortrijk campus (KULAK)

Email: info@kuleuven.be **Phone:** +32 (0)16 32 40 10

Address: Oude Markt 13, Bus 5005, 3000 Leuven

Website: <http://www.kuleuven.be>

Phone: +32 (0) 56 24 61 11

Address: Etienne Sabbelaan 53, 8500 Kortrijk

Website: <http://www.kuleuven-kulak.be/>

The main campus of Katholieke Universiteit Leuven (K.U. Leuven) is in Leuven, but the university also has a campus in Kortrijk (KULAK) where students can obtain a bachelor's degree.

The main actors in food related research at K.U.Leuven and KULAK are listed below. Many of these units are also partners of the Leuven Food Science and Nutrition Research Centre (LForCe).

Department of Biosystems - Division of Mechatronics, Biostatistics and Sensors (MeBioS)

Contact: Bart Nicolai - bart.nicolai@biw.kuleuven.be

Website: <http://www.biw.kuleuven.be/biosyst/mebios/>

MeBioS carries out applied research in areas such as agricultural and food process engineering, postharvest technology, food chain quality and safety, and diagnostics for life sciences. This precompetitive research is typically driven by current needs of the industry and often relies on the basic research at MeBioS.

Expertise:

- Agricultural and food process engineering
- Diagnostics in life sciences
- Food chain safety and quality
- Postharvest technology (e.g. development of controlled atmosphere storage technologies for fruit and vegetables, improvement of the postharvest quality of horticultural produce, packaging technology)
- Risk and reliability of food processes from farm to fork
- High-throughput flavour analysis of foods

Department of Chemical Engineering - Laboratory of Chemical and Biochemical Process Technology and Control (BioTeC)

Contact: Jan Van Impe - jan.vanimpe@cit.kuleuven.be

Website: <http://cit.kuleuven.be/biotec/index.php>

The scope of the field includes biotechnological production processes or fermentation processes, in which a considerable diversity of products are produced (e.g., food products and components, pharmaceutical products), as well as biological wastewater treatment processes, the most important of which is the activated sludge process. In addition, during the lifetime of a food product growth of pathogenic and/or spoilage bacteria is an undesired process. A common characteristic of all these processes is that their dynamics are determined in the first place by a living microbial population.



Department of Microbial and Molecular Systems - K.U.Leuven Campus Kortrijk - Food & Lipids

Contact: Imogen Foubert - imogen.foubert@kuleuven-kulak.be

Website: <http://www.kuleuven-kulak.be/nl/onderzoek/Wetenschappen/chemie/>

The Food & Lipids laboratory concentrates on the lipid (fat) fraction of foodstuffs. Lipids are often under fire because they are said to be unhealthy, but they are essential for the sensory (e.g. taste), nutritional (e.g. essential fatty acids, fat soluble vitamins) and technological (e.g. spreadability) properties of fat-rich food products. The mission of the laboratory is thus to conduct research facilitating the production of healthy or healthier fat-rich food products without compromising taste or technological functionality.

One line of research focuses on nutritionally valuable lipids, specifically on their (new) sources and how they can be applied in food stuffs and nutraceuticals. Most of the research currently focusses on micro-algae. This research is conducted in collaboration with the Aquatic Biology laboratory.

Another line of research investigates fat crystallisation and its influence on the technological properties of fat-rich food products. Most of our current research is on either monitoring fat crystallisation using ultrasonic methods or studying products based on liver paste.

Centre for Food and Microbial Technology

- **Laboratory for Food Technology (LFT)**

Contact: Marc Hendrickx - marc.hendrickx@biw.kuleuven.be

Website: <http://www.biw.kuleuven.be/m2s/clmt/lmt/>

The research mission of LFT has two parts: (1) 'to develop scientifically based approaches to quantitatively evaluate the impact of physical preservation/processing unit operations on food functionality and (2) to use these approaches in design, evaluation and optimisation of such processes.' The first objective results in fundamental research, while the second objective is more application oriented and involves case studies on food models and real foods at pilot and industrial scale.

The laboratory for Food Technology is equipped with instruments regarding

- Thermal processing of foods
- High-pressure processing of foods
- High-pressure homogenisation of foods
- High-voltage equipment for batch treatment of liquid samples
- Low-temperature processing of foods
- Analytical techniques

- **Laboratory of Food Chemistry and Biochemistry**

Contact: Jan Delcour - jan.delcour@biw.kuleuven.be

Website: <http://www.biw.kuleuven.be/m2s/clmt/lmcb>

The research mission of the Laboratory of Food Chemistry and Biochemistry is (1) to generate basic insights into the starch, non-starch polysaccharide, storage and physiologically active protein and lipid constituents of cereals and (2) to apply such insights with the aim to understand and improve processing, final product and/or health related functionality in biotechnological processes where cereals are used.

- **Laboratory of Food Microbiology**

Contact: Chris Michiels - chris.michiels@biw.kuleuven.be

Website: <http://www.biw.kuleuven.be/m2s/clmt/lmm/>

The Laboratory of Food Microbiology conducts basic research whose aim is to understand the effects of (bio)chemical, physical and biological parameters on microbial growth, microbial growth inhibition or microbial inactivation and to apply the knowledge generated through this basic research to develop more efficient and safe food production and preservation technologies.

- **Division of Bioeconomics**

Contact: Tessa Avermaete – Tessa.Avermaete@ees.kuleuven.be

Key terms: Food security, health, sustainable food consumption and production

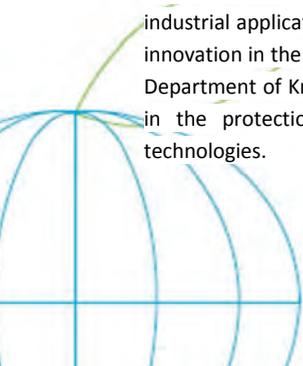
- **The Leuven Institute for Beer research (LIBR)**

Contact: Gino Baart - Gino.Baart@biw.kuleuven.be

Website: <http://libr.be>

The Leuven Institute for Beer Research (LIBR) is part of the University of Leuven. This unique research centre unites several specialised laboratories at K.U. Leuven, which all have expertise in beer- and beverage research and development. Innovative technologies resulting from this multidisciplinary research in the domain of beer and beverage products, LIBR facilitates the transfer of these technologies into practical and/or industrial applications.

LIBR focuses on fundamental and applied projects and research that can either lead to industrial applications and/or respond to the need for increased productivity, quality and innovation in the brewing industry. We can rely on continuous support of the K.U. Leuven Department of Knowledge and Technology Transfer to build strategic alliances that assist in the protection and licensing of intellectual property and valorisation of new technologies.



- **KU Leuven Association**

Email: info@associatie.kuleuven.be **Phone:** +32 16 32 40 84

Address: Schapenstraat 34, 3000 Leuven

Website: <http://associatie.kuleuven.be>

The Industrial Research Fund (IOF), which is part of the K.U. Leuven Association, provides support to researchers at institutions for innovative research of both industrial and societal importance. The IOF serves as an internal catalyst and bridge-builder for research initiatives with a clear valorisation trajectory.

Twelve institutions of higher education in Flanders have joined their forces in the K.U. Leuven Association. The following institutions are the main actors in this food research:

Catholic University College Odisee

Website: www.odisee.be

Odisee has been created by the fusion of the University college Brussels (HUB and the KAHO Sint Lieven. Odisee counts 6 campuscenters, of which the technology campus Ghent (former Catholic University College KAHO Sint-Lieven) is the most important for food related research.

Research Group for Technology and Quality of Animal Products

Contact: Hubert Paelinck - Hubert.Paelinck@kuleuven.be, Ilse Fraeye - ilse.fraeye@biw.kuleuven.be

The research topics of the Laboratory for Food Chemistry and Meat Technology address all the aspects of meat processing. The technological research center for meat processing of the Laboratory for Food Chemistry and Meat Technology is unique in Flanders. Processing of all types of heated and fermented meat products (cooked ham, cooked sausages, pastes, dry and dry cured meat products) is possible in our technological research centre in accordance with good manufacturing practices. Meat processing companies, their product suppliers and other industrial customers all use these facilities intensively to promote technological development.

Instruments: <http://www.kuleuven.be/site/index.php?p=/en/page/1477/technicum/>

- **Laboratory of Enzyme, Fermentation and Brewing Technology (EFBT)**

Contact: Guido Aerts - guido.aerts@kuleuven.be

Expertise: Sustainable malt and beer production, enzyme technology, hydrolysis of non-starch polysaccharides, production of low calorie sugars, hop and other herbs or spices.

Catholic University College Vives

Starting in September 2013, KATHO and KHBO have become VIVES, as a result of the cooperation between KATHO, with campuses in Kortrijk, Roeselare, Tielt, Torhout and KHBO, with campuses in Bruges and Ostend.

Centre of expertise – FOOD (EC Food)

Contact: Yves De Bleeckere – Yves.Debleecker@katho.be

The Centre of Expertise in Food is a driving force of innovation by providing advice and training and conducting practical research for (small) food companies and nonprofit organisations. The four main areas of expertise of EC Food are :

- Innovative product development
- Use of microwave technology for industrial applications
- Valorisation of waste products
- Microbiological analysis of food and water
- **Animal Department**

Contact: Dieter Anseeuw - dieter.anseeuw@katho.be

Aquaponics: an innovative sustainable food production system integrating aquaculture with hydroponic cultivation of vegetables and herbs

Catholic University College Kempen (KHK)

- **Lab4Food**

Contact: Leen Van Campenhout – leen.van.campenhout@khk.be

Lab4Food has four research topics: (i) texture, rheology and sensory research, (ii) shelf life and preservation technology, (iii) legislation and food safety and (iv) nutrition.

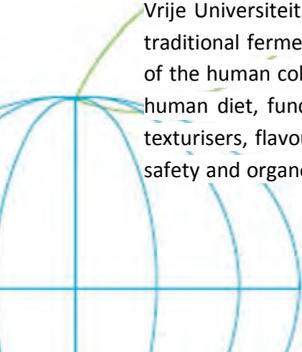
- **Vrije Universiteit Brussel (VUB)**

Research Group for Industrial Microbiology and Food Biotechnology

Contact: Luc De Vuyst – ldvuyst@vub.ac.be

Website: <http://imdo.vub.ac.be/>

The Research Group of Industrial Microbiology and Food Biotechnology (IMDO) of the Vrije Universiteit Brussel studies lactic acid bacteria and acetic acid bacteria involved in traditional fermented foods and beverages, as well as health-promoting microorganisms of the human colon fermentation process. To improve the naturalness and quality of the human diet, functional metabolites that can replace chemical food preservatives, food texturisers, flavour enhancers, etc., and functional starter cultures that can enhance the safety and organoleptic properties of fermented foods and increase industry's innovation



and diversification potential, are of utmost importance. Research on functional metabolites and functional and bio protective starter cultures is our core business.

IMDO serves as a unique function in industrial food biotechnology research with respect to research on functional starter cultures for food fermentation processes.

Social & Cultural Food Studies (FOST)

Email: fost@vub.ac.be

Website: http://www.vub.ac.be/FOST/fost_in_english/index.html

The past ten years have seen an upsurge in food research in the humanities and social sciences. Sociologists, anthropologists, economists, historians, art historians, social geographers, linguists, philosophers, archaeologists, ethnologists, and social and cultural theorists have devoted attention to the seemingly banal acts of shopping, cooking, eating and drinking. This was characterised by a myriad of approaches and themes, which comprised social and economic policy, health concerns, identity formation, sociability, inequality, signification, and globalisation.

Since the 1970's, the Department of History of the Vrije Universiteit Brussel has played an important role in this research field, in Belgium and on an international level.

In recent years, colleagues from other departments have shown vivid interest in food studies. Today, this expertise is present in various departments of the university. This attention and qualification led to the submitting of several research proposals dealing with food studies.

These researchers wanted to institutionalise the expertise by setting up a new research group at the Vrije Universiteit Brussel. Therefore, in April 2003, FOST (Social & Cultural Food Studies) was founded. FOST works in collaboration with the *Vlaams Centrum voor Volkscultuur*, the *Institut Européen de l'Histoire de l'Alimentation* and the *Institut National de Recherche Agronomique*.

- **University of Antwerp (UA)**

Faculty of Life Sciences - Department of Pharmaceutical Sciences

- **Natural Products and Food - Research and Analysis (NatuRA)**

Contact: Mart Theunis **Email:** mart.theunis@ua.ac.be **Phone:** +32 (0) 3 265 27 20

Address: Universiteitsplein 1, 2610 Wilrijk

Website: <http://www.ua.ac.be/main.aspx?c=ONDERZKDBE&n=40312&id=UA020&tid=21139>

This group combines the expertise of several labs, two of which are presented below (the Laboratory of Nutrition and Functional Food Science and the Laboratory of Pharmaceutical Analysis).

The research activities of the Laboratory of Nutrition and Functional Food Science aim to provide a scientific evaluation for possible health promoting food ingredients. The lab is specialised in *in vitro* and *in vivo* research of the antioxidative activity, and the absorption and metabolism by, the intestinal flora of food constituents. The focus is on polyphenolic antioxidants. Furthermore, the laboratory has a long tradition in analysing and studying the availability of minerals and trace elements from different matrices (foods, drugs, biological matrices, etc.).

The Laboratory of Pharmaceutical Analysis is well known for method development and validation on plant based drugs or supplements. This lab collaborates closely with the industry and other research groups. It obtained an accreditation by BELAC for the quality control on plant preparations and food supplements.

- **University Liège –Gembloux campus: Agro- BioTech**

Contact: Marianne Sindic **Email:** marianne.sindic@ulq.ac.be **Phone:** +32 (0)81 62 23 06

Address: Passage des Déportés 2, 5030 Gembloux

Website: <http://www.gembloux.ulq.ac.be>

The Agro-Food Technology Unit has four divisions: (i) Process Engineering, (ii) Physical Chemistry of Food Systems, (iii) Food Science and Quality and (iv) Business Assistance – ATISA.

- **Université catholique de Louvain (UCL)**

Earth and Life Institute –Applied Microbiology Section

Contact: Pierre Defourny – pierre.defourny@uclouvain.be

Website: <http://www.uclouvain.be/en-elim.html>

- **Bacteriology (MIAE):** *Bacillus cereus*, food safety, biofilms, gene transfers. **Contact:** jacques.mahillon@uclouvain.be
- **Bioengineering (GEBI):** Pollutant removal, microbial engineering, processes, biomass bioconversion. **Contact:** spiros.agathos@uclouvain.be
- **Brewery and food industry (INBR):** Organoleptic properties of food, aromas, polyphenols, brewery. **Contact:** sonia.collin@uclouvain.be
- **Mycology (MYCO):** Mycotoxins, mycorrhizae, “mycotheque” (collection of fungi). **Contact:** stephan.declerck@uclouvain.be
- **Nutritional quality and chemical safety of foods.** **Contact:** Yvan Larondelle – larondelle@bnut.ucl.ac.be

Psychological Sciences Research Institute (IPSY)

Contact: Stefan Van Den Broucke - Stephan.Vandebroucke@uclouvain.be

Expertise: Psychology, consumer behavior

- **Institute for Agricultural and Fisheries Research (ILVO)**

Contact: Bjorn Possé (research coordinator) - Lieve Herman (Head Technology and Food Science unit) **Email:** bjorn.posse@ilvo.vlaanderen.be - lieve.herman@ilvo.vlaanderen.be

Address: Burg. van Gansberghelaan 96, 9820 Merelbeke

Website: <http://www.ilvo.vlaanderen.be>

The Institute for Agricultural and Fisheries Research (ILVO) performs multidisciplinary, innovative and independent research aimed at economically, ecologically and socially sustainable agriculture and fisheries. Through this research ILVO accumulates fundamental and applied knowledge which is vital for the improvement of products and production methods, for quality control and the safety of end products, and for the amelioration of policy instruments as a foundation for sector development and agricultural policy for rural areas.

ILVO has four research units (Plant Sciences, Animal Sciences, Social Sciences and Technology and Food Science). The Technology and Food Science Unit conducts research beyond the farm gate, with a focus on food safety, product innovation and the Food Pilot, which is housed at ILVO.

In Food Safety, the microbiological and chemical safety and quality of food products of animal and plant origin are studied. The Product Quality and Innovation research group focuses on the authenticity of animal and plant products, including GMOs and allergens, and the improvement of the functional quality and valorisation of foodstuffs.

Expertise: ILVO conducts several research projects within the scope of sustainable food production and consumption from farm gate to consumer. Some of these projects/research themes are listed below. For more information, visit www.ilvo.vlaanderen.be or search the SUSFOOD Meta Knowledge Base.

All aspects of food safety:

- Microbiological food safety (including fungi)
- Detection and identification of allergens in food products and during processing, validation of allergen screening kits
- The presence and development of *E. coli* and other harmful microorganisms during primary production (e.g. lettuce, milk, eggs, etc.)
- The detection of chemical contaminants in diverse food matrices (expertise in honey and milk); the detection of mycotoxins in primary food products (e.g. fruit)
- The use of feed additives to reduce pathogen contamination in meat

Food quality and authenticity

- Detection of GMOs in food products and primary food production (e.g. detection of non-authorised GMOs)

- Quality measurements of fresh fish products and study of the quality and authenticity of all kinds of marine food products
- Alternative ingredients for fat and sugar in food products
- Nutritional/health benefits related to eggs, milk, etc.
- Migration of ink and adhesives through packaging materials
- Transfer of medicines through meat products to human
- Functional foods
- Health improving ingredients in meat production (e.g. omega-3 fatty acids in chicken)
- Detection and valorisation of pork with boar taint

Sustainable food production:

- Food spoilage
- Efficient practice for cleaning and disinfection in food processing businesses
- Innovative and potential valorisation applications for food products (e.g. brown shrimp and by-products of shrimp fishery, fruit and vegetables, etc.)
- Valorisation of by-products from the primary food production in food and feed
- Product and process innovation in the food industry through stimulation of open pilot infrastructure

Other:

- Organic food: coordination of European transnational research concerning organic food production, needs of the organic food processing industry
- Marketing of food products (regional food, short chain supply, organic food, etc.)
- Influence of climate changes on food production
- **FOOD PILOT**

Contact: *Katleen Coudijzer* **Email:** katleen.coudijzer@ilvo.vlaanderen.be

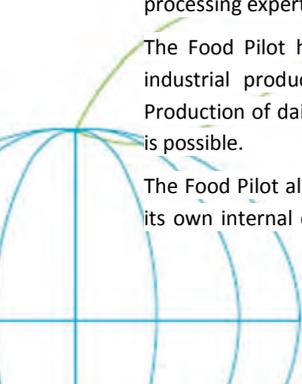
Address: *ILVO, Business Unit and Service Centre, Brusselsesteenweg 370, 9090 Melle*

Website: <http://www.foodpilot.be>

The Food Pilot is a pilot food-processing plant. It is the ideal venue for agro-food companies to test new concepts or products before producing them on an industrial scale. New equipment can also be tested before purchase, and technicians and food processing experts can be trained using the Food Pilot's equipment.

The Food Pilot has several versatile pilot units, which makes it possible to mimic an industrial production line and perform pilot tests under semi-industrial conditions. Production of dairy products, desserts, meat, fish, vegetables, fruits and bakery products is possible.

The Food Pilot also offers high-level technical and scientific expertise. The Food Pilot has its own internal control laboratory. For more specific analyses, Food Pilot staff can also



access the multidisciplinary research laboratories of the Technology and Food Science Unit of the Institute for Agricultural and Fisheries Research (ILVO). ILVO's specialised equipment and expertise make even highly specific analyses accessible to the agro-food industry.

The Food Pilot can be used by all agro-food companies and educational institutions. Pilot tests done at the Food Pilot form a vital link between an idea (tested in a lab or not) and production on an industrial scale. The Food Pilot addresses the questions facing industrial agro-food companies: to continually expand their product range, improve the quality of existing products, explore new raw materials, ingredients and additives, streamline production facilities, save energy, reduce environmental impact, and implement new processes.

Farm processors, SMEs and large organisations in the agro-food industry such as research institutes can also use the pilot infrastructure and the know-how available in the Food Pilot.

The Food Pilot is an initiative of Flanders' FOOD and the Institute for Agricultural and Fisheries Research (ILVO), with the support of the Society for the Promotion of Innovation in Science and Technology in Flanders (IWT-Vlaanderen).

- **VITO**

Email: vito@vito.be **Phone:** + 32 (0) 14 33 55 11

Address: Boeretang 200, 2400 Mol

Website: <http://www.vito.be>

An independent and customer-oriented research organisation, VITO provides innovative technological solutions as well as scientifically based advice and support to stimulate sustainable development and reinforce the economic and social fabric of Flanders.

VITO's research aims to develop technological innovations that strengthen our economy and at the same time answers to the following three societal challenges:

- (i) Transition towards a society less dependent on fossil fuels
- (ii) Transition towards a more sustainable industry in Flanders
- (iii) Improved quality of life through better use of our environment

- **Research and information center of consumer organisations (OIVO-CRIOC)**

Email: info@oivo.be **Phone:** +32(0)2 547 06 11

Address: Paepsem Business Park - Paapsemiaan 20 - 1070 Brussel

Website: <http://www.oivo.be/>

Keywords within the scope of SUSFOOD: Consumer perception, consumer behaviour, sustainable consumption, etc.

- **FOOD2KNOW**

Contact: *Benedikt Sas* **Email:** Benedikt.Sas@UGent.be **Phone:** +32 (0)9 264 99 40

Address: *Universiteit Gent, Coupure Links 653, 9000 Ghent*

Website: <http://www.food2know.be>

Flanders has a significant pool of expertise related to feed, food, nutritional and health sciences or technologies. The knowledge centres of Flanders seek to anticipate the new trends and developments in the feed, food & health related industry, markets and legislation. Ghent University took the initiative to create the Centre of Excellence "Food2Know" in order to facilitate an integrated and multidisciplinary approach to these innovation-driven research issues. This Centre of Excellence for Food Science, Nutrition and Health groups more than 30 research labs, spread out over five life science faculties (Bioscience Engineering, Pharmaceutical Sciences, Veterinary Sciences, Sciences, and Medicine & Health Sciences), the Institute for Agricultural & Fisheries Research (ILVO) and the University Colleges. The full integrated chain "from farm to fork" is covered: from researchers studying the relation between feed composition and the quality of meat or fish, over conservation and packaging technologies, the relation between food and the general health of humans and animals, all the way to consumer behavior and perception. Food2Know is the preferred gateway for companies or ministries to get direct access to top experts or high tech equipment for routine analyses, scientific or business advice, or for elaborate research projects. Food2Know is committed to identify and analyse group(s) in the consortium. In addition to the regional or national related activities, Food2Know has also a strong international focus.

More info: <http://www.food2know.be/en/s/15/research-groups>.

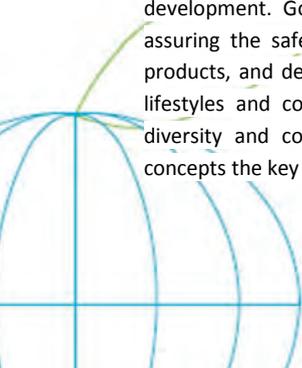
- **Leuven Food Science and Nutrition Research Centre (LFoRCe)**

Contact: *Jan Delcour / Kurt Gebruers* **Email:** jan.delcour@biw.kuleuven.be / kurt.gebruers@biw.kuleuven.be **Phone:** +32 (0) 16 32 16 34

Address: *Katholieke Universiteit Leuven Science, Engineering and Technology Group - LFoRCe Kasteelpark Arenberg 20 box 2463 3001 Leuven*

Website: <http://www.lforce.kuleuven.be/>

Today, the food chain is more complex than ever. Challenges can be found on all levels: in agriculture, food production, policy making and regulatory bodies, or research and development. Goals include increasing the sustainability of food production systems, assuring the safety of food products, conferring health-promoting properties to food products, and dealing with the shift in age profile of the consumer. In addition, diverse lifestyles and consumer demands with respect to organoleptic properties, shelf life, diversity and convenience of food make innovation in food technologies and food concepts the key to success in the food sector.



To help address these challenges,, the Management Science, Engineering and Technology Group at K.U.Leuven established the Leuven Food Science and Nutrition Research Centre (LForCe). LForCe is a multidisciplinary centre in the area of feed, food and health. It bridges the gap between the Science, Engineering and Technology Group, the Biomedical Sciences Group and the Humanities and Social Sciences Group. LForCe operates at the level of the K.U. Leuven Association.

LForCe research has interdependent disciplinary research lines:

- Food technology
- Health-related functionalities of food and ingredients
 - in model systems
 - in humans
- Social aspects of food and health

When combined, these research lines embody the natural transition from high-quality and safe food across a model-based approach of studying health effects to a study of impact on human health, while keeping the expectations of man and society in the field in mind.

More info: <http://www.lforce.kuleuven.be/main%20pages/Research%20Teams.aspx>.

- [SENSTECH - Flemish Advice Centre for Sensory Quality of Food Products and Food Contact Materials](#)

Contact: *Inge Dirinck* - inge.dirinck@senstech.be

Website: <http://www.senstech.be>

The Flemish Advice Centre for Sensory Quality of Food Products and Food Contact Materials (SENSTECH) provides knowledge (by means of advice, training sessions, support for research projects, etc.) concerning the chemical background of the aroma of food products and the odour of food contact materials. A technological advice centre, SENSTECH delivers information and expertise for product and process innovations in the food and packaging companies. Confidential, bilateral projects concerning sensory quality of food products and food contact materials are performed in close collaboration with the industry. SENSNET vzw is a consortium of companies interested in the SENSTECH expertise gathered during the projects in the context of the Flemish Innovation Cooperation (VIS-programme of the agency for Innovation by Science and Technology (IWT)) and as a result of long-term sensory-related research projects. Specialised laboratories can become an associated member of SENSNET vzw.

Expertise: sensory analysis of food products or food contact materials and support of internal sensory panels in companies - chemical-analytical aroma and odour characterisation of food products and food contact materials using gas chromatography-mass spectrometry (GC-MS) - mass spectrometry-based electronic nose technology (MS-nose) for fast aroma and odour analysis of food products and food contact materials.

Topics of sensory-related consultancy of food products and food ingredients - variability of base products (ingredients) (cultivars, geographical origins, crops, ...) - optimisation of (industrial) processing technologies (fermentation, ripening, roasting, ...) - influence of formulation and additives/ingredients on sensory quality and shelf life (antioxidants, spices, substitution agents, ...) - ageing, oxidation, aroma formation mechanisms (biogenesis, fermentation, Maillard-reaction , ...) - aroma quality control (consistency of aroma as a function of time) - benchmarking: comparative aroma/odour profiling of products on the market (company products vs. competitor products) - influence of sugar, sodium and/or lipid reduction on sensory quality of food products (reformulation strategy) - influence of packaging concepts (packaging methods and materials) on flavour/aroma of food products (shelf life experiments, aroma evolution, migration, scalping, permeation, ...)

- **Vandemoortele Centre for Lipid Science and Technology**

Contact: Koen Dewettinck (UGent) / André De Laporte (Vandemoortele)

Email: Koen.Dewettinck@UGent.be / andre.delaporte@vandemoortele.com

Phone: + 32 (0)9 264 61 65/ +32 (0)51 33 21 31

Website: <http://www.foodscience.ugent.be>

The new research centre, called the *Vandemoortele Centre for 'Lipid Science and Technology'*, opened at Ghent University on 11 April 2012 in a bid to develop healthy lipids that retain their functional characteristics such as flavour and texture.

The new research centre is the result of several years of cooperation between the Laboratory of Food Technology and Engineering of Ghent University and Vandemoortele Lipids NV.

- **Cacaolab**

Contact: Koen Dewettinck **Email:** Cacaolab@ugent.be **Phone:** +32 (0) 9 264 61 65

Address: Ghent University, Coupure Links 653, 9000 Ghent

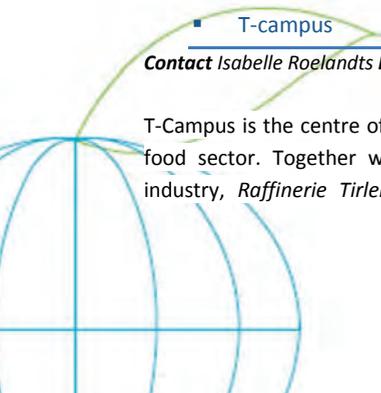
Website: <http://www.cacaolab.be/>

Combining fundamental knowledge with a strong partnership with the industry, the UGent Cacaolab aims to create innovative chocolate products and processes and to stimulate the export potential of chocolate producers.

- **T-campus**

Contact Isabelle Roelandts **Email:** isabelle.roelandts@raftir.be **Phone:** +32 (0) 2 775 80 66

T-Campus is the centre of knowledge and expertise for the future of the agricultural and food sector. Together with a number of other players in the agricultural and food industry, *Raffinerie Tirlemontoise* started the T-Campus. Its goal is to implement a



sustainable and booming economic activity by working together and sharing technology, knowledge and know-how.

T-Campus represents almost 5.07 million tonnes of contracted raw materials (sugar beet, wheat, rice and chicory) which are received, treated and processed in various factories into products ranging from sugar to food supplements.

- **Food Industry Federation - FEVIA**

Contact: Claire Bosch **Email:** cb@fevia.be **Phone:** +32 (0) 2 550 17 42

Address: Avenue des Arts 43, 1040 Brussels

Website: www.fevia.be

FEVIA represents, supports and helps in the development of a sustainable Belgian food industry. The federation represents all companies and industry associations active in the production of food and drinks. The members are multinationals as well as SME's, from local artisanal traditions to high tech mass production.

FEVIA strives for optimal cooperation between all stakeholders, agriculture and distribution, governments and consumer organisations, employees and employers, research institutes and environmental organisations.

- **Flanders' FOOD (FF)**

Contact: Erwin Lamot **Email:** Erwin.Lamot@flandersfood.be **Phone:** +32 (0) 2 788 43 63

Address: Kunstlaan 43, 1040 Brussels

Website: www.flandersfood.be

Flanders FOOD (FF) is the Centre of Competence for the Flemish food industry. It is a non-profit organisation founded in 2005 as a spin-off from FEVIA. FF is 80% funded by the Flemish government. Flanders FOOD is considered a platform between the food industry and knowledge centers.

Under the central theme "food for tomorrow: full of quality, balanced and tasty", Flanders FOOD handles following themes:

- Quality (food safety; stability and shelf life; sensory analysis; hygiene and allergen control; authenticity and packaging)
- Balanced food (nutritional improvements; ingredients and personalised food)
- Sustainability (valorisation of sidestreams; food losses; alternative food sources and local and seasonal food)
- Trends
- Technology

The mission of Flanders' FOOD is to improve competitiveness by specific stimulation of technological innovation via knowledge development and dissemination.

- **WagrALIM - The Agro-industry's Competitive Cluster in Wallonia**

Contact : Francois Heroufosse **Email:** info@wagrallim.be **Phone:** +32 (0)81 72 85 40

Address: Créalys Science Park, REGAIN, Rue Phocas Lejeune 25, 5032 Gembloux

Website: <http://www.wagrallim.be/>

As part of the Marshall Plan, the Walloon Region defined 5 priority areas which correspond to particular activities that are developing globally and in which a number of successful Walloon companies and research centers specialise. In order to improve competitiveness in the region in these sectors, it has created Centres of Excellence which bring together businesses, training centres and public and private research organisations who are keen to get involved in collaborative high added value projects.

WagrALIM, dedicated to the food industry, is one of these Centres of Excellence.

The Cluster's goals involve improving competition between companies in the food industry, and boosting business and employment in the sector by

- bringing manufacturers together
- developing the spirit of innovation with products and technology whose qualities meet the needs of the customer and the market
- improving the profitability of networks by encouraging people to work together and nurture sustainability
- increasing production capacity and the size of businesses by enhancing their place in growing markets and extending their sales skills and capacities.

To achieve the goals that have been set, manufacturers in the sector have defined 4 priority development areas: (1) health foods, (2) innovative production and conservation technology, (3) bio-packaging, and (4) development of sustainable food industry networks.

- **Brussels Food Technology Centre (BRUFOTEC)**

Email: info@brucefo.be **Phone:** + 32 (0)2 800 39 00

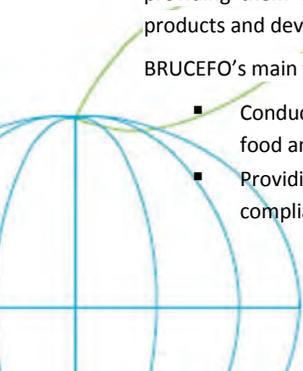
Address: Boulevard industriel 200, 1070 Brussels

Website: www.brucefo.be

The Brussels Center for Food Expertise (BRUCEFO) supports businesses in the food sector by checking the quality of the food and consumption products they manufacture and providing them with technical assistance. BRUCEFO thus helps improve the quality of products and develop new projects.

BRUCEFO's main task is supporting businesses in the food sector by:

- Conducting chemical, biochemical and bacteriological quality checks on the food and consumption products they manufacture
- Providing technical assistance and advice on high-quality product fabrication in compliance with legal standards



BRUCEFO works with Brussels Food Technology Association (BRUFOTEC), a non-profit organisation that helps agri-food businesses comply with food security legislation.



Photos © ILVO



SUSFOOD COUNTRY REPORT DENMARK

Authors:

DASTI: Frederik Søholm, Jørgensen, Anna Munck-Laybourn, Susanne Edeling Hede, Niels Gøtke

UCPH: Jeanineke Merete Dahl-Kristensen



Introduction

Food production including primary production, manufacturing and processing of food and food products is one of the most important professions in Denmark. The food sector represents a significant share of Danish exports and has for many years had an important significance for the Danish economy and employment. Besides primary production, the food sector includes a significant processing industry as well as supporting industry in terms of technology, packing materials etc. The two sectors are closely related in the food industrial complex, where two thirds of the turnover comes from primary agricultural production. The food area including the entire value chain from primary production over processing to trade is continuously one of the important resource areas for Denmark, and the importance has even increased further since Denmark joined the EU in 1973.

An important element in the strategy is that development and innovation in the Danish food sector should be based on relevant advanced strategic research, and Denmark has conducted several different food research programmes during the years. Today the research covers all aspects of the food chain from farm /sea to table, from primary production, storage and transportation, processing, control, distribution and marketing to consumption. Typically, the programmes deal with rather broad scientific subjects, involving many different disciplines, including science /technology, health sciences and social sciences. It is quite characteristic that the research is interdisciplinary and covers the whole production chain from land /sea to table.

As in many other countries, initiatives are taken to face one of the major challenges of the world: how can we contribute to a sustainable increase of the food, feed and biomass production in order to create growth and development - while simultaneously using less natural resources and causing lower environmental and climatic impacts? Therefore initiatives such as the Centre for Sustainable Agriculture and Forestry Systems (SAFor) at University of Copenhagen (<http://safor.ku.dk/>) are formed. As shown in the SUSFOOD MKB, many Danish research institutes perform research on sustainable organic food, (nutritional value of) healthy sustainable diets, sustainable packing methods, food chain innovation and waste reduction and so on.

Ministries

- [Ministry of Higher Education and Science](#)

Email: ufm@ufm.dk **Phone:** +45 3392 9700

Address: Slotsholmsgade 10, 1216 Copenhagen

Website: <http://ufm.dk>

Danish Agency for Science, Technology and Innovation (DASTI)

Email: fi@fi.dk **Phone:** +45 3544 6200

Address: Bredgade 40, 1260

Website: <http://ufm.dk/en/the-minister-and-the-ministry/organisation/the-danish-agency-for-science-technology-and-innovation>

The Danish Agency for Science, Technology and Innovation is an agency under the Danish Ministry of Science, Innovation and Higher Education. The Agency was established in response to a significant increase in public sector investments in research and development, which placed great demands on the authorities tasked with administrating the funds.

The Agency performs tasks relating to research and innovation policy and provides secretariat services to and supervises the scientific research councils which allocate funds for independent research and innovation, and which advise the political system. A key challenge for the Agency lies in translating the high political prioritization of research and innovation into growth, employment, prosperity and cultural development in Denmark. The Agency is also responsible for interaction between the Agency itself, government ministries, the independent councils for scientific research and innovation, knowledge institutions and private enterprises as well as for international research and innovation partnerships. The object is to create partnerships and alliances to strengthen the quality and relevance of Danish research.

- **Ministry of Food, Agriculture and Fisheries**

Email: mail@naturerhverv.dk **Phone:** +4533958000

Address: Slotsholmsgade 12, DK-1216 København K

Website: <http://aqrifish.dk/>

The aim of the Ministry of Food, Agriculture and Fisheries of Denmark is to provide the framework for: (i) A development and growth orientated food producing sector, (ii) Responsible stewardship of natural resources and (iii) Food safety, consumers' choice and healthy eating habits.

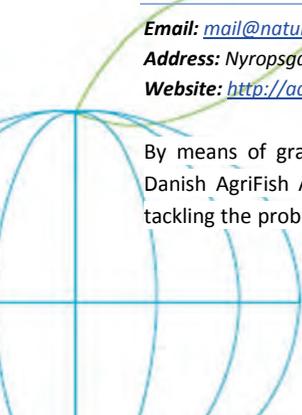
The Danish AgriFish Agency

Email: mail@naturerhverv.dk

Address: Nyropsgade 30, DK-1780 København V

Website: <http://aqrifish.dk/home.aspx?ID=16472>

By means of grants, development programmes, guidance, regulation and control, the Danish AgriFish Agency supports the development of a food sector that is capable of tackling the problems of the future, whilst remaining in balance with the environment. At



the same time, the Danish AgriFish Agency contributes to enhancing the living conditions of the population living in rural and fishing areas in Denmark.

Danish Veterinary and Food Administration (DVFA)

Email: fvst@fvst.dk **Phone:** +4572276900

Address: Stationsparken 31-33, DK-2600 Glostrup

Website: <http://www.foedevarestyrelsen.dk/english/Pages/default.aspx>

The Danish Veterinary and Food Administration is part of the Ministry of Food, Agriculture and Fisheries. Administration, development, co-ordination and the formation of rules and regulations take place in the head office of the Danish Veterinary and Food Administration at Glostrup near Copenhagen. DVFA has approximately 1870 employees.

- The Danish Ministry of the Environment

Email: mim@mim.dk **Phone:** +4572546000

Address: Børsgade 4, 1215 Copenhagen K

Website: <http://www.mim.dk/eng/>

The Ministry of the Environment is responsible for administrative and research tasks in the areas of environmental protection and planning. In Denmark the administration at state level is managed by the Ministry of the Environment. At the regional and local levels, much of the administrative responsibility has been delegated to municipalities.

Environmental Protection Agency

Email: mst@mst.dk **Phone:** +4572544000

Address: Strandgade 29, 1401København K

Website: <http://www.mst.dk/English/>

The mission of the Environmental Protection Agency includes: (i) Advising the government on environmental initiatives, (ii) Developing and administering rules and measures, nationally and internationally, (iii) Working in dialogue with the general public, companies and other authorities and, (iv) Collating and disseminating knowledge about the environment.

National funding bodies and research programmes

From the survey behind the Fahre report (2010), it appears –that a large part of the resources used for public food research is related to primary production, i.e. within agriculture, plants, livestock, fisheries and aquaculture and the research that underlies it. There are also many resources used in areas such as processing and consumption. Most of R & D projects are particularly related to research topics of health, diet and nutrition, cultivation methods welfare and health, food quality, food quality and safety and organic farming. It is quite characteristic that the research is inter-disciplinary including different

scientific disciplines like nutrition, microbiology, veterinary science, social science, health science etc., however, with a greater proportion in agriculture and veterinary science. In addition, it appears that most of food research should be categorized as applied research.

- **The Danish Council for Independent Research (DFF)**

Email: dasti@dasti.dk **Phone:** +45 3544 6200

Website: <http://en.fi.dk/councils-commissions/the-danish-council-for-independent-research>

Owned by: The Ministry of Science, Innovation and Higher Education - Danish Agency for Science, Technology and Innovation (DASTI)

The Danish Council for Independent Research funds specific research activities, within all scientific areas, that are based on the researchers' own initiatives and that improve the quality and internationalisation of Danish research. To fund research calls are used to find appropriate research.

Research programmes funded by The Danish Council for Independent Research:

Natural Sciences (FNU)

Natural Sciences funds research based on researchers' own initiatives and can award grants to researchers investigating basic scientific issues in the natural sciences, computer science and mathematics where the aim is pure, but not necessarily applied research. There are no requirements as to applicants' citizenship, the location of research institutions or the specific venue for carrying out the research activities applied for. But in all cases, a general assessment criterion will be the extent to which the project applied for will benefit Danish research.

Technology and Production Sciences

Via the Technology and Production science programme, the Council covers the following main scientific fields: animal and dairy science, biotechnology, civil engineering, electronic engineering, electrical engineering, food sciences, information engineering, agricultural sciences, chemical engineering, communication engineering, materials engineering, mechanical engineering, medical engineering, micro- and nano- technology, environmental engineering, plant production, veterinary science, use of natural resources and environmental protection.

- **The Innovation Foundation**

Email: innovationsfonden@innovationsfonden.dk **Phone:** +45 6190 5000

Website: <http://innovationsfonden.dk>

The Innovation Foundation (Danish: InnovationsFonden) was established as of 1 April 2014 by bringing together research, technology development and innovation grants from the Danish Council of Strategic Research, the Danish National Advanced Technology Foundation and the Danish Council for Technology and Innovation into one new powerful

foundation. The overall aim of the Innovation Foundation is to support the development of knowledge and technology, including advanced technology, in order to strengthen research and innovative solutions that may benefit growth and employment in Denmark.

The Innovation Foundation will be offering grants for activities within strategic research, technology and innovation.

Research programmes funded by InnovationsFonden – Denmark

Strategic research in Health, Food and Welfare

The Danish Council for Strategic Research supports research activities within the area of health, food and welfare. In 2014 the Council more specifically supports activities within the following themes: (i) Connection between food, health and lifestyle (DKK 79 million), (ii) Bioresources, food and other biological products including production systems and processes within the food industry (DKK 94 million), (iii) organic food production (DKK 25 million).

All Danish and foreign citizens can apply. However, it is required that the supported research activities promote and strengthen Danish research.

Strategic Research in Sustainable Energy and Environment

The Strategic Research in Sustainable Energy and Environment funds strategic research contributing to a sustainable energy system through the development of energy-efficient, intelligent and climate-friendly technologies, capable of reducing greenhouse gas emissions and dependency on fossil fuels.

All Danish and foreign citizens can apply. However, it is required that the supported research activities promote and strengthen Danish research.

Advanced Technology Project

The Innovation Foundation will support selected fields and technologically advanced projects or consortiums which have a range of participants that will contribute financially. All projects which are relevant to advanced technological research and/or innovation may apply for grants. The three main criterias are:

- Obvious business potential
- Internationally recognised high quality research and innovation
- Entrepreneurship

Societal Partnerships (INNO+ Partnerships)

Societal partnerships on innovation represent a shared effort to provide new, innovative solutions to concrete societal challenges and thereby create growth and employment in Denmark. InnovationsFonden invests in societal partnerships in which 5-10 core parties together define how the partnership is to solve the INNO+ challenges and how to translate global challenges into Danish solutions that may subsequently be sold on the global market. Solutions are provided through a focused collaboration between companies, research institutions and public authorities. Based on the INNO+ catalogue

(<http://ufm.dk/en/publications/2013/inno-catalogue>), the Danish Innovation Foundation called for societal partnerships within the 5 following themes:

- Blue jobs via green solutions
- Intelligent, sustainable and efficient plant production
- Denmark as preferred country for early clinical testing of new medicines
- Water-efficient industrial production
- Innovatorium for building renovation of world class standard

Innovation Consortia

Innovation consortia are collaboration projects between companies, research institutions and advisory/knowledge dissemination parties. The purpose of the consortia is that the parties jointly develop knowledge or technologies that benefit not only individual companies but entire industries within the Danish business community. An innovation consortium should consist of at least two companies, a research institution and advisory/knowledge dissemination party. Collaboration should be agreed for a duration of between two and four years.

Netmatch

Innovation Network Denmark has 22 nationwide innovation networks and three strategic platforms. An innovation network is a forum where companies and knowledge institutions share experience and develop new ideas within a specialist or technologically delimited field. Each network has pools for innovation projects where companies and researchers work together to solve concrete challenges. The innovation networks also carry out idea generation processes and matchmaking activities, and they hold theme meetings and specialist events. The companies contribute the time used. The innovation networks are open to all interested parties. In the beginning of 2010, the Danish Ministry of Science, Technology and Innovation established Netmatch as a unifying platform and a support function for the innovation networks/clusters in Denmark.

- **The Danish AgriFish Agency**

Email: mail@naturerhverv.dk

Address: Nyropsgade 30, DK-1780 København V

Website: <http://aqrifish.dk/home.aspx?ID=16472>

Owned by: The Ministry of Food, Agriculture and Fisheries of Denmark

By means of grants, development programmes, guidance, regulation and control, the Danish AgriFish Agency supports the development of a food sector that is capable of tackling the problems of the future, whilst remaining in balance with the environment. At the same time, the Danish AgriFish Agency contributes to enhancing the living conditions of the population living in rural and fishing areas in Denmark.

Research programmes funded by the Danish AgriFish Agency

- Green development and demonstration programme

- Organic RDD
- Tax and Production Levy Fonds
- The Rural Development Programme
- [Environmental Protection Agency](#)

Email: mst@mst.dk **Phone:** +4572544000

Address: Strandgade 29, 1401København K

Website: <http://www.mst.dk/English/>

Owned by: The Danish ministry of the Environment

The mission of the Environmental Protection Agency: (i) Advising the government on environmental initiatives (ii) Developing and administering rules and measures, nationally and internationally (iii) Working in dialogue with the general public, companies and other authorities (iv) Collating and disseminating knowledge about the environment.

Research programmes funded by The Environmental Protection Agency:

[Pesticide Research](#)

Strategic research on pesticides should enhance the knowledge-base for overall research on pesticides in order to establish a solid knowledge-base for administration of legislation and action plans in the pesticides area. The objective of the research programme is therefore to elucidate the spread of pesticides and their impact on the environment and health in order to achieve a better understanding of how pesticides affect the environment and health and to provide a better basis for regulation of pesticide consumption. Furthermore the programme aims at better opportunities for reducing the total impacts on the environment and health, including helping develop alternative pesticides and prevention methodologies. The long-term goal is to develop cultivation strategies which reduce agriculture's dependency on pesticides so that their use is minimised as far as possible, and also to encourage international focus on the need for reductions in consumption.

Website: <http://www.mst.dk/English/Pesticides/Grant+Programmes/reseachprogramme/>

- [The Danish National Research Foundation \(DNRF\)](#)

Phone: +4533181950

Address: Holbergsgade 14, 1. sal, 1057 København K

Website: <http://da.dk/>

The Danish National Research Foundation is an independent organization established by the Danish Parliament in 1991 with the objective to promote and stimulate basic research at the highest international level at the frontiers of all scientific fields. The Center of Excellence (CoE) program is the main funding mechanism, but also a number programs and initiatives have been launched specifically targeted at increasing the level of

internationalization of Danish research communities. Since 1991, the foundation has committed itself to supporting Danish research with more than 5 billion DKK (nearly 700 M euro).

National research institutes

However, the three major universities, Copenhagen University, Aarhus University and the Technical University of Denmark count for the major part of food related research, all research institutes described below work in the field of food related research.

Until 2013, The Centre for Advanced Food Studies (LMC) existed in Denmark. LMCs' objective was to coordinate the public food related, Agricultural and industry related research in Denmark. The closure of Center for Advanced Food Studies by the end of 2012 means that collaboration among universities takes place when relevant. However formal links are yet to be made between universities regarding research on food science.

- **University of Copenhagen**

Email: ku@ku.dk **Phone:** +45 35 32 26 26

Address: Nørregade 10, Postboks 2177, 1017 København K

Website: <http://www.ku.dk/english/>

The University of Copenhagen is the largest institution of research and education in Denmark. It merged with The Royal Veterinary and Agricultural University and The Danish University of Pharmaceutical Sciences a few years ago and is now one of the largest Health and Life Science centers in Northern Europe. Especially the Faculty of Science is involved in food related research.

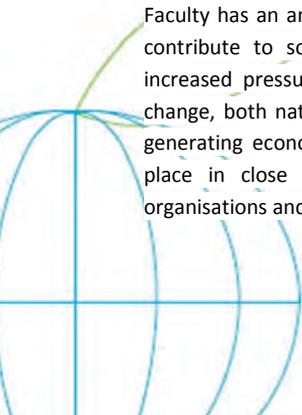
Faculty of Science

Email: science@science.ku.dk

Address: Bülowsvej 17, 1870 Frederiksberg C

Website: <http://www.science.ku.dk/english/>

The Faculty of Science at the University of Copenhagen – or SCIENCE – is Denmark's largest science research and education institution with 3,400 employees and 9,000 BSc and MSc students in 11 departments and the Natural History Museum of Denmark. The Faculty has an annual budget of DKK 2.5 billion. The Faculty's most important task is to contribute to solving the major challenges facing the rapidly changing world with increased pressure on, among other things, natural resources and significant climate change, both nationally and globally. At the same time, the Faculty must contribute to generating economic growth and, thus, ensure our welfare in society. This must take place in close cooperation with the business community and public authorities, organisations and other universities, both in Denmark and abroad.



- Department of Food and Resource Economics

Email: foi@foi.ku.dk **Phone:** +45 3533 6800

Address: Rolighedsvej 25, DK-1958 Frederiksberg

Website: <http://www.foi.life.ku.dk/English.aspx>

The activities of the Department are centered around themes such as environment, natural resources, development, food and agricultural development, as well as consumption, nutrition and health with a focus on, for example, economic regulations, incentive structure, information systems, valuation, consumer behaviour and political economy.

- Department of Food Science (FOOD)

Email: ifv@life.ku.dk **Phone:** +4535333222

Address: Rolighedsvej 30, 1958 Frederiksberg C

Website: <http://food.ku.dk/english/>

The Department of Food Science performs research and offers university education programmes within food science and technology. Knowledge is disseminated so it can be beneficial to the Danish as well as the international society. The research is primary related to food quality and safety. At FOOD the traditional disciplines within food science are combined with new research areas such as nanotechnology, chemometrics and biotechnology. The Department has a widespread network of national and international collaborators. The joint forces with industry are a considerable strength of FOOD that is likely to expand. The research is world leading in numerous areas such as chemometrics and food chemistry. The Department aim to maintain and strengthen this position and coordinate three EU projects, PathogenCombat, Q-PorkChains and MARAMAIL.

The Department of Food Science covers all disciplines of food science in the chain from raw material to processing and consumption. The department is organized in six discipline oriented sections with focus on both basic and applied research solving issues related to global challenges and often for the benefit of the industry. The research includes food microbiology, food chemistry, food analysis, metabolomics, molecular and technological functionality, food processing technology, explorative data analysis, gastronomy, sensory quality, and consumer perception. Several of these research areas are recognized as of international excellence. The research is closely integrated with the department's educational programmes and is often carried out in close collaboration with the food industry. It is the ambition to be the preferred collaboration partner for the food industry and the department has been coordinating several EU programmes.

- Department of Nutrition, exercise and sport

Contact: Kirsten Jenlev **Email:** kje@life.ku.dk

Website: <http://www.science.ku.dk/english/about-the-faculty/departments/nutrition-sports/>

The Department's objective is to secure fundamental research, applied research and instruction at the highest international level with the research areas of the department. The Department's research and instruction are represented within the main areas of nutrition, human physiology and the social scientific aspects of sport science.

- Department of Geoscience and Natural Resource Management (IGN)

Email: sl@life.ku.dk

Address: Rolighedsvej 23, 1958 Frederiksberg C

Website: <http://ign.ku.dk/english/>

On 1 January 2013, Forest & Landscape and the Department of Geography & Geology joined forces to form the Department of Geosciences and Natural Resource Management. Our research creates new fundamental and applied knowledge within the fields of geology, geography and geoinformatics, forest, landscape and biomass, parks and urban landscapes as well as urban and landscape studies. The department offers six Bachelor's degree programmes, seven Master's degree programmes, one vocational programme and four PhD programmes as well as a number of further and supplementary training programmes. It engages in close collaboration with the business community and the authorities.

- Aarhus University (AU)

Email: au@au.dk **Phone:** +4587150000

Address: Nordre Ringgade 1, 8000 Aarhus C

Website: <http://www.au.dk/en/>

The food related research at Aarhus University is mainly performed at the former Research Institute for Agricultural Science, which was a Governmental Research Institute (GRI) under the Ministry for Food, Agriculture and Fisheries. The institute was merged in 2007 with Aarhus University and will from the 1st of January be a part of the Faculty of Science and Technology in close collaboration with MAPP – the Centre for research on customer relations in the food sector – and with the Department for Public Health at the university. The research at the Institute is related to primary production including organic farming, which is of increased importance in Denmark, and to food science in the production chain from the composition and quality of primary products through processing to health, value, eating quality and consumer preferences.



School of Business and Social Sciences

Email: bss@au.dk **Phone:** +4587150000

Website: <http://bss.au.dk/>

School of Business and Social Sciences is a broad business school and one of the four main academic areas at Aarhus University. With approx. 14,000 full-time students, several thousand part-time students, almost 225 PhD students and more than 500 academic staff members, School of Business and Social Sciences ranks among the largest business schools in Europe. Furthermore, it is the largest School of Business and Social Sciences unit in Denmark at university level with a broad academic base.

- **Department of Business Administration**

Email: badm@asb.dk

Address: Bartholins Allé, 10, 8000 Aarhus C

Website: <http://badm.au.dk/>

The department teaches and carries out research into marketing and organisation. We have a strong international focus in our research and degree programmes. A stated objective for the department is to conduct high-quality research. High priority is given to publication of our research in leading academic journals and at recognized conferences. Communication with the business community, political decision-makers and society in general is of crucial importance for us.

Faculty of Science and Technology

- **Department of Agroecology**

Email: agro@au.dk **Phone:** +4587156000

Address: Blichers Allé 20, DK-8830 Tjele

Website: <http://agro.au.dk/en/>

Department of Agroecology carries out research into the interaction between climate, soil, plants, animals and humans in agricultural systems to the advancement of health, sustainability and environmentally friendly production of foods, feed and energy crops. The research at the Department of Agroecology contributes to increasing the agricultural production of foods and energy in an environmentally friendly and sustainable manner.

- **Department of Animal Science**

Email: anis@au.dk **Phone:** +4587156000

Address: Blichers Alle, 20, DK 8830 Tjele

Website: <http://anis.au.dk/en/>

The objective of the Department of Animal Science is to carry out basic, strategic and applied research in issues relating to the nutrition, health and welfare of livestock, companion animals and humans.

- **Department of Food Science**

Email: food@au.dk **Phone:** + 45 8715 6000

Address: Blichers Allé 20, 8830 Tjele

Website: <http://food.au.dk/en/>

Research and teaching activities in the Department of Food Science encompass the entire food chain from field to fork, as well as the health-promoting properties of foods and food constituents.

The Department of Food Science possesses leading capabilities and resources, as well as active national and international networks, and is therefore able to make significant contributions to current food-related global challenges: food supply, food wastage, sustainable food production under changed climatic conditions, and increased occurrence of lifestyle-related diseases. Additional focus areas include food quality, differentiation of foods, and novel, convenient and healthy foods.

Most of the research is carried out in collaboration with industrial or research partners, and there is a significant focus on dissemination, development, demonstration and implementation of research findings to the benefit of industry and society.

- **Department of Molecular Biology and Genetics**

Email: mbg@au.dk **Phone:** +4587150000

Address: Gustav Wieds Vej 10, 8000 Aarhus C

Website: <http://mbg.au.dk/en/>

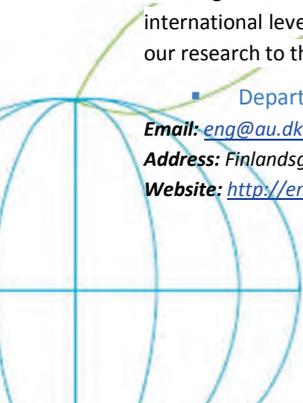
The main tasks of the Department of Molecular Biology are to provide research-based teaching at the undergraduate, graduate and doctoral level, to do research at an international level, to transfer knowledge to companies, and to disseminate the results of our research to the general public within molecular biology and genetics.

- **Department of Engineering**

Email: eng@au.dk **Phone:** +4541893000

Address: Finlandsgade 22, 8200 Aarhus N

Website: <http://eng.au.dk/en/>



Department of Engineering and Aarhus University School of Engineering are united in a common goal of ensuring a clear correlation between societal investment in the engineering discipline and the contribution of the engineering discipline to a stronger Danish economy.

- **Technical University of Denmark (DTU)**

Email: dtu@dtu.dk **Phone:** +45 45 25 25 25

Address: Anker Engelundsvej 1, Building 101A, 2800 Kgs. Lyngby

Website: <http://www.dtu.dk/English.aspx>

Today, DTU is ranked as one of the foremost technical universities in Europe, continues to set new records in the number of publications, and persistently increase and develop partnerships with industry, and assignments accomplished by DTU's public sector consultancy. The number of student enrolment is higher than ever and, for the eleventh consecutive year, DTU has received a record-breaking number of applications from students who want to pursue a degree from a technical elite university with a global outlook. The international dimension is of vital importance to DTU. In 2011, DTU welcomed 336 international students into MSc programmes, half of the PhD students are recruited from abroad, and more than one third of the scientific staff are highly qualified researchers of international backgrounds. In addition, the extent and intensity of the collaborations with other leading technical universities around the world continue to grow. DTU has international educational exchange programmes with over 200 universities around the globe, and enjoys close research collaborations with its partners in addition to building research and educational programmes in Nordic Five Tech, the Euro Tech Universities - Excellence in Science and Technology, as well as with Rensselaer in the U.S., Nanyang in Singapore, and KAIST in South Korea.

The National Food Institute (DTU Food)

Contact: Dennis Jensen **Email:** food@food.dtu.dk **Phone:** +45 35 88 70 00

Address: Mørkhøj Bygade 19, 2860 Søborg

Website: <http://www.food.dtu.dk/English.aspx>

The National Food Institute is the main actor in food and health research at the Technical University. The Institute conducts applied research into human nutrition and chemical and microbiological food safety. The overall purpose is to promote consumer access to healthy and safe food products and to prevent diet-related disorders in humans. The institute acts as scientific advisor for the National Food Authorities and supports the food industry.

The university has established a network – FoodDTU - of institutes engaged in the food area. The network comprises ten separate DTU units, providing a total faculty and staff of

2,700 including 1,300 scientists and PhD students. FoodDTU is an international knowledge and skills centre devoted to food science. The network covers the entire supply chain – from the sea and soil to the dinner table, and it conducts research, provides instruction and offers consultancy on all aspects of food science. FoodDTU covers the following fields: Primary food production, the food industry, health and nutrition, biotechnology, processing technology, micro/ nanotechnology, bioinformatics and mathematics, production planning and management.

The National Food Institute works within six technical focus areas: Biotechnology, nutrition, food quality, food safety, food technology and environment & human health. Activities cover a wide range of food products throughout the entire food chain from farm to table, comprising both research activities and research-based consulting and teaching. The focus of our activities are important aspects related to the impact of food products on human health and disease as well as food quality. The main aim is to help ensure that consumers have access to healthy and safe high-quality food products and to prevent disease in humans related to food products, diet and chemical or microbiological food contamination.

- **DTU-FOOD Division of Industrial Food Research**

Contact: Bo Jørgensen

Address: Mørkhøj Bygade 19, 2860 Søborg

Website: <http://www.food.dtu.dk/>

DTU Nanotech

Email: info@nanotech.dtu.dk **Phone:** +45 45255700

Address: Ørstedes Plads, Building 345 east, 2800 Kgs. Lyngby

Website: <http://www.nanotech.dtu.dk/English.aspx>

DTU Nanotech promotes academic excellence by fostering a team-based scientific environment building on the passion, talent and skills of the international and cross-disciplinary staff. DTU Nanotech applies micro- and nanotechnology within the life sciences, environment & energy and sensing technologies.

DTU Nanotech has a budget of 119 M. DKK (roughly 16 M. Euro) and participates in more than 70 collaborative research projects. As of October 2008, DTU Nanotech has 165 people on its staff. With 40% non-Danes, the department constitutes an international environment.

DTU Environment

Contact: Jørn Smedsgaard **Email:** smeds@food.dtu.dk

Address: Anker Engelundsvej 1, Building 101A, 2800 Kgs. Lyngby

Website: <http://www.env.dtu.dk/>

DTU Environment conducts science-based engineering research within four sections.

Each section hosts two to four research groups. Research activities span from fundamental investigations of microbial degradation of toxins to applied water resources management in developing countries. Research is therefore conducted in applied science as well as in engineering.

The aim is to continue developing our understanding of problems related to the environment and to resource depletion and to develop technologies and management tools for a sustainable society – in Denmark as well internationally. Details on each research section can be obtained via the links on this page. Each section presents its research groups and offers links to list of staff, current projects and lists key publications.

DTU Environment is one of the largest university departments specializing in environmental engineering in Europe. Research is conducted by an international staff consisting of 25 faculty members, approximately 20 post-doctoral fellows, 10 visiting foreign scientists and 60 Ph.D. students. The researchers at DTU Environment are drawn from the best universities in more than 15 different countries.

The staff is supported by a range of technicians who provide expertise on state of the art instrumentation and experimental techniques. See DTU Environments research facilities [here](#).

DTU Environment publishes annually more than 100 international scientific journal articles, 75 international conference contributions, 20 technical reports and 60 contributions to Danish conferences and journals. Information about these publications is provided [here](#). DTU Environment publications are frequently cited in international scientific journals.

DTU Environment obtains research funding from a variety of sources including the Commission of the European Union, national research councils, the Danish EPA, industry, utility companies, municipalities, research foundations and international organizations.

[DTU Management Engineering \(DTU MAN\)](#)

Contact: Mikolaj Owsianiak **Email:** miow@dtu.dk **Phone:** (+45) 4525 4805

Address: Produktionstorvet 424, 2800 Kgs. Lyngby

Website: <http://www.qsa.man.dtu.dk/>

The Department of Management Engineering at DTU focuses on innovation and organization of innovation processes and technological and environmental relations in a business and social perspective. The department's Division for Quantitative Sustainability Assessment (QSA) focuses on the development of scientifically based engineering methods and tools for analysis and application in decision support concerning environmental and social sustainability. These tools include life cycle assessment (LCA), social life cycle assessment (S-LCA) or cost-benefit analysis (CBA). In addition to methodological development, QSA has an experience in application of these tools in

decision situations within various technological domains, including biomass and biofuels, waste, and agriculture – and thus can provide decision makers, managers and developers of products, product systems and services with valuable knowledge.

- **Quantitative Sustainability Assessment**

Contact: Mikolaj Owsianiak **Email:** miow@dtu.dk **Phone:** (+45) 4525 4805

Address: Produktionstorvet 424, 2800 Kgs. Lyngby

Website: <http://www.qsa.man.dtu.dk/>

Education

- Is biodiesel more sustainable than petrodiesel?
- Are nanoproducts friends or foes in the environment?
- Learn how to assess a product's impacts on the environment and learn about tools available for the environmentally oriented engineer in QSA courses.

Research

We are in the forefront of methodological and applied research in the field of Life Cycle Assessment. Our aim is to develop decision support tools for sustainability assessment, with a focus on environmental and social LCA.

Industrial collatoration

We support development of sustainable technology and technical solutions across all domains at DTU through use of engineering tools for environmental assessment. We continuously collaborate with:

- Companies
- National and international institutions
- Peers and professionals
- **Aalborg University**

Email: aau@aau.dk **Phone:** +45 9940 9940

Address: Fredrik Bajers Vej 5 P.O. Box 159, 9100 Aalborg

Website: <http://www.en.aau.dk/>

Department of Development & Planning

Email: webmaster@plan.aau.dk **Phone:** (+45) 9940 8429

Address: Vestre Havnepromenade 5, 9000 Aalborg

Website: <http://www.en.plan.aau.dk>

The field of the Department includes development and planning in a broad sense, and thereby it reaches from the social science aspects of development (technological, environmental, international and administrative aspects) to physical planning, sector



planning, land management, and to technical subjects such as road engineering, road safety, surveying and mapping. The department belongs to the Faculty of Engineering and Science.

- **Research Group for Meal Science & Public Health Nutrition (MENU)**

Email: dkj@plan.aau.dk

Address: A.C. Meyers Vænge 15, 2450 København SV

Website: <http://www.en.menu.aau.dk/>

The MENU (Meal Science & Public Health Nutrition) Research Group investigates in everyday food and meals consumption, whether by individuals, communities or within wider populations. Food intake has a direct effect on our health and quality of life.

Every day people are confronted by food and meals in various sizes, shapes and food types in various eating environments. As we become more busy and mobile, we consume more and more meals outside home. Eating in social gatherings has become an integrated part of our everyday food experience from in schools, public spaces, workplaces to in the street. The meals consumed within this spectrum set the arenas of the MENU research.

A particular research focus for MENU is addressing meals and public health nutrition issues. MENU develops and evaluates strategies, interventions, methodologies and social technologies that can affect collective and personal determinants, such as knowledge, skills, competencies and social interactions related to food and meals.

[Department of Computer Science](#)

Contact: Jesper Kjeldskov

Email: jesper@cs.aau.dk

Address: Selma Lagerloefs Vej 300, DK-9220 Aalborg East

Website: <http://people.cs.aau.dk/~jesper/>

Aalborg University's Department of Computer Science is one of Denmark's leading environments for computer science research and teaching. The Department is internationally recognized for its research, education, technology development, and collaborations with IT industry. The department's research approach ranges from formal logic, over experimental construction to empirical description.

[Aalborg University Copenhagen](#)

Address: A.C. Meyers Vænge 15, 2450 København SV

Website: <http://www.en.cph.aau.dk/Aalborg>

University Copenhagen (AAU-Cph) constitutes Aalborg University's educational and research activities in the Greater Copenhagen area. All activities are gathered in a new

integrated research campus with several innovative start-up-businesses at Sydhavnen close to central Copenhagen.

Since AAU-Cph was established in Copenhagen we have experienced a tremendous growth. Today AAU-Cph offers 9 Bachelor programmes and 23 Master programmes covering the entire spectrum of the academic field from natural sciences to humanities. Around 4,000 students are enrolled at AAU-Cph working side by side with PhD students, researchers and approximately administrative employees

- University of Southern Denmark (SDU)

Email: sdu@sdu.dk **Phone:** +4565501000

Address: Campusvej 55, 5230 Odense

Website: <http://www.sdu.dk>

Department of Biochemistry and Molecular Biology

Email: bmb@bmb.sdu.dk **Phone:** +4565502441

Address: Campusvej 55, 5230 Odense M

Website:

http://www.sdu.dk/en/Om_SDU/Institutter_centre/Bmb_biokemi_og_molekylaer_biologi

At the Department of Biochemistry and Molecular Biology basic molecular and biochemical processes that mediate cellular growth and development and cellular interactions in living organisms are studied. Highly advanced analytical and biochemical techniques and computational tools (bioinformatics) to characterize and understand gene organization, protein structure and function and membrane composition and dynamics are used. Their research provides insight into the mechanisms of disease development, for instance in diabetes, cancer, neurodegenerative disorders and pathogenic bacterial infections. The international and interdisciplinary scientific research environment at BMB provides an excellent platform for a future career in biotechnology, biomedicine or bioinformatics.

- Roskilde University

The Department of Society and Globalisation

Contact: Sevasti Chatzopoulou **Email:** seva@ruc.dk

Website: http://www.ruc.dk/isg_en

- Institute of Chemical Engineering, Biotechnology and Environmental Technology

Email: tcs@kbm.sdu.dk **Phone:** +65507360

Address: Niels Bohrs Alle 1, Blok B, 5230 Odense M

Website: http://www.sdu.dk/en/Om_SDU/Institutter_centre/lkbm_kemi_bio-og_mijoeteknologi

The Institute of Chemical Engineering, Biotechnology and Environmental Technology focuses his research to the areas of : (i) Chemical process engineering, (ii) Functional materials and fuel cells, (iii) Biomass technology, (iv) Processing of vegetable raw materials for food, feed and natural medicine, (v) System analysis and environmentally efficient technology and, (vi) Biosystems technology.

- **Copenhagen Business School**

Email: cbs@cbs.dk **Phone:** +45 3815 3815

Address: Kilevej 14A, 2000 Frederiksberg

Website: <http://www.cbs.dk>

With more than 19,000 students and 1,300 staff members, Copenhagen Business School is one of the largest business schools in Europe. Using traditional fields within business economics and languages as a starting point, CBS gives very high priority to cross-disciplinary and problem-oriented approaches, making sociology, psychology, anthropology, politology, law, philosophy, and intercultural understanding important areas of CBS' academic profile.

- **Danish Technological Institute**

Email: info@teknologisk.k **Phone:** +4572202000

Address: Gregersensvej 1, 2630 Taastrup

Website: <http://www.dti.dk/>

The Danish Technological Institute is a self-owned and not-for-profit institution. We develop, apply and disseminate research- and technologically-based knowledge for the Danish and International business sectors. As such, DTI participates in development projects which are of use to society in close collaboration with leading research and educational institutions both in Denmark and abroad.

- **DHI**

Email: dhi@dhiigroup.com **Phone:** +4545169200

Address: Agern Allé 5, 2970 Hørsholm

Website: <http://www.dhiigroup.com/>

DHI is an independent, international consulting and research organisation. They strive to advance knowledge in water environments and to share it globally with their clients, partners and society at large. DHI's key aim is to their quest – to solve challenges in water environments worldwide.

- **AgroTech**

Email: info@agrotech.dk **Phone:** +4587438400

Address: Agro Food Park 15, 8200 Aarhus N

Website: <http://agrotech.dk/en>

AgroTech creates business development through knowledge and innovation. AgroTech specialises in providing cutting edge knowledge of biology and technology, and the staff produces unique results by combining their specialist skills. We develop innovative and commercial solutions for the food industry, nurseries and suppliers to the agricultural industry.





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SUSFOOD COUNTRY REPORT ESTONIA

Authors:

EVPM: Külli Kaare Evelin Loit, Maarja Malm, Helena Pärenson, Piret Priisalu, Aile Otsa



Introduction

Food industry is an important industry with long traditions in Estonia. It contributes to about one fifth from the total production of the processing industry, in which approximately one third is formed by milk processing and one fifth by meat processing. The share of food and beverage industry in the Estonian GDP is about 2%. With the increase of production volume and, on the other hand, with the decrease of consumption, domestic market meat self-supply level has risen to 84%.

Product and market development are in the centre of activities. More than a quarter of food industry production will be exported; the majority of the exported dairy products goes to the other EU Member States. Food production is inevitably accompanied by the usage of natural resources, first and foremost, the usage of soil and water. It is important that farmers use natural resources rationally and preserve them also for future generations. The preservation of the environment and local areas and a sustainable use of resources are regarded as some of the Estonian priorities.

Ministries of agriculture and food

- Ministry of Agriculture of Estonia (Põllumajandusministeerium) (EVPM)

Contact: Külli Kaare **Email:** kylli.kaare@agri.ee **Phone:** +3726256554

Address: Lai St 39 // Lai St 41, 15056 Tallinn

Website: <http://www.agri.ee/>

The areas of activity of the Ministry of Agriculture are drafting and realisation of national agricultural development plans and effectuation of corresponding measures, regulation of activities related to the processing of agricultural products, agricultural market regulation, the national stockpiles of basic grain seed and food grains, food control and supervision, plant protection, veterinary medicine, animal and plant breeding, land improvement. The Ministry provides for the legal framework for agricultural research, education and training, and prepares relevant draft legislation.

The objective of the activities of the Ministry is to provide conditions for the sustainable and diverse development of Estonian rural development, agriculture, and fishing industry, to ensure safe and proper food and feeding-stuffs, and a good state of animal health and protection and plant health and protection fields through evolvement, implementation and assessment of rural development, agricultural, and fisheries policies and elaboration and implementation of food safety, animal health and protection, and plant health and protection requirements.

National funding bodies and research programmes

- Ministry of Agriculture of Estonia (Põllumajandusministeerium) (EVPM)

Contact: Külli Kaare **Email:** kylli.kaare@agri.ee **Phone:** +3726256554

Address: Lai St 39 // Lai St 41, 15056 Tallinn

Website: <http://www.agri.ee/>

Research programmes funded by The Ministry of Agriculture of Estonia

National Programme Applied Research and Development in Agriculture 2009-2014

Sub-programme Food safety and health:

The programme aims to improve the safety and quality of food produced, processed and consumed in Estonia, ensure at least a satisfactory condition of animal health and increase the consumers awareness on food safety, animal welfare and its connections to the risk factors of the environment.

Sub-Programme: Plant production and plant health (incl. horticulture)

The goal of the sub-programme is to ensure economic and clean production and preservation technologies for the Estonian plant producers. Due to changes in market situation, plant growing methods on different cultivation levels (organic farming, conventional and extensive farming) need to be researched, focusing on the application of the production (human consumption, feedingstuffs, raw material for the food industry, energetic purposes, etc).

Annual Budget: 550 000 EUR

- The Estonian Research Council

Contact: Madis Saluveer **Email:** madis.saluveer@etag.ee **Phone:** +372 730 0326

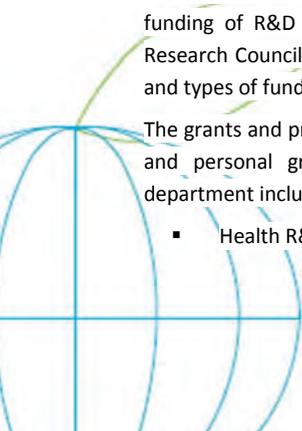
Address: Soola 8, 51013 Tartu

Website: <http://www.etag.ee/estonian-research-council/?lang=en>

Estonian Research Council is a governmental foundation that was established on the basis of Estonian Science Foundation and combined with Research Cooperation Centre, a department from Archimedes Foundation acting as the 7th Framework Programme National Contact Point. The Estonian Research Council was established to concentrate the funding of R&D and guarantee better functioning of financing systems. The Estonian Research Council is the main funding organization of R&D, consolidating different grants and types of funding and giving research more visibility in the society.

The grants and programmes department is responsible for the distribution of institutional and personal grants and handling of grant applications. Grants and programmes department include several national programmes for research:

- Health R&D programme,



- Environmental Conservation and Environmental Technology R&D Programme, and
- Estonian Research Infrastructures Roadmap activities.

The Estonian Research Council is the authorized processor of the Estonian Research Information system that is the information channel for submitting and processing grant applications and for submitting and confirming project reports. The Council also acts as the help-desk to the Estonian Research Information System.

National research institutes

Food related research is performed in several universities and national research institutes. The most important research facilities covering food related topics are listed here.

- **Estonian University of Life Sciences**

Contact: Evelin Loit **Email:** info@emu.ee **Phone:** +372 7313502

Address: Kreutzwaldi 1, 51014 Tartu

Website: <http://www.emu.ee/>

Estonian University of Life Sciences is the only university in Estonia whose priorities in academic and research activities provide the sustainable development of natural resources necessary for the existence of Man as well as the preservation of heritage and habitat. The university consists of five institutes that are responsible for achieving the objectives: Economics and Social Sciences; Technology; Veterinary Medicine and Animal Husbandry; Forestry and Rural Engineering; and Agricultural and Environmental Sciences.

Institute of Agricultural and Environmental Sciences

The institute of Agricultural and Environmental Sciences (IAES) consists of 11 departments (Botany, Environmental Protection, Field Crop and Grassland Husbandry, Horticulture, Landscape Architecture, Landscape Management and Nature Conservation, Mycology, Plant Physiology, Plant Protection, Soil Science and Agrochemistry, and Zoology) and three research and experimental centers (Polli Horticultural Research Centre, Rõhu Experimental Station and the Centre for Limnology).

- **Department of Field Crops and Grassland Husbandry**

Contact: Evelin Loit **Email:** evelin.loit@emu.ee **Phone:** +372 731 3502

Address: Kreutzwaldi 1, 51014 Tartu

Website: <http://pk.emu.ee/en/structure/fieldcrophusbandry/>

Research projects:

- Long term impacts of different farming systems , conventional and organic farming, on crop yield, quality and soil;
- Nutrient cycling in field and grassland systems;
- •Effect of replanting treatments on potato yield and quality;

- •Modelling the effect of climate change on yield;
 - •Application of molecular biology methods in plant production;
 - Effects of biochar application to soils and plant productivity;
 - Liquid manure (slurry), sewage sludge and biomass ash to fertilize grassland and arable land to measure their impacts on yield quality and the environment;
 - Food, feed and energy crops cultivation, environmental impact of agro technologies, yield quality;
 - Green manure crops in conventional and organic farming systems, regulating humus status, nutrient balance in soil;
 - Internet based Decision Support System for plant protection.
- **Department of Horticulture**

Phone: +372 731 3515

Address: Kreutzwaldi 1, 51014 Tartu

Website: <http://pk.emu.ee/en/structure/horticulture/>

The department of Horticulture has several areas of activities such as physiology and biochemistry of horticultural plants, cultivation technologies of fruits, vegetables and ornamentals and postharvest quality and storage technologies of horticultural products.

- **Polli Horticultural Research Center**

Contact: Ave Kikas **Email:** polli@polli.ee **Phone:** +372 43 31 443

Address: Polli, 69104, Karksi-Nuia, Viljandi county

Website: <http://polli.emu.ee/>

The goal of the Polli Horticultural Research Centre is to advance the fruit science, technology of fruit growing, and student's training in the following sphere: (i) introduction, testing and evaluation of cultivars, (ii) breeding of cultivars, especially apple, pear, plum, sweet cherry, black currant, raspberry, and apple vegetative rootstocks, (iii) agricultural methods in fruit production and, (iv) preserving of all fruit and small fruit cultivars of Estonian origin.

As the result of cultivars` introduction and breeding activities, the most complete collections of tree fruit and small fruit cultivars in Estonia have been produced.

The Institute of Veterinary Medicine and Animal Sciences

The Institute of Veterinary Medicine and Animal Sciences performs high-level modern teaching and R&D activities in the field of animal nutrition, animal production, including aquaculture, animal genetics and breeding, reproductive biology, biotechnology, normal and pathological morphology, animal health, infectious and invasive diseases, therapy, food hygiene, food technology, and other subject areas related to animal science and veterinary medicine.

Research conducted by the departments and working groups of the Institute involves almost all aspects of the “from farm to fork” production and processing chain of animal products.

- **Department of Food Science and Technology**

Contact: Meat technology: Lembit Lepasalu - lembit.lepasalu@emu.ee, +372 731 3357

Contact: Milk technology: Hannes Mootse - hannes.mootse@emu.ee, +372 731 3343, +372 5034510

The department has a long-standing relationship with the food processing industry. They regularly train specialists, provide consultation services for enterprises and conduct scientific and applied research covering a broad spectrum of food-related issues. Specific areas of emphasis in which it provides consultation and research support to the food processing industry include:

(i) Food and food processing technologies:

- Research into the impact of technological practices and operating regimes on the composition and quality of dairy and meat products (quality assessment of products manufactured under different conditions);
- Development of traceability systems across the food supply chain;
- Experimental product development at the Microdairy and Meat laboratory
- Scientific and applied research provided by the department laboratory's
- Fractal structure analysis of food materials; chemical, microbiological and organoleptic analysis of food
- Research related to biochemistry and molecular biology

(ii) Experimental development of food products

(iii) Functional foods and health-promoting additives

The department's most important areas of applied research are related to developing new food products. Since major clients and partners include milk and meat processing companies, their laboratory's are the primary structures that deal with the sector.

Department Food Hygiene

Contact: Mati Roasto **Email:** mati.roasto@emu.ee **Phone:** (+372) 7 313 433

Address: Kreutzwaldi 58A, 51014, Tartu

Website: <http://vl.emu.ee/en/structure/department-of-food-hygiene/>

The department carries out research in the field of food safety and quality and partly in veterinary public health. The department is the leading body for teaching of veterinary medicine students in food hygiene and –safety and in veterinary food control. They are responsible for teaching of meat technology students in veterinary control and food hygiene in meat industry. They also carry out research in human nutrition and in cell and molecular biology for students under different curricula.

Main research topics:

- Functional food supplements: (i) Flavonoids, (ii) Antioxidativity, (iii) Antimicrobial activity
- Foodborne pathogenic bacteria: (i) *Listeria monocytogenes*, (ii) *Campylobacter* spp., (iii) *Yersinia* spp.
- Chemical food hazards: Nitrates, nitrites
- Production and environmental hygiene

Institute of Forestry and Rural Engineering

Address: Kreutzwaldi 1, 51014 Tallinn

Website: <http://mi.emu.ee/en/>

- Tallinn University (TLU)
-

Phone: +372 640 9101

Address: Narva mnt 25, 10120 Tallinn

Website: <http://www.tlu.ee/>

Tallinn University includes 19 institutes and 6 colleges where study and research is conducted in six disciplines: (i) Educational sciences, (ii) Humanities, (iii) The Arts, (iv) Natural sciences, (v) Social sciences and, (vi) Health sciences.

In 2011 Tallinn University had 43 research projects that were funded by the Estonian Science Foundation (incl 11 postdoctoral grants and 2 top researcher grants) and 18 research projects that were funded by government. In addition, scientists of Tallinn University work with a variety of science and development projects.

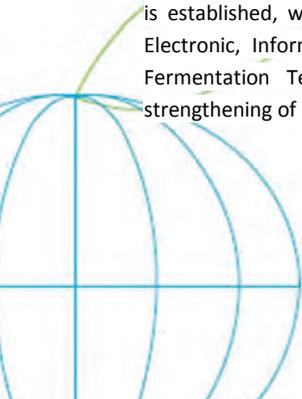
- Tallinn University of Technology (TUT)
-

Email: info@ttu.ee **Phone:** +372 620 2002

Address: Ehitajate tee 5, 19086 Tallinn

Website: <http://www.ttu.ee/en/>

Tallinn University of Technology (TUT) is the only technological university in Estonia and the flagship of Estonian engineering and technical education. This is the place where synergy between different fields (technological, natural, exact, social and health sciences) is established, where new ideas are born. TUT has also several Competence Centres: Electronic, Information and Communications Technology; Cancer Research; Food and Fermentation Technology. Participation in centres of competence has promoted strengthening of cooperation with entrepreneurship.



Department of Food Processing

Contact: Raivo Vokk **Email:** raivov@rocketmail.com **Phone:** (+372) 620 1952

Address: Ehitajate tee 5, 19086 Tallinn

Website: <http://www.ttu.ee/en/?id=47745>

The Department of Food Processing has become the centre concentrated on different problems connected with food area - new technologies, food safety, quality management etc. The scientific topics have been influenced by specificity of the study programmes and courses as well as industrial training. Different planned technological investigations have been carried out on the basis of the scientific and industrial grants. More recently, the short-term objectives are directed to perfecting food quality and the nutritional aspects of different food products both produced in Estonia and imported, as well.

Biotechnological innovations in food processing:

- Optimization of growth of brewers yeast. Identification of factors limiting the growth
- Rye sourdough fermentation and bread stability
- Ice structuring proteins (ISP)
- Development of dietary foods, taking into account physiological and biochemical peculiarities of humans
- The production of gelling agent for specific purpose
- Comparative study on biologically active compounds in sea-buckthorn *Hippophæ rhamnoides*
- Nutrition surveys for children in schools and nurseries

- [University of Tartu \(UT\)](#)

Email: info@ut.ee **Phone:** +(372) 737 5440

Address: Ülikooli 18, 50090 Tartu

Website: <http://www.ut.ee>

University of Tartu, founded in 1632, is one of the oldest universities in Northern and Eastern Europe.

It is the only Estonian university in the top 3% universities in the world.

There are 9 faculties and important contributions to the research work of the faculties are made by the university's 4 colleges, the Estonian Genome Center and the University of Tartu Library.

High-level research is also conducted by the university's interdisciplinary centres of excellence.

Faculty of Medicine (UT)

Medicine has been taught at the University of Tartu since 1632 when the king of Sweden Gustav Adolf gave orders to found a university here. Nowadays the Faculty of Medicine

has developed into a medical and study centre consisting of 8 pre-clinical departments and 18 clinical departments.

It is the only Faculty in Estonia where students can study medicine, dentistry, pharmacy, nursing science and public health.

- **Department of Biochemistry (Faculty of Medicine)**

Contact: Mihkel Zilmer, DrMed, PhD, professor of Medical Biochemistry

Email: mihkel.zilmer@ut.ee **Phone:** (+372) 7 374 311

Address: Ravila 19, 50411, Tartu

Website: <http://biomedicum.ut.ee/arbkl/>

Department of Biochemistry teaches medical, dental and pharmacy students in accordance to the programmes adapted to those specialties. These programmes involve a special chapter Biochemistry of nutrition (human metabolism-based analysis of nutrients, diets, clinical aspects of nutrition, pre-and probiotics, antioxidants, functional food). Scientific work comprises innovative activities in the field of functional food products, probiotics and prebiotics, oxidative stress, as well as conduction of different clinical trials on innovative foodstuffs. Department of Biochemistry is one of the scientific partners of a special Consortium (the R&D Centre; with participation of different spin-off firms and enterprises) whose research is focused on biotechnological fundamental and applied studies on development original milk products. Department of Biochemistry belongs also to the Centre of Excellence for Translational Medicine.

Faculty of Science and Technology (UT)

- **Institute of Chemistry (Faculty of Science and Technology)**

Chair of Analytical Chemistry (Institute of Chemistry)

Contact: Ivo Leito, PhD, professor of Analytical Chemistry **E-mail:** ivo.leito@ut.ee

Website: <http://tera.chem.ut.ee/~ivo/RD.html> or <http://www.ut.ee/ams/>

A core research topic of the Analytical chemistry research group of University of Tartu is focused on liquid chromatography (LC), mass spectrometry (MS) and especially the hybrid LC-ESI-MS method whereby LC and MS are interfaced by the electrospray ion source (ESI). These techniques are applied by the group to a diverse range of analysis tasks, including different food-related applications. The research projects carried out recently in food analysis include development of analysis methods for Sudan dyes, amino acids, seleno-amino acids, pharmaceuticals, pesticides, perfluorinated carboxylic and sulfonic acids, etc. The matrixes include fruits, vegetables, cereals, honey, fish, sauces and ketchups, etc. As a related „horizontal“ topic research on quality assurance, method validation and measurement uncertainty estimation of LC-MS analysis is carried out.

Some of the recent highlights are development of a novel electrospray nebulizer, application of polyfluoroalcohols as mobile phase modifiers and ESI ionization enhancers

and development of novel derivatization reagents aiming at enhancing ionization in the ESI source.

- **Estonian Crop Research Institute**

Email: info@etki.ee **Phone:** +372 7766 901

Address: J. Aamisaia 1, Jõgeva alevik 48309

Website: <http://etki.ee/index.php/eng/>

Estonian Crop Research Institute is an autonomous state research and development institute under the jurisdiction of the Ministry of Agriculture of Estonia.

The main areas of activities of the Institute are variety breeding of agricultural crops (winter rye, winter and spring wheat, barley, oats, field pea, potatoes, vegetables, forage grasses and legumes), applied research on agro technical aspects and seed production of agricultural crops and basic research in genetics and heritability of valuable traits, selection and description of genetic resources. Maintenance of plant genetic resources in the genebank started in last decade. Commercial activities of the Institute include maintenance breeding, production of breeder's seed, production and marketing of certified seed and representation of varieties of foreign breeding companies, collection of royalties according to UPOV legislation.

- **The National Institute for Health Development**

Email: tai@tai.ee **Phone:** +372 659 3900

Address: Hiiu 42, 11619 Tallinn

Website: <http://www.tai.ee>

National Institute for Health Development is a government established research and development institution collecting, linking and providing reliable national information from a multitude of sources, related to the health of the Estonian population. They also maintain the national food database.

The National Institute for Health Development conducts research activities in the following fields: (i) biostatistics and epidemiology, (ii) oncology, (iii) medical virology and, (iv) infectious diseases, drug addiction and risk behavior.

In a research framework The National Institute for Health Development conducts or participates in periodic national and population-based surveys of the health state and health behaviour of children, youths and adults.

Their task is to monitor the implementation of national health strategies and programmes, develop indicators therefor and assess the efficiency of their implementation.

- **The National Institute of Chemical Physics and Biophysics(NICPB)**

Address: Akadeemia tee 23, Tallinn 12618

Website: <http://www.kbfi.ee/>

The National Institute of Chemical Physics and Biophysics is a research institution that carries out fundamental and applied research and engages in the development of the novel directions in material sciences, gene- and biotechnology, environmental technology, and computer science.

The Laboratory of Environmental Toxicology(NICPB)

Contact: Dr. Anne Kahru, Ph.D., Leading research scientist, Head of Laboratory, Chair-person of the Estonian Society of Toxicology **E-mail:** anne.kahru@kbfi.ee

Main research areas and key-words:

- •Elucidation of mechanisms of toxic effects of chemicals (e.g., nanoparticles) using in vitro tests (luminescent bacteria, algae, protozoa, animal/human cell cultures etc)
- •Construction of new recombinant luminescent bacteria for study of the mechanisms of toxic action of chemicals and/or nanoparticles
- •Manifestation of toxic effects on physiological endpoints of microorganisms. Intracellular homeostasis.
- •Bioavailability and its mechanisms
- •Environmental risk assessment
- •3R, QSAR, REACH

The high level of scientific research of the Lab has led to several previous and currently funded EU projects as well as other International cooperation projects. The research activities range from studying fundamental aspects of biology to applications. Strong emphasis is given to the development and refinement of molecular biology methods in mechanistic research.

- **Bio-competence center of healthy dairy products (BioCC)**

Contact: Ene Tammsaar **E-mail:** ene.tammsaar@tptak.ee **Phone:** +372 51 64 210

Address: Kreutzwaldi 1, 51014 Tartu, Estonia

Website: <http://www.tptak.ee/en/>

The focus of the Bio-Competence Centre of Healthy Dairy Products (BioCC) is to enhance competitiveness and profitability of the production of healthy added-value milk and dairy products, through innovative solutions and encompassing the whole chain (feed industry, cattle breeding and nutrition, dairy technology, human nutrition and medicine). There is a great opportunity in food industry to find R&D based solutions for the prevention of health problems through development of health-sustaining and health supporting food.

BioCC has the expertise to perform R&D in the areas from breeding, feeding, raising livestock, elaborating of creation ideology for health-supporting products to clinical trials to investigate the wholesomeness of food products and provide scientific substantiation of health claims.

The uniqueness of the BioCC lies in synergy of uniting the expertise of the entire chain starting from feed industry and cattle breeding up to making healthy products clinical trials. In the BioCC the principle “from farm to fork” is fully in force.

The Estonian Accreditation Centre has confirmed that Bio-Competence Centre of Healthy Dairy Products conforms to the requirements of EN ISO/IEC 17025:2005 as testing laboratory in the field of food and feeding stuffs microbiological analyses and blood immunoassays. BioCC is working together with milk producers, dairy processors and with two leading Estonian universities in the fields of feed industry, cattle breeding and nutrition, dairy technology, human nutrition and medicine.

International opportunities. BioCC offers clinical trials and physiological research for testing the effect of foodstuffs, animal feed,- feed additives and food supplements on animals and humans. For that BioCC has established and trained a competent core team who are capable of providing consultations, performing tests and conducting necessary scientific research. BioCC offers R&D services throughout the entire farm-to-fork value chain. By creating synergies between agriculture, food science and medical science, the BioCC has been able to develop several novel products such as a functional food and EU registered silage bacteria. BioCC own collection microbiological of strains from human, animal and plant origin. Strains have been patented and deposited in international culture collections and BioCC is willing to license its strains to different food and animal feed producers. BioCC intellectual property also involves different useful databases for cattle breeders, milk producers and milk processors.

- **Competence center for food and fermentation technologies (CCFFT)**

Contact: *Urmas Sannik* **Email:** info@tftak.eu **Phone:** +372 6408200

Address: Akadeemia tee 15 A, 12618 Tallinn

Website: <http://www.tftak.eu>

There has been two Strategic Development Areas from the very beginning up to now: 1. Quality, Functionality and Stability of Food, and 2. Novel Fermentation Technologies

CCFFT has developed during the last number of years into a modern food and systems biology center with two broad practical aims:

- a) Develop and apply systems biology methods
 - to optimize microorganisms, biotechnological processes and perform ab initio cell design,

- to develop and optimize food production processes (cheese, rye bread, ice cream etc.) with emphasis on metagenomics based microbial resource management, and food category appraisal based sensory analysis; and
- b) Carry out applied research supporting product development in the partner enterprises.

Problems concerning food quality, the stability of sensory and nutritional properties, and the relationships between food and health, are of primary concern for modern food technology and nutrition science. The composition, structure, and nutritive properties of raw materials change during processing, which often involves a complex series of steps. Additionally, changes occur during food storage. An important goal is to optimize this complex process to ensure the maximal benefits for health as well as a positive consumer perception.

Genomics and proteomics, food systems biology and physics, instrumental and descriptive sensory analysis, together with modeling, provide tools to construct a detailed physical and chemical characterization of raw materials and additives, bacteria and their consortia, and provide quantitative information about how molecules, cells, organelles, and food materials interact in time and space during food production, ripening, storage and digestion in the human gastrointestinal tract.

The development of a systems biology platform for the study of microorganisms is the scope and content of the research in the second strategic development area. This platform can be applied to solve synthetic biology tasks and study processes used to produce yeast biomass and products derived from it. It is useful to quantitatively study the physiology of *Lactococcus lactis* and *Escherichia coli*, and in the development of balanced complex media to grow these bacteria.

- **Competence Center of Food and Fermentation Technologies**

Contact: *Urmas Sannik* Email: urmas@tftak.eu Phone: +3726408200

Address: Akadeemia tee 15a, 12618 Tallinn

Website: <http://tftak.eu>

CCFFT was founded in 2004 to bridge the gap between academia and industry in cooperation between Tallinn University of Technology and six Estonian enterprises active in food production and processing. CCFFT offers extensive knowledge in both food and fermentation science. Computer-controlled systems enable one to carry out the most complicated possible cultivation processes, including simulations of food processing, and the human gastrointestinal tract. CCFFT possesses modern equipment for physical, chemical and biological analysis of food- and bio-products. Research at CCFFT involves development of novel cultivation techniques, simultaneously with cell physiological models, along with studies of food stability, quality and health benefits. The industrial partners of CCFFT include world leading companies such as Lallemand Inc, Applicon Inc, Valio OY, as well as local companies. CCFFT has become a major training base for

undergraduate and postgraduate studies in food technologies from universities with 55 graduate students presently taking part in R&D projects at the Centre.

- Estonian Research Institute of Agriculture

Address: *Lai St 39 // Lai St 41, 15056 Saku*

Website: <http://www.eria.ee/index.php?page=3>

- Jõgeva Plant Breeding Institute (JPBI)

Address: *Lai St 39 // Lai St 41, 15056 Saku*

Website: <http://www.sordiaretus.ee/?setLang=eng>





SUSFOOD COUNTRY REPORT

FINLAND

A stylized graphic in the bottom left corner consisting of a blue wireframe globe and a green leaf-like shape above it.

Authors:

MTT : Susanna Rokka, Sari Torkko, Sirpa Kurppa

MMM : Suvi Ryyänen

Introduction

Finland is the northernmost country in the world that is able to produce most of the food it needs. The Finnish conditions are severe, but the breeds, varieties and methods developed for agriculture over centuries allow viable farming this far north.

In 2010 there were 62 800 active farms in Finland, most of them family farms. Agriculture employed 3.2 percent of the working population in 2011 and the food industry a further 1.5 percent. The agriculture and food sectors currently employ, directly or indirectly, over 300 000 people (12 percent of the workforce).

In 2010 the contribution of the agriculture, game and fisheries sectors to Finland's GDP was 2.1 percent and of the food industry 1.7 percent. The three largest food and drinks industry sectors – meat processing, dairy farming and baking – represent 50% of the industry's gross production value. Eighty-five percent of all raw ingredients used in the food and drinks industry originate from Finland. Food sector exports in 2011 were worth €1.6 billion and imports €4.3 billion. There were approximately 1 900 food companies in 2008, many of them small-scale. Most of the foodstuffs consumed in Finland are still of domestic origin.

Finnish agricultural research ranked first in the 2001-2004 relative citation impact assessment for the OECD countries, covering all major fields of science. Core funding of €16 million and €23 million of external funding contributed to food and nutritional sciences in Finland. Based on the entries in the SUSFOOD MKB, Finland currently has several research projects in sustainable food production and consumption, including research carried out on the nutritional value of products and sustainable ways of producing food.

Ministries of agriculture and food

- Ministry of Agriculture and Forestry (MMM)

Phone: +358 295 16 001

Address: PO Box 30 (Hallituskatu 3, Helsinki), FI-00023 GOVERNMENT

Website: <http://www.mmm.fi/en/index/frontpage.html>

Ministry of Agriculture and Forestry (MMM) steers the policy on sustainable use of natural resources and the policy on food chain. Legislative work is carried out as part of the Finnish Government and the EU institutions and decision-making. The newly revised organisation structure confirms the new strategy of the Ministry, with the functions of the Ministry and the whole administrative branch focused on two main sectors, food and renewable natural resources.



- **Ministry of the Environment (YM)**

Phone: + 358 2952 50400

Address: PO Box 35 (Kasarmikatu 25, Helsinki), FI-00023 GOVERNMENT

Website: <http://www.ym.fi/en>

The Ministry of the Environment leads national efforts and encourages cooperation in safeguarding biodiversity, promoting sustainable development, and securing a good living environment for both current and future generations.

National funding bodies and research programmes

There are different ways of funding food related research in Finland: basic and competitive research funding. The basic funding in the institutes is based on long term strategies with the Ministry of Agriculture and Forestry and the Ministry of the Environment. Programmes in Tekes and the Academy of Finland are competitive.

The governmental budgets for food related research comes from general programmes. In addition to this programmes the applicants have to apply own financing as well, the amount varies in the programmes and in total it is valued to be larger than the agency funding.

The main part of funding comes from private organisations, however, this kind of funding is difficult to measure. According to the FAHRE country report (2010), the Finnish Food and Drink Industries' Federation (ETL) writes 56 million EUR for the food chain sector.

In addition to this, the Finnish innovation cluster has recently incorporated so called "competence clusters" which exists out of companies and research institutes. These clusters finance their own research, covering 'hot' topics for the industry. The Finnish innovation system is described in <http://www.research.fi>.

The Finnish system for food research supporting uses a lot of instruments, such as programmes, institutes and universities, researcher trainings, centres of excellence in research, international cooperation, cooperations with business and industry and via strategic centres for science, technology and innovation.

Funding bodies and some research programmes specific for sustainable food research are described below.

- **Ministry of Agriculture and Forestry (MMM)**

Phone: +358 295 16 001

Address: PO Box 30 (Hallituskatu 3, Helsinki), FI-00023 GOVERNMENT

Website: <http://www.mmm.fi/en/index/frontpage.html>

In Agri-food research, the Ministry of Agriculture and Forestry plays a significant role with its governmental research institutes, and with its competitive research budget. The

ministry directs its competitive funding to projects providing science - based evidence to political decision making, as well as providing innovative technologies to help improve competitive and environmentally and ethically sustainable production technologies and to ensure food quality and safety. With its competitive research budget, the ministry also co-operates with other research funding bodies in relevant themes and ERA-NET-schemes.

- **Ministry of the Environment (YM)**

Phone: + 358 2952 50400

Address: PO Box 35 (Kasarmikatu 25, Helsinki) FI-00023 GOVERNMENT

Website: <http://www.ym.fi/en>

The Ministry of the Environment co-ordinates the environmental cluster research programme, and is the programme's main source of funding. This programme aims to find new ways to help improve the environment, and to develop related products, while improving co-operation between researchers, businesses, the authorities and funding organisations.

Research programmes funded by The Ministry of the Environment

More from less - wisely

Finland's programme to promote sustainable consumption and production – Getting more and better from less – was one of the first such national programmes to be launched anywhere in the world. The programme was initiated in 2005, in response to a decision made at the UN Sustainable Development Summit in 2002 that ten-year framework programmes should be drawn up in order to promote sustainable forms of production and consumption. The proposal for the revised programme, More from Less – Wisely, was published in May 2012. The aim of this programme is therefore to reduce greenhouse gas emissions and other environmental nuisances caused by consumption, while simultaneously improving quality of life, finding new opportunities for the green economy and creating new jobs. In addition, the programme seeks to promote material and energy efficiency in the public sector, and in companies and households.

Website: [http://www.ym.fi/en-US/The environment/Sustainable consumption and production/Programme to Promote Sustainable Consump\(10503\)](http://www.ym.fi/en-US/The%20environment/Sustainable%20consumption%20and%20production/Programme%20to%20Promote%20Sustainable%20Consumption(10503))

Timing: 2010-2015

Contact: Taina Nikula

- **Finnish Funding Agency for Innovation (Tekes)**

Email: firstname.lastname@tekes.fi **Phone:** +358 29 50 55000

Address: PO Box 69 (Kyllikinportti 2), FI-00101 Helsinki

Website: <http://www.tekes.fi/en>



Tekes is the most important publicly funded expert organisation for financing research, development and innovation in Finland. We boost wide-ranging innovation activities in research communities, industry and service sectors. Tekes promotes a broad-based view on innovation: besides funding technological breakthroughs, Tekes emphasises the significance of service-related, design, business, and social innovations. Tekes works with the top innovative companies and research units in Finland. Every year, Tekes finances some 1,500 business research and development projects, and almost 600 public research projects at universities, research institutes and polytechnics. Research, development and innovation funding is targeted to projects that create in the long-term the greatest benefits for the economy and society. Tekes does not derive any financial profit from its activities, nor claims any intellectual proprietary rights.

Research programmes funded by Tekes:

Green Growth programme

The aim of the Green Growth programme is to identify potential new growth areas for the sustainable economy business, which are essentially based on lower energy consumption and sustainable use of natural resources. The programme aims at a leap forward in energy and material efficiency of production and service chains over the entire life span of products. The programme is aimed for companies seeking to grow or renew their business in the face of changes in energy and raw material prices and impacts of laws and regulations. The programme will support the generation of new innovations especially on boundaries between sectors, as future sustainable economy solutions will not be defined by traditional sectoral divisions. Research organisations will play an important role in generating new anticipatory information and skills.

Website:

<http://www.tekes.fi/en/programmes-and-services/tekes-programmes/green-growth/>

Timing: 2011-2015

Contact: <http://www.tekes.fi/en/programmes-and-services/tekes-programmes/green-growth/contact/>

- **Academy of Finland**

Email: firstname.lastname@aka.fi **Phone:** +358 29 533 5000

Address: PO Box 131 (Hakaniemenranta 6), FI-00531 Helsinki

Website: <http://www.aka.fi/en-GB/A/>

The Academy of Finland's mission is to finance high-quality scientific research, act as a science and science policy expert, and strengthen the position of science and research. The Academy works to contribute to the renewal, diversification and increasing internationalisation of Finnish research. Its operation covers the full spectrum of scientific disciplines. The Academy supports and facilitates researcher careers in research and internationalisation. The Academy is keen to emphasise the importance of the impact of

research and breakthrough research by encouraging researchers to submit boundary-crossing funding plans that involve risks but that also offer promise and potential for scientifically significant breakthroughs. The Academy funds research annually with 327 million euros (year 2012). Each year the Academy receives funding applications worth 1.1 billion euros. Funding is provided for research projects, research programmes, Centres of Excellence in research, research posts, foreign visiting professors' work in Finland and international networking. Each year Academy-funded projects account for some 3,000 researcher FTEs at universities and research institutes.

National research institutes

Finland has an exceptionally large network of universities and applied universities - 15 universities and 26 universities of applied science. Most Finnish universities are publicly owned, while the universities of applied science can be private, semi-private or public institutions. Finnish municipalities are important owners of applied universities. The largest universities are the University of Helsinki, Aalto University School of Science and Technology, University of Oulu and the University of Turku. Many of the Finnish universities are very small.

In addition to these higher education based research players Finland has 20 government research institutes (sectoral). The biggest player is VTT (The Technical Research Centre of Finland). MTT Agrifood Research Finland is the leading research institute developing sustainability and competitiveness of the food system. The Finnish Food & Health public research is dominated by universities and sectoral research institutes and smaller research at the universities of applied science.

- **University of Helsinki**

Email: firstname.lastname@helsinki.fi

Address: P.O. Box 33 (Yliopistonkatu 4), FI-00014 University of Helsinki

Website: <http://www.helsinki.fi/research>

The University of Helsinki is one of the best multidisciplinary research universities in the world. The high-quality research carried out by the university creates new knowledge for educating diverse specialists in various fields, and for utilisation in social decision-making and the business sector. The University of Helsinki is an international academic community of 40,000 students and staff members. It operates on four campuses in Helsinki and at 17 other locations. Founded in 1640, the University of Helsinki wants to strengthen its position among the world's leading multidisciplinary research universities and to actively promote the well-being of humanity and a fair society.



Faculty of Agriculture and Forestry

Email: mmtk-international@helsinki.fi **Phone:** + 358 2941 58247

Address: P.O. Box 62 (Viikinkaari 11), FI-00014 University of Helsinki

Website: <http://www.helsinki.fi/af-faculty/>

Faculty of Agriculture and Forestry promotes sustainable use of natural resources and human wellbeing through scientific research and teaching.

- **Department of Food and Environmental Sciences**

Contact: Kaisu Taskila **Email:** research_funding_services@helsinki.fi **Phone:** +358 2941 58909

Address: P.O. Box 66 (Agnes Sjöbergin katu 2), FI-00014 University of Helsinki

Website: <http://www.helsinki.fi/food-and-environment>

The Department of Food and Environmental Sciences has chosen four extensive, multidisciplinary areas as its focus areas of research: food production chains, food quality and healthy nutrition, microbes resources and their utilisation, and vital soil and clean environment. The department with a staff of more than 200, provides an environment where high-quality research, training based upon it, and the administrative work which provides the supporting framework are conducted in a good spirit of togetherness.

Faculty of Veterinary Medicine

Email: firstname.lastname@helsinki.fi **Phone:** +358 2941 911

Address : P.O. Box 66 (Agnes Sjöbergin katu 2), FI-00014 Helsingin yliopisto

Website: <http://www.vetmed.helsinki.fi/english/index.htm>

The Faculty of Veterinary Medicine safeguards the health and wellbeing of animals and people.

- **Department of Food Hygiene and Environmental Health**

Phone: +358 2941 911

Website: <http://www.vetmed.helsinki.fi/english/foodhygiene/index.html>

The Department of Food Hygiene and Environmental Health carries out research of an internationally high standard. The Centre of Excellence in Microbial Food Safety Research (MiFoSa) is acting at the Department together with the Department of Veterinary Biosciences. Mifosa belongs to the national programme for Centres of Excellence in Research for the years 2008-2013, designated by the Academy of Finland. Research and studies in the subject comprehensively cover the diseases caused by microbes and toxins spread to people via foods and the environment.

- **University of Eastern Finland (UEF)**

Contact: Jaana Backman **Email:** firstname.lastname@uef.fi **Phone:** +358 294 45 1111

Address: P.O. Box 1627 (Yliopistoranta 1), FI- 70211 Kuopio / P.O. Box 111 (Yliopistokatu 2), FI-80101 Joensuu

Website: <http://www.uef.fi/uef/english>

The University of Eastern Finland is a multidisciplinary university which is internationally recognised for its competitive research and education. The university's research in its areas of expertise is of high international standard and the university's education provision is attractive. Furthermore, the university's research in the areas of expertise contributes to the national intellectual capital and the university produces research-based knowledge, which is relevant to the surrounding society and trade and industry alike. Areas of expertise in research: forests and the environment, health and well-being and new technologies and materials.

- **University of Jyväskylä**

Contact: Elina Humala **Phone:** +358 14 260 1211

Address: P.O. Box 35, (Seminaarinkatu 15), FI-40014 University of Jyväskylä

Website: <http://www.jyu.fi/en/research>

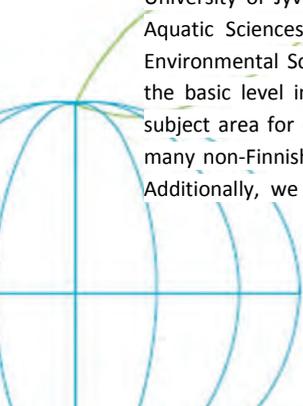
The University of Jyväskylä is a nationally and internationally significant research university and an expert on education that focuses on human and natural sciences. The University is Finland's leading expert in teacher education and adult education, as well as the major exporter of education. Faculties: Humanities, Information Technology, Education, Business and Economics, Sport Sciences, Mathematics and Science and Social Sciences.

Department of Biological and Environmental Science

Address: P.O. Box 35 (Survontie 9C), FI-40014 University of Jyväskylä

Website: <http://www.jyu.fi/bioenv/en>

The Department of Biological and Environmental Science offers high-quality teaching and is founded on excellent research activities. The Department is one of the largest at the University of Jyväskylä, and consists of four major educational and research divisions: Aquatic Sciences, Cell and Molecular Biology, Ecology and Evolutionary Biology and Environmental Science and Technology. Students at the department receive training at the basic level in all areas, and then tailor their advanced studies within their major subject area for completion of B.S., M.S. or Ph.D. degrees. The Department is home to many non-Finnish students and staff, and teaching is done in both Finnish and English. Additionally, we offer the International Masters Programme in Aquatic Sciences and



participate in other multi-disciplinary International Masters Programmes: Nanoscience, Renewable Energy and Development and International Cooperation.

School of Business and Economics

Contact: Hanna-Leena Pesonen

Address: P.O. Box 35 (Ohjelmakaari 10), FI-40014 University of Jyväskylä

Website: <http://www.jyu.fi/jsbe/en>

The Jyväskylä University School of Business and Economics (JSBE) is an innovative, active, and international scientific community with 1100 full time students, 170 doctoral students, 200 MBA students and 100 staff members. It is a full service Business School with vivid educational activities (Bachelor, Master, Doctoral), research, and business outreach. Research focuses on problems concerning the evaluation of businesses and organizations and understanding their functions as parts of society. Research topics include applied economic research, labour markets, regional studies, different aspects of financial and management accounting in for-profit and non-profit organizations, strategic management, competitive analysis, business ethics, family businesses, entre- and intrapreneurship, and corporate environmental management.

- University of Oulu

Email: firstname.lastname@oulu.fi **Phone:** +358 294 480 000

Address: PL 8000, FI-90014 Oulun Yliopisto

Website: <http://www.oulu.fi/english/>

The University of Oulu is an international science university which creates innovation for the future, well-being, and knowledge through multidisciplinary research and education. Future innovation is about seeking, utilizing and applying new knowledge. The University of Oulu researches people and culture in a changing living environment, as well as opportunities that new technology provides for improving the well-being of people and the environment. The University of Oulu is a multidisciplinary expert in Northernness. Founded in 1958, our research and education community is 16 000 students and 3000 employees strong, and one of the biggest and the most multidisciplinary universities in Finland. The six faculties, the many departments and the specialized research units of the University of Oulu create the foundation for multiscientific research, innovation and training of experts for demanding professional tasks.

CEMIS-Oulu; Food processing and analytics

Email: firstname.lastname@oulu.fi **Phone:** +358 294 484 636

Address: Kehräämöntie 7, Teknologiapuisto, PL 127, FI-87400 Kajaani

CEMIS-Oulu is a multidisciplinary research unit at the University of Oulu established by fusing laboratories of biotechnology and measurement technology. The unit produces and

offers applied research expertise of international high quality in particularly in bioanalytics, analytical chemistry and biosensors. Two of the main application fields are food industry and well-being. The CEMIS-Oulu locates in a region of Kainuu known for its pure environment and great renewable natural resources. The region is one of the main producers of forest berries in Finland and home of several SMEs utilizing natural materials in food products. The unit has established a good cooperative network with the SMEs. The current research activities of CEMIS-Oulu in food science are focused on sustainable food processing, food safety and analytics. We investigate plant-derived materials and especially side streams of their industrial processing aiming to improve efficient use of valuable raw materials and to develop new products for food industry, but also for other industrial fields such as cosmetics. We carry out also contract-based product development projects and analytical services for food industry. When it comes to development of new analytics, we are best known for biosensor development. The biosensors have practically limitless application opportunities in food industry and food safety ranging from rapid detection of toxins and contaminating microbes to inspection of nutritional quality of raw materials. Our very own niche in this field is developing sensors for detection of nutritional status of humans.

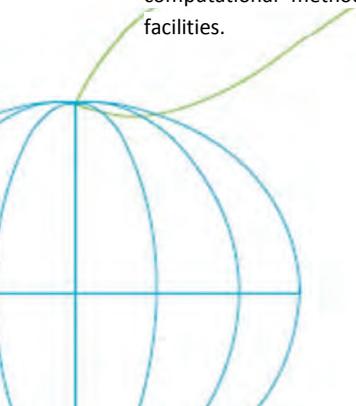
Instruments: The CEMIS-Oulu has modern and versatile instrumentation for analytical work including capillary electrophoresis, gas chromatographs (GC/FID and GS/MSD), LC-MSD and various other LC detectors, microplate reader with spectrophoto/fluoro/luminometer detection, flow cell cytometer, automatic monitoring system for microbe growth (Bioscreen), RT-PCR, DNA-extractor and cell culture facilities. We are fully equipped for developing and testing electrochemical and surface plasmon resonance -based biosensors and pilot instruments.

Mass and Heat Transfer Process Engineering

Address: P.O.Box 4300, FI-90014 University of Oulu

Website: <http://www.oulu.fi/pyolamen/>

The facilities available at the Mass and Heat Transfer Process Laboratory are grouped by research applications. There are facilities for catalytic studies, membrane studies, separation studies, heat transfer studies, industrial waste stream utilization, computational methods, laboratory exercise equipments and analysators and other facilities.



- University of Turku

Email: firstname.lastname@utu.fi **Phone:** +358 2 333 51

Address: FI-20014 Turun yliopisto

Website: <http://www.utu.fi/en/research>

University of Turku is an active academic community of 25 000 students and staff members – a truly international research university, a provider and developer of Finnish high-quality education and a strong bellwether of its area. High-grade, diversified research is the foundation the University of Turku. Free research and scientific education are advanced in the university. The search of the truth and critical challenging of truisms are driving forces of the research. Research is done in seven faculties and in several special units. Numerous high placings in worldwide university rankings tell about the high quality of the university. There are over thousand researchers working in the university and about 150 new doctors graduate annually.

- University of Vaasa

Contact: Marita Niemelä **Email:** firstname.lastname@uva.fi **Phone:** +358 29 449 8080

Address: Wolffintie 34, FI-65200 Vaasa

Website: <http://www.uva.fi/en/about/>

The University of Vaasa educates responsible leaders and experts for international assignments. The fields of the university are administrative sciences, business studies, languages and communication technology. The strategic areas of the University of Vaasa are finance, management, energy and multilingualism. These strategic areas are multidisciplinary themes in teaching and research, which we have chosen and on which we focus in particular. Our research is strongly connected to our time and we produce scientific knowledge of high quality about issues which are useful for society and the business world. We respond to modern demands by also providing our students with skills for international tasks and business competence. The strength of our university is the community spirit which promotes multidisciplinary studies and prepares graduates for tasks requiring responsibility in working life.

Consumption Research and Customer Value Creation

Website: http://www.uva.fi/en/research/groups/consumer_research/

Our research group is built around a strong knowledge of consumer behaviour research. We examine relevant economic phenomena in different cultural playing fields using the diverse tools of consumption research. Our research is related to value creation for consumers (customer value), businesses (competitive advantage) and culture (cultural significance). Our research group combines standard research with practical applications. Areas of application include current business fields where our collaboration with various

knowledge centres is strong. Currently these areas are foodstuffs, energy, retail sales, communication, design and leisure-time. Regarding culture, we take an international view as we examine consumption culture, national differences and connections, where urban and local features of consumption are highlighted. In addition, we emphasise the ethical dimensions of the operational environment and focus on the examination of responsibility and welfare.

Networked Value Systems (NeVS)

Website: <http://www.uva.fi/en/research/groups/nevs/>

Networked Value Systems is a multidisciplinary research program that combines both strategic management and operations management capabilities. Research program studies strategies, processes and practices within industrial value systems, networks and firms. Research program utilizes theories of strategic and operations management. Research program focuses on three particular themes: inter-organizational networks and relationships, strategies and strategy processes, as well as industrial service business. Program intends to develop both theory and practice.

- **Natural Resources Institute Finland (2015-)**

Address: Viikinkaari 4, FI-00790 Helsinki

Website: <http://www.luke.fi>

MTT Agrifood Research Finland, the Finnish Forest Research Institute and the Finnish Game and Fisheries Research Institute are to be amalgamated under a new entity called Natural Resources Institute Finland as of 1 January 2015. Natural Resources Institute Finland will coordinate bioeconomy research nationally and look for increasingly integrated solutions to societal problems. Natural Resources Institute Finland will be the second largest research institution in the country and one of the biggest clusters of bioeconomy expertise in Europe. In 2012, the total output of the three institutions was more than 1,700 person-years of research, and their combined turnover was approximately EUR 140 million. The three institutions currently operate in 38 different locations, which means that the new Natural Resources Institute Finland will have offices across the country. The merger is part of the reform of Finland's research and innovation system. The Finnish Government's aim is to pool the resources of research institutions operating in the same field and to clarify the division of responsibilities between universities and the state's research centres.

- **MTT Agrifood Research Finland**

Email: firstname.lastname@mtt.fi

Address: FI-31600 Jokioinen

Website: <http://www.mtt.fi/english>



High-quality food, clean environment - better well-being. MTT Agrifood Research Finland is the leading research institute developing sustainability and competitiveness of the food system. It is a non-profit public research organisation operating under the Finnish Ministry of Agriculture and Forestry. MTT produces and disseminates scientific knowledge and new innovations for the agriculture and food sector. MTT's core areas of expertise include animal and plant production, biotechnology and food science, together with economic, environmental and technological research, rural policies and market research. MTT's research promotes food industry competitiveness, the well-being of consumers, the vitality of rural areas, the quality of production and living environments, and supports economic forecasting and policymaking. MTT employs around 750 people at 15 locations across Finland. Our head office is situated at Jokioinen, a 1.5-hour drive from Helsinki. In 2011 our expenditure totalled approximately EUR 56,7 million, of which 58 % was budget financing. MTT Agrifood Research Finland, the Finnish Forest Research Institute and the Finnish Game and Fisheries Research Institute are to be amalgamated under a new entity called Natural Resources Institute Finland as of 1 January 2015.

Environmentally friendly agriculture

Contact: Jyrki Aakkula **Email:** jyrki.aakkula@mtt.fi

Website: https://portal.mtt.fi/portal/page/portal/mtt_en/research/environment-agriculture

The Environmentally friendly agriculture research area pursues a balance between agriculture and the environment. Agriculture and the environment function in an interdependency in which both have their own values. The central goals for the environmentally friendly agriculture research area are to determine the most cost-efficient way to reduce the runoff of agricultural nutrients and pesticide loads into the Baltic Sea and Finland waterways and the greenhouse gas emissions from agriculture. Research is also focused on how to preserve and enhance nature's biodiversity in agriculture.

Green economy opportunities

Contact: Hilikka Vihinen **Email:** hilikka.vihinen@mtt.fi

Website: https://portal.mtt.fi/portal/page/portal/mtt_en/research/green-economy

Non-renewable natural resources and the pursuit of continuous growth have long been at the core of the economy. Growth, however, has social and ecological limits that are being reached globally. The Green economy opportunities research area stems from this and pursues a sustainable economic model that utilizes scarce resources efficiently. The green economy requires use of renewable natural resources, production that is more energy efficient and uses less material, moderate consumption and the pursuit of well-being also from intangible factors.

Responsible food chain – better consumer well-being

Contact: Juha-Matti Katajajuuri **Email:** juha-matti.katajajuuri@mtt.fi

Website: https://portal.mtt.fi/portal/page/portal/mtt_en/research/responsibility

The Responsible food chain – better consumer well-being research area reaches into the future by carrying out comprehensive research on the food chain and its responsibility. The chain forms a ring of players, including e.g. primary production, industry, commerce, consumers and waste management. The goal of the research area is to reduce the food chain's negative environmental impacts as well as the lifestyle diseases related to dietary choices and the costs of treating them. Additionally, the research promotes national health, product safety and animal well-being as well as the functionality and transparency of the food markets.

Smartly from renewable resources

Contact: Sanna Marttinen **Email:** sanna.marttinen@mtt.fi

Website: https://portal.mtt.fi/portal/page/portal/mtt_en/research/renewable-resources

The Smartly from renewable resources research area builds a new bioeconomy model that crosses the boundaries of traditional production areas. The research area focuses on the under-utilized resources of the food system: information and by-product flows. The area seeks applicable information from different parts of the food system and utilizes the parts of food production that are considered as waste or environmentally problematic.

Sustainable and competitive food production

Contact: Harri Huhta **Email:** harri.huhta@mtt.fi

Website: https://portal.mtt.fi/portal/page/portal/mtt_en/research/food-production

The focus of the Sustainable and competitive food production research area is on profitability, healthiness and self-sufficiency. The goal is for the profitable production of high-quality and healthy Finnish food, while at the same time securing the domestic food supply.

- **Finnish Game and Fisheries Research Institute (RKTL)**

Phone: +358 295 301 000

Address: Viikinkaari 4, 00790 Helsinki

Website: <http://www.rktl.fi/english/>

The Finnish Game and Fisheries Research Institute's (FGFRI) key tasks include the evaluation, projection and statistical assessment of fish and game resources. They also include maintaining the diversity of fish stocks and fostering economic activities related to fish, game and reindeer. Our most important task is to produce useful and reliable



information on exploitable animal stocks. This is intended to meet the needs of international and national decision makers planning the management and sustainable use of such resources. It is also aimed at meeting the requirements of economic interests and those carrying out practical work. We take a solution-based approach to research i.e. we aim to provide our customers with various perspectives, solutions, decisionmaking models and criteria.

- **National Consumer Research Centre**

Contact: Piia Jallinoja **Phone:** +358 29 505 9000

Address: P.O.Box 142 (Kaikukatu 3), FI-00531 Helsinki

Website: <http://www.kuluttajatutkimuskeskus.fi/en/>

The mission of the National Consumer Research Centre is to investigate, anticipate and identify change and risk factors within the consumer society, in consumer behaviour and in the market, and to be a communicator of consumer research knowledge. National Consumer Research Centre carries out research in the following areas of expertise: household activity and changes in consumption, quality of products and services and, market functionality and price structures. Research activities are organised into three research entities: functioning markets in consumers' everyday lives, sustainable living environments and innovations and technologies and cultures of well-being. National Consumer Research Centre will join University of Helsinki, Faculty of Social Sciences in the beginning of 2015.

- **Finnish Food Safety Authority Evira**

Email: info@evira.fi **Phone:** +358 29 530 0400

Address: Mustialankatu 3, 00790 Helsinki

Website: <http://www.evira.fi/portal/en/>

Activities at Finnish Food Safety Authority Evira aim at ensuring food safety, promoting animal health and welfare, and developing the prerequisites for plant and animal production, and plant health.

Evira was established by joining together the agencies that work in the administrative field of the Ministry of Agriculture and Forestry. These were the National Food Agency, the National Veterinary and Food Research Institute, and the Plant Production Inspection Centre. Evira also assumed responsibility for the executive functions of the Department of Food and Health and the Information Centre of the Ministry of Agriculture and Forestry.

Scientific research at Evira is divided into two research programmes of which one is food related, namely food safety. The scientific research is related to the societal tasks and effectiveness of Evira.

- **Finnish Environment Institute (SYKE)**

Phone: +358 295 251 450

Address: P.O.Box 140 (Mechelininkatu 34a), 00251 Helsinki

Website: <http://www.syke.fi/en>

The Finnish Environment Institute (also known as SYKE, after the Institute's Finnish acronym) is both a research institute, and a centre for environmental expertise. SYKE's research focuses on changes in the environment, and seeks ways to control these changes. Our expertise is based on long-term environmental monitoring, wide-ranging research results, and the Institute's highly-qualified staff.

- **Pellervo Economic Research (PTT)**

Email: econ.res@ptt.fi **Phone:** +358 9 348 8844

Address: Eerikinkatu 28a, 00180 Helsinki

Website: <http://www.ptt.fi>

Pellervo Economic Research (PTT) is a non-profit organization. The Institute was established in 1979 by Pellervo Confederation of Finnish Cooperatives (Pellervo-Seura) and the Central Union of Agricultural Producers and Forest Owners (MTK). The members of the PTT Sponsors' Association have primarily been the above-mentioned organisations and the commercial cooperatives of Pellervo Group.

- **VTT Technical Research Centre of Finland**

Contact: Raija Lantto, Anu Kaukovirta-Norja, Johanna Buchert

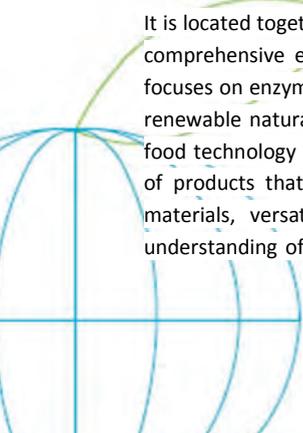
Email: firstname.lastname@vtt.fi **Phone:** +358 20 722 111

Address: P.O. Box 1000, FI-02044 Espoo

Website: <http://www.vtt.fi>

VTT is a government owned research institute with polytechnological activities. VTT Technical Research Centre of Finland is a globally networked multitechnological applied research organization. VTT provides high-end technology solutions and innovation services. We enhance our customers' competitiveness, thereby creating prerequisites for society's sustainable development, employment, and wellbeing.

It is located together with the Aalto University School of Science and Technology. VTT has comprehensive expertise in biotechnology and food technology. In biotechnology VTT focuses on enzyme technology and its applications as well as in the more effective use of renewable natural resources in the production of industrial chemicals and materials. In food technology VTT utilises biotechnology by developing methods for the manufacture of products that meet the expectations of consumers. VTT's strong expertise in raw materials, versatile utilisation of enzymes and microbes in food processing, solid understanding of factors affecting product quality, and consumer research serve as the



basis of new applications. New food and nutrition solutions are developed e.g. in a multidisciplinary NUTRITECH –Research Programme. More info: <http://www.nutritech.fi/>.

VTT Food research

Website: http://www.vtt.fi/research/technology/food_solutions.jsp

VTT Food research is part of VTT's Bio- and chemical processes unit (<http://www.vtt.fi/research/bic/>), in which the research focuses on sustainable chemistry and sustainable processing as well as biotechnologies and ICT for health and well-being. The research in the Bio- and chemical processes covers the whole chain from molecular level research (discovery and production of enzymes, development of new microbial strains, development of chemical reaction routes, discovery of drug targets and biomarkers), analysis of the reaction mechanisms with advanced analytical methods as well as development of process applications at the laboratory and pilot scale. VTT Food research offers solutions for the whole food production chain, by drawing on the strong technological and scientific expertise. VTT Food Research focuses on developing feasible and sustainable technologies and new food concepts by utilizing versatile enzymes, microbes and fractionation technologies in food and beverage processing. Our food research work aims to develop technology for healthier foods and ingredients with consumer-appealing sensory properties. Our core competence in food technology covers aspects from technological development to consumer expectations. VTT has unique expertise in developing functional, plant-based ingredients by sophisticated milling and fractionation technology, enzymatic modification and microbial fermentation.

- **Savonia University of Applied Sciences (Savonia UAS)**

Email: savonia@savonia.fi **Phone:** +358 17 255 6000

Address: P.O. Box 6 (Microkatu 1), FI-70201 KUOPIO

Website: <http://portal.savonia.fi/amk/en>

Savonia has selected four areas of focus for education and research, development and innovation (RDI). Each focus has a respective leading edge in RDI. Research is undertaken in collaboration with enterprises and other organizations. Savonia University of Applied Sciences brings in perspectives to market, innovation potential of customers and end-users, national and international development of the sector, and the latest research knowledge. In RDI projects, Savonia forms the link from regional livelihoods and services into the best practices and newest knowledge in the world. RDI priorities close to Susfood ERA net are Agriculture and foods, User-oriented services in health and welfare, and Integrated Product Development.

- **Turku University of Applied Sciences (Turku UAS)**

Email: firstname.lastname@turkuamk.fi **Phone:** +358 2 330 000

Address: Joukahaisenkatu 3 A, FI-20520 Turku

Website: <http://www.tuas.fi>

TUAS' RDI programmes emphasise the applicable nature of research and development. The programmes cover our various expertise areas while acknowledging that innovations often originate on the borders of different disciplines. Practical work is done in the programmes by means of different projects. Research group activities close to Susfood ERA net are Biocompetence and Business Know-How (Life Sciences and Business), Lifelong Well-being Services (Well-being Services), and Expertise in Health Care and Medication (Health Care).

- **HAMK University of Applied Sciences**

Contact: Helena Kautola **Email:** hamk@hamk.fi

Address: Visamäentie 35A, FI-13101 Hämeenlinna (South Finland (Kanta-Häme))

Website: <http://www.hamk.fi>

HAMK UAS is a multidisciplinary university of applied sciences in the fields of 1) culture, 2) natural resources and the environment, 3) natural sciences 4) social sciences, business and administration, 5) social services and health 6) technology, communication and transport and 7) professional teacher education. Research and development is an important part of HAMK operations and one of its mission is to carry out research and development important in regional, national and on global level. HAMK plays a key role in creating an innovative environment in the region and in supporting the development of top-level know-how. We work together eagerly, openly, and with the strength of diversity. All HAMK's four specified research units support the workplace, the research and further education. The research units operate according to the focus areas and those related to Susfood are Bioeconomy and Bioprocess Technology, Everyday Services and Industrial Digitalisation, and Professional Expertise. In addition and linked to these all is welfare.

- **Lappeenranta University of Technology**

Contact: Mika Mänttari **Email:** firstname.lastname@lut.fi **Phone:** +358 294 462 111

Address: P.O.Box 20, FI-53851 Lappeenranta

Website: <http://www.lut.fi>

The expertise of the LUT School of Technology emphasises energy efficiency and energy technology, the metal and process industries and scientific computing and the modelling of phenomena. LUT Chemtech's main areas of expertise are in separation technology, process development and applied research in the fibre and paper industries. The Separation Technology Laboratory's mission is to develop more environmentally friendly,

less waste-producing, more energy efficient and, as a result, more cost-efficient separation processes for the benefit of industry and society as a whole.

- **The University Consortium of Seinäjoki**

Address: *Kampusranta 9 C (2nd floor), FI- 60320 Seinäjoki*

Website: <http://www.ucs.fi/index.php/english>

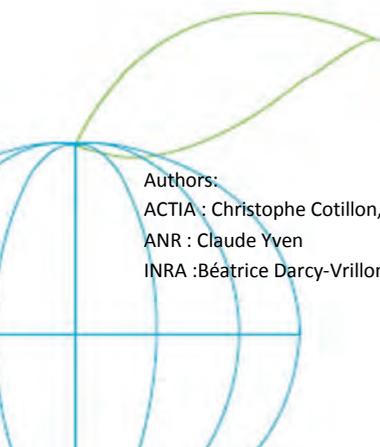
The University Consortium of Seinäjoki is a multidisciplinary scientific community of some 90 experts involving five Finnish universities. The University of Tampere coordinates the University Consortium. The University Consortium of Seinäjoki focuses on scientific and artistic research and development, adult education, and widespread collaboration with public and private organisations; in doing so, it aims for significant social and regional scientific impact. The University Consortium combines internationality and local cooperation, and it is actively involved in the development work of innovation environments, aiming at the renewal of business life, public services and culture through scientific knowledge. The operations of the University Consortium focus on fields with a strong connection to business (SMEs) and working life in the region.





SUSFOOD COUNTRY REPORT

FRANCE

A stylized graphic in the bottom left corner consisting of a blue wireframe globe and a green leaf-like shape above it.

Authors:

ACTIA : Christophe Cotillon, Alice Dulas, Anne-Clothilde Guyot

ANR : Claude Yven

INRA : Béatrice Darcy-Vrillon, Catherine Esnouf, Marie Russel

Introduction

Among French industries, the food industry, with 154 billion euros turnover, is ranked first in front of the automotive sector. This sector is also ranked first in Europe and second worldwide, after the United States. With 11 500 companies, of which 97 % are SMEs and together represent more than 60 % of the turnover, jobs are created and allow this sector to be ranked second in terms of employee numbers (more than 400 000).

A tremendous opportunity for the French national agriculture, by processing more than 70 % of products, the agri-food industry added-value has exceeded the one of agricultural production for more than 20 years. This makes both the agriculture and food sectors major pillars of the French national economy.

With 31.1 billion euros of processed food products exported, the sector remains the international leader with 9.1 billion euros net gain in 2007. The French food industry is also comprised of a large number of “artisanal” and traditional food companies playing a key role in economic development, a real driving force in the sector.

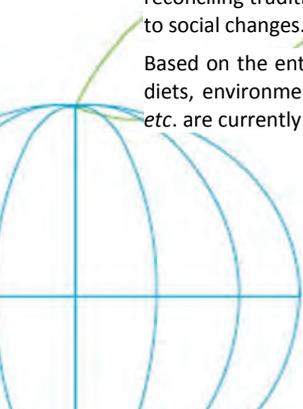
Research and development in the French food sector are conducted around:

- the scientific confirmation of food qualities and by increasing the knowledge about the origins and determinants of French food culture. Research must be able to consolidate the different attributes and prove and demonstrate their benefits ;
- inciting opportunities to communicate information on population lifestyles (behavioral changes of populations). In a dynamic approach, actions must be taken to understand the evolution of behaviors and food preferences, as well as to support the image of food and eating habits within a globalized food view ;
- a strong contribution from innovation to tradition during the manufacturing and use of food, while conserving essential qualities. Consumer lifestyles and expectations in relation to their food and diets have drastically changed over the past decade. This is due to changes in lifestyle patterns (living individually, aging...), dietary habits, culinary practices, ways of distribution and the deterioration of certain products' images (nutritional value ...).

Undertaking such research requires specialized methodologies involving complementary disciplines (biology, chemistry, engineering, social sciences, toxicology...) and professional profiles (researchers, engineers, processors, ingredient producers, manufacturers, farmers, government support, consumers) in a quality engineering approach.

Until now, the French food industry has succeeded in maintaining a strong link with its territory and cultural heritage while meeting quality and food safety standards and reconciling tradition and innovation. It is essential to strengthen this dynamic, yet adapt it to social changes.

Based on the entries into the SUSFOOD MKB, several projects about healthy sustainable diets, environmental sound food production, food chain innovation, reduction of waste etc. are currently being handled by French researchers.



Ministries and public services

- Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail

Email: questions@anses.fr **Phone:** + 33 (0)1 49 77 13 50

Address: avenue du Général Leclerc 27-31, 94701 Maisons-Alfort Cedex

Website: <http://www.anses.fr/>

The French agency for Food, Environmental and Occupational Health Safety (ANSES) is a public administrative institution reporting to the Ministers for Health, Agriculture, the Environment, Labor and Consumer Affairs. ANSES implements independent, multi-disciplinary scientific expertise. Its principal mission is to contribute to the protection of human health with respect to the environment, the workplace and food. It also contributes to the protection of: the health and welfare of animals; the protection of plant health; the evaluation of the nutritional and functional characteristics of food. Finally it undertakes missions regarding veterinary medicinal products. In its sphere of competence, the Agency's mission is to conduct risk assessments, to provide the competent authorities with any information about these risks as well as the expertise and scientific and technical support necessary to draft legislative and statutory provisions and implement risk management and mitigation strategies. It conducts monitoring, alert, vigilance and reference missions. It defines, implements and funds scientific and technical research programmes. It proposes to the competent authorities any measure likely to protect public health. When public health is threatened by a serious hazard, it recommends the necessary health measures to these authorities. It participates in work undertaken by European and international bodies, and represents France at the request of the Government.

To fulfill its missions, the Agency:

- organizes collective expert assessment in its sphere of competence, relying in particular on the Scientific Panels (CES);
- sets up a network of organisations and coordinates their work in order to assess the health risks in its sphere of competence;
- contributes to information, training, dissemination of scientific and technical literature, and public debate, which it stimulates and encourages;
- helps shape national and EU research policies in its spheres of competence,
- creates scientific and technical databases in its spheres of competence or helps others create them;
- is establishing a nutritional vigilance system and participating in the toxicant monitoring system;
- sets up observatories on the products and processes falling within its sphere of competence, as well as on their use or dissemination;

- engages in national and EU reference laboratory activities in its sphere of competence, and conducts research studies;
- provides the competent authorities with the expertise and scientific and technical support necessary for the evaluation of biocidal and chemical substances and products, as well as plant protection products, additives, fertilizers and growing media.

ANSES may enter into agreements or participate in public interest groups with anybody, public or private, French or foreign, such as educational and research institutions that have missions that complement its own.

National funding bodies and research programmes

Within the French public research system a general trend is the growing importance of the launch of competitive calls. The French National Research Agency (ANR) is the main funding body in France and manages a budget close to 600 million euros funding 1300 projects per year. Every year, the agency launches around 50 calls for proposals (see below). Besides the growing importance of competitive calls, focus is set to reinforce the link between research and education between public and private research. As the French research system mainly relies on large research organisations such as INRA, efforts to strengthen the links between education and research are implemented since the late 90

Recherche". Also, the creation of The Carnot Institutes Association in 2006 (12% of the total public research in terms of human resources and almost 50% of private funding of the French public research), with its LISA institute support partnership research in food and health especially through lipids expertise. More recent efforts include for example the creation of QUALIMENT1 in July 2009, a network of 200 researchers specialized in nutrition-sensory-eating behaviour- food structure of processed food belonging to 6 research and educational organisations. The network aims to support industrial innovation and has been labeled as Institut Carnot.

Public funds are allocated to industry through subsidy or call for proposals. Different organisations can be at the origin of this funding: OSEO, Regions, State, and Europe.

- **The French National Research Agency (ANR)**

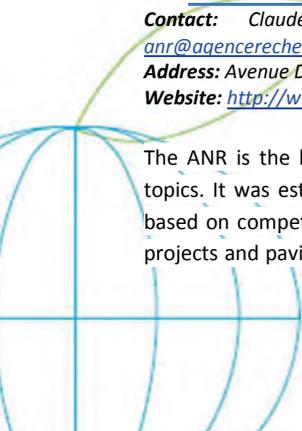
Contact: *Claude Yven* **Email:** eranet.SUSFOOD@agencerecherche.fr or contact-anr@agencerecherche.fr

Address: Avenue Daumesnil 50, 75012 Paris

Website: <http://www.agence-nationale-recherche.fr/>

The ANR is the largest research funding organization in France, including food related topics. It was established by the French government in 2005 to fund research projects, based on competitive schemes giving researchers the best opportunities to realize their projects and paving the way for ground-breaking new knowledge. The role of the Agency

"s, mainly th



is to bring more flexibility to the French research system, foster new dynamics and devise cutting edge-strategies for acquiring new knowledge. By identifying priority areas and fostering private-public collaborations, it also aims at enhancing the general level of competitiveness of both the French research system and the French economy.

The ANR supports the public and private-sector research community. The 2013 funding edition of ANR is based on three ways of funding:

- The non-thematic instruments (e.g. Blanc programme, Young Researchers, Post-doctoral Return, Industrial chairs)
- The construction of the European research area and multilateral collaborations (ERA-NETs and multilateral programmes)
- The thematic programme planning (28 programmes)

ANR will therefore maintain a balanced budget between the bottom-up “non-thematic programmes” and the top-down “thematic programmes”.

The thematic programme planning of ANR strives to act as a catalyst and amplifier for research themes that emerge within different components of society. The thematic programme planning for 2013 was organised around major societal issues that are consistent with Horizon 2020. A few examples are given below.

- Innovative, secure and cohesive societies
- Health and increased life expectancy
- Biological resources, environmental monitoring and protection
- Energy transition and the post-carbon economy
- Information and communication science and technology
- Global security and dual research

Since 2014, the non-thematic instruments and the thematic programmes are merged in ANR work programme in a unique call for proposals; which is organised around nine societal challenges and an “all-knowledge” challenge to strengthen the link between the French national work programme and Horizon 2020. Among the nine societal challenges, one is untitled “Food security and demographic challenges”.

Research programmes in within the scope of SUSFOOD funded by ANR:

Food and Human Nutrition (PNRA) 2005 - 2007

The National Research Programme on Food and Human Nutrition (PNRA) aimed at financing research projects in order to support innovation in the food industry and the acquisition of knowledge on foodstuff, food chain, consumer and the interactions between consumers' behaviour, food, health and food policies. This programme aimed to promote projects of scientific excellence, innovative, in one of the six items:

Axis 1: Consumer behaviour;

Axis 2: Food safety;

Axis 3: Building food quality;

Axis 4: Technologies and food processes;

Axis 5: Nutrition of healthy individuals: optimal health and wellbeing;

Axis 6: Food and nutritional policies

Total Budget: 41 800 000 EUR

Annual Budget: 13 900 000 EUR

Food and Food Industries (ALIA) 2008 - 2010

The Food and food industries programme (ALIA) is oriented towards a better knowledge and the development of tools for more sustainable food systems and affordable products to improve the well-being and healthy ageing of the consumers. To achieve these objectives, the programme is organized around three main topics: 1. "Well-being and healthy ageing of populations" with the main objective of succeeding to improve the quality of life of specific or/and frail populations thanks to a diet adapted to their needs; 2. "A more dynamic food production economy" with the main objective of improving competitiveness of enterprises and improving food and their technological pathways; 3. "A balanced society and a more sustainable development of food production" with the main objective of developing and applying tools for sustainable food systems (economy, environment, society).

Total Budget: 24 700 000 EUR

Annual Budget: 8 200 000 EUR

Sustainable Food Systems (ALID) 2011 - 2013

The ALID programme (Sustainable Food Systems) aimed to build sustainable systems for production, processing, distribution and consumption of food products, taking into account consumer demand, competitiveness of enterprises, protection of ecosystems in the context of global changes.

Total Budget: 14 800 000 EUR

Annual Budget: 4 900 000 EUR

▪ Institut national de la recherche agronomique (INRA)

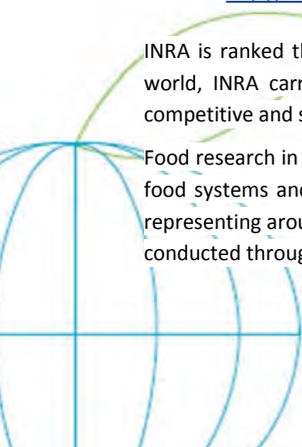
Contact: Catherine Esnouf **Email:** catherine.esnouf@paris.inra.fr **Phone:** + 33 1 42 75 91 51

Address: Rue de l'universite 147, 75338 Paris cedex 07

Website: <http://www.international.inra.fr/>

INRA is ranked the number one agricultural institute in Europe and number two in the world, INRA carries out mission-oriented research for high-quality and healthy foods, competitive and sustainable agriculture and a preserved and valorised environment.

Food research in INRA addresses the issue of the development of healthy and sustainable food systems and involves around 800 researchers and engineers for an annual budget representing around 25% of INRA's total budget (around 200 millions euros per year). It is conducted through three high priority research questions:



- To identify and master the characteristics of foods and the vulnerability of their production methods in order to design products better suited to a changing environment.
- To study, understand and act on the determinants of food consumption.
- To analyze and understand the causal relationships between diet and health.

Research programmes funded by INRA

Diet impacts and determinants

The general objectives of DID'IT are:

- To understand, model and predict the dynamic and complex effects of food behaviour determinants
- To establish and model causal relations between food behavior and health and/or sustainability so as to assess the impact of interventions and provide recommendations for public policies, thus contributing to the well-being and health of consumers throughout their life.

Annual Budget: 1 000 000EUR

The funding is reserved for INRA projects only, or in combination with international teams with own funding.

Food transition and Global food security

This program is in partnership with CIRAD.

The general objectives are: modeling the global needs versus availability of food resources, the nutritional evolution of diets, the efficiency and sustainability of food processing including in particular the prevention of losses and wastes, the land uses and their impacts on ecosystems quality and the evolution of agricultural efficiency, the access of people to food and the global governance of food systems.

Annual budget: 1 000 000EUR

The funding is reserved for INRA/CIRAD projects only, or in combination with international teams with own funding.

National research institutes

Main research players in the food field are a few research organizations that fall under the joint supervision of the Ministry of Research, the Ministry of Agriculture and the Ministry of Health: INRA (agriculture, food and environment), ANSES (food safety and animal health), CIRAD (agriculture and development), and IRD (development). The leading role of INRA is to be noted, as well as the fact that food-related research is also carried out in organisations mainly dedicated to health research.

The universities are not mentioned because they are very numerous and in most cases, their research teams are linked with research institutes like INRA or CNRS.

This section also mentions representative higher education bodies and technical centers, which produce research too.

- **Institut national de la recherche agronomique (INRA)**

Contact: Catherine Esnouf **Email:** catherine.esnouf@paris.inra.fr **Phone:** + 33 1 42 75 91 51

Address: Rue de l'universite 147, 75338 Paris cedex 07

Website: <http://www.international.inra.fr/>

INRA, the French National Institute for Agricultural Research. This is a public scientific and technological institution (EPST) under the joint supervision of the Ministry of Agriculture and the Ministry for Research. INRA represents 1800 full-time equivalent researchers dispatched in more than 230 research units (including 148 joint research units with other organizations) located in 20 research centres and 60 experimental units. INRA has three scientific directors: (1) Food: food science and processing; microbiology; food behaviour, nutrition and toxicology; (2) Agriculture and (3) Environment. INRA is divided into several research divisions (13 total) and each division coordinates several research units. A scientific policy called “the division strategic plan” is designed every 4 years (2010-2014).

Food research in INRA is mainly conducted in four divisions, Cepia (food processing), Mica (microbiology in food chain), SAE2 (economic and social issues) and AlimH (nutrition and toxicology).

Division for Science and Process Engineering of Agricultural Products (CEPIA)

Contact: Monique Axelos **Email:** cepia@nantes.inra.fr **Phone:** + 33 2 40 67 51 45

Address: BP 71627 - 44315 NANTES Cedex 3

Website: http://www4.inra.fr/cepia_eng

The Division for Science and Process Engineering of Agricultural Products is one of INRA's 13 research divisions. It conducts its research in the sectors of food, biotechnologies (pharmacy, cosmetology) and in green chemistry (biofuels, materials, biomolecules). The 500 researchers from the division therefore have a dual research goal: to understand and control the quality construction of products and foods, and to develop the use of renewable resources.

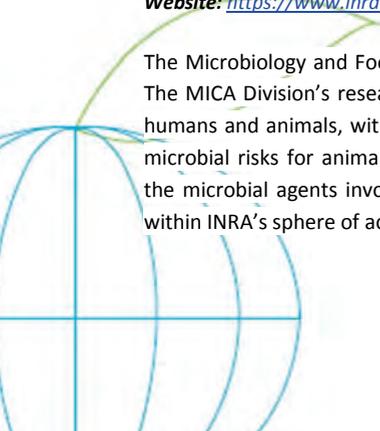
Microbiology and Food Chain Division (MICA)

Contact: Emmanuelle Maguin **Email:** mica@inra.fr **Phone:** + 33 1 34 65 25 20

Address: Domaine de Vilvert, 78352 Jouy-en-Josas CEDEX

Website: https://www.inra.fr/mica_international

The Microbiology and Food Chain Division (MICA) is one of INRA's 13 research divisions. The MICA Division's research primarily focuses on the microbiology of the food chain in humans and animals, with four major objectives: (1) improving food safety, (2) reducing microbial risks for animal health, (3) improving the quality of fermented foods through the microbial agents involved, (4) acquiring generic knowledge in microbiology in areas within INRA's sphere of activity.



Social Sciences, Agriculture and Food, Space and Environment division (SAE2)

Contact: Bertrand Schmitt **Email:** dptsae2@rennes.inra.fr

Address: allée Adolphe Bobierre 4, CS 61103, F35011 Rennes Cedex

Website: <http://www.inra.fr/Internet/Departements/ESR/en/dpt-ora.php>

The Social Sciences, Agriculture and Food, Space and Environment Department at INRA (SAE2) has been commissioned to describe how the world is organised from an economic point of view, to produce analytical frameworks for understanding the different forms of organisation and to provide the conceptual and operational tools to enlighten public and private actors in the fields related to production, markets and agricultural exchanges, transformation and distribution of farm and agrifood products, food consumption, environment and natural resources, land use and rural development and science-society relations.

Nutrition division (AlimH)

Contact: Béatrice Darcy Vrillon **Email:** beatrice.darcy-vrillon@paris.inra.fr

Phone: + 33 1 42 75 91 49

Website: http://www4.inra.fr/alimentation-humaine_eng

The main objective of The Nutrition, Chemical Food Safety and Consumer Behaviour Division is to provide scientific data to improve health and well-being and to enhance the development of food better adapted to humans. Studies lie in a compromise between individual well-being and economic and socio-professional realities. The division also aims at organising a scientific community in the area of food-borne chemical risk.

- [French Research Institute for Exploration of the Sea \(Ifremer\)](#)

Website: <http://www.ifremer.fr>

Ifremer, through its research work and expert advice, contributes to knowledge of the oceans and their resources, to monitoring of marine and coastal environments and to the sustainable development of marine activities. To these ends, Ifremer conceives and operates tools for observation, experimentation and monitoring, and manage the oceanographic databases. Ifremer is a public institute of an industrial and commercial nature (EPIC). It is supervised jointly by the Ministry of Higher Education and Research; Ministry of Ecology, Sustainable Development and Energy; and Ministry of Agriculture. Ifremer works in a network with the French scientific community, but also in collaboration with partner organisations in numerous other countries. This cooperation is centred on large international programmes, on French overseas regions and targeted countries (United States, Canada, Japan, China, Australia, Russia), and on Mediterranean policy-forming partnerships between Europe and countries of the southern Mediterranean coast. Ifremer undertakes research missions, offers expert advice and acts as a funding agency. Ifremer performs targeted applied research to address the questions posed by

society (climate change effects, marine biodiversity, pollution prevention, seafood quality etc.). Results include scientific knowledge, technological innovations, and systems for ocean observation and exploration.

- **Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)**

Contact: Bruno Dorin **Email:** presse-com@cirad.fr **Phone:** +33 1 53 70 20 00

Address: Rue Scheffer 42, 75116 Paris

Website: <http://www.cirad.fr/>

CIRAD is a French agricultural research organization working for development in the South and the French overseas regions. Its research work is generally conducted in partnership.

CIRAD's operations encompass the life sciences, social sciences and engineering sciences, applied to agriculture, food and rural territories. From the field to the laboratory, CIRAD works in response to the needs expressed by socio-economic players in developing countries. It builds its research projects in association with its partners.

- **National Center for Scientific Research (CNRS)**

Address: rue Michel Ange 3, 75794

Website: <http://www.cnrs.fr/index.php>

Founded in 1939 by governmental decree, the Centre National de la Recherche Scientifique (National Center for Scientific Research) is a public organization under the responsibility of the French Ministry of Higher Education and Research. As the largest fundamental research organization in Europe, CNRS carried out research in all fields of knowledge. CNRS has the following missions:

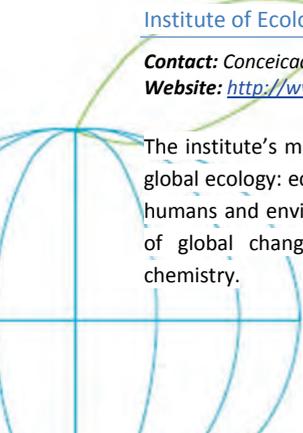
- To evaluate and carry out all research capable of advancing knowledge and bringing social, cultural, and economic benefits for society.
- To contribute to the application and promotion of research results.
- To develop scientific information.
- To support research training.
- To participate in the analysis of the national and international scientific climate and its potential for evolution in order to develop a national policy.

Institute of Ecology and Environment (INEE)

Contact: Conceicao Silva **Email:** conceicao.silva@cnrs-dir.fr **Phone:** + 33 (0)1 44 96 43 08

Website: <http://www.cnrs.fr/inee/>

The institute's mission is to develop and coordinate research carried out in the fields of global ecology: ecology and environment, including biodiversity and interactions between humans and environment. Scientific fields: ecology and ecosciences, biodiversity, impact of global change, health - environment, resources, ecological and environmental chemistry.



International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM)

Email: secretariat@ciheam.org **Phone:** + 33(0)1 53 23 91 00

Address: rue Newton 11, 75116 Paris

Website: <http://www.ciheam.org/>

The International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) was founded at the joint initiative of the OECD and the Council of Europe on 21 May 1962 under an agreement signed by the governments of seven southern European countries: France, Greece, Italy, Portugal, Spain, Turkey and Yugoslavia.

The 1962 agreement establishing the Centre stipulates that CIHEAM's mission consists in "providing supplementary education (economic as well as technical) and developing a spirit of international cooperation among agricultural personnel in Mediterranean countries". According to article 15 of this agreement, every country on the Mediterranean rim is potentially eligible for membership of CIHEAM.

In the mid nineteen-eighties CIHEAM therefore began to open up to countries on the southern and eastern shores of the Mediterranean Basin. This initiative resulted in the accession of several new Member States: Tunisia (1985), Egypt and Algeria (1986), Malta (1989), Morocco (1991), Albania (1992) and Lebanon (1994).

CIHEAM is made up of four Mediterranean Agronomic Institutes (MAIs), located in Bari (Italy), Chania (Greece), Montpellier (France) and Zaragoza (Spain), and a General Secretariat based in Paris.

In pursuing its three main complementary missions (post-graduate specialised education, networked research and facilitation of the regional debate), CHEAM has established itself as an authority in its fields of activity: Mediterranean agriculture, food and rural development.

▪ Mediterranean Agronomic Institute of Montpellier (IAMM)

Contact: Martine Padilla **Email:** padilla@iamm.fr **Phone:** + 33 (0)4 67 04 60 22

Address: route de Mende 3191, 34093 Montpellier

Website: <http://www.iamm.fr/>

IAMM is pursuing three main complementary missions: post-graduate specialised education, networked research and facilitation of the regional debate in the fields of Mediterranean agriculture, food and rural development.

- **AGROCAMPUS OUEST** Institute for life, food and horticultural sciences and landscaping

Contact: Marnet Pierre-Guy **Email:** Dirsci@agrocampus-ouest.fr **Phone:** +33 (0)2 23 48 56 77
Address: rue de St Briec 65, 35042 Rennes cedex
Website: <http://www.agrocampus-ouest.fr/infoqlueDeliverLive/>

Education, Research, Knowledge, Valorisation: Through a distinctive tradition of core-discipline excellence, interdisciplinary collaborations and productive partnerships, AGROCAMPUS OUEST teaches students to think critically, objectively and creatively and to be lifelong learners, engaged leaders and productive worldwide citizens (1800 students, 13000 alumni in the world, 140 research lecturers and 500 part time professional lecturers). It pursues research to advance knowledge and address regional, national and global challenges (14 joint units of research and 500 scientists), and serves the society improvements through the generation, broad dissemination and application of knowledge in 3 main domains: (i) Innovative and sustainable agricultural production systems (ii) Sea, environment, landscape: integrated management of natural resources and landscape (rural and urban environments) (iii) Nutrition, Food and food production.

Analyticals tools, International and certified dairy platform including an experimental pilot of drying tower, a biological resources center, animal and plant productions facilities (farms, greenhouse) and environment observatories....

- **AGROPARISTECH** Paris Institute of technology for life, food and environmental sciences

Contact: Gérard Cuvelier **Email:** gerard.cuvelier@agroparistech.fr
Address: rue Claude Bernard 16, 75231 Paris cedex 5
Website: <http://www.agroparistech.fr/Presentation-of-AgroParisTech.html>

The mission of AGROPARISTECH is (i) to train high level Master of Science in Engineering, Master of Science and Doctoral students and, (ii) to advance scientific knowledge, in close association with public or private research centers, main relevant technical-vocational centers and industrial partners.

AgroParisTech has 23 joint research groups in 5 French regions, which have their expertise in agriculture, food, forest and environmental sciences.

- **Ecole Nationale de Formation Agronomique (ENFA)**

Contact: Jean-François Marcel **Email:** secretariat-recherche.enfa@educaagri.fr
Phone: +4587438400
Address: Route de Narbonne - BP 22687 2, 31326 Castanet-Tolosan
Website: <http://www.enfa.fr/recherche/politique-scientifique/>

Research at ENFA is at the same time academic, linked to the advance of knowledge, and concerned with technological development and transfer : (i) education: training future

contributors to tomorrow's world; (ii) living organism: biological evolution and diversity; (iii) society: public policy, territorial development and environmental management.

- [Université de Versailles Saint-Quentin-en-Yvelines](#)

Address: *avenue de Paris 55, Versailles cedex*

Website: <http://www.uvsq.fr/>

- [University Paris-Est Créteil Val-de-Marne](#)

Address: *Streetname: avenue du Général de Gaulle 61, 94010 Creteil* **Region:** *Ile-de-France*

Website: <http://www.en.u-pec.fr/university-paris-est-creteil-upec--412460.kjsp?RH...>

With 32 000 students and 12 faculties, the UPEC is the largest multidisciplinary and vocational university within Ile-de-France. 13% of our students come from over 118 foreign countries.

- [National School for Water and Environmental Engineering of Strasbourg \(ENGEES\)](#)

Contact: *Florence Le Ber* **Email:** florence.leber@engees.unistra.fr **Phone:** + 33 (0)3 88 24 82 82

Address: *quai Koch - B.P. 61039 1, 67070 STRASBOURG Cedex*

Website: <http://engees.unistra.fr/site/index.php?id=322>

ENGEES is a school of environmental hydraulics which aims to train engineers who are ready to go straight into the professional world in the fields of : public amenities (drinking water, sanitation, waste), sustainable spatial planning, management of environmental and sanitary risks, management of public utilities. Initial and continuing education is founded on the work of 3 research units.

- [ISARA-Lyon](#)

Contact: *Carole Chazoule* **Phone:** + 33 (0)4.27.85.85.85

Address: *Rue Jean Baldassini 23, F-69364 Lyon Cedex 07*

Website: <http://www.isara.fr/en>

ISARA-Lyon is a French "grande école" (graduate college) specialized in agricultural, food and environmental science. It is recognized by the French Ministry of Agriculture. Our research teams made of agronomists, ecologists, food and social scientists work in two main interdisciplinary areas: Agroecology and Sustainable Food Systems

- [ISA GROUP High Institute of Agriculture](#)

Contact: *Patrice Halama* **Email:** patrice.halama@isa-lille.fr **Phone:** + 33 (3) 28 38 48 48

Address: *Boulevard Vauban 48, 59046 LILLE CEDEX*

Website: <http://www.isa-lille.com/>

BioGAP Laboratory (mycology – phytopathology, interactions plant-parasite, SDP, biocide, animal parasitology) Food Quality Laboratory (expert vs novice panelists, new sensory

methodologies, cultural differences in perception) Department of food sciences (alternative or breakthrough solutions, process, transformation industries, sustainable development). CASE Team (Animal Behaviour and Livestock Systems, Individual behavioural characterization and welfare improvement strategies GRECAT (Agricultural future markets and farmers' strategies).

- **Groupe HEI ISA ISEN**

Contact: Pierre Vandendriessche **Email:** pierre.vandendriessche@isa-lille.fr

Address: 48 Boulevard Vauban, 59056 Lille

Website: <http://www.isa-lille.com/research/>

Groupe ISA is the Insitute of Living Sciences of Lille (France).

- **Montpellier SupAgro - International Centre for Higher Education in Agricultural Sciences**

Contact: Bruno Blondin **Email:** blondin@supagro.inra.fr **Phone:** +33 (0)4 99 61 27 90

Address: place Viala 2, 34060 Montpellier Cedex

Website: <https://www.supagro.fr/>

Montpellier SupAgro an International Centre for Higher Education in Agricultural Sciences hosts 1500 students, including 200 Ph. D, 100 teacher-researchers and 430 staff members. It offers a full range of training courses from Bachelor degree to PhD, as well as several excellent engineer training curricula. Agriculture, plant sciences, food, environment and rural territories are at the heart of its concerns. Montpellier SupAgro is partner of 21 Research Units and benefits from a prominent and worldwide scientific environment in agricultural sciences, federated by Agropolis International. The high scientific standard of research teams in the field has been recognized through the creation of the " Laboratories d'Excellence of Agronomy" in 2011 which gathers 1200 scientist and 600 Ph.D students.

- **Veterinary Medicine, Food Science and Engineering National College Nantes-Atlantic (ONIRIS)**

Contact: Pierre Sai **Email:** direction@oniris-nantes.fr **Phone:** + 33 (0)2 40 68 77 77

Address: Route de Gachet - Site de la chantrerie - BP 40706, 44307 Nantes Cedex3

Website: <http://www.oniris-nantes.fr/en/>

Oniris is a high establishment of the Agriculture and Agri-Food Ministry, anchored in the "Pays de la Loire" region and Nantes Metropole. Oniris develops its research, training and valorisation missions through an innovative intergrated approach. The first ambition of Oniris is indeed to train high level professionals capable of meeting international issues in health and nutrition. More generally, Oniris contributes to the concept of "one medicine, one health" and aims to play a supporting role for public policies and territorial valorisation in the fields expressed through its signature "Health and Food at the heart of

life". While developing the intersections between the fields of health and food, the school maintains, particularly in its research missions, its wide range of themes, including animal health and public health, clinical and biotechnologies, the fields of food and nutrition, and process engineering.

- Institut d'enseignement supérieur et de recherche en alimentation, santé animale, sciences agronomiques et de l'environnement (VetAgro Sup)

Contact: Thierry Seyvet **Email:** direction@vetaagro-sup.fr **Phone:** + 33 (0) 4 78 87 25 25

Address: avenue Bourgelat 1, 69280 MARCY L'ETOILE

Website: <http://www.vetaagro-sup.fr/>

VetAgro Sup is a Graduate Institute depending on French Ministry of Agriculture. It is a member of the University of Lyon and Clermont University. VetAgro Sup places particular emphasis on issues relating to food, health and sustainable development. At the heart of the living world, VetAgro Sup Institute trains veterinary surgeons, agronomic engineers and specialists in agronomic and veterinary public health. VetAgro Sup research units exert their activities in partnership with the biggest national and international research institutes. They are involved in many research and development projects on major issues.

- European foundation for sustainable territories (Fondaterra)

Website: <http://www.fondaterra.com/>

Founded in September 2004 as a non-profit association, Fondaterra has been a partnership foundation of the University of Versailles Saint-Quentin-en-Yvelines and the industrial groups EDF, GDF SUEZ and Vinci Construction since 16 April 2009.

Fondaterra coordinates a unique network of multidisciplinary national, European, and international institutions in the public and private sectors, federating skills in research, training services, and the dissemination of knowledge and expertise around the subject of sustainable development of territories.

Based on experimentation and change management, Fondaterra's model is a tremendous pool of tools and innovations for everyone. In the initial stages, demonstration programmes are implemented on experimental territories then rolled out at national, European, and international levels.

- Association de coordination technique pour l'industrie agroalimentaire (ACTIA)

Contact: Christophe Cotillon **Email:** c.cotillon@actia-asso.eu **Phone:** + 33 (0)1 44 08 86 20

Address: rue Claude Bernard 16, 75231 Paris Cedex 5

Website: <http://www.actia-asso.eu/>

ACTIA (Association of Technical Coordination of Agrifood Industries) is the head of 15 research centres dedicated to food innovation, whose researchers, engineers and technicians provide daily support for companies, especially SMEs.

The research centres (ITAI) are:

- Actalia (dairy sector & food quality and safety)),
- Adiv (meat sector),
- Adria Développement,
- Aérial (regional development and transfer centres),
- Arvalis (cereals sector),
- BNIC (cognac sector),
- Céva (algae sector),
- CTCPA (fruit & vegetables sector),
- CVG (valorisation of vegetal products),
- IFBM (beer and fruit juices sector),
- Ifip (pork meat sector),
- IFPC (cider sector),
- IFV (wine sector),
- Iterg (fats and oils sector), and
- LNE (packaging sector).

Actia centres intervene in all sectors of the food industries and in the non-food promotion of agricultural products (biotechnology, fine chemistry and pharmacy).

Actia mobilises the expertise of its centres in support of public and professional stakeholders through the management of partnership tools, Joint Technical Units and Networks (14 UMTs and 10 RMTs respectively).

- Écoval (Eco-compatibility of food processes and products and valorisation of agro-industrial by-products).

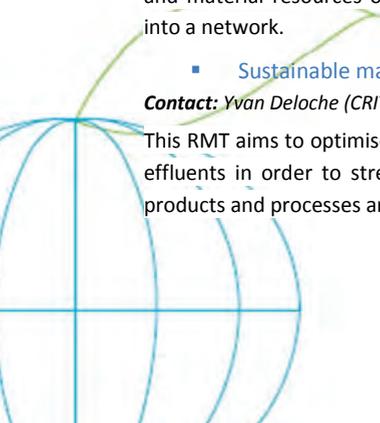
Contact: Fabrice Bosque (Iterg) -F.BOSQUE@itera.com

The main objective of Écoval is to create expertise for these two subjects by placing skills and material resources of various research, development, transfer and teaching bodies into a network.

- Sustainable management of fluids.

Contact: Yvan Deloche (CRITT PACA) – Yvan.Deloche@critt-iaa-paca.com

This RMT aims to optimise the use of energy and fluids, as well as the treatment of liquid effluents in order to strengthen the performance of companies and ensure that their products and processes are eco-compatible



Actia benefits from the support of the French Ministry responsible for Food, in the framework of its Contract of Agreed Objectives.

- Technical institute for Fruits and Vegetables (CTIFL)

Contact: *Christophe Aubert* **Phone:** + 33 (0) 1 47 70 16 93

Address: *Rue Bergère 22, 75009 Paris*

Website: <http://www.ctifl.fr/>

Established in 1952 under the law passed on 22nd July 1948 concerning Industrial Technical Centres, Ctifl is a non-profit organisation. All experimentation, studies, training and publications are aimed at improving the level of expertise necessary in all sectors of the fruit and vegetable industry, as well as improving company performance. Ctifl is particularly involved in carrying out work of general interest to the public sector under the aegis of the government. In answer to consumer concerns Ctifl's expertise contributes to managing quality, to guaranteeing food safety and hygiene as well as traceability, to preserving the environment and to striving for sustainable development.

Facing society's demands and the challenges of tomorrow, Ctifl aids communication and consultation between all those involved in the fruit and vegetable industry. From the grower to the retailer, each sector is represented in the decision-making bodies: board of directors, executive board and committees.

- CED Centre Emile Durkheim

Contact: *Béatrice Barthélémy* **Email:** b.barthelemy@sciencespobordeaux.fr

Address: *allée Ausone - Sciences Po Bordeaux 11, 33607 Pessac*

Website: <http://centredurkheim.fr/>

The CED is a research centre composed of 65 sociologists and political scientists, together with 90 doctoral students. It has five 'pole's: identifications, public action, institutions, markets and international relations. Researchers in all of these poles are interested, to varying degrees, in sustainable development. Food and agriculture is not a speciality of the centre but many individuals do work on these themes.

- CENS - Centre Européen pour la Nutrition et la Santé (European Center for Nutrition and Health)

Contact: *Julie-Anne Nazare* **Email:** julie-anne.nazare@cens-nutrition.com

Address: *c/o CRNH, Pavillon Médical Centre Hospitalier Lyon Sud 165, chemin du Grand Revoyet, 69310 Pierre Benite*

Website: <http://www.cens-nutrition.com/>

CENS proposes a novel organization of our research activities to reinforce interactions between fundamental research, clinical investigations, patient care, economic and social aspects of nutrition. CENS is a collaborative structure gathering more than 150

researchers and clinicians offering cutting-edge infrastructures and a network of multidisciplinary skills. CENS aims to facilitate exchanges and partnerships with academic and industrial laboratories worldwide. Our aims are: - To develop a high level research focused on major health problems - To reduce obesity and diabetes pandemic by understanding the mechanisms and developing prevention and treatment strategies - To develop nutrition/lifestyle programs to promote health and well-being in general population as well as in children, elderly and adult with chronic diseases

- Institut Catholique d'Arts et Métiers (ICAM)

Contact: Jean michel Rigaut **Email:** jean-michel.rigaut@icam.fr

Address: 6, rue Auber, BP 10079, 59016 Lille **Region:** Nord Pas de Calais

Website: <http://www.icam.fr>

Icam is an engineering college in the North of France, created in 1898 by managers of industrial companies. With over 3000 students on all its campuses, ICAM is a well known generalist Engineering School in France. Groupe ICAM manages about 300 consulting contracts yearly with industrial & business partners. ICAM has been involved in the European cooperation network for 20 years. Icam is actually coordinator of the project meCagrO2 (www.mecagro2.com), which is co-financed by Interreg and is focused on specific actions in the agro-food sector, with items concerning LCA evaluations of parts of food processes in industrial food plants, and by-products valorization. In this project. ICAM brings since 2 years its skills and savoir-faire in the field of industrial processes, mastery of the energy of these processes, thermal digital simulation, fluid mechanics, regulation of industrial systems.

- Institut Charles Violette

Contact: Pascal Dhulster **Email:** pascal.dhulster@univ-lille1.fr

Address: Cité Scientifique Polytech'Lille, 596555 Villeneuve d'Ascq **Region:** Nord-pas-de Calais

Website: <http://probioqem.univ-lille1.fr/>

Biotechnologies et écoconception de procédés propres pour une transformation et une valorisation durable des agroressources » L'objectif de l'Institut est d'aller vers une gestion durable de l'ensemble des « entrants » et « sortants » de la filière agroalimentaire, en intégrant sécurité et qualité des aliments avec en trame de fond l'éco-conception des procédés et des produits. L'Institut prend également en compte les attentes des consommateurs, tant en termes de durabilité et de naturalité qu'en termes de goût et texture des aliments. Son domaine d'action couvre donc une large partie du cycle de vie des produits et intègre dans ses axes de travail des enjeux identifiés comme prioritaires pour la filière agroalimentaire par Agroé : ingrédients, formulation et nutrition et transition vers la durabilité. Cela participera à la fluidité et à une meilleure cohérence entre la recherche fondamentale et appliquée en agroalimentaire, ce qui est indispensable à l'amélioration de la compétitivité des filières agroalimentaires régionales.

- Institut de l'Elevage

Contact: Florence MACHEREZ **Email:** florence.macherez@idele.fr

Address: Rue de Bercy 149, 75595 PARIS cedex 12

Website: <http://www.idele.fr>

The French Livestock Institute is the sole national technical institute on ruminants authorized by the French Ministry of Agriculture.

It aims to :

- improve farms competitiveness;
- help farmers, meat and dairy sectors meet social expectations;
- respond to the breeding and meat and dairy industry demands on products processing and quality approach from producer to consumer.

It provides livestock farmers, breeding organizations and herbivorous bovine, ovine, caprine and equine breeding sectors (production, processing, transport, slaughter) with research, training, expertise, studies, publications, guide to good practices, operational tools services, etc.

- Technical Center for Food Preservation

Contact: Elisabeth PAYEUX **Email:** ctcpa@ctcpa.org

Address: Rue d'Alésia 44 , 75682 PARIS cedex 14 **Region:** Paris - Ile-de-France

Website: <http://www.ctcpa.eu/>

The CTCPA achieves its general interest missions thanks to a fiscal contribution paid by French companies working in the canned and dehydrated food sector. The missions include: collective research programs; transfer of technology; expertise; representing the profession; scientific, technical, and regulatory watch; technical support to professionals through question and answer service; valorization of the research results.

In parallel to these activities the CTCPA carries out a number of sales activities which integrate the essential needs of a food company: processes, packaging, food safety, nutritional quality, sustainable development and training. These actions take various forms depending on the professional needs: research projects, in plant audits, advice, trials and pilot productions in the technological halls, analytic expertise in the laboratories, training ...

- The Terralia Cluster

Contact: Gilles Fayard **Email:** contact@pole-terralia.com

Website: <http://www.pole-terralia.com/>

The competitiveness cluster TERRALIA, formerly known as PEIFL, was created in 2005. It coordinates an ecosystem of partnerships between enterprise, research centres, and training organisations to foster economic growth and the job creation.

The challenge is to build on synergies and confidence established between stakeholders through practical cooperation in the form of collaborative and innovative projects. The purpose is to enable those companies involved to be at the forefront of their sector both in France and internationally.

The TERRALIA Cluster strategy is based on :

A multi-sectoral positioning to develop synergies in numerous matters of innovation common to the following sectors :

- Fruits and vegetables, both fresh and processed (including the olive sector)
- Wine growing and wine
- Cereals and cereal-based products, particularly durum wheat and rice
- An integrated sector approach from 'seed to plate' in three target sectors: seeds and plants, agricultural production, agri-food industry first and second-stage processing, distribution.
- Mobilising technological companies as vectors for innovation (farming and food industry suppliers, equipment manufacturers/suppliers, etc.)
- An interregional positioning in the South East (PACA, Rhône Alpes and Languedoc Roussillon)

Missions :

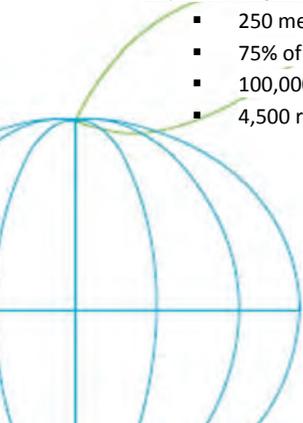
Support innovation and foster the growth of collaborative R&D projects to effectively address key innovation and technological priorities in the three sectors and the challenges posed by the target markets.

Develop actions encouraging economic opportunities and support for business growth. In conjunction with other stakeholders in the region, Terralia Cluster seeks to attain this objective by helping its beneficiaries to transform the results of collaborative projects into innovative marketable products, procedures and services.

Promote an overall environment conducive to innovation and the Cluster's stakeholders by delivering activities, pooling and sharing, or accompanying its members in subjects such as access to private finance, international development, industrial property, initial advice on skills and human resource management, *etc.*

Key cluster figures :

- 250 members
- 75% of which are companies
- 100,000 jobs
- 4,500 researchers



- National Research Institute of Science and Technology for Environment and Agriculture

Contact: Maja Musse **Email:** maja.musse@irstea.fr

Website: <http://www.irstea.fr/>

To better reflect its missions, Cemagref adopts a new name : Irstea, "National Research Institute of Science and Technology for Environment and Agriculture"

Irstea is a research organization which, since more than 30 years, works on major issues of a responsible agriculture and territories sustainable planning, water management and related risks, drought, floods, inundations, the biodiversity and complex ecosystems study in their interrelation with human activities.

Multidisciplinary research, appraisal and support to "agri-environmental" public policies ", partnership with territorial authorities and actors of the economic world, such are the characteristics of Irstea, qualified "Carnot Institute". In the continuity of the research model of Cemagref, every day our engineers and our researchers put a lot of themselves into their mission : to take up the challenge of global change comprehension for a sustainable and environmentally friendly development.

- University of Lorraine

Website: <http://www.univ-lorraine.fr/>

Research unit animal and functionality of animal products

Contact: Emeline Roux **Email:** emeline.roux@univ-lorraine.fr

Address: Vandoeuvre- lès-Nancy

Website: <http://www.urafpa.fr>

Composed by 34 teacher-researchers, hospital practitioners and researchers, 21 technicians (BIATSS and ITA) and 21 PhD students, UR AFPA is a laboratory of University of Lorraine under contract with the French National Institute for Agricultural Research (INRA) and belongs to the scientific cluster "Agronomy, Food, Forest" (A2F) and to the research federation 4242 "Forest Ecosystems, Agricultural Resources, Biomolecules, Food" (EFABA). UR AFPA is organized into four research teams:

- The Domestication in inland Aquaculture team
- The Micropollutants and food contaminants team
- The Proteolysis & biofunctionalities of proteins and peptides team
- The Bioavailability and Functionalities of Dietary Lipids team

The teacher-researchers of the laboratory are strongly implied in the technological and scientific formation of the University of Lorraine (DUT Bioengineering, Professional Licences, Scientific Licences, Masters BioMane and FAGE, engineer formation ENSAIA).

- LILLE 1 University - Science and Technology

Website: <http://www.univ-lille1.fr/home/>

The laboratory of Biological Processes, Enzymatic and Microbial Engineering (ProBioGEM)

Contact: Pascal Dhulster **Email:** Pascal.Dhulster@univ-lille1.fr

Website: <http://probioqem.univ-lille1.fr/en/index.php>

Research topics:

- Study and Control of kinetics and selectivity of enzymatic hydrolysis of dietary protein for the production of bioactive peptides
 - Screening of new molecules from non-ribosomal mechanism and control of their synthesis.
 - Development and integration of biocatalytic processes for the separation and selective production of functional biomolecules.
 - ITERG - Expert in fat and oils
-

Contact: Jean David LEAO **Email:** jd.leao@iterq.com

Website: <http://www.iterq.com/-home->





Photos © ILVO, DEFRA



SUSFOOD COUNTRY REPORT GERMANY

Authors:

BLE : Annika Fuchs, Katerina Kotzia, Elke Saggau

Jülich : Veronika Deppe, Stefan Lampel, Nicola Schulz, Rolf Stratmann



Introduction

Around 82 million consumers helped to make Germany the largest food and beverage retail market in Europe. Total food retailing revenue reached EUR 170 billion in 2011. Other important distribution channels include food service sales (EUR 66.4 billion) and exports (EUR 48.4 billion).

Germany's food and beverage industry is the fourth largest industry sector in Germany – generating production value of EUR 163.3 billion (8 percent increase on 2010) in 2011. The industry is best characterized by its small and medium-sized enterprise (SME) sector of around 6,000 companies employing 550,000 people. The largest industry segments by production value are meat, sausage and cold-meat products (23 percent), dairy products (16 percent), baked goods (9 percent), and confectionery (8 percent).

The German food industry as well as the public and private institutes continuously conduct R&D activities to develop new products, to enhance nutrition, and to improve general food safety.

The German food and beverage industry is expected to have spent almost EUR 340 million on R&D activities in 2012. The core areas of the companies in terms of R&D are experimental development (50 percent of total spending) and applied science (40 percent of total spending).

The non-profit Research Association of the German Food Industry (FEI) supports research projects in all fields of food science, food technology, and nutritional science. The main focuses of the FEI's activities are the coordination and promotion of industrial collective research projects initiated by the Federal Ministry of Economy and Technology.

Germany's federal and regional institutes are supporting R&D activities with around EUR 500 million per year. Germany's R&D landscape of the food industry is supported by well-established public institutes such as the Julius Kühn-Institut (Federal Research Centre for Cultivated Plants), the Max Rubner-Institut (Federal Research Institute of Nutrition and Food), and a number of institutions of the Leibniz Association.

The main research areas incorporate nutrition science, food technology, plant and animal production, and aquaculture. The majority of research projects supported by public authorities in the field of production are regarding to new technological and biotechnological processes.

Ministries

- Federal Ministry of Food, Agriculture and Consumer Protection / Bundesministerium für Ernährung und Landwirtschaft (BMEL)
-

Email: poststelle@bmel.bund.de **Phone:** +49 228 995 290

Address: Rochusstraße 1-3, 53123 Bonn

Website: <http://www.bmel.de>

Food, agriculture and consumer protection are subjects that affect all citizens directly.

The BMEL's main aims include promoting a balanced, healthy diet and safe foods, ensuring that everyday goods are safe, assisting in the development of clear consumer rights and helping to ensure that the agricultural sector is strong and able to perform the duties required of it.

The BMEL offices in Bonn and Berlin have 83 division with a total of over 900 staff committed to achieving these aims.

You can find out more about the ministry's political staff, the research carried out by the different departments and the ministry's goals regarding sustainability and the cutting of red tape on the following pages.

Research programmes funded by BMEL:

Coordination by the Federal Office for Agriculture and Food (BLE)

Federal Organic Farming Scheme and other forms of sustainable agriculture

The aim of the Federal Government is to extend organic agriculture from at present 3.2 % of the area under cultivation to 20 % over the next ten years. The framework conditions for a further expansion of organic agriculture in Germany are considerably improved by the Federal Programme. This programme complements the current funding policy with measures that support the impetus of organic agriculture on all levels from production to consumers. Within the framework of this programme, in future funding will be particularly provided for practice-oriented research and development projects that are connected to projects regarding the improvement of knowledge transfer as well as activities regarding the improvement of market transparency and the continuity of the demand trend.

Key terms: Organic Agriculture

Annual Budget: 17 000 000 EUR

Contact: boeln@ble.de

Programme on Innovation Funding

The aim of the Programme on Innovation Funding is to support technical and non-technical innovations in the areas of food, agriculture and consumer protection. With the funding, the development of innovative, internationally competitive products, techniques and services is to be supported on the basis of scientific findings.

Keyterms: Innovation, Food, Agriculture, Consumer Protection

Annual Budget: 36 500 000 EUR

Contact: Holger Stöppler-Zimmer - Holger.Stoeppler-Zimmer@ble.de

- [Federal Ministry of Education and Research \(BMBF\)](#)

Email: information@bmbf.bund.de **Phone:** + 49 30 18 57-0

Address: *Hannoversche Straße 28-30, 10115 Berlin*

Website: <http://www.bmbf.de>

Education and research are the foundations for our future. The promotion of education, science and research by the Federal Ministry of Education and Research represents an important contribution in order to strengthen Germany's potential of innovation and to find solutions to global challenges and devising strategies for sustainable growth.

With the High-Tech Strategy, the Federal Government is orienting its innovation policy towards important social challenges; it strengthens cooperation between science and industry and improves the basic conditions for innovation. Between 2010 and 2013, the Federal Government intends to invest almost 27 billion euros in the five demand fields of climate/energy, health/nutrition, communication, mobility and security, and in the promotion of key technologies. Moreover, the Excellence Initiative supports top performers at universities and research facilities and the Pact for Research and Innovation strengthens the science system and the German research organizations (the Fraunhofer Society, the Helmholtz Association, the Max Planck Society, the Leibniz Association and the German Research Association).

Regarding the field of nutrition and food research the Ministry of Education and Research has provided individual research funding programmes for years. Since 1999 nearly 100 million euros have been invested in this specific area (around 7 million per year).

[BMBF research programmes within the scope of SUSFOOD:](#)

Coordination by the Project Management Jülich (PTJ)

[National Research Strategy "BioEconomy 2030"](#)

Website: <http://www.bmbf.de/en/1024.php>

In November 2010, the Federal Government adopted the "National Research Strategy BioEconomy 2030 – Our Route Towards a Biobased Economy" as a component of the High-Tech Strategy. Over 2 billion euros have been earmarked for this research strategy for the coming six years. The vision of a natural cycle-oriented, sustainable biobased economy carries the commitment to achieve global food supplies that are both ample and healthy, and high quality products from renewable resources that will strengthen our competitiveness.

This research strategy sets five priorities to continue Germany's path towards a knowledge-based, internationally competitive bioeconomy:

- global food security
- sustainable agricultural production
- healthy and safe food
- industrial use of renewable resources
- biomass-based energy sources

A healthy diet is indispensable for a healthy life. The development of consumer-oriented product and process innovation for healthy, high-quality, affordable and safe foodstuffs is supported by the BMBF through the priority area "Producing healthy and safe foods."

National funding bodies and research programmes

- Federal office for Agriculture and Food/ Bundesanstalt für Landwirtschaft und Ernährung/ (BLE)

Contact: Elke Saggau **Email:** elke.saggau@ble.de **Phone:** +49 (0)228 / 99 68 45-3930

Address: Deichmanns Aue 29, 53179 Bonn

Website: http://www.ble.de/EN/00_Home/homepage_node.html

As a federal institution for public law, directly accountable to the Federal Government, the Federal Office for Agriculture and Food (Bundesanstalt für Landwirtschaft und Ernährung, BLE) conducts its operations within the scope of business of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV). As the agricultural sector world-wide is subject to major structural changes, its competitiveness is being enhanced by research.

Hence, on behalf of the BMELV, the BLE supervises research projects undertaken in the fields of agriculture, food, consumer protection and innovation promotion, starting from an initial project idea through to the evaluation and application of results. Where agricultural research is concerned in particular, the BLE also coordinates German participation in the crossnational European Research Area Networks (ERA-Nets) and Joint Programme Initiatives (JPIs).

- Forschungszentrum Juelich GmbH (FZJ) – Project Management Juelich

Contact: Veronika Deppe **Email:** v.deppe@fz-juelich.de **Phone:** + 49 2461 61 9416

Address: Wilhelm-Johnen-Str., 52425 Jülich

Website: <http://www.ptj.de/>

Project Management Jülich coordinates research and innovation funding programmes in the areas of biotechnology, energy, materials technologies, environment and sustainability, marine and polar research, navigation and marine technology, technology transfer and start-up companies, as well as regional technology platforms and clusters. With expertise in research and innovation management, Project Management Jülich supports its clients in the German Federal Government and the federal states as well as the European Commission in implementing their research policy goals with a focus on

project funding. Project funding furnishes the public authorities with an instrument that they can use to help set the course of research. In 2012 Project Management Jülich supervised more than 14.500 projects with a monetary turnover of € 1.24 billion.

National research institutes

Following a number of research institutions within the scope of SUSFOOD are listed.

- **Leuphana Universität Lüneburg**

Address: Scharnhorststr. 1, D-21335 Lüneburg

Website: <http://www.leuphana.de/en/university.html>

Faculty Sustainability

Contact: Sabine Dembeck **Email:** dembeck@uni.leuphana.de **Phone:** +49.4131.677-2801

Address: Scharnhorststr. 1 / C11.012, 21335 Lüneburg

Website: <http://www.leuphana.de/en/faculty-sustainability.html>

How can we shape a sustainable society? Within the scope of the university-wide Sustainability Research Science Initiative, academics in the Faculty of Sustainability look at the conditions and opportunities for sustainable development. For this purpose, the Faculty combines natural sciences and the humanities: There are 25 professorships in the fields of chemistry, information systems, communication, management, ecology, philosophy, planning, politics, psychology, law, engineering, and economics. The transdisciplinary methods applied in research, studying and services aim particularly to create future potentials for development for civil society in the 21st century.

Institute for Environmental and Sustainability Communication (INFU)

Email: infu@uni.leuphana.de **Phone:** +49-4131 - 677 2802

Address: P.O.B. 2440, D-21314 Lüneburg

Website: www.leuphana.de/infu

For more than 10 years, contributions to theory building and professionalization of sustainability communication have been the focus of research and teaching in the Institute for Environmental and Sustainability Communication (Institut für Umweltkommunikation, INFU). Inter- and transdisciplinary processes have a central role in these endeavours. Education, participation, policy making and environmental informatics are the four research themes of the Institute. The work of the Institute aims to advance individual, institutional and collective competencies for shaping the future in the context of the challenges of global environmental change and sustainable development.

- Münster University of Applied Sciences - Institute of Sustainable Nutrition and Food Production (iSuN)

Email: isun@fh-muenster.de **Phone:** +49 251 83-65571

Address: Corrensstraße 25 - Raum C 303 + C 305, 48149 Münster

Website: www.fh-muenster.de/isun

Research undertaken at iSuN is dedicated to the development of concepts, products and services for sustainable nutrition. We cooperate closely with actors involved in the field of nutrition. iSuN questions existing supply structures and consumer behaviour in the food system, aiming to develop them in terms of joint responsibility for sustainable lifestyles. The resulting range of food on offer makes it easier for people to eat a healthy, delicious diet at home, at work, at school and in other areas of life, and enables companies to provide us with the appropriate products. iSuN combines the expertise of nutritionists, microbiologists, economists, engineers, logisticians and business economists of Münster University of Applied Sciences, creating synergies for innovative concepts implemented together with partners from business practice.

- Technische Universität München (TUM) - Institute for Marketing and Consumer Research

Contact: Prof. Dr. Jutta Roosen **Email:** jroosen@tum.de **Phone:** +49 8161 71-3316

Address: Alte Akademie 16, 85345 Freising

Region: Bavaria

Website: <http://www.hez.wzw.tum.de/index.php?id=30&L=1>

The Chair Group in Marketing and Consumer Research mostly applies concepts and methods of consumer economics and consumer behaviour research to questions of consumers' demand for food and health-related behaviour. Food consumption behaviour is analysed in different environments such as in private households but also away from home. Most research is empirically oriented using survey data and data from economic experiments. The chair group cooperates with several research institutions in order to obtain data from consumer panels and household income and consumption data. Primary goal of the research is the development of appropriate methods to analyse consumer decision making, such as in contingent valuation surveys and economic experiments. In addition, the objective is to guide marketing and consumer policy in finding the appropriate tools to increase their efficacy. The main research subjects can be grouped into the area Consumer economics and consumer behaviour Marketing Consumer policy.



- **Johann Heinrich von Thünen Institute (VTI)**

Email: info@ti.bund.de **Phone:** +49 531 - 596 1003

Address: Bundesallee 50, 38116 Braunschweig

Website: <http://www.ti.bund.de/en/startseite/home.html>

What impact does increasing international competition and the demand for bio energy have on prices for food products? What consequences does climate change have on agricultural, forest and aquatic ecosystems? What processes would allow the non-food sector to use renewable resources in a more efficient manner? These questions give an impression of the broad of spectrum of topics we work on. Spatially, we focus on: Rural areas as production sites and living areas for a sizeable part of the population, Forests as ecosystems and suppliers of wood, Oceans (North Sea, Baltic Sea, North Atlantic) as biotopes for fish as a natural resource. Functionally, we are active in a comprehensive way in the disciplines: Economics, Ecology, Technology.

The research of the Johann Heinrich von Thünen Institute is targeted at developing concepts for a sustainable, ecologically viable, and competitive agriculture and food economy, forestry and wood economy, fisheries and aquaculture. Another main focus is to help overcome the specific problems of the rural areas.

- **Max Rubner-Institut, Federal Research Institute of Nutrition and Food (MRI)**

Address: Haid-und-Neu-Straße 9, 76131 Karlsruhe

Website: <http://www.mri.bund.de/en/de/home.html>

Max Rubner-Institut, the Federal Research Institute of Nutrition and Food, was founded on 1 January 2008. Its research focus is health and consumer protection in the nutrition sector. Important research fields are the determination and nutritional assessment of health relevant food ingredients, the investigation of careful and resource-preserving procedures of processing, the quality assurance of vegetable and animal food as well as the analysis of sociological parameters of nutrition and the improvement of nutrition information.

- **The Institute for Social-Ecological Research (ISOE)**

Email: info@isoe.de **Phone:** +49 69 707 69 19-11

Address: Hamburger Allee 45, 60486 Frankfurt am Main

Website: <http://www.isoe.de/en/home/>

ISOE is an independent institute that develops social-ecological concepts for sustainable development. As an innovative scientific think tank we undertake transdisciplinary research for society, policy makers and industry – providing support for sound decision-making processes.

- **Wuppertal Institute for Climate, Environment and Energy**

Phone: +49 (0)202 2492-0

Address: Döppersberg 19, 42103 Wuppertal

Website: <http://wupperinst.org/en/home/>

Sustainable development requires an integrated approach to policy and science because many of the issues it raises cannot be addressed within a single department or using the tools of individual scientific disciplines. This is where the Wuppertal Institute's research programme begins - by taking an interdisciplinary approach and working towards systems understanding. Designing transitions to a sustainable development is the Wuppertal Institute's stated mission.

- **Federal Institute for Risk Assessment**

Contact: Karin Schlesier **Email:** FK@bfr.bund.de

Address: Max-Dohrn-Str. 8-10, 10589 Berlin

Website: <http://www.bfr.bund.de>

"Identify risks - Protect health" - this is the guiding principle for the work of the Federal Institute for Risk Assessment (BfR) in the field of consumer health protection. The Federal Institute for Risk Assessment (BfR) is a scientific institution within the portfolio of the Federal Ministry of Food and Agriculture (BMEL) in Germany. It advises the Federal Government and Federal Länder on questions of food, chemical and product safety. The BfR conducts its own research on topics that are closely linked to its assessment tasks.

- **Fraunhofer Gesellschaft**

Email: info@zv.fraunhofer.de

Address: Hansastrafße 27c, 80686 München **Region:** North-Rhein-Westfalia

Website: <http://www.fraunhofer.de/en/about-fraunhofer.html>

Fraunhofer ICT-IMM

Contact: Michael Maskos **Email:** michael.maskos@imm.fraunhofer.de

Address: Mainz

Website: <http://www.imm.fraunhofer.de/en.html>

Our scientists carry out research and development within the key competences Decentralized and Mobile Energy Technology, Continuous Chemical Process Engineering (Flow Chemistry), Microfluidic Analysis Systems, Medical Sensors and Technical Sensor Systems and Microtechnology for Nanoparticles.

The knowledge we gain and the developments which evolve from these fields are applied in the business areas Energy and Environment; Chemistry, Process Technology and



Aviation and Aerospace; Biomedical Analytics and Diagnostics and Security as well as Industrial Analytics Applications.

We build a bridge between basic research and application, because our developments pass through the institute beginning from the idea to the basic and application-oriented research to the point of their realization into custom built and market-ready results.

Fraunhofer Institute for Materialflow and Logistics IML

Email: info@iml.fraunhofer.de

Address: Joseph-von-Fraunhofer-Strasse 2-4, 44227 Dortmund

Website: <http://www.iml.fraunhofer.de/>

Fraunhofer Institute for Material Flow and Logistics advises companies of all industries and sizes in all questions about material flow and logistics. For our customers we offer widespread services: As consultants we support in fulfilling new tasks and meeting requirements, as researchers we work out new solutions together with our customers, as planners we help to optimize the internal and external logistics and as developers we realize solutions in soft- and hardware. In the process, Fraunhofer IML focuses on company-specific, made-to-measure solutions and accompanies its customers from planning to implementation.

Fraunhofer Institute for Process Engineering and Packaging IVV

Contact: Daniella von der Haar **Email:** daniela.von.der.haar@ivv.fraunhofer.de

Website: <http://www.ivv.fraunhofer.de/>

We develop and optimize products and processes in the area of: Biogenic Raw Materials / Functional Ingredients / Food Processes and Products / Food Quality and Sensory Acceptance / Compliance of Packaging Materials / Functional Materials / Processing and Packaging Machinery / Recycled Plastics

Fraunhofer Institute for Structural Durability and System Reliability LBF

Contact: Andreas Friedmann **Email:** andreas.friedmann@lbf.fraunhofer.de

Website: <http://www.lbf.fraunhofer.de/en.html>

Fraunhofer LBF in Darmstadt is one of the most traditional institutes of the Fraunhofer-Gesellschaft. The latest milestone in the development of the „Fraunhofer Institute for Structural Durability and System Reliability LBF“ was the integration of the renowned German Plastics Institute DKI in 2012. The tried and tested competencies are found today in numerical and experimental structural durability, in smart structures and system reliability and in the area of plastics. Fraunhofer LBF continues to develop these four core competencies on a technical and organizational level in research divisions of the same name and in a total of 10 departments.

Partners in the development process

More than 550 scientists, engineers, technicians, administrators and experts from diverse disciplines bring their know-how into interdisciplinary project work and services that extends beyond the boundaries of each subject matter to the advantage of customers and partners. They take up future-oriented topics, develop them to product and process innovations in close cooperation with their customers and thus set new trends.

The Fraunhofer LBF teams offer services along the entire value-added chain starting with the material and its processing up to the finished component, the complex system, its qualification with regard to safety and reliability, and performance from product design to verification. Particularly in the area of plastics, the institute provides support at an early stage of the value added chain with polymer synthesis and in-depth material characterization.

Comprehensive material and energy-efficient solutions are developed in the areas of vibration technology, lightweight construction, reliability and polymer technology – tailored to the individual needs of each customer. Fraunhofer LBF reaches a number of different markets with its characteristic, wide-reaching competence and service portfolio, particularly in rail transport technology, ship building, aviation, mechanical and plant engineering, energy technology, building industry, medical technology and the chemical industry.

- German Institute of Food Technologies DIL

Contact: Alexander Mathys **Email:** a.mathys@dil-ev.de

Address: Prof.-von-Klitzing-Str. 7, 49610 Quakenbrueck

Website: www.dil-ev.de/en

- Hamburg University of Technology Institute for Thermal Separation Processes

Contact: Irina Smirnova **Email:** irina.smirnova@tuhh.de

Address: 38, Eissendorfer Strasse, 21073 Hamburg

Website: <http://www.tuhh.de/v8>

As the petrol era is facing its end, new resources for base chemicals, polymers and energy production need to be explored. Therefore the bioconversion of biomass to high value products such as fine chemicals and biofuels has recently attracted the interest of scientists from academia and industry. Established processes are mainly based on the utilisation of starchy substrates, leaving the main constituent of biomass resources unused. Biomass consists mainly of cellulose, hemicellulose and lignin followed by proteins and lipids. Our motivation is to isolate these compounds or compound mixtures from natural source, and to convert these into platform materials like glucose. Those materials can be introduced into a sustainable production of scale for almost all needs in

life science, energy and polymer producing technologies. These processes are contained in the term “biorefinery”. In analogy to an oil refinery, the biorefinery uses renewable sources as a feedstock and turns them into different product streams. Nevertheless, in order for this biorefinery to be economically viable all its product streams should find use and application, exactly like in the oil refinery.

- Institute for Sanitary Engineering, Water Quality and Solid Waste Management

Contact: Prof. Dr.-Ing. Martin Kranert **Address:** Bandtäle 2, 70569 Stuttgart

Website: <http://www.iswa.uni-stuttgart.de/index.en.html>

- Julius Kühn Institut, Federal Research Centre for Cultivated Plants

Contact: Silke Dachbrodt-Saaydeh **Email:** silke.dachbrodt-saaydeh@jki.bund.de

Address: Stahnsdorfer Damm 81, 14532 Kleinmachnow

Website: <http://www.jki.bund.de/>

Federal research organization and higher federal authority

- Leibniz Institute for Agricultural Engineering Potsdam-Bornim (ATB)

Contact: Christiane von Haselberg **Email:** atb@atb-potsdam.de

Address: Max-Eyth-Allee 100, 14469 Potsdam

Website: www.atb-potsdam.de

We develop sustainable technologies for a resource-efficient utilization of biological systems to produce food, raw materials, and energy to meet the challenges of the changing climate and global requirements. To achieve our goals we combine high quality basic research with practical applications. Our tasks include the development of processes for sustainable land management as well as innovative technical solutions for agriculture and industry.

Furthermore, we evaluate techniques and technologies in terms of functionality and impact on resource efficiency. Special focus is given to the interactions between biomass production and climate.

Our technologies developed in the context of biorefinery concepts and cascade utilization contribute to the establishment of a sustainable bio-based material and energy economy.

Founded in 1992, ATB today is one of Europe’s leading research institutes in the area of agricultural engineering. With its scientific expertise in the fields of biomass, emissions, soil and water in agriculture, among others, ATB provides support for decision makers in policy, industry, and agriculture.

Our research is organized within four programs. This reflects the interdisciplinary nature and the systems approach in our research objectives.

- Precision farming and precision livestock production
- Quality and safety of food and feed
- Material and energetic use of biomass
- Technology assessment in agriculture
- **Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO)**

Contact: Viola Bruschi Email: iamo@iamo.de

Address: Theodor-Lieser-Str. 2, 06120 Halle (Saale)

Website: <http://www.iamo.de/>

Adapted to the changing challenges and problems in transition economies the main research areas at IAMO – in action since January 2008 – cover now more general issues of agricultural development; this also in the context of globalisation and an increasing divergency between countries as well as between structurally weak and dynamic regions. The main research areas include a bunch of the latest, most relevant and promising research topics respectively questions in the context of research of agricultural and food economy in Central and Eastern Europe as well as in Central and Eastern Asia.

Main research areas at IAMO are:

- Policy reforms and institutional change
- Structural change and business growth
- Employment and livelihoods
- Competitive strategies and market requirements
- **Ludwig-Maximilians-Universität München**

Address: Geschwister-Scholl-Platz 1, 80539 Munich

Website: <http://www.en.uni-muenchen.de/index.html>

LMU - Klinikum - Abteilung für Stoffwechsel und Ernährung

Contact: Berthold Koletzko **Email:** office.koletzko@med.uni-muenchen.de

Address: Lindwurmstr. 4, 80337 München

Website: <http://www.klinikum.uni-muenchen.de/Kinderklinik-und-Kinderpoliklinik-im...>

- **Nutrition Ecology - Justus-Liebig-University Giessen**

Contact: Katja Schneider, Martina Metz, Eleonore Heil

Email: eleonore.a.heil@ernaehrung.uni-giessen.de, katja.schneider@ernaehrung.uni-giessen.de, martina.metz@ernaehrung.uni-giessen.de

Address: Wilhelmstr. 20, 35392 Giessen

Website: http://www.uni-giessen.de/fbr09/nutr-ecol/index_e.php



Nutrition ecology is a concept to deal with multidimensionality and complexity in nutrition science and practice. Along the food supply chain not only the dimension health, but also the dimensions environment, society, and economy are taken into account simultaneously and coequally. Solutions of complex nutrition-related problems are developed by combining special disciplinary knowledge with methods and principles of research on complexity and knowledge integration

- Rheinische Friedrich-Wilhelms-Universität Bonn

Address: Regina-Pacis Weg 3, 53113 Bonn **Region:** NRW

Website: <http://www3.uni-bonn.de/>

Institute for Food and Resource Economics, Chair of Agricultural and Food Market Research

Contact: Lucie Adenauer, Nina Langen

Email: lucie.adenauer@ilr.uni-bonn.de, nina.langen@ilr.uni-bonn.de

Address: Nussallee, 21, 53115 Bonn **Region:** NRW

Website: <http://ilr.uni-bonn.de>

Uni-Bonn - Department of Agricultural and Food Market Research

Contact: Prof. Monika Hartmann **Website:** <http://www.ilr.uni-bonn.de/>

Email: monika.hartmann@ilr.uni-bonn.de

Address: Regina-Pacis Weg 3, 53113 Bonn **Region:** NRW

- Technische Universität Dresden, Chair of Food Engineering

Contact: Harald Rohm

Email: harald.rohm@tu-dresden.de

Address: Bergstraße 120, 01069 Dresden

Website: <http://www.tu-dresden.de/mw/ilb>

- University Duisburg-Essen

Contact: Nicole Kraemer **Email:** nicole.kraemer@uni-due.de

Website: <http://www.uni-due.de/>

- University of Goettingen/Georg-August-Universität Göttingen

Address: Wilhelmsplatz, 1, 37073 Goettingen

Website: <http://www.uni-goettingen.de>

GUA - Department of Agricultural Economics and Rural Development

Email: omussho@uni-goettingen.de

Address: Platz der Göttinger Siebe 5, 37073 Göttingen

Website: <http://www.uni-goettingen.de>

- GUA - Division Environmental and Resource Economics
- University of Hohenheim

Contact: Susanne Braun **Email:** s.braun@uni-hohenheim.de

Address: 70593 Stuttgart

Website: <https://www.uni-hohenheim.de>

We are working on international projects and we are involved in several networks related to SUSFOOD.

Life Science Center

Website: <https://lsc.uni-hohenheim.de/>

The objective of the Life Science Center (LSC) is to strengthen the University's scientific potential in the field of life sciences and to further develop its profile by providing a platform for information exchange and research support. As a central research institution of the University of Hohenheim, the LSC consists of an internal inter-faculty and cross-sectional network of scientists with LSC members.

Special emphasis is placed on the concept of the Food Chain, from food production and healthy nutrition, to the behavior of consumers. Emphasis is also given to adjacent fields of basic research in the life sciences. The LSC centralizes the numerous scientific activities from agricultural sciences, biology, nutritional sciences and socio-economic sciences. It addresses new interdisciplinary research topics that would be inaccessible for individual working groups.

The Life Science Center is divided up into three thematic sections due to the scientific objectives of the center:

- Section 1: Biomolecular Signals and Genomics
- Section 2: Quality and Biofunctionality of Food
- Section 3: Ecosystems and Resource Management
- University of Rostock

Address: Ulmenstraße 69, Building 3, 18057 Rostock

Website: <http://www.uni-rostock.de>

Faculty of Agricultural and Environmental Sciences

Contact: Elmar Mohr **Email:** dekan.auf@uni-rostock.de

Address: Justus-von-Liebig-Weg 6, 18059 Rostock

Website: <http://www.uni-rostock.de/nc/en/faculties/faculty-of-agricultural-and-en...>



University of Rostock - Department Waste Management and Material Flow

Email: asw@uni-rostock.de

Website: <http://www.auf-aw.uni-rostock.de/>

- Technische Universität Berlin (TU Berlin)

Contact: <http://www.tu-berlin.de/>

Institute for Food technology and Food Chemistry

Contact: Bettina Caemmerer **Email:** bettina.caemmerer@tu-berlin.de

Website: http://www.lmtc.tu-berlin.de/menue/institut_fuer_lebensmitteltechnologie_und_lebensmittelchemie/

- Ostwestfalen-Lippe University of Applied Sciences - Institute for Food Technology (OWL UAS)

Contact: Hans-Juergen Danneel **Email:** hans-juergen.danneel@hs-owl.de

Website: <http://www.hs-owl.de/en>

Ostwestfalen-Lippe University of Applied Sciences's goal is to tackle complex problems and global challenges and work to ensure that knowledge and innovations benefit society. We provide education and research in engineering, economics and management, life science technologies, design and construction.

Ostwestfalen-Lippe University of Applied Sciences has nationally reached a top position due to its excellent applied research.

Ostwestfalen-Lippe University of Applied Sciences (OWL UAS) is an important component in the regional and national innovation landscape with international appeal. It is one of the leading research universities for applied sciences in Germany. At the moment 171 professors teach and conduct research in the nine university departments. In addition more than 180 scientific assistants are employed in third-party funded positions and there are over 80 student assistants involved in research projects.

OWL UAS has an active culture of application-orientated innovation with a strong network of industrial partners and other research organizations. The University has excellent contacts in the industry and business fields due to its long tradition in the region. Together new approaches and innovative concepts are developed for research and offered courses. The cooperation with industry is the basis for our success.

Interdisciplinary research is the basis for the strategy for the future

In addition to individual work the departments offer a broad range of research in research focal points. These scientist groups provide pool expertise and know-how.

Leading edge fields “Industrial Information Technology” and “Food Technology”

OWL UAS focuses on clear profiles in leading edge fields of application-oriented research. These profile areas are closely linked with industry and are well recognized in the scientific community. The profile areas are organized in the institutes “ILT.NRW – Institute for Food Technologies.NRW” and “inIT – Institute Industrial IT”.

- **ttz Bremerhaven**

Address: An der Karlstadt 10, 27568 Bremerhaven

Website: <http://ttz-bremerhaven.de>

ttz Bremerhaven is an innovative provider of research services and operates in the field of application-oriented research and development. Under the umbrella of ttz Bremerhaven, an international team of experts is working in the areas of food, environment and health.

- **N-Zyme BioTec**

Contact: Stefan Marx **Email:** marx@n-zyme.de

Address: Darmstadt

Website: <http://www.n-zyme.de/>

Unlocking the Potential of Nature





Photos © MIPAAF



SUSFOOD COUNTRY REPORT ITALY

Author:

MIPAAF : Elena Capolino



Introduction

The agri-food sector

Italy is the third country contributing to the European food production.

The agrifood system is a critical part of Italy's economy, in which a variety of elements interact. Agriculture is the primary ring, connected, up and down the supply chain, to other sectors of the economy – producers of inputs and services, outside contractors, feed manufacturers, processing activities of the food industry, distribution, catering – which together are worth the remarkable figure of almost 267 billion euro, or nearly 17% of national GDP, with agriculture, at nearly 52 billion, and the food, drink and tobacco industry at 127 billion euroⁱⁱ.

In 2010, the food industry, including drinks and tobacco, numbers around 57,000 active businesses and in 2011 the sector employs roughly 435,000 work units (10.6% share to the total work units in the manufacturing industry).

In 2011, Italian household spending on food, drinks and tobacco is approximately 166 billion euro in current values, representing the largest share (17%) on overall consumer spending.

The knowledge system

The Italian National Institute of Statistics (ISTAT) survey indicates that in 2010 the investments in R&D in the agro-food sector are about 780 million euro, 4% of the entire amount of the national R&D expenditure. 40,6% of this budget comes from the private sector (mainly – 98% - from industry, only 2% from agricultural enterprises), 30,4% from public research institutions, 27,4% from universities, 1,6% from no-profit organizations.

The private sector employs, in terms of full-time equivalent, 2200 people (36% of them are researchers), a lower share than the employees involved in R&D in the whole enterprises sector, while no-profit institutions employ 203 workers, public institutions (CNR, CRA; INEA, etc.) 4536 (33% of them are researchers) and universities 2809 (61% of them are researchers)ⁱⁱⁱ.

Ministries involved in agriculture and food topics

- Ministero delle politiche agricole alimentari e forestali (MIPAAF)

Email: disr4@mpaaf.gov.it **Phone:** +390646655076

Address: Via XX Settembre 20, 00187

Website: <http://www.politicheagricole.it>

The Ministry of Agricultural, Food and Forestry Policies (MIPAAF) is the main national funding body for agricultural, agro-food and forestry research.

- **Ministero dell'Ambiente e della Tutela del Territorio e del Mare**

Address: Via Cristoforo Colombo 44, 00147 Roma

Website: <http://www.minambiente.it>

The ministry mainly supports activities related to environmental protection.

- **Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR)**

Address: Piazza Kennedy 20, 00144 Roma

Website: www.istruzione.it

The ministry supports and coordinates research in all the sectors.

- **Ministero della Salute**

Address: Viale Giorgio Ribotta 5, 00144 Roma

Website: <http://www.salute.gov.it>

The ministry supports topics related to human health, food safety, etc.

- **Ministero dello Sviluppo Economico (MSE)**

Website: <http://www.sviluppoeconomico.gov.it>

The ministry supports industrial R&D.

Other public institutions supporting agri - food research

At local level, the 20 Italian Regions and 2 autonomous Provinces (Bolzano and Trento) fund agricultural research either directly with their own research structures or indirectly with own research programmes implemented through national structures (Universities and other public institutions) situated in their region; in addition some "Interregional Programmes" concerted between national and regional governments are financed.

National funding bodies and research programmes

Research is mainly funded via the previous mentioned ministries and governmental institutions. Concerning food related topics, MIPAAF has many research programmes, the ones running in the last years are posted in the MKB and indicated hereafter.

- **Ministero delle politiche agricole alimentari e forestali (MIPAAF)**

Contact: Elena Capolino **Email:** e.capolino@politicheagricole.it **Phone:** + +39 0552491258

Website: <http://www.politicheagricole.it>

Research programmes funded by MIPAAF:

AGRITRASFER-IN-SUD

Building a permanent system for the transfer of research results and innovation to the agro-food sector in Southern Italy regions. The project, coordinated by the Consiglio per la Ricerca e la Sperimentazione in Agricoltura (CRA) involves research institutions,

institutional bodies (Regions, regional development services, etc.), entrepreneurs' organizations, industry, farmers, etc., and aims at developing strategies for the transfer of knowledge to business in the southern regions.

Timing: 2007- March 2013

Total Budget: 2 966 220 EUR, **Annual Budget:** 494 370 EUR

Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favour of public research institutions with specific expertises.

[Arimnet \(ERA-Net\) - project SAFEMED \(food safety\)](#)

The project SAFEMED has been financed through the Arimnet ERA-Net call for transnational research projects proposals launched in 2011. The SAFEMED Project aims at analyzing the conditions for an international co-regulation of food safety between North and South Mediterranean sides. It consists in analysing the structure of the competition between supply chains of both sides and examining the possibilities for a coordination of public and private food safety strategies. The Project develops a multi-criteria analysis that makes it possible to conciliate: (i) The imperative of food safety, to assure European consumers' health via the provision of safe imports, and, at the same time, the health of South Mediterranean consumers that have to take advantage of the evolution of good agricultural practices at international level, (ii) Producers' market access, given that agrifood exports represent an important factor of South countries' economic development, (iii) Safe and fair competition among actors of North and South sides to avoid phenomena of "sanitary dumping" (derived from countries heterogeneity of food safety regulations).

Timing: 2012-2015

Total Budget: 90 000EUR, **Annual Budget:** 30 000 EUR. The Budget indicated is the amount financed by MIPAAF in favor of the Italian partner of the SAFEMED transnational research consortium.

Eligibility: ERA-Net criteria + Italian regulations which state that: research institutions and private no profit institutions that have among their institutional scopes a research activity are eligible to participate in the call.

[Bioenergy \(direct assignment\)](#)

Energy from agricultural and forestal biomasses: valorization and integration of the biofuel and fibre chains for the production of electric and heat energy.

The 5 years programme (which started in 2007) focuses on innovation and knowledge transfer among all the bioenergy chain actors. Little part of the programme relates to the production of biofuels from agricultural wastes.

Timing: 2007- March 2013

Total Budget: 4 950 000 EUR, **Annual Budget:** 990 000 EUR

Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favor of public research institutions with specific expertises.

Bioenergy (Public call)

10 million euros research programme for research activities in the field of "bioenergy", financed by the Ministry (MIPAAF), mainly focussing on the production of biofuels through agricultural and agro-industrial wastes' recovery. Maximum duration of the projects: 3 years.

14 projects were approved for funding, 12 out of them focus on second generation biofuels production, mainly with agricultural and agro-industrial wastes as substrates. The total budget here indicated (80% of the call budget) refers to the projects dealing with wastes recovery. Most of the projects have a 3-year duration.

Timing: 2011- 2013

Total Budget: 8 092 000 EUR, **Annual Budget:** 2 697 300 EUR

Eligibility: research institutions and private no profit institutions that had among their institutional scopes a research activity were eligible to participate to the call.

Bioenergy (Voluntary submission)

7 million euros research programme for research activities in the field of "bioenergy", financed by the Ministry (MIPAAF) on free topics through a mechanism of voluntary submission. Maximum duration of the projects: 3 years. Maximum budget for each project: 300.000 euros.

29 projects were approved for funding (total budget 7 M euros), 16 (total budget 4 M euros) out of them focus on biofuels production from agricultural and agro-industrial wastes. The total budget here indicated refers to the projects dealing with wastes recovery.

Timing: 2011- 2013

Total Budget: 4 000 000 EUR, **Annual Budget:** 1 333 330 EUR

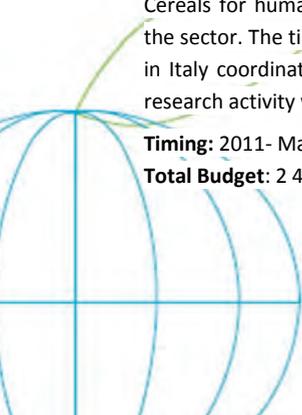
Eligibility: research institutions and private no profit institutions that had among their institutional scopes a research activity were eligible to participate to the call.

CER.S.UOM (cereals for humankind)

Cereals for humankind: integrated functionality of the product and sustainability of the the sector. The timing seems to not correspond to the 3 years duration of the project, but in Italy coordinators of the projects can ask for a postponement of the deadline of the research activity without any further funding, in case of motivated reasons.

Timing: 2011- March 2013

Total Budget: 2 497 280 EUR, **Annual Budget:** 832 425 EUR



Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favor of public research institutions with specific expertises.

Core Organic II (ERA-Net) - project AuthenticFood

The project AuthenticFood has been financed through the Core Organic II ERA_Net call launched in September 2010 (thematic research area: " Ensuring quality and safety of organic food along the whole chain"). 3 Italian institutions participate to the project. The AuthenticFood project aims: In AuthenticFood a portfolio of the most promising analytical methods, markers and concepts will be tested for their ability to authenticate organic plant products. The aims are to provide the tools that will ultimately give confidence to consumers by revealing fraudulent substitution of organic with conventionally cultivated products and consequently to promote organic food through assured authenticity. The market shares for organic products have continuously grown over the last decade even though organic products are being sold at premium prices compared to conventional ones. However, recently there have been a growing number of reported cases, where conventional food products were mislabelled and fraudulently sold as organic. Consequently, there is an urgent need for development and validation of analytical methods, which allow discrimination between organic and conventional food products. Background of the project: There is an ever-increasing consumer demand for foods of local origin or food cultivated by organic farming practices. However, the organic sector is becoming increasingly dominated by corporate players that may not share some of the less tangible benefits of the organic philosophy. This places an increased burden on certification/inspection bodies and traceability systems on which the authenticity of the organic produce depends. Thus, to assure the authenticity of foods marketed and labelled as "organic", there is a need for robust, accurate and validated analytical control methods.

Timing: 2012- 2014

Total Budget: 186 500 EUR, **Annual Budget:** 62 166 EUR

Eligibility: ERA-Net criteria + Italian regulations which state that: research institutions and private no profit institutions that have among their institutional scopes a research activity are eligible to participate in the call

Food quality 1

Three projects funded through direct assignment, not related to a specific programme, dealing with Food quality. "Nume" project: Nutrigenomics, valorization of Mediterranean food; "Palingenio" project: nutritional behaviour and lifestyle of the Italian population; "Biovita" project: biodiversity in the Italian agrofood sector.

Timing: June 2008- 2012

Total Budget: 9 800 000 EUR, **Annual Budget:** 3 267 000 EUR

Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favor of public research institutions with specific expertises.

Food quality 2

Three projects funded through direct assignment, not related to a specific programme, dealing with food quality: "Nutrigea" project (24 months): valorization of the nutritional quality of sprouts for human nutrition; "Regalim" project (36 months): nutritional behaviour in the Italian regions in relation to the territory, the social structure, the cultural and local traditions; "Alimed" project (24 months): Mediterranean food after 50 years.

Timing: December 2009- June 2013

Total Budget: 4 000 000 EUR, **Annual Budget:** 1 780 000 EUR

Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favor of public research institutions with specific expertises.

Food safety

Strategies to tackle food safety emergencies; improvement of the healthy and functional aspects of commodities for human nutrition and animal feed production. Two projects (SAFORISK, ALISAL) have been financed through the mechanism of direct assignment; average duration of the 2 projects: 30 months. / The timing seems to not correspond to the 3 years duration of the project, but in Italy coordinators of the projects can ask for a postponement of the deadline of the research activity without any further funding, in case of motivated reasons.

Timing: June 2009- March 2013

Total Budget: 2 089 500 EUR, **Annual Budget:** 835 800 EUR

Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favor of public research institutions with specific expertises.

Joint Programming Initiative FACCE (JPI for Agriculture, food security and climate change) - Knowledge Hub MACSUR

The "FACCE Knowledge Hub" is a novel instrument developed by the FACCE – JPI to foster the transnational cooperation, collaboration and communication between the research communities in the field of FACCE. A call was organised in a two-step process, beginning with a letter of intention. Eligibility to enter the second stage was determined nationally by members of the JPI Steering Committee. MACSUR means "Modelling European Agriculture with Climate Change for Food Security" and brings together 73 partners from 17 countries all over Europe and Israel, with an estimated total budget of 15 million Euros. The project is divided into 3 subthemes: crops, livestock and grasslands, and trade.

Timing: May 2012 – June 2013



Total Budget: 503 920 EUR, **Annual Budget:** 167 973 EUR The budget indicated is the amount financed by MIPAAF in favour of the Italian partners of the MACSUR transnational research consortium.

Eligibility: A project needs to fulfill the JPI and national criteria in order to apply.

MEDITO (Mediterranean diet)

Mediterranean diet in a new perspective of research: connections between nutrition, genome and human health. The 2 years project is carried out by INRAN (Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione - National Research Institute for food and nutrition), a research institution supervised by MIPAAF.

Timing: June 2011- June 2013

Total Budget: 1 000 000 EUR, **Annual Budget:** 500 000 EUR

Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favor of public research institutions with specific expertises.

MIERI (processing)

Miniaturization and simplification of the processing lines for small agro-food productions and use of renewable energy.

The timing seems to not correspond to the 3 years duration of the project, but in Italy coordinators of the projects can ask for a postponement of the deadline of the research activity without any further funding, in case of motivated reasons.

Timing: 2009- March 2013

Total Budget: 2 256 460 EUR, **Annual Budget:** 752 154 EUR

Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favor of public research institutions with specific expertises.

OIGA I - Osservatorio per l'Imprenditorialità Giovanile in Agricoltura (young entrepreneurs)

8.095.000 euros programme addressed to SMEs managed by young farmers (max age 40) working in cooperation with public research institutions in order to make easier and more effective the interaction between the innovation needs and the research results transfer.

The budget indicated above is part of the total programme budget and refers to projects dealing with the Susfood topics: recovery and valorization of wastes (from agriculture, from agro-industry), innovation in the food processing, quality of food.

Timing: August 2009 – September 2012

Total Budget: 1 684 000 EUR

Annual Budget: 612 363 EUR

Eligibility: young farmers (max age 40) and research institutions.

OIGA II - Osservatorio per l'Imprenditorialità Giovanile in Agricoltura (young entrepreneurs)

Five Mio euros programme addressed to SMEs managed by young farmers (max age 40) working in cooperation with public research institutions in order to make easier and more effective the interaction between the innovation needs and the research results transfer. The projects for a maximum duration of 24 months deal with: 1) reasearch and experimentation (4 M euro), 2) research and development (1 M euro).

Timing: December 2010 – December 2012

Total Budget: 2 186 000 EUR

Annual Budget: 1 093 000 EUR

Eligibility: young farmers (max age 40) and research institutions.

OIGA III - Osservatorio per l'Imprenditorialità Giovanile in Agricoltura (young entrepreneurs)

Two Mio euros programme addressed to SMEs managed by young farmers (max age 40) and consortia of young farmers working in cooperation with research institutions in order to make easier and more effective the interaction between the innovation needs and the research results transfer. The projects (max budget 150.000 euros each) have a maximum duration of 24 months and deal with industrial research (following the EU definition).

The budget indicated above is part of the total programme budget (related to all fields of agriculture) and refers to the 5 projects dealing with the Susfood topics (out of the total of 22 projects).

Timing: January 2012 –February 2014

Total Budget: 700 000 EUR, **Annual Budget:** 350 000 EUR. The budget indicated is the amount financed by MIPAAF in favour of the Italian partners of the MACSUR transnational research consortium.

Eligibility: young farmers (max age 40) and research institutions.

Organic Agriculture

Research in all the fields of organic agriculture.

Eighteen projects have been financed, most of them have a duration of 36 months, 4 last 24 months. Some of these projects are strongly related to food safety, sustainability, environment protection, consumer wellbeing.

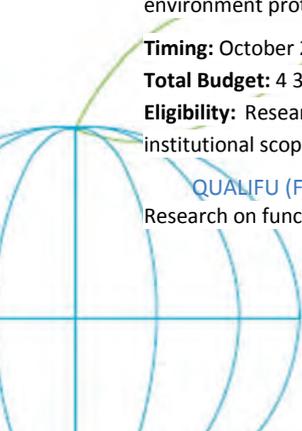
Timing: October 2009- February 2013

Total Budget: 4 378 000 EUR, **Annual Budget:** 1 592 000 EUR

Eligibility: Research institutions and private no profit institutions that had among their institutional scopes a research activity were eligible to participate to the call.

QUALIFU (Functional food and food quality)

Research on functional food and food quality.



The project is carried out by INRAN (Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione - National Research Institute for food and nutrition), a research institution supervised by MIPAAF.

Timing: January 2009 - December 2013

Total Budget: 7 300 920 EUR, **Annual Budget:** 2 433 640 EUR

Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favor of public research institutions with specific expertises.

Sustainability in the agro-food chain

Sustainability of the agro-food chain looking at biodiversity, territory and nutrition; tradition vs. innovation in the food sector.

Timing: December 2011 – December 2013

Total Budget: 2 800 000 EUR, **Annual Budget:** 1 400 000 EUR

Eligibility: When the ministry needs relevant research actions of public interest funding can be allocated (by means of direct assignment) in favor of public research institutions with specific expertises.

Joint Programming Initiative HDHL (JPI A Healthy for a Healthy Life) - DEDIPAC Knowledge Hub on "Determinants of diet and physical activity Choice".

The first strategic joint action of the JPI HDHL launched in November 2012 consists of a network of 160 research groups from 12 countries, reflecting a great variety of disciplines (nutritional, food, health, behavioural and social sciences, psychology, epidemiology, etc.). The overall objective of DEDIPAC is to improve understanding of how individual, social, economic, and cultural, gender, biological, environmental and policy factors influence health related to diet and to promote interdisciplinary approaches and integration of biological and social sciences.

The network started his work on March 2013 (but the official starting date is December 2013), its programme of activity involving 2000 man/months for a total budget of 11.999 Million Euro and a requested cash contribution of 7.275 euro. It is coordinated by NL together with a coordination team including scientists from UK, Germany, Norway, Ireland, Italy and Belgium. It is divided in three thematic areas: a) Assessment and harmonization of methods for future research, monitoring and evaluation of interventions; b) Determinants of dietary behaviour, physical activity and sedentary behaviour across the life course and in vulnerable groups; c) Evaluation and benchmarking of public health and policy interventions aimed at improving dietary, physical activity and sedentary behaviours across the life course.

Timing: December 2013 - November 2016

Total IT Budget: 550 000 EUR, **Annual Budget:** 183 333 EUR. The budget refers to the in cash contribution of two Ministries, MIUR and MIPAAF, in favour of the 25 Italian partners of the DEDIPAC transnational research consortium.

Eligibility: A proposal needs to fulfill the JPI and national criteria in order to apply.

National research institutes

In Italy there are many universities, national research centres and colleges that have research projects and expertise in food related topics from the primary sector to the consumer.

In the SUSFOOD Meta Knowledge Base, many research facilities have subscribed. All these research institutions have expertise within food research topics. Most of them are listed below. In the MKB, an continuously updated version can be found.

- [Consiglio per la Ricerca e la Sperimentazione in Agricoltura](#)

Website: <http://sito.entecra.it>

The Council for Research and Experimentation in Agriculture is organized in 4 Departments which comprise 15 Research Centers and 33 Research Units. The Department of Transformation and valorization of Agro-Industrial Products is specifically working on issues related to the Susfood scope. Some of the Centers and Units are indicated hereafter.

Centro di ricerca per l'enologia (CRA ENO)

Email: eno@entecra.it

Expertise: Physical, chemical and biological studies and researches about composition and transformation of grapes, conservation and technological improvement of wines, in order to reach more quality and sustainability in the whole winemaking sector.

Centro di ricerca per le colture industriali (CRA CIN)

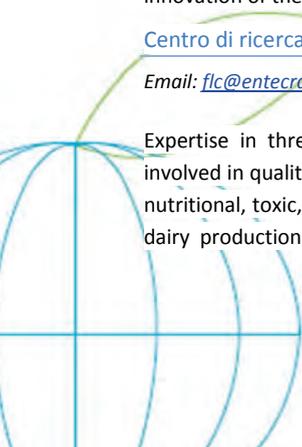
Email: cin@entecra.it

Expertise: Agronomic, biochemical, genetic and technologic research on the main agro-industrial crops and products: sugarbeet, fruit, vegetables, food and technical oils, protein, fiber, special chemicals as well as biofuels, officinal and aromatic plants; innovation of the methods for conservation and processing of agricultural products.

Centro di ricerca per le produzioni foraggere e lattiero-casearie (CRA FLC)

Email: flc@entecra.it

Expertise in three main areas: crop productions (primary and secondary metabolites involved in quality aspects of forage plants, as well as natural compounds possessing anti-nutritional, toxic, nutraceutical, and pharmacological properties, etc.), dairy livestock, and dairy productions (aspects related to forage production, animal nutrition, and bovine



breeding aimed at achieving dairy products of high safety standard, as well as of high sensorial and nutritional quality, environmental impact of livestock production, etc.).

[Centro di ricerca per l'olivicoltura e l'industria olearia \(CRA OLI\)](#)

Email: oli@entecra.it

Expertise: Olive production and industry

[Centro di ricerca per gli alimenti e la nutrizione \(CRA-NUT, ex INRAN\)](#)

Email: nut@entecra.it

Website: <http://www.inran.it>

Expertise: research, information and promotion in the field of food and nutrition for consumer protection and improvement of the quality of agro-food production.

[Unità di ricerca per i processi dell'industria agro- alimentare \(CRA-IAA\)](#)

Email: iaa@entecra.it

Expertise: The research activities of The Food technology research Unit are focused on the studies of biological, biochemical and commodity aspects in the agricultural field. The principal skills are: - Assessment of technological processes - Ripening, storage, and shelf-life optimization - Development of post-harvest technologies for fruits and vegetables - Development of post-slaughter technologies for animal products - Assessment of monitoring systems and procedures for the quality control along the agro-food chain - Improvement of the global quality with particular attention in maintaining the original nutritional and sensory characteristics of agro-food products.

[Dipartimento Trasformazione e valorizzazione dei prodotti agro-Industriali](#)

Website: <http://www.cra-cma.it/dti/>

[Centro di ricerca per la frutticoltura](#)

Address: Roma

[Centro di ricerca per la cerealicoltura](#)

Address: Foggia

- [Consiglio Nazionale delle Ricerche \(CNR\)](#)

Website: <http://www.cnr.it>

The National Research Council (CNR) is a public organization with the duty to carry out, promote, spread, transfer and improve research activities in the main sectors of knowledge growth and of its applications. It is the greatest research public body of Italy.

One of the thematic areas in which CNR is involved is “Bio – agrofood sciences”. Two of the institutes working on these topics are indicated hereafter .

Istituto di Scienze delle Produzioni Alimentari (ISPA-CNR)

Contact: Marzia Giribaldi, Francesco Gai

Email: marzia.giribaldi@ispa.cnr.it, francesco.gai@ispa.cnr.it

Website: <http://www.ispa.cnr.it>

Expertise: centre of excellence, worldwide renowned, acting in the fields of scientific research, innovation and technology transfer aimed to improve safety and quality of agro-food products

Istituto di Scienze dell’Alimentazione (ISA-CNR)

Contact: Filomena Nazzaro (filomena.nazzaro@isa.cnr.it), Giuseppe Iacomino (Piacomino@isa.cnr.it), Rosa Pizzano (rosa.pizzano@isa.cnr.it), Gian Luigi Russo (grrusso@isa.cnr.it)

Website: <http://www.isa.cnr.it/webisa/>

Expertise: studies on the composition and nutritional quality of foods; evaluation of the effects of nutrition on human health; characterization and enhancement of foods typical of the mediterranean diet; genomics, proteomics and bioinformatics of food sciences.

Other CNR contacts: Mauro Gamboni (mauro.gamboni@cnr.it), Antonietta Mello (a.mello@ipp.cnr.it), Niccolò Cultrera (niccolo.cultrera@igv.cnr.it)

- Università degli Studi di Bologna (UniBO)

Website: <http://www.unibo.it>

Centro Interdipartimentale di Ricerca Industriale Agroalimentare (CIRI)

Website: <http://www.agroalimentare.unibo.it/>

Expertise: Food – consumer – health (processing and shelf – life optimization, control of quality, traceability and safety, packaging, development of new functional and nutraceutical food)

Centro Interdipartimentale di Ricerca sull’Alimentazione Umana

Website: <http://www.dibinem.unibo.it/it/servizi-e-strutture/centri-di-ricerca/centri-di-ricerca-convenzionali-al-dipartimento/centro-interdipartimentale-di-ricerca-sullalimentazione-umana>

Expertise: promotion and coordination of studies and research in human nutrition



Alma Food IRT

Contact: andrea.gamberini6@unibo.it **Email:** almafoodirt@unibo.it

Website: <http://www.almafood.unibo.it/AlmaFood/About/default.htm>

Within the strategic Research System of the University of Bologna, a few initiatives have been implemented to make research become the main key to competitiveness at international level.

Among other initiatives, Integrated Research Teams (IRTs), which are multi-disciplinary organisations of researchers working in the same research area, have been created. In particular, Alma Food IRT is the coordination tool of the UniBo expertise in the agro-food research area.

- **Università degli Studi di Verona (UniVR)**

Website: <http://www.univr.it>

Dipartimento di Biotecnologie

Contact: Sandra Torriani, Antonio Del Casale, Diego Begalli, Roberta Capitello

Email: sandra.torriani@univr.it, a.delcasale@microbion.it, diego.begalli@univr.it, roberta.capitello@univr.it

Address: Strada Le Grazie 15, 37134 Verona

Website: <http://www.dbt.univr.it>

The Department of Biotechnology promotes a multidisciplinary scientific research approach in the following areas related to food: analytical chemistry, organic chemistry, toxicology, nutraceutical and food technologies, botany, crop physiology, plant nutrition, ecology, biochemistry and molecular biology, agricultural genetics, food and environmental microbiology, viticulture, plant pathology, food science and technology, industrial bioprocesses.

Sezione di Epidemiologia e Statistica medica

Website: <http://biometria.univr.it/>

Expertise: epidemiology and medical statistics

- **Università degli Studi di Napoli Federico II (UniNA)**

Website: <http://www.unina.it>

Dipartimento di medicina clinica e sperimentale

Contact: Angela Albarosa Rivellesse, Gabriele Riccardi

Email: rivelles@unina.it, riccardi@unina.it

Website: <http://teachserv.unina.it/dipartimenti/medclispe>

Expertise: nutrition and health / diseases

Dipartimento di Scienza degli Alimenti

Address: Reggia di Portici - Via Università 100, 80055 Napoli

Website: http://teachserv.unina.it/dipartimenti/index.php?id_servizio=00010073

- Università degli Studi di Teramo (UniTE) - Dipartimento di Scienze degli alimenti

Contact: Emilio Chiodo **Email:** echiodo@unite.it

Website: <http://www.unite.it/UniTE/Enqine/RAServePG.php/P/28681UTE2226>

Expertise: education for new generations of scientists in the food sector, research and innovation in food processing, food safety and functionality

- Università degli Studi di Torino (UniTO)

Website: <http://www.unito.it/>

Dipartimento di Scienze Agrarie, Forestali e Alimentari

Contact: Davide Spadaro, Franco Ajmone Marsan, Andrea Schubert, Alessandra Ferrandino, Cristiana Peano, (other contacts can be found in the MKB)

Email: davide.spadaro@unito.it, franco.ajmonemarsan@unito.it, andrea.schubert@unito.it, alessandra.ferrandino@unito.it, cristiana.peano@unito.it

Website: <http://www.unito.it/unitoWAR/appmanager/dipartimenti9/D106? nfls=false>

Expertise: Agricultural, Forest and Food Sciences and Technologies

Dipartimento di Economia e Statistica "Cognetti de Martiis"

Contact: Alessandro Corsi, Anna Lo Presti (other contacts can be found in the MKB)

Email: alessandro.corsi@unito.it, anna.lopresti@unito.it

Website: <http://www.unito.it/unitoWAR/appmanager/dipartimenti4/D031? nfpb=true>

Expertise: economics

Dipartimento di Scienze Veterinarie

Contact: Bartolomeo Biolatti, Francesca Tiziana Cannizzo (other contacts can be found in the MKB) **Email:** bartolomeo.biolatti@unito.it, tiziana.cannizzo@unito.it

Website: <http://www.unito.it/unitoWAR/appmanager/dipartimenti9/D108? nfls=false>

Expertise: veterinary sciences

Dipartimento di Scienze della Sanità Pubblica e Pediatriche

Contact: Carlo Robino (other contacts can be found in the MKB) **Email:** carlo.robino@unito.it

Website: <http://www.unito.it/unitoWAR/appmanager/dipartimenti9/D105? nfpb=true>

Expertise: Public and Pediatric Health Sciences



- Università degli Studi di Milano (UniMI) - Facoltà di Scienze Agrarie e Alimentari

Website: <http://www.agraria.unimi.it>

Dipartimento di Scienze Agrarie e Ambientali - Produzione, Territorio, Agroenergia (DISAA)

Contact: *Ilaria Mignani, Anna Spinardi* **Email:** ilaria.mignani@unimi.it, anna.spinardi@unimi.it

Website: <http://www.diprove.unimi.it>, <http://www.disaa.unimi.it>,
<http://eng.disaa.unimi.it/ecm/home/research>

Expertise: scientific research about farming systems, forestry, livestock, environmental and energy based on a multidisciplinary approach

Dipartimento di Scienze e Tecnologie Alimentari e Microbiologiche (DISTAM)

Website: <http://www.distam.unimi.it/>

Expertise: Food and Microbiological Sciences and Technologies

- Università della Calabria (UniCAL)

Website: <http://www.unical.it>

Dipartimento di Chimica e Tecnologie Chimiche

Contact: *Silvia Mazzuca* **Email:** s.mazzuca@unical.it

Expertise: Chemistry and Chemical Technology

Dipartimento di Farmacia e Scienze della Nutrizione e della Salute

Email: direttore.farmacia@unical.it

Website: http://www.unical.it/portale/strutture/dipartimenti_240/dfssn/

Expertise: Pharmacy, nutrition and health sciences

- Università Cattolica del Sacro Cuore - OPERA Research Center

Email: info@opera-indicators.eu **Phone:** +39 0 523 599218

Website: <http://www.agraria.unicatt.it>

OPERA is a young, growing independent research centre and think tank of the Università Cattolica del Sacro Cuore providing simple pragmatic solutions to support EU and national decision making. We bridge science and policy through a transparent platform to debate the right approaches for sustainable, intensive agriculture. Our vision is to provide high quality information and analysis of the latest developments in EU agri-food policy-making to promote balanced dialogue between interested stakeholders. We are developing clear and pragmatic approaches for improving intensive and biological agriculture together

with simple and transparent solutions for all our stakeholders through the use of existing research and developing new research in collaboration with partners to support the ongoing sustainability of the European agriculture. The 90 % of the OPERA financial resources are coming from collaborations with public bodies and participation to international calls: this is a sign of the appreciation and of the trust created by this initiative. OPERA will provide its members and the wider public with rapid, high-quality information and analysis of the latest developments in European agri-food policy-making, it aims to promote a balanced dialogue between the interested parties, covering the majority of stakeholders. OPERA is headquartered in Piacenza, Italy and hosted by the Università Cattolica del Sacro Cuore (UCSC), which provides the necessary resources and support. It is bound by the principles and procedures of UCSC. As a fully independent body, OPERA's vision is to be transparent to all the relevant stakeholders and the public. The Brussels office of OPERA is located in Place du Champ de Mars, n.2, in the building hosting the offices of the representation of Regione Lombardia.

- **Parco scientifico e tecnologico della Sicilia (Science and Technology Park of Sicily) (PSTS)**

Email: info@pstsicilia.it

Website: <http://www.pstsicilia.it/>

Expertise: The Science and Technology Park of Sicily (PSTS) is a consortium which principally works thanks to the financial support of the Sicilian Region. The park has developed a complex system of relationships between Sicilian Universities, research centres and companies that share the mission of enhancing the competitiveness of the region through research, innovation, technology transfer and wide spreading of a culture of quality and specialized training.

- **Università degli Studi di Roma "La Sapienza" - Unità di ricerca Scienza dell'Alimentazione e Nutrizione Umana**

Contact: Lorenzo Maria Donini **Email:** lorenzomaria.donini@uniroma1.it

Website: <http://w3.uniroma1.it/scialim/>

Expertise: The research activity carried out by the Institute is particularly focused on nutrients and foodstuffs, epidemiological investigation in the field of nutrition, food education, nutritional status, food behaviour, malnutrition (over- or undernourishment), mass catering.

- **Università degli Studi della Tuscia (UNITUS) - Dipartimento di Scienze ecologiche e biologiche**

Contact: Nicolò Merendino **Email:** merendin@unitus.it

Website: <http://www.deb.unitus.it>

Expertise: Food science and human health



- Università degli Studi di Genova (UniGE) - Dipartimento di Ingegneria meccanica, energetica, gestionale e dei trasporti (DIME)

General contact UniGE: Claudio Parco **Email:** parco@uniqe.it

Contact: Silvia Massa, Stefania Testa **Email:** silvia.massa@uniqe.it, stefania.testa@uniqe.it

Website: <http://www.uniqe.it>

Expertise: Innovation and knowledge management (with a focus on the food sector); customer co-creation; social media, food industry

- Università degli Studi di Perugia

Dipartimento di Scienze zootecniche

Contact: Alessandro Dal Bosco **Email:** dalbosco@unipg.it

Website: <http://www.unipg.it>

Expertise: Poultry, Rabbit and Fish meat quality; sustainability of farms; organic rearing systems

Dipartimento di scienze economico-estimative e degli alimenti (DSEEA)

Contact: Stefano Ciliberti **Email:** steciliberti@libero.it

Expertise: Valorization of the agrofood productions typical of the Umbria region

- ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development

Website: <http://www.enea.it/>

Expertise: the Agency's main research issues are: Energy Efficiency, Renewable Energy Sources, Nuclear Energy, Climate and the Environment, Safety and Health, New Technologies, Electric System Research.

UTAGRI - Technical Unit Sustainable Development and Innovation of the Agroindustrial System

Email: utagri@enea.it

Address C.R. Casaccia - Via Anguillarese 301 N° 76, 00123 Roma

Website: <http://utagri.enea.it>

- Mediterranean Agronomic Institute of Bari (IAMB – MAIB)

Website: http://www.iamb.it/mod=static_content,183,183,mai-bari.htm

The Mediterranean Agronomic Institute of Bari (MAI-Bari) was established by CIHEAM as its Italian operating facility. It is a Centre for post-graduate training, applied scientific research and design of in-loco partnership actions in the framework of the international cooperation programmes. It works, among other thematic areas, in the field of Sustainable Agriculture, Food and Rural Development.

Other research institutions listed in the MKB:

- Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione

Address: *Via Ardeatina 546, 00178 Roma*

Website: <http://www.inran.it>

- Libera Università di Lingue e Comunicazione

Address: *Milano*

Website: <http://www.iulm.it>

- Ospedale San Raffaele

Address: *Milano*

Website: <http://www.hsr.it>

- Parco scientifico tecnologico-Parma Tecnnova srl (Science and Technology Park of Parma - Parma Tecnnova srl)

Email: pstparma@pstparma.it

Website: <http://www.pstparma.it/>

- Università degli studi "Gabriele d'Annunzio" Chieti Pescara

Address: *Pescara, Chieti*

Website: <http://www.unich.it>

Facoltà di Medicina e Chirurgia

Address: *Chieti*

Website: <http://www.unich.it/unichieti/appmanager/federati/medicina>

- Università degli Studi del Molise

Website: <http://www.unimol.it>

- Università degli Studi di Bari Aldo Moro

Address: *Piazza Umberto I 1, 70121 Bari*

Website: <http://www.uniba.it/>

Facoltà di Agraria

Address: *Via G. Amendola 165/A, 70126 Bari*

Website: <http://www.uniba.it/ateneo/facolta/agraria>

- Università degli Studi di Firenze

Address: *Via G. Amendola 165/A, 70126 Bari*

Website: <http://www.uniba.it/ateneo/facolta/agraria>

Dipartimento di Scienze Farmaceutiche

Address: *Firenze*

Website: <http://www.scifarm.unifi.it>



Facoltà di Agraria

Address: Firenze

Website: <http://www.agr.unifi.it>

- Università degli Studi di Padova
-

Address: Via 8 Febbraio 2, 35122 Padova

Website: <http://www.unipd.it/>

Dipartimento di Agronomia Animali Alimenti Risorse Naturali e Ambiente

Address: Legnaro (PD)

Website: www.dafnae.unipd.it

Dipartimento di Biomedicina Comparata ed Alimentazione

Address: Legnaro (PD)

Website: www.bca.unipd.it

Dipartimento di Medicina Animale, Produzioni e Salute

Address: Legnaro (PD)

Website: www.maps.unipd.it

- Università degli Studi di Palermo
-

Address: Palermo

Website: www.unipa.it

Facoltà di Agraria

Address: Viale delle Scienze 13, edificio 4/B, 90128 Palermo

Email: presidenza.agraria@unipa.it

Website: <http://portale.unipa.it/Agraria/>

Università degli Studi di Trieste

Address: Trieste

Website: <http://www.units.it>

Medicina Interna - Dipartimento di Scienze Cliniche Morfologiche e Tecnologiche

- Università degli Studi di Udine
-

Address: Udine

Website: <http://www.uniud.it>

Dipartimento di Scienze degli alimenti

Address: Udine

Website: <http://www.uniud.it/dipartimenti/dial>

- Università del Piemonte Orientale
-

- **Università del Piemonte Orientale 'Amedeo Avogadro'**

Address: via Duomo 6, 13100 Vercelli

Email: ricerca@unipmn.it

Website: <http://www.unipmn.it>

Dipartimento di Scienze e Innovazione Tecnologica - Department of Science and Technological Innovation

Address: viale Teresa Michel 11, 15121 Alessandria

Website: <http://www.disit.unipmn.it>

- **Università di Sassari**

Address: Piazza Università 21, Sassari

Website: <http://www.uniss.it>

Dipartimento di Scienze Ambientali Agracalabriaérie e Bioteconologie Agroalimentari

Address: Viale Italia 39, 07100 Sassari

Email: disaaba@uniss.it

Website: <http://disaaba.uniss.it/>

- **Universita' di Torino**

Website: <http://www.unito.it/>

- **Fondazione Edmund Mach (FEM)**

Contact: Roberto Chincarin **Email:** roberto.chincarin@fmach.it **Phone:** +390461615198

Address: via Edmund Mach 1, 38010 San Michele all'Adige **Region:** Autonomous Province of Trento

Website: <http://fmach.it>

The Institute is a scientific and technical Institution sustained by the Autonomous Province of Trento. Its activities are organized in three separate centres: education, research, and technical assistance to the regional economy.

CRI, the Research and Innovation Centre of FEM promotes and enhances the Trentino land-based economy through studies and innovation that improve the value of natural and agricultural ecosystems. It sustains the region's environmental resources through development and promotion of low-impact agricultural practices, study and preservation of biodiversity, scientific investigations in alpine and subalpine ecosystems. CRI encourages the cooperation with private industry on food processing technology, the generation of patents, plant and animal varieties, and new ventures.

FEM has a strong background in plant physiology and plant genomics. It recently took part in the consortia for the sequencing of three important crops (apple, grape and wild strawberry). Furthermore, FEM owns state-of-the-art technical infrastructures in metabolomics analysis, isotope analysis, and bioinformatics. FEM plays an important role in the education of the future technicians and growers of the regions, through a

vocational high school in agricultural and forestry studies, a joint college degree in oenology, and a PhD school in plants genomics.

Research & Innovation Centre (CRI)

Contact: Roberto Chincarini **Email:** roberto.chincarini@fmach.it **Phone:** +390461615198

Address: via Edmund Mach 1, 38010 San Michele all'Adige **Region:** Autonomous Province of Trento

Website: <http://www.fmach.it/eng/Research-and-Innovation-Centre>

A research institute that carries out studies and innovations in the fields of agriculture, nutrition, and environment, with the aim to generate new sharing knowledge and to contribute to economic growth, social development and the overall improvement of quality of life.

Our mission - We carry out research at an international level, collaborating with institutes and universities from around the world. Our results impact the larger scientific community and the world at large.

Our history - CRI was officially created the 1st January 2009, when the pre-existent FEM Experimental Centre was combined with the Centre of Alpine Ecology. At the beginning CRI was organised into tree thematic area (Environment, Agriculture and Nutrition). Since January 2011 CRI had a new organisational structure built upon five institutional Departments, and one joint research centre (FoxLab).

- **ADR**

Management of the scientific, research and technological operations of CRI

- **Sustainable Ecosystems & Bioresources Department (DASB)**

Tomorrow's world depends on today's investments. With an ever-increasing human population and consumption of resources at record highs, the future for our fragile Earth depends on protection of the remaining natural environment and sustainable use of our bio-resources.

- **Biodiversity and Molecular Ecology Department (DBEM)**

Combine state-of-the-art molecular tools with ground-breaking statistical analyses and spatial and temporal modelling to understand changes in presence and distribution of many species occur and the effects of these changes improve management practices and allow native species to adapt to future environmental changes.

- **Computational Biology Department (CBC)**

Computational biology is an interdisciplinary area which applies and integrates the most advanced computational techniques, as bioinformatics, computational modelling, computational biochemistry and genomics, and systems biology. These scientific competences and approaches are necessary today for studying the complexities of biological processes and the interaction between...

- **Genomics and Biology of Fruit Crop Department (DGBPF)**

Their aim is to further genetic improvement of crops and/or to develop new varieties of commercial interest, working in the fields of functional and structural genomics, transcriptomics, applied genomics, quantitative genetics, and advanced molecular breeding.

- **FoxLab Research consortium (FL)**

International projects to the forest-wood chain with an integrated and interdisciplinary approach, aiming to the establishment of high innovative 'spin-off'.

- **PhotoLab Special project (PHL)**

To develop a synthetic photosynthesis machine, obtained by transferring the photosynthetic apparatus of the model plant *Arabidopsis thaliana* into the photosynthetic unicellular cyanobacterium *Synechocystis* sp. PCC 680.

- **Research Valorisation Area**

Fundraising (AVR)

- **Research Support Area (ASR)**

Support to the CRI researches

- **Food Quality and Nutrition Department (DQAN)**

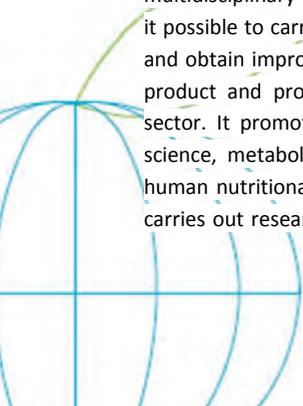
Contact: Fulvio Mattivi **Email:** fulvio.mattivi@fmach.it **Phone:** +390461615259

Address: via Edmund Mach 1, 38010 San Michele all'Adige **Region:** Autonomous Province of Trento

Website: <http://www.fmach.it/eng/Research-and-Innovation-Centre/general-info/orqanisation/Food-Quality-and-Nutrition>

The activities in the field of research and innovation aimed at the qualitative, technological and nutritional enhancement of agri-food products are carried out by this Department, in order to improve the food quality and respond to the needs of the consumer.

The research activities are carried out using new study methods, based on advanced technological platforms and infrastructures (metabolomics, stable isotopes, sensory panels, innovation incubators), and by adopting an integrated approach of a multidisciplinary nature. Innovative technical platforms and a systematic approach make it possible to carry out studies of fundamental significance, generate new study methods and obtain improved knowledge of agri-food products. The Department aims to support product and processing innovation based on knowledge of the food and agriculture sector. It promotes the use of research in the fields of biological sciences, consumer science, metabolomics and traceability as tools for innovative production. Provides a human nutritional research nucleus for the emerging strategic area of nutrigenomics. It carries out research, both in the laboratory and at the pilot project and company levels,



providing scientific support for the creation of products and processes with added value, based on knowledge, ideas and innovation.



Photos © ILVO, photos herring and take away food © www.holland.com

SUSFOOD COUNTRY REPORT THE NETHERLANDS

Editor:
EZ: Erwin Maathuis



Introduction

The agri-food complex is an important economic pillar of the Dutch economy. The Netherlands is a European leader in the agri-food sector with many successful and innovative companies, knowledge institutes such as Wageningen UR. The agri-food sector is one of the key sectors in the recent business policy of the Dutch Government.

The Netherlands is one of the world's largest exporters of agricultural products. Together with the USA and France, the Netherlands is one of the world's three leading agri-food producers. At the same time, the production poses challenges to the environment. The food production must become more sustainable, the Dutch Government said. Today, the Dutch agri-food complex has a strong focus on sustainability, producing healthy and safe foods with respect for the landscape and the environment.

The Ministries involved in setting the agenda for (sustainable) food and health research are the Ministry of Economic Affairs (EZ) and the Ministry of Health, Welfare and Sport (VWS). The Netherlands Food and Consumer Product Safety Authority (NVWA), an agency of the Ministry of Economic Affairs, is responsible for and commissions research on food safety and food quality. These ministries directly commission research to the national institutes, WUR, RIVM and TNO, to support their policy.

The Netherlands Organisation for Scientific Research (NWO) funds fundamental research at Dutch universities. NWO receives its funding from the Ministry of Culture and Science (OCW). For agri-food the NWO-devisions Technology Foundation (STW) and Netherlands Organisation for Health Research and Development (ZonMw) are important. STW funds application-oriented research at Dutch universities and selected institutions. STW receives its funding from the Ministry of Economic Affairs and NWO. ZonMw funds innovation in the field of healthy food research and health care and is funded by the Ministry of Health, Welfare and Sport and NWO.

The National Service for Entrepreneurial Netherlands (RVO.nl) encourages agri-food entrepreneurs in their sustainable, innovative and international business. With subsidies, finding business and knowledge partners.

The Health Council of the Netherlands (GR) is an independent scientific advisory body of the Dutch ministries. Although the Council does not perform research itself or commission research, it has an important role in the agenda-setting of research on nutrition and food.

As part of the recent business policy of the Dutch Government the Private-Public cooperation is established in the Top consortium for Knowledge and Innovation (TKI) Agri & Food. In the TKI companies together with government and knowledge institutes promotes innovations in the sector. From a broad knowledge and innovation agenda and a strong focus on marketable products and services that contribute to solving societal challenges (Global Challenges). The top sector adopted the agenda set out in a contract

innovation. It contains measures, plans and agreements to strengthen the ambitions of the top sectors in the coming years. The contracts were signed by the representatives of the Dutch business, government and knowledge organizations.

In the Netherlands, several organisations are participating in research on sustainable foods and sustainable food production, including universities and knowledge institutes. In addition, a number of initiatives were developed to form partnerships aimed at promoting enhanced growth and innovation in the food sector. Examples include Food Valley (<http://www.foodvalley.nl/English/default.aspx>), Innofood (www.innofood.org), Innexis (www.innexus.eu) and Fhealinc (www.fhealinc.nl). These initiatives involve food companies, research institutes, experimental facilities and incubators. Food companies, large and small, are encouraged to participate in publicly-funded research to achieve a more effective and timely translation of fundamental and applied research.

The Netherlands Nutrition Centre (www.voedingscentrum.nl) is responsible for communication on nutrition, food and health to the public. This Centre is funded by the Ministry of Health, Welfare and Sport and the Ministry of Economic Affairs.

Ministries of agriculture and food

- Ministry of Economic Affairs (EZ)

Contact: Tekla ten Napel, Erwin Maathuis **Email:** t.h.m.tennapel@minez.nl; e.j.r.maathuis@minez.nl

Address: Bezuidenhoutseweg 73, 2594 AC Den Haag

Website: <http://www.minez.nl>

The Ministry of Economic Affairs promotes the Netherlands as a country of enterprise with a strong international competitive position and an eye for sustainability. It is committed to creating an excellent entrepreneurial business climate, by creating the right conditions and stimulating entrepreneurs to innovate and grow and by encouraging cooperation between knowledge institutes and food companies. This is how the Netherlands strengthens its leading positions in agriculture, industry, services and energy and invests in a powerful, sustainable country with the aim to provide safe, healthy and sustainable foods to all consumers.

Close links have been established with the Joint Programming Initiative A healthy diet for a healthy life.

National funding bodies and research programmes

Most of the public food-related research in the Netherlands is funded by the Ministry of Economic Affairs.



- Ministry of Economic Affairs (EZ)

Contact: Erwin Maathuis **Email:** e.j.r.maathuis@minez.nl

Address: Bezuidenhoutseweg 73, 2594 AC Den Haag

Website: <http://www.minez.nl>

The Ministry of Education, Culture and Science (OCW) finances all universities in the Netherlands except for Wageningen University which is financed by the Ministry of Economic Affairs.

Research programmes funded by the Ministry of Economic Affairs:

Topsector Agri&Food - Theme Consumer

Duration: 2012-2016

Annual Budget: 9 400 000EUR. Annual Budget includes (50%) cofunding by private companies

Contact: Cor Wever - c.j.g.wever@minez.nl

Topsector Agri&Food - Theme Market and chain innovations

Duration: 2012-2016

Annual Budget: 12 000 000EUR. Annual Budget includes (50%) cofunding by private companies

Contact: Cor Wever c.j.g.wever@minez.nl

Topsector Agri&Food - Theme Product technology

Duration: 2012-2016

Annual Budget: 22 500 000EUR. Annual Budget includes (50%) cofunding by private companies

Contact: Cor Wever - c.j.g.wever@minez.nl

Topsector Agri&Food - Theme Resource efficiency

Duration: 2012-2016

Annual Budget: 21 600 000EUR. Annual Budget includes (50%) cofunding by private companies

Contact: Cor Wever - c.j.g.wever@minez.nl

Topsector Agri&Food - Theme Sustainable enabling technology

Duration: 2012-2016

Annual Budget: 18 300 000EUR. Annual Budget includes (50%) cofunding by private companies

Contact: Cor Wever - c.j.g.wever@minez.nl

Topsector Agri&Food - Theme Valorisation of sidestreams

Duration: 2012-2016

Annual Budget: 27 900 000EUR. Annual Budget includes (50%) cofunding by private companies

Contact: Cor Wever - c.j.g.wever@minez.nl

FUSIONS, Food Use for Social Innovation by Optimising Waste prevention Strategies

This is a EU FP7 programme, coordinated by Wageningen UR with 21 different partners.

Duration: 2012-2016

Total Budget: 4 000 000EUR

Contact: Toine Timmermans - toine.timmermans@wur.nl

GreenCook, sustainable food system by food waste reduction

GreenCook is an interreg IVB - programme coordinated by the Espace Environment, Wageningen UR and the involvement of seven other partners.

Duration: 2010 – 2014

Total Budget: 6 000 000 EUR

Contact: Hilke Bos-Brouwers - hilke.bos-brouwers@wur.nl

Healthy and safe foods from a food chain perspective (KB-V)

Duration: 2010-2015

Total Budget: 15 000 000EUR. The budget includes a multiplier derived from EU, Dutch Topinstitutes and regional fundings.

Contact: Charon Zondervan - charon.zondervan@wur.nl

ISPT-programme: Food and associated graduate school OSPT

The Institute for Sustainable Process Technology (ISPT) is a co-operation between industry, universities, and knowledge institutes, within the food program there is focus on innovation of sustainable food process technologies, minimal processing, exploration of routes to high nutritional food and extraction of complex molecules and proteins from various process flows The graduate school is an interuniversity school in the area of Chemical Engineering and Process Technology.

The total budget includes cofunding by private companies ISPT started in 2007.

Duration: 2010-2018

Total Budget: 11 700 000EUR

Contact: info@ispt.eu

Nudging: effective tools to nudge consumers to healthier and more sustainable food choice

Duration: 2013-2015

Annual Budget: 400 000EUR. Budget for years to follow after 2013 not yet known

Contact: Rene de Wijk - rene.dewijk@wur.nl



- **The Netherlands Organisation for Scientific Research (NWO)**

Email: nwo@nwo.nl

Address: Laan van Nieuw Oost-Indië 300, 2593 CE De Haag

Website: <http://www.nwo.nl>

The Netherlands Organisation for Scientific Research (NWO) is the national research council in the Netherlands and has a budget of 625 million euros per year. NWO promotes quality and innovation in science. NWO funds top researchers, steers the course of Dutch science by means of research programs and by managing the national knowledge infrastructure.

- **Technology Foundation STW**

Email: info@stw.nl

Address: Streetname: Van Vollenhovenlaan 661, 3527 JP Utrecht

Website: <http://www.stw.nl>

Technology Foundation STW realises the transfer of knowledge between the technical sciences and users. It does this by funding excellent technical scientific research and by bringing researchers and users together in each project. STW's basic strategy is to call for proposals from the field. These always concern innovative research with a potential for utilization, in the form of independent projects and programmes (related projects around one subject). The chance of utilization is increased by the compulsory utilization section in each proposal where the researchers must state how they will realize the use of knowledge by third parties. Each proposal is subjected to the same critical review process by independent experts in which scientific quality and utilisation carry equal weighting. Furthermore, each proposal must always be accompanied by a statement of intention from actual or potential users. Representatives of these users sit on the User Committee appointed per project and supervise the research. This approach applies to all of STW's activities.

National research institutes

In the Netherlands, several organizations are participating in research involving food and health. These include universities, research institutes and governmental institutes. An approximate estimation of the researchers in food and health research is 10,000 – 30,000 people. In the following paragraph, a brief description of the main organizations is given.

- **Wageningen University and Research centre (WUR)**

Contact: Toine Timmermans **Email:** info@wur.nl **Phone:** +31 317 48 0100

Website: <http://www.wageningenur.nl/>

'To explore the potential of nature to improve the quality of life' is the mission of Wageningen UR (Wageningen University and Research Centre). A staff of 6,500 and 10,000 students from over 100 countries work everywhere around the world in the

domain of healthy food and living environment for governments and the business community-at-large. The strength of Wageningen UR lies in its ability to join the forces of specialised research institutes and Wageningen University. It also lies in the combined efforts of the various fields of natural and social sciences. This union of expertise leads to scientific breakthroughs that can quickly be put into practice and be incorporated into education. This is the Wageningen approach. The scientific quality of Wageningen UR is affirmed by the prominent position we occupy in international rankings and citation indexes. The domain of Wageningen UR consists of three related core areas: food and food production ; living environment; and health, lifestyle and livelihood.

Wageningen UR - Food & Biobased Research (FBR)

Contact: Toine Timmermans **Email:** info.fbr@wur.nl **Phone:** +31 317 48 00 84

Website: <http://www.wageningenur.nl/en/Expertise-Services/Research-Institutes/food-biobased-research.htm>

The mission of WUR – Food and Biobased Research is to perform research in order to create sustainable, innovative and market oriented solutions for healthy food, fresh food chains, biorefinery, biobased chemicals and materials.

Wageningen UR - LEI

Contact: Yvonne Fernhout **Email:** yvonne.fernhout@wur.nl **Phone:** +31 6 535 871 90

Website: <http://www.wageningenur.nl/en/Expertise-Services/Research-Institutes/lei.htm>

The LEI is a research institute of Wageningen University and develops economic expertise for governmental bodies and industries in the field of food, agriculture and natural environment. One of the research areas of LEI is consumer behaviour. This research is concerned with the purchasing and consumer behaviour of consumers of food and other agriculture products and with factors influencing this behaviour.

- **The Sustainability Consortium (TSC) - Europe**

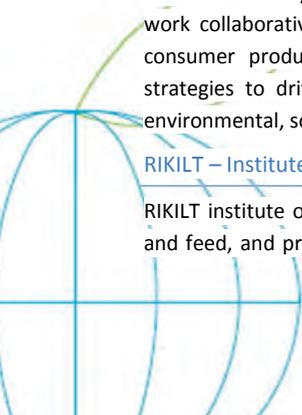
Contact: Koen Boone **Email:** Koen.Boone@wur.nl **Phone:** +31 70 33 58 235

Website: www.sustainabilityconsortium.org

The Sustainability Consortium (TSC) is an organization of diverse global participants that work collaboratively to build a scientific foundation that drives innovation to improve consumer product sustainability. It develops transparent methodologies, tools, and strategies to drive a new generation of products and supply networks that address environmental, social, and economic imperatives.

RIKILT – Institute of food safety

RIKILT institute of food safety assesses the safety, health and quality of the Dutch food and feed, and provides consultancy services to national and international governmental



authorities. It supports the Government with advice on the elaboration of standards and guidelines, risk assessment and on the authorization of new agricultural additives and foods of vegetable and animal origin.

The majority of the research is carried out for the Dutch Ministry of Economic Affairs and Netherlands Food and Consumer Products Safety Authority (NVWA). RIKILT has some 200 employees (www.rikilt.wur.nl/UK).

- **Louis Bolk Institute**

Email: info@louisbolk.nl **Phone:** +31(0)343 523 860

Address: Hoofdstraat 24, 3972 LA Driebergen

Website: <http://www.louisbolk.org/>

The Louis Bolk Institute is an independent international knowledge institute to advance truly sustainable agriculture, nutrition and health. With practice-oriented research and advice we have contributed to the healthy humans, animals, plants and soils and their interrelationships, for more than 35 years. Our principal clients include the Dutch ministry of Economic Affairs, the European Commission, the Netherlands Organisation for Health Research and Development, provincial governments, water boards, nature conservation organisations, foundations, knowledge centres for e.g. Integrative Medicine and businesses. They value our comprehensive vision of sustainable agriculture, nutrition and health, and our ability to come up with system-level solutions. A selection of our main research themes: animal welfare, sustainable soils, plant breeding, agro ecology, biodiversity, food quality and nature assisted health.

The Louis Bolk Institute stands for:

- Pioneering research: We do inventive, innovative and sometimes ground-breaking research.
- Evidence based results: We use scientific methods and deliver tangible results.
- Coherent methodology: We follow a systems approach.
- Applicable knowledge and solutions: We offer practical solutions that can be directly implemented by our target groups

Our employees (approximately 45) work in Driebergen, the Netherlands. For a full overview of our projects, please visit <http://www.louisbolk.org/projects>.

- **Vrije Universiteit Amsterdam (VU)**

Phone: +31 20 59 89898

Address: De Boelelaan 1105, 1081 HV Amsterdam

Website: <http://www.vu.nl>

VU stands for universal university values such as academic freedom and independence, which is reflected in our name ('VU' is the Dutch abbreviation for 'free university'): free

from the church, state and any commercial interest. The basic philosophy of VU is expressed in three core values: responsible open personally engaged.

More info: <http://www.vu.nl/en/about-vu-amsterdam/faculties-and-institutes/index.asp>

Faculty of Earth and Life Sciences (VU-FALW)

Contact: Drs. E. Salomé-Munnik **Email:** ellen.salome@falw.vu.nl **Phone:** +31 (0)20 59 87301

Website: <http://www.falw.vu.nl>

The faculty has several institutes and research centres. Especially IVM is working in the field of sustainability, including food sustainability and food security.

- IVM

Email: info.ivm@vu.nl **Phone:** +31-20-5989555

Website: <http://www.ivm.vu.nl> or <http://www.profetas.nl>

The Institute for Environmental Studies (Instituut voor Milieuvraagstukken, IVM) is an interdisciplinary research institute with a research and teaching community of hundred and forty scientists and support staff. IVM's mission is to contribute to sustainable development and care for the environment through scientific research and teaching. Since its creation in 1971, the institute has built up considerable experience in addressing environmental problems in their social and economic context. We aim to reinforce the institute's position as a major European centre for multidisciplinary environmental research, measured in terms of scientific and policy impact. We seek collaborations with strong partners (research institutes, funders, societal actors) and so strengthen a research culture that stimulates interchange between researchers and stakeholders from diverse backgrounds. It is our ambition to build a critical mass in key disciplines and research themes by training well-rounded, independent and entrepreneurial researchers with a passion for combining scientific excellence with societal engagement. Within the VU University, IVM has strong links with the Faculties of Science, Economics, Social Sciences and Law. We also have strong relationships with the ecological and earth sciences departments in our own Faculty of Earth and Life sciences (FALW). Beyond VU University, IVM collaborates in research and teaching with many institutes and universities in the European Union and internationally, including in Asia, Africa and the Americas. IVM is currently involved in the STOA project "Technology Options for Feeding 10 billion People", commissioned by the European Parliament.



- **TNO Gezond Leven (Healthy Living)**

Contact: Peter van Dijkent **Email:** peter.vandijken@tno.nl **Phone:** +31 888668463

Website:

http://www.tno.nl/content.cfm?context=thema&content=thema hoofd&laag1=891&item_id=891&Taal=2

TNO is one of Europe's largest independent contract research institutes offering a combination of customer-driven research services and scientific excellence. Many food and food ingredient companies choose TNO as their strategic partner to develop new, improved or healthier foods without compromising on food safety.. This means applying research to areas where our society needs it most. TNO's food and health research encompasses the areas: food safety, healthy food, food quality and production, and healthy lifestyle.

- **Rijksinstituut voor Volksgezondheid en Milieu (RIVM) (National Institute for Public Health and the Environment)**

Contact: Prof.dr. Jantine Schuit **Email:** jantine.schuit@rivm.nl **Phone:** +31 302742161

Address: Antonie van Leeuwenhoeklaan 9, 3721 MA, Bilthoven

Website: www.rivm.nl/en

As an agency of the Ministry of Health, Welfare and Sport, the National Institute for Public Health and the Environment (Rijksinstituut voor Volksgezondheid en Milieu, RIVM) is a governmental research and knowledge institute providing policy support to the Dutch government. RIVM performs tasks to safeguard and promote public health and environmental quality in the Netherlands. In its role as trusted advisor, RIVM provides the government with impartial advise on infectious diseases, vaccination programmes, population screening, life style, nutrition, pharmaceuticals, environment, sustainability, safety and security. The main tasks of RIVM are: 1) to conduct research; 2) to provide policy advice and recommendations; 3) to direct and implement prevention and control response (e.g. national coordination of health and environmental monitoring programmes); 4) to coordinate intervention programs; 5) to provide information to professionals and the general public. Our experts participate in various international networks and are members of many international scientific committees and experts panels of the EU. RIVM also carries out activities for other international organizations such as the World Health Organization (WHO) and OECD.

Moreover, RIVM transfers knowledge specifically aimed at capacity and institution building in for instance pre-accession countries and developing countries.

RIVM's commissioning bodies consist of ministries (the Ministry of Health, Welfare and Sport, the Ministry of Infrastructure and Environment, the Ministry of Economic Affairs, Agriculture and Innovation) and various public services such as the inspectorates. The

scientific quality of RIVM work is monitored by the Scientific Advisory Board, which includes a number of well-respected scientists. The independent position of RIVM is set down in statutes.

Currently, RIVM has about 1,350 employees (fte). In 2012, it published 225 reports and 900 scientific articles. RIVM has a proven track record regarding the execution of EU funded projects. Currently RIVM participates in around 45 FP7 projects. Our researchers are members of more than 200 international expert committees of the EU, WHO, OECD and other international organizations and provide scientific advice for policy development. RIVM regularly performs research and provides advice to EU agencies such as EFSA, EEA, ECDC and EMA.

One important task of RIVM is describing current and future health of the Dutch population in the Public Health Status and Forecast documents (VTV) every fourth year. These documents have been made since 1993, and in 2014 the sixth document will be published. Foresight of future health is an increasingly important part of these documents. 4Sight4Health will build upon the vast experience of RIVM in doing foresight studies aiming to describe all key aspects of health, taking views from different stakeholders into account, using quantification where possible, and qualitative approaches in other cases).

- **NIZO food research**

Contact: Koos Oosterhaven **Email:** koos.oosterhaven@nizo.com **Phone:** +31 318 659 511

Website: www.nizo.com

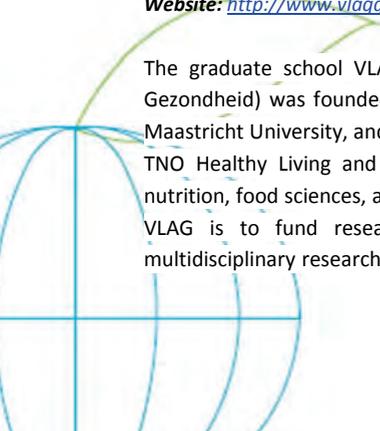
NIZO food research is a contract research company that assists the world-wide foodindustry to make better foods and be more profitable. NIZO believes that good food needs good science. That is why we develop and apply competitive technologies to support our clients' innovation (flavour, texture and health), cost reduction (process efficiency, ingredient replacement, test productions) and responsible entrepreneurship (food safety and quality, sustainable processing and evidence-based health claims).

- **VLAG Graduate school**

Email: vlaq@wur.nl **Phone:** +31 317 485108

Website: <http://www.vlaqgraduateschool.nl/>

The graduate school VLAG (Voeding, Levensmiddelentechnologie, Agrotechnologie en Gezondheid) was founded in 1993, and is a cooperation of Wageningen University and Maastricht University, and WUR Food and Biobased Research, RIKILT, NIZO food research, TNO Healthy Living and RIVM. The graduate school covers the following disciplines: nutrition, food sciences, agro-biotechnology and health sciences. Aim of the main tasks of VLAG is to fund research projects and acquire external funding for large-scale multidisciplinary research projects. Based on four research areas (sustainable production,



product and ingredient structuring and functionality, food safety and nutrition, metabolism and health) a number of priorities areas have been chosen: delivery systems, food components in complex matrices, biofunctionality and safety of foods, and molecular nutrition.

- **Protein Competence Centre (PCC)**

Contact: Charon Zondervan **Email:** charon.zondervan@wur.nl **Phone:** +31 317 480 227
Website: www.pccresearch.nl

The Protein Competence Centre is on the forefront of innovative protein research through collaboration of food, feed and ingredient companies and knowledge partners, to strive towards a healthy and sustainable society. Based in the Netherlands we build an internationally renowned center with our national and multinational companies and our network of knowledge partners. Four innovation themes have been identified as relevant growth areas for the partners: biorefinery and processing; proteins as ingredients; protein functionality; chain aspects of new protein sources.

- **Carbohydrate Competence Centre (CCC)**

Contact: Fons Voragen **Email:** info@cccresearch.nl **Phone:** +31 317 483 209
Website: www.cccresearch.nl

The Carbohydrate Competence Center was established to generate and develop high-quality knowledge in the field of carbohydrates with the aim of stimulating innovation and contributing to a healthier and more sustainable society. Three innovation themes: nutrition and health; sensory and structure; bioingredients and functionality

- **Top Institute Food and Nutrition (TIFN)**

Contact: Toine Timmermans **Email:** info@tifn.nl **Phone:** +31 317 485 383
Website: www.tifn.nl

Top Institute Food and Nutrition is a public/private partnership between research institutes and the industry and was created in 2007, and was created from the Wageningen Centre for Food Sciences (WCFS). Research programmes are guided by industry and research partners jointly. The research is carried out in the laboratories of the research organisations by multidisciplinary teams. The aim of the partnership is to develop innovative products and technologies that respond to consumer demands for safe, tasty and healthy foods with regard to major health concerns such as obesity and metabolic syndrome. The research within the TIFN is organized in four main programmes: 1) nutrition and health; 2) sensory and structure, 3) bioingredients and functionality and 4) food chain sustainability and dynamics.

- TKI Agri&Food

Contact: Kees de Gooijer **Email:** kees.degooijer@wur.nl **Phone:** +31 6 51701630

Website: <http://www.tki-agrifood.nl>

The Topconsortium for Knowledge and Innovation (TKI) Agri&Food controls the research & innovation efforts for Agri&Food in both fundamental research (TIFN and NWO), applied research (DLO and TNO) as well as Valorisation specifically aimed at SME's.. It covers the gathering and translation of knowledge and generated leads on food & health to concrete products, processes and services. This does also, but not only, concern knowledge generated in TIFN, as well as any other available knowledge within the food industry that can help to boost innovations. The roadmaps that are operational are Valorisation of side-streams, Resource efficiency, Sustainable husbandry, Markets & Chains, Health, Product & Process technology, Food safety, Consumer sciences, and Sustainable imports & Internationalisation.

- Food companies

Several large food companies also host R&D departments, including Unilever, DSM, Danone (formerly Numico) and FrieslandCampina. Some of these companies have well-defined sustainability programmes.





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SUSFOOD COUNTRY REPORT NORWAY

Author:

RCN : Turid Hiller



Introduction

The food industry in Norway consists of 2011 companies employing 48600 people with a production value of 171,6 billion NOK in 2012. Food is a topic for several of the Ministries in Norway, but with an emphasis on The Ministry of Food and Agriculture, LMD, and of The Ministry of Trade, Industry and Fisheries, NFD.

In Norway investigations connected with sustainable food production and consumption are carried out by scientific institutions (universities, research institutes and enterprises). The cooperation with and participation of enterprises is increasing.

The Research Council of Norway is a national strategic and funding agency for research activities, and a chief source of advice on and input into research policy for the Norwegian Government, the central government administration and the overall research community.

From January 2012 the Research Council of Norway has started a new programme, BIONAER. The overall thematic area of the programme encompasses agriculture, forestry and nature-based value chains as well as seafood and marine biomass, from the time raw materials are taken out of the sea until they reach the consumer. New areas of focus under the programme are primarily linked to the concept of the bioeconomy and to achieving closed-loop systems. This represents a new approach to thematic areas within the food sector.

Ministries

- **Ministry of Agriculture and Food (LMD)**

Email: postmottak@lmd.dep.no **Phone:** 004722249090

Address: Teatergata 9, 0030 Oslo

Website: <http://www.regjeringen.no/en/dep/lmd>

- **Ministry of Trade, Industry and Fisheries (NFD)**

Email: postmottak@nfd.dep.no **Phone:** 004722249090

Address: Grubbegt. 1, 0032 Oslo

Website: <http://www.regjeringen.no/en/dep/nfd>

- **Ministry of Education and Research (KD)**

Email: postmottak@kd.dep.no **Phone:** +4722249090

Address: Kirkegata 18, 0153 Oslo

Website: <http://www.regjeringen.no/en/dep/kd>

- **Ministry of Health and care services (HOD)**

Email: postmottak@hod.dep.no **Phone:** +4722249090

Address: Teatergt: 9, 0030 Oslo

Website: <http://www.regjeringen.no/en/dep/hod>

- **Norwegian Food Safety Authority**

Email: postmottak@mattilsynet.no **Phone:** +4723216800

Address: P.o.box 383 ,N-2381 Brummunddal

Website: www.mattilsynet.no

The Norwegian Food Safety Authority is the government supervisory body for food safety. The authority promotes plant, fish, animal and human health and supervises food" from the farm to the fork", from the fishing boat and the farmer, via abattoirs, dairies and importing agencies to groceries and restaurants.

The Ministry of Agriculture and Food is responsible for the institutional management of the Food Safety Authority. The Ministry of Health and Care Services and the Ministry of Fisheries and Coastal Affairs are responsible for management within their respective areas.

National funding bodies and research programmes

- **The Research Council of Norway (RCN)**

Contact for Susfood in RCN: Turid Hiller **Email:** post@forskningsradet.no **Phone:** +4722037000

Website: <http://www.forskningsradet.no>

The Research Council of Norway is a national strategic and funding agency for research activities, and a chief source of advice on and input into research policy for the Norwegian Government, the central government administration and the overall research community.

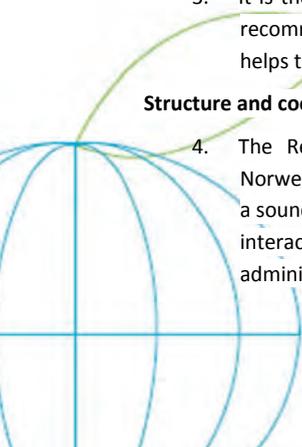
1. An important objective is to ensure that Norway adequately invests in research and development (R&D) activity.

Cohesive strategic approach

2. The Research Council promotes a cohesive strategic approach to the establishment of new fields of research, the development of higher calibre research and the implementation of new initiatives to meet the needs of society.
3. It is the task of the Research Council to identify Norway's research needs and recommend national priorities. Using targeted funding schemes, the Council helps to translate national research policy goals into action.

Structure and cooperation

4. The Research Council works to enhance financial and quality targets in Norwegian research and innovation activities. The Council also works to design a sound underlying structure for the research system and develop new forms of interaction between the research community, trade and industry and the public administration.



5. The Research Council provides a central meeting place for researchers, users of research and research funders and actively promotes the internationalisation of Norwegian research.

The Research Council's vision: In the Vanguard of Norwegian Research

6. Research and development expand the boundaries of what we know, understand and can achieve. They add cultural resonance to society and establish a viable basis for sustainable development, increased welfare and greater value creation.
7. The Research Council works to promote high-calibre research and win greater acknowledgment of research as a cultural, value-creating force that fuels social development.
8. A knowledge-based society is dependent on a research establishment that is on the cutting edge internationally. The Research Council seeks to strengthen the international position of Norwegian research together with other players in the research system.

Four key challenges

- To enhance the capacity and quality of Norwegian research
- To strengthen research in areas of particular importance for research, trade and industry, and society at large
- To promote constructive cooperation, distribution of responsibility and structures in the research system
- To translate research results into action

Funding schemes and instruments:

- Research programmes (within the programmes there are calls for f.ex. Researcher projects, Knowledge building projects for the industry and User led projects.)
- Large-scale programmes
- Independent projects
- Infrastructural and institutional measures
- Centre schemes
- Networking measures

Most relevant research programme within the RCN:

Sustainable Innovation in Food and Bio-based Industries (BIONAER)

Primary objective of the BIONAER programme is to promote research and innovation that enhances value creation in Norway's bio-based industries. In keeping with this, the programme will:

- Strengthen and develop knowledge and expertise in selected areas to promote sustainable bio-based industry in Norway; research-based innovation in bio-based companies and bioresource management
- Implement innovative work forms that involve players in the research community, trade and industry, the public administration and special interest organisations
- Use coordination and dissemination activities to enhance the benefits of knowledge and expertise gained by the industry and public administration
- Participate in international cooperation in order to strengthen knowledge-building and innovation in priority areas

The scope of the BIONÆR programme encompasses:

- Agriculture, forestry and nature-based value chains
- Seafood, from the time the raw materials are taken out of the sea until they reach the consumer

Research organizations, universities and industries (companies) within the relevant sectors can apply for funding. Calls for f.ex. Researcher projects, Knowledge building projects for the industry and User led projects. Cooperation with industry in f.ex. reference groups is important also in Researcher projects.

Duration: 2012-2022.

Total Budget: ca. 300 000 EUR, **Annual Budget:** ca. 30 000EUR

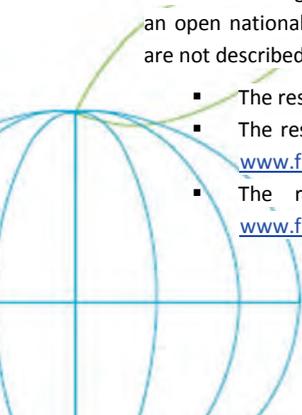
Keyterms: food, human nutrition, well-being, food industry, food sectors, food systems, food processing, consumption, integrated conception, food quality, food safety, food security, functional efficiency, ingredients, integrative approach, interdisciplinarity, sustainable development, food policies, waste,health and food,bioeconomy,food labelling, traceability methods, consumer, innovation

Contact: Trond Einar Pedersen - tep@forskningsradet.no

Website: www.forskningsradet.no/bionaer

There are also other programmes in the RCN which have some relevance to the area of Susfood, although they mainly are in other areas. These are two relatively small programmes within health and the relatively large programmes within nano technologies and biotechnology. In addition there is a programme for Independent projects which is in an open national competitive arena on the basis of scientific merit. These programmes are not described further, but information is at the websites referred to here:

- The research programme on Public Health: www.forskningsradet.no/folkehelse
- The research programme on Environmental Exposures and Health Outcomes: www.forskningsradet.no/milpaahel
- The research programme Biotechnology for innovation (Biotek2021): www.forskningsradet.no/biotek2021



- The Research Programme Nanotechnology and Advanced Materials (NANO2021): www.forskningsradet.no/nano2021
- The Research Programme for Independent projects: www.forskningsradet.no/fripro

Skattefunn

The Skattefunn R&D tax incentive scheme is a governmental program that is designed to stimulate research and development.

The Skattefunn R&D tax incentive scheme is a government program that is designed to stimulate research and development (R&D) in Norwegian trade and industry. Business and enterprises that are subject to taxation in Norway are eligible to apply for tax relief.

Costs associated with certain R&D project activities are tax deductible under the scheme. To qualify as R&D, any activity must meet the definitions set out by the Research Council of Norway.

SkatteFUNN is open to all branches of industry and all types of companies. Companies submit their applications electronically to the Research Council of Norway via the online submission service at skattefunn.no.

Email: skattefunn@forskningsradet.no

Website: www.skattefunn.no

- [The Norwegian Agricultural Authority \(SLF\)](#)

Contact: Kari Kolstad **Email:** postmottak@slf.dep.no **Phone:** 004724131000

Address: Stortingsgt. 26, 0161 Oslo

Website: <http://slf.dep.no>

The mission of the Norwegian Agricultural Authority is to provide professional advice, implement agricultural policies, and facilitate co-operation within the agricultural and food industry. Norwegian Agricultural Authority administrates various agricultural research and development funds. NAA has a coordinating role regarding these funds. Additionally, NAA has the secretariat responsibility for two research funds. One, the board of directors for the agricultural agreement research fund and second, the board of directors for the foundation for research levy on agricultural products. This entails the preparation and recommendation of cases which are then presented to the two research boards.

Instruments: Researcher projects (R&D institutes and universities), user led projects and knowledge building projects for the industry.

- [The Norwegian Seafood Research Fund \(FHF\)](#)

Contact: Hans Peter Næs **Email:** post@fhf.no **Phone:** 004723896408

Address: Universitetsgt. 10, 0659 Oslo

Website: <http://www.fiskerifond.no>

The Norwegian Seafood Research Fund is the Norwegian seafood industry's tool in managing the industry's investments into industry-based R&D. The clear objective is to create added value for the seafood industry. FHF is financed by the industry itself through an R & D levy on exports of all seafood (currently 0,3%). The FHF board is appointed by the Ministry of Trade, Industry and Fisheries, and comprised of representatives from the industry. Industry foundation is further strengthened through a series of advisory groups consisting of active players in the industry.

FHF funds research through researcher projects. Cooperation with industry in f.ex. reference groups is important.

- **Innovation Norway (IN)**

Email: post@innovationnorway.no **Phone:** +4722002500

Address: P.b. 448 Sentrum 0104, 0030 Oslo

Website: <http://www.innovasjon Norge.no>

Innovation Norway (IN) is the Norwegian Government's instrument for innovation and development of Norwegian enterprises and industry. Innovation Norway is the Norwegian government's official trade representative abroad and aim to assist Norwegian businesses grow and find new markets. IN support companies in developing their competitive advantage and to enhance innovation. Norwegian enterprises have access to a broad business support system as well as financial means. Innovation Norway provides competence, advisory services, promotional services and network services. The marketing of Norway as a tourist destination is also considered one of the organizations important tasks.

Innovation Norway contributes to:

- Enhancing innovation in Norwegian enterprises and industry
- Building competitive Norwegian enterprises at both domestic and international markets
- Norwegian enterprises have access to a broad business support system as well as financial means. Innovation Norway provides competence, advisory services, promotional services and network services. The marketing of Norway as a tourist destination is also considered one of the organizations important tasks.

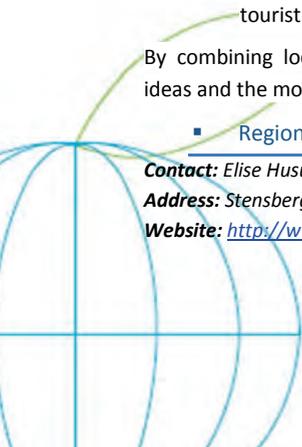
By combining local industry knowledge and international networks with the business ideas and the motivation of entrepreneurs, the foundation for new businesses is created.

- **Regional research funds in Norway (RFF)**

Contact: Elise Husum **Email:** post@forskningsradet.no **Phone:** +4722037000

Address: Stensberggt. 26, 0131 Oslo

Website: <http://www.regionaleforskningsfond.no>



The Mission of the Regional Research funds in Norway is to:

- strengthen research intended to increase and improve regional innovation and regional development
- increase R&D efforts in all Norwegian regions
- Improve research quality and competitiveness of the R&D institutions in all regions
- organise arenas for the sharing of knowledge and experiences
- establish cooperation with national and international programmes and activities

Instruments: Researcher projects, institution projects, support for strengthening national programmes, user led innovation projects, public sector projects and qualifying support.

- [GreeNudge](#)

Contact: Gunhild A. Stordalen **Email:** info@greenudqe.no

Address: Haakon VII's gate 6 pb.1232 Vika, 0110 Oslo

Website: <http://www.greenudqe.no/>

GreeNudge is an organisation with the goal to initiate, fund and promote research into behavioural change as a climate measure. By producing small, potent "nudges", changing the way we live, we hope to add a new array of instruments with which to combat climate change.

Nudging is about making choices. A nudge is to inform about the total lifetime cost of tumble driers in the moment of purchase, visualizing the benefits of the climate friendly choice. Good choices are best made with good information. GreeNudge wish to explore measures that can nudge us in a greener and more climate friendly direction.

GreeNudge funds research and provides networking to get in contact with possible business partners for field experiments. We participate during project design, and help promoting good results.

Information on applying for funds will soon be available in english. If you have any questions related to applying for funds, please contact us on info@greenudqe.no.

GreeNudge was initiated in 2011.

National research institutes

The most important research institutes in the field of food research in Norway are listed below:

- [Bioforsk](#)

Email: post@bioforsk.no **Phone:** +4740604100

Address: Fredrik A. Dahlsvei 20, 1432 Ås

Website: <http://www.bioforsk.no>

Bioforsk, the Norwegian Institute for Agricultural and Environmental Research, conducts applied and specifically targeted research linked to multifunctional agriculture and rural

development, plant sciences, environmental protection and natural resource management. International collaboration is given high priority.

- **National Institute for Consumer Research (SIFO)**

Email: sifo@sifo.no **Phone:** +4722043500

Address: Sandakerveien 24C, 0405 Oslo

Website: <http://www.sifo.no>

SIFO is a non-bias governmental institute that conducts consumer research and testing. Research fields: Consumption and economy, culture of consumption, technology and the environment and product testing. Importance is placed on research as well as the dissemination of information to various authorities, consumer-oriented institutions, research and scientific institutions, and in private industry.

- **Nofima AS**

Email: post@nofima.no **Phone:** + 4777629000

Address: Muninbakken 9-13, 9291 Tromsø

Website: <http://www.nofima.no>

Nofimas research includes Food science, Aquaculture and Fisheries, Industry and Market. The research field encompasses consumer and sensory sciences, food and health, food safety and quality, raw materials and process optimization, biolab, breeding and genetics, fish health, nutrition and feed technology, production biology, capture-based aquaculture, seafood industry, processing technology, marine biotechnology, industrial economics and strategic management and consumer and market research.

- **Norwegian Agricultural Economics Research Institute (NILF)**

Email: postmottak@nilf.no **Phone:** +4722367200

Address: Storgata 2-4-6, 0030 Oslo

Website: <http://www.nilf.no>

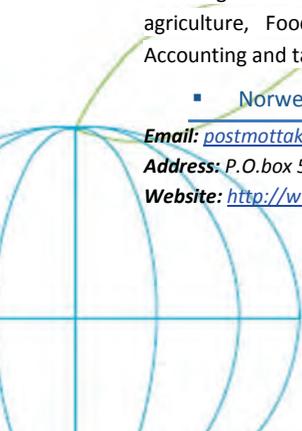
Research fields: Economic matters pertaining to Norwegian agriculture, International matters concerning Norwegian agriculture (EES, EU, WTO, etc.), Rural development, including rural tourism and "niche productions", Environmental matters relating to agriculture, Food consumption, self-sufficiency and readiness for self-supply, and Accounting and taxation matters.

- **Norwegian University of Life Sciences**

Email: postmottak@nmbu.no **Phone:** +4764965000

Address: P.O. box 5003, 1432 Ås

Website: <http://www.nmbu.no>



The University will be collaborating towards sustainable development in the following research fields: Basic and applied life sciences, Bioproduction, including aquaculture, Use and conservation of natural resources, Environment, climate change and renewable energy, Development studies and globalisation, Landscape architecture and spatial planning, Food production and food safety, Technology, Economics and social sciences, Teacher training in natural sciences and natural resource management and Animal and human health.

- **Norwegian University of Science and Technology (NTNU)**

Email: postmottak@adm.ntnu.no **Phone:** +4773595000

Address: Høgskoleringen 1, 7491 Trondheim

Website: <http://www.ntnu.no>

Relevant research fields are Life sciences and biotechnology, Marine sciences and technology, Material Science, Medicine and health, Physical sciences, Social Sciences, management and economics, ICT and Energy and environment.

- **Norwegian Institute of public health**

E-mail: post@fhi.no **Phone:** +47 21077000

Address: PO Box 4404 Nydalen, 0403 Oslo

Website: www.fhi.no

The Norwegian Institute of Public Health is placed directly under the Ministry of Health and Care Services. The NIPH is a driving force in improving the population's health and quality of life and preventing illness and injury. The NIPH also assists the prosecuting authorities and the judiciary in resolving criminal and civil cases. The NIPH bases its advice and services on research and health surveillance.

- **Östfoldforskning**

Email: post@forskningsradet.no **Phone:** + 4769351100

Address: Gamle Beddingvei 2B, 1671 Krakeroy

Website: <http://ostfoldforskning.no>

The research is centered around two areas, each one headed by a research manager: (i) Environmental Protection Research and, (ii) Business and Regional Development Research.

- **Sintef Fiskeri og havbruk AS**

Email: fish@sintef.no **Phone:** + 4740005350

Address: Brattørkaia 17C, 7010 Trondheim

Website: <http://sintef.no/fish>

Relevant main research areas are: (i) Raw material quality, shelflife and processing, product/processing technology, spectroscopy, competence in aquafeed and fish raw materials, lipid, proteins, ingredients etc., (ii) Traceability of marine products, and, (iii) International Projects and Consulting: National and international advisory services for companies and public administration.

- **The national Institute of nutrition and Seafood Research (NIFES)**

Email: postmottak@nifes.no **Phone:** + 4755905100

Address: Strandgaten 229, 5817 Bergen

Website: <http://www.nifes.no>

NIFES is a governmental research centre which gives research based advice to the government, food authorities and the aquaculture- and fishery industries in matters concerning fishfeed, health and safety aspects of seafood consumption.

The research activity at NIFES is divided into the following areas:

- Aquaculture Nutrition
- Seafood and Health
- Seafood Safety
- Surveillance

- **University of Bergen (UiB)**

Email: post@uib.no **Phone:** + 4755580000

Address: Museplassen 2, 5006 Bergen

Website: <http://www.uib.no>

In addition to research and education in the traditional university disciplines as mathematics, natural sciences and medical research, the University of Bergen has two major focuses: marine research and development research. Within this there are relevant activities as nutrition, health and diet and raw materials

- **University of Oslo (UiO)**

Email: postmottak@admin.uio.no **Phone:** + 4722855050

Address: Problemveien 7, 0313 Oslo

Website: <http://www.uio.no>

Most relevant activities at the University of Oslo related to Susfood is within nutrition and diet, food and health.

- **University of Tromsø (UiT)-The Arctic University of Norway/ Norwegian College of Fisheries Science**

Email: postmottak@uit.no **Phone:** + 4777644000

Address: Pb. 6050 Langnes, 9037 Tromsø

Website: <http://www.uit.no>



Most relevant activities at the University of Tromsø is within nutrition and diet, food and health.

Within The Norwegian College of Fisheries Sciences, which is a part of UIT, there is a Department within Marine food -Seafood science. Activities are within: Seafood and health, seafood quality and quality oriented processing of seafood.

- Oslo and Akershus University College of applied sciences

Email: postmottak@hioa.no **Phone:** + 47 67 23 50 00

Address: Kunnskapsveien 55, 2027 Kjeller

Website: www.hioa.no

The priority areas in research at HiOA:

- Care, health and welfare
- Communication, education and culture
- Educational research

Most relevant activities at HIOA within Susfood area is raw materials, nutrition and epidemiology, health and diet

- Norwegian school of economics

Email: nhh.postmottak@nhh.no **Phone:** + 4755959000

Address: Helleveien 30, 5045 Bergen

Website: www.nhh.no

Research fields (relevant): Business management science, economics, consumer research, strategy and management, intercultural communication.

- University of Stavanger

Email: post@uis.no **Phone:** + 47 51831000

Address: Rennebergstien 30, 4021 Stavanger

Website: <http://www.uis.no>

Research fields (relevant): Innovation processes, strategy and management within a.o. food sector

- Møreforskning

E-mail: epost@mfaa.no **Phone:** 004770111600

Address: Norsk Maritimt Kompetansesenter, Borgundvegen 340, 6009 Ålesund

Website: www.moreforsk.no

Research fields (relevant): Raw materials, product, process and market.

- Centre for Rural Research

Email: post@bygdeforskning.no **Phone:** +4773591729

Address: Universitetscenteret Dragvoll, 7491 Trondheim

Website: www.bygdeforskning.no

Research fields: Local community, rural life, culture, resource management, environment, landscape, business development, agriculture, value chains of food.

- Center for International Climate and Environmental Research

Contact: Hege Westskog

Address: Oslo

Website: <http://www.cicero.uio.no/>

CICERO is primarily a research institute and carries out projects funded by, for example, the Research Council of Norway and the EU Framework Programs. CICERO also undertakes consultancy work, in both its research and its information capacity, for government ministries and agencies, business, and national and international organizations such as the World Bank.

The researchers at CICERO represents a wide range of disciplines including anthropology, atmospheric chemistry, meteorology, geophysics, human geography, sociology, biology, chemistry, political science, and economics.





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SUSFOOD COUNTRY REPORT POLAND

Author:

NCBiR: Michał Podniewski



Introduction

The food sector is one of the most important and fastest-growing branches of the Polish economy. The share of the sector in the sale value of the entire national industry amounts to almost 24% and it is by about 9 percentage points higher than in 15 countries of the European Union where it equals on average 15%. Within the EU countries a higher share of the food industry than in Poland is present in Denmark(28%) and Greece (27%).

In Poland investigations connected with sustainable food production and consumption are carried out by scientific institutions (universities, research institutes, scientific units of Polish Academy of Sciences) with the increasing participation of enterprises. The strategic directions of Polish scientific research and development works were determined in document of Ministry of Science and Higher Education which is called National Scientific Programme.

According to the Reform of Polish Science, funding of scientific research was moved from Ministry of Science and Higher Education (MNiSW) to implementing agencies of MNiSW: National Centre for Research and Development (NCBiR) and National Science Centre (NCN).

Moreover, scientific research in the area of food are funding by Ministry of Agriculture and Rural Development (MRiRW) and in the area of health by Ministry of Health (MZ).

Ministries of agriculture and food

Food and health related research is mainly guided and funded by the implementing agencies of Ministry of Science and Higher Education (MNiSW): National Centre for Research and Development and National Centre for Science but also by Ministry of Agriculture and Rural Development (MRiRW), Ministry of Health (MZ).

- [Ministry of Science and Higher Education \(MNiSW\)](#)

Address: Hoża Street 20, 00-529 Warsaw

Website: <http://www.nauka.gov.pl/>

Ministry of Science and Higher Education is responsible for research, higher education and partially (with Ministry of Economy) innovation policy. The ministry plays a strategic and a key role in Polish research and higher education systems. The main tasks of the Ministry are as follows:

- Preparation of proposals for policy decision and changes (reforms);
- Active participation at international level (particularly at EU-level and OECD)
- Financing strategic or fundamental initiatives and activities
- Development of new trends in science and higher education policies
- Taking care of ethics in scientific and academic society

- **Ministry of Agriculture and Rural Development (MRiRW)**

Address: Wspólna Street 30, 00-930 Warsaw

Website: <http://www.minrol.gov.pl/eng/>

- **Ministry of Health (MZ)**

Address: Miodowa Street 15, 00-952 Warsaw

Website: <http://www.mz.gov.pl/>

The main object of Ministry of Health is to support Minister of Health in implementing health policy in Poland. Ministry of Health is part of central public administration system. Moreover, the following organs and units are supervised and subordinated to Ministry of Health: Medical Universities, University Hospitals, Research and Development Units, Main Pharmaceutical Inspector, Chief Sanitary Inspector, Regional Centres of Blood Donation and Blood Therapy and other Units.

National funding bodies and research programmes

- **Ministry of Science and Higher Education (MNiSW)**

Address: Hoża Street 20, 00-529 Warsaw

Website: <http://www.nauka.gov.pl/>

Ministry of Science and Higher Education is responsible for research, higher education and partially (with Ministry of Economy) innovation policy. The ministry plays a strategic and a key role in Polish research and higher education systems. The main tasks of the Ministry are as follows:

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- Financing strategic or fundamental initiatives and activities
- Development of new trends in science and higher education policies
- Taking care of ethics in scientific and academic society

- **National Science Centre (NCN)**

Address: Królewska 57, 30-081 Kraków

Website: <http://www.ncn.gov.pl/>

The National Science Centre is a government executive agency set up to fund basic research. The NCN was established by the Act on the National Science Centre, which came into force on 1 October 2010. The activities of the NCN are supervised by the Minister of Science and Higher Education. The National Science Centre announced the first calls for proposals within basic research. Basic research is original experimental or theoretical research work undertaken primarily to acquire new knowledge of the underlying

foundations of phenomena and observable facts, without any direct practical application or use.

Research programmes funded by NCN:

HARMONIA

HARMONIA is a funding opportunity designed for scientists wanting to carry out research in the following forms: in cooperation with foreign partners, within the framework of international programmes or initiatives announced under bi- or multilateral cooperation, utilising large-scale international research infrastructure. In the frame of this programme, are carried out following projects in the area of sustainable food production and consumption: 1. Chemopreventive properties of polysaccharides isolated from edible Basidiomycete mushroom (*Boletus edulis*). In vitro and molecular studies in colon carcinoma cell culture model 2. Hydrolysates of milk whey proteins as potential modulators of the intestinal ecosystem in the relation of obesity.

Key terms: microbiota, enterocytes, obesity, gut model, mice model, cell lines cultures (Caco-2, HT-29)

Budget for projects in the area of sustainable food production and consumption: 277 515.00 EUR

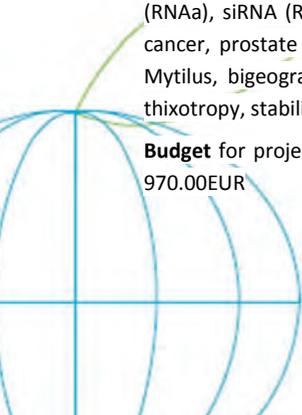
OPUS

OPUS is a funding opportunity intended for a wide range of applicants. The research proposal submitted under this scheme may include the purchase or construction of research equipment. In the frame of this programme, are carried out following projects in the area of sustainable food production and consumption: 1. CRON diet as an alternative for athletes finishing their sporting career. 2. Research on the bioavailability for selected minerals under in vitro and in vivo condition from gluten-free bread enriched with natural additives of the different origin 3. Interactions between the human gut microbiota and antioxidative components of functional food 4. Physicochemical studies of selected polyphenols and their complexes with metal cations. The search for new antioxidant substances as food additives. 5. Physiological and health-promoting parameters of lamb's lettuce (*Valerianella locusta* Laterr. Em Betcke) grown in greenhouse with application of modern SLL LED technology in supplemental lighting 6. Evaluation of selected functional properties of food product enriched in fructans from different sources in the aspect of osteoporosis prevention - in vivo studies in the condition of calcium hypoalimentionation, using model of female growing or ovariectomized female mature (Wistar rat) 7. Evaluation of new and commercial probiotic preparations for health benefits and safety: a model trial on animals with chemically induced colitis 8. Bioactive components in fruits of some wild shrubs and their effect on laboratory rats. 9. Phenolic compounds as pancreatic lipase inhibitors 10. Improving the attractiveness and nutritional value of processed fruit cherries 11. The use of proteolytic enzymes isolated from nonconventional sources for obtaining biologically active peptides from milk proteins 12. The influence of

beta-glucan 1,3D-1,6D added to the low-calorie diet on insulin sensitivity and the expression of selected proinflammatory cytokines in adipose tissue and peripheral blood mononuclear cells in obese humans 13. Interactions of protein and protein hydrolysates with hydroxycinnamic acids of antioxidant properties in model studies and pro-healthy food products 14. Study on the mechanism of arabinoxylan structure modification in rye bread model systems and its impact on the viscous and antioxidant properties of bread 15. Conjugated linoleic acid (CLA)-induced transcriptional activation of PPAR-an investigation of molecular mechanisms of putative anticancer action of fatty acids of CLA-enriched egg yolks 16. Molecular biogeography of marine mussels and tracability of their food products imported to Poland 17. Liable in time potato starch pastes and possibilities of their stabilization

Key terms: nutrition, former sportsmen, epigenomic, lipidometabolomic, FoxO, Sirtuin, Kaloric restriction, resweratrol bioavailability, gluten-free bread, mineral elements, in vitro, in vivo, rats antioxidants, biotransformation reactions, HPLC, intestinal microbiota, metabolomics, plant extracts, polyphenols polyphenols, flavonoids, biological activity, antioxidants, free radicals, molecular structure photosynthesis, transpiration, nitrogen metabolism, LED diodes, radiation spectrum, biological value of yield, term of growing, reduced energy consumption functiona properties, fructans, sorbet, bone condition, osteopenia, osteoporosis, rat, ovariectomy probiotic, intestinal inflammation, colitis, colon cancer, safety polyphenols, heavy metals, antioxidant status, rats phenolic compounds, pancreatic lipase, fruits, juices, nectars Pro-health properties of cherries and its products, phenolic compounds, antioxidant activity, anticancer activity, sensory proteolytic enzymes, milk protein hydrolyzates, biologically active peptides insulin sensitivity, obesity, diet, cytokines hydroxycinnamic acids, protein hydrolysates, microencapsulation, protein digestibility, antioxidant activity, pro-healthy food Rye bread model systems, dietary fibre polysaccharides, arabinoxylans, structural subfractions, degree of substitution with arabinose, degree of substitution with ferulic acid, molecular weight, intrinsic viscosity, hydrodynamic radius, extract viscosity, antioxidant properties, functional foods, prevention of heart diseases and diabetes. Conjugated linoleic acid (CLA), anticancer properties of CLA, cis9,trans11-CLA isomer, trans10,cis12-CLA isomer, peroxisome proliferator-activated receptors (PPARs), transcriptional activation of ligand-dependent transcription factors, PPAR-dependent regulation of gene expression, saRNA (RNAa), siRNA (RNAi), tumors, cell lines, agonist/antagonist of PPAR, melanoma, breast cancer, prostate cancer, nutrigenomics, nutrients, enriched food, nutraceuticals mussels, Mytilus, bigeography, food products, identification of geographic origin potato starch, thixotropy, stabilization of starch pastes, natural polysaccharide hydrocolloids

Budget for projects in the area of sustainable food production and consumption: 1 655 970.00EUR



PRELUDIUM

PRELUDIUM is a funding opportunity intended for pre-doctoral researchers about to embark on their scientific career. In the frame of this programme are carried out following projects in the area of sustainable food production and consumption: 1. Assessment of risk to human health based on analysis of exposure biomarkers associated with intake Polycyclic Aromatic Hydrocarbons (PAHs) in diet 2. Usefulness of proinflammatory genes profiling for prediction of body mass reduction under low-calorie diet. 3. Effect of non-enzymatic glycosylation products of pea albumins (*Pisum Sativum*) on regulatory cells induction and mucosal immune system response. 4. Microflora of the selected regional food products of the Wielkopolska as an origin determining factor and a source of metabolites with the potentially functional properties 5. The influence of selenium addition during germination of Brassica seeds on the content of bioactive compounds in sprouts 6. Determination of coenzyme Q10 and lipoic acid contents in some food products and assessment of their daily-intake 7. New synthetic resveratrol derivatives with potential anti-ageing and anti-cancer properties 8. Evaluation of mineral and isotopic composition, the effect of culinary processing and bioavailability of minerals and their nutritional value for selected species of fungi and processed fungal products 9. Potential role of blackcurrant pomace in the prevention of high-fat diet-induced metabolic changes in rabbits 10. Determination of total concentrations of trace metals in bee honeys by flame atomic absorption spectrometry and solid phase extraction without necessity of sample digestion 11. Diamond and graphite nanoparticles as an antitumor agents - characteristics of antinutritional mechanism of action on an in vitro and in ovo models.

Key terms: PAH, exposure, risk assessment, biomarkers, food, diet obesity, low-calorie diet, inflammatory markers, gene expression pea albumins, gut mucosal immune system, ELISA, Treg, allergy microflora, fried cheese, pumpernickel, origin, traceability, pcr-dgge selenium, supplementation, brassicas coenzyme Q10, lipoic acid, food analysis, daily intake cancer invasiveness, cellular senescence, mesothelial cells, peritoneal cavity, resveratrol, stilbenes fungi, trace elements, environment, food blackcurrant, anthocyanins, high-fat diet, rabbit honey, solid phase extraction, flame atomic absorption spectrometry, trace elements Antinutritional factor, nanofeeding, caveolin-1, nanoparticle, carbon, glioma, chicken embryo

Budget for projects in the area of sustainable food production and consumption: 564 600.00 EUR

SONATA

SONATA is a funding opportunity addressed to scientists holding a doctoral degree starting their career in research. The researchers submitting projects under this funding opportunity are expected to conduct innovative research utilising state-of-the-art equipment and/or developing original scientific or academic approach. In the frame of

this programme are carried out following projects in the area of sustainable food production and consumption: 1. The evaluation of the influence of diverse calcium supply and inulin addition in the diet on calcium absorption and expression of genes involved in calcium transport in the intestine. 2. Oils from selected fruit seeds as potential ingredients for dietary supplements and health-promoting foods 3. Transcriptomic profile of bovine skeletal muscle in the context of nutritional and health value of beef 4. I and Se biofortification of selected vegetables, including the influence of these microelements on yield quality as well as evaluation of iodine absorption and selected biochemical parameters in rats fed with vegetables biofortified with iodine. 5. Dextrins obtained from potato and corn starch to activate the development of the intestinal bacteria Bacteroides and to limit the increase of Firmicutes, are responsible for obesity and metabolic syndrome (research in vitro and in vivo on animals) 6. The effect of obestatin contained in the breast milk on the structural and functional development of the offspring in the early postnatal period

Key terms: calcium, inulin, active and passive calcium transport, VDR, calcium absorption, Caco-2 cell culture, transepithelial transport, RT-PCR, PCR-DGGE. polyunsaturated fatty acids; plant oils; diet-related diseases; health-promoting additives; metabolism; rat meat production, meat quality, gene expression, microarray Iodine, selenium, plant biofortification, mineral nutrition, functional food, rats, gene expression, cell lines dextrins, intestinal microbiota, food, obesity, metabolic syndrome milk, obestatin, development, intestine, neonate

Budget for projects in the area of sustainable food production and consumption: 626 100.00 EUR

- **National Centre for Research and Development (NCBiR)**

Address: Nowogrodzka 47a, 00-695 Warsaw

Website: <http://www.ncbir.pl/en/>

Support of the Polish research units and enterprises in developing their abilities to create and use solutions based on scientific research results in order to encourage economy development and to the benefit of society.

The main task of the National Centre for Research and Development is management and execution of strategic research and development programs, which lead directly to the development of innovativeness.

Among the tasks of the National Centre for Research and Development, are the support of commercialization and other forms of transfer of scientific research results, the management of applied research programs and the performance of national security and defense projects.



The Centre also attempts to provide young scientists with training and development opportunities i.a. by implementing international scientific mobility programs. Special attention is paid to the participation of young scientists in research programs. The Centre enables young researchers to expand their business and intellectual property management skills and to learn how to commercialize research results.

At the same time, via implemented initiatives, it draws attention to the necessity of raising the R&D staff's awareness of the importance of industrial property protection to the commercialization of modern solutions and international patent protection opportunities for research units.

Research programmes in the area of sustainable food production and consumption funded by NCBiR:

Applied Research Programme –Phase 1

Applied Research Programme of the National Centre for Research and Development is a horizontal programme aimed at supporting the science sector and the industry sector within the scope of applied research in various scientific fields (programme path A) and industry branches (programme path B), introduced pursuant to art. 30 section 1 point 3 of the Act dated 30 April 2010 on the National Centre for Research and Development. The programme will be implemented on the basis of competitions for co-financing of applied research projects. A detailed course of conducting the competition with regard to submitting applications and the criteria of formal and content-related assessment is specified in the Rules of the competition. Applied research, mentioned in art. 2 point 3 letter b of the act dated 30 April 2010 on science financing, is defined as research work conducted in order to gain new knowledge with specific practical application. It consists either in searching for possible practical uses for research results or in searching for new solutions allowing to meet the assumed practical targets. In the frame of this programme, following projects in the area of sustainable food production and consumption are carried out: 1. A low cost and environmentally safe system for corn fertilizing and sowing; 2. Development of innovative technology of second generation bioethanol production from biomass sorghum (*Sorghum* sp) and miscanthus (*Miscanthus* sp); 3. Innovative system of barley and triticale selection based on new achievements of phenomics and genomics; 4. Microbial activators in denitrification deposits used for the treatment of nitrate pollution for the implementation of the Water Framework Directive and the Nitrates Directive; 5. Innovative dairy products in the prevention and mitigation of type 2 diabetes; 6. Comprehensive investigation of vegetable storage technology; 7. Application of ultrasounds for enhancement of drying processes of biological materials especially susceptible to thermal drying conditions.

Timing: 2012-2015

Total budget: 57 412 100.00 EUR (budget for all projects funding in the frame of this programme)

GEKON

Increasing the innovativeness of the Polish economy through the development of environmental technologies, the development and implementation of a new financial instrument to support the development of environmental technologies, the development and implementation of new, innovative environmental technologies in the Polish economy.

Key terms: economy, environmental technologies

Timing: 2012-2016

Total budget: 48 426 200 EUR

JPI FACCE Knowledge Hub

The “FACCE Knowledge Hub” is a novel instrument developed by the FACCE – JPI to foster the transnational cooperation, collaboration and communication between the research communities in the field of FACCE. It sets out 5 core research themes reflecting the key challenges to be tackled by FACCE-JPI: 1. Sustainable food security under climate change, 2. Environmentally sustainable growth and intensification of agriculture, 3. Trade-offs between food supply, biodiversity and ecosystem services, 4. Adaptation to Climate Change, 5. Mitigation of Climate Change.

Key terms: food security, supply, climate change, biodiversity

Timing: 2011 - January 2014

Total budget: 250 000 EUR

JPI HDHL Knowledge Hub - DEDIPAC

In the framework of this Joint Programming Initiative Member States and Associated Countries (Austria Belgium Cyprus Czech Republic Denmark Finland France Germany Ireland Italy The Netherlands Norway Poland Romania Slovakia Spain Sweden Switzerland Turkey United Kingdom Latvia Slovenia) are engage in defining, developing and implementing through joint initiatives a common Strategic Research Agenda, based on a common vision of how to address major societal challenges. In DEDIPAC - Determinants of diet and physical activity, the challenge is to understand the most effective ways of improving public health through interventions targeting dietary and physical activity behaviour. In 2030, all European consumers will have the motivation, ability and opportunity to choose a healthy lifestyle.

Key terms: public health, dietary, physical activity behaviour, healthy lifestyle

Timing: November 2012 - December 2015

Total budget: 250 000 EUR



- **Ministry of Health (MZ)**

Address: Miodowa Street 15, 00-952 Warsaw

Website: <http://www.mz.gov.pl/>

The main object of Ministry of Health is to support Minister of Health in implementing health policy in Poland. Ministry of Health is part of central public administration system. Moreover, the following organs and units are supervised and subordinated to Ministry of Health: Medical Universities, University Hospitals, Research and Development Units, Main Pharmaceutical Inspector, Chief Sanitary Inspector, Regional Centres of Blood Donation and Blood Therapy and other Units.

Research programmes in the area of health funded by MZ:

National Program for counteracting civilization diseases. First module: The prevention of overweight, obesity and chronic non-communicable diseases through improved nutrition and physical activity.

The main objective of this health program is to prevent one of the most often cause of health problems related to lifestyle. The most important goal of this module is to increase the level of knowledge in the society regarding healthy eating habits and proper lifestyle.

Timing: 2012 - 2014

Budget 2012-2013: 427 657.00 EUR

National Program for the Prevention of diseases of civilization. Second module: The National Program for Diabetes Prevention and Education.

The main objectives of this program are: increase the level of awareness and knowledge in the society about diabetes, reduce the risk factors, create an effective strategy for the prevention from complications in diabetes and improve the quality of life of patients who suffer from diabetes.

Timing: 2012 - 2014

Budget 2012-2013: 789 033.00 EUR

National Programme for the Prevention of diseases of civilization. Third module: Iodine Deficiency Elimination Program in Poland between 2012 and 2016.

The core issue of this health program is to increase the level of knowledge in the society regarding recommended minimal dose of iodine, especially among pregnant and breast-feeding women. The most important task is to educate society and health professionals about the importance of iodine for proper functioning of the human body.

Timing: 2012 - 2016

Budget 2012: 11 195.40 EUR

National research institutes

- Gdynia Maritime University (GMU)

Contact: Janusz Mindykowski

Address: Morska 81-87, 81-225 Gdynia

Website: <http://www.am.gdynia.pl/>

The mission of the Gdynia Maritime University (GMU) is to educate and train marine officers for shipboard positions on merchant marine vessels and managers for land-based enterprises of maritime industries in compliance with Polish, European and international educational standards. It is provided on a solid basis for their professional careers where the awareness of global labour markets is harmonised with developments in the employment opportunities offered in Polish maritime regions, Poland and the EU.

- Lodz University of Technology (TUL)

Contact: Kazimiera Zacharska Email: RNP@adm.p.lodz.pl / kazimiera.zacharska@p.lodz.pl

Address: Zeromskiego 116, 90-924 Lodz

Website: <http://www.p.lodz.pl>

Following the principles of academic freedom, creative freedom and freedom of teaching, Lodz University of Technology fulfills its mission to discover and convey the truth by teaching and educating students, conducting research and development work, as well as training research staff. The knowledge gained in the course of research and scientific work provides the basis for training highly-qualified personnel for careers in business and administration. Lodz University of Technology promotes and increases the achievements of science, technology and national culture, as well as acts for the benefit of local and regional communities.

- Medical University of Silesia, Katowice, Poland (SUM)

E-mail: rekna@sum.edu.pl

Address: Poniatowskiego 15, 40-055 Katowice

Website: www.sum.edu.pl

The mission of the Medical University of Silesia as integral part of national system of education and science is to develop and transfer the truth by conducting the research and providing the education of students.



- Poznan University of Medical Sciences (PUMS)

E-mail: rektor@ump.edu.pl

Address: Fredry 10, Collegium Maius, 61-701 Poznan

Website: <http://www.ump.edu.pl>

The University participates in Poland's scientific and cultural development, educates students and teaching staff, and follows the principle of freedom of scientific research and teaching.

- Poznan University of Technology (PUT)

Contact: *prof. dr hab. inż. Joanna Józefowska* **Email:** prorektor.nauka@put.poznan.pl

Address: Pl. Marii Skłodowskiej-Curie 5, 60-965 Poznan

Educating highly qualified personnel in engineering in its broad sense, in a close relationship with scientific research, the development of technologies and innovations, in the cooperation with industry and community.

- Poznan University of Life Sciences

Contact: *Dr Urszula Mojsiej* **Email:** mojsieju@up.poznan.pl

Website: <http://www.puls.edu.pl>

The description of Poznan University of Life Sciences is focussed on research and teaching functions from a broadly understood agri-food and forestry sector, development of rural areas, protection of the natural environment, wood technology, biology, animal breeding biotechnology, food technology and human nutrition, horticulture and ending with landscape architecture.

- University of Gdansk (UG)

Contact: *Prof. dr hab. Grzegorz Węgrzyn* **Email:** rekdsn@ug.edu.pl

Address: Bażyńskiego 1A, 80-952 Gdansk, Poland

Website: <http://www.ug.edu.pl/en>

The University of Gdańsk carries out its mission by upholding the principles of freedom of expression and conscience, freedom of teaching, freedom of research, and freedom of artistic creativity. There can be no place at the University for any forms of discrimination. The Mission of the University is: To educate students so that they can gain and develop knowledge and prepare themselves for professional employment; To conduct scientific and scholarly research and development work; To educate and develop the skills of its academic staff; To inculcate in undergraduate and postgraduate students a sense of responsibility for the Polish state, for the defence of democratic principles, and for respect for human rights; To create conditions that offer equal opportunities for disabled persons through education and vocational rehabilitation; To promote the development of the physical well-being of students, doctoral students and staff; To contribute to and

spread achievements in science and scholarship, the culture of Poland, and technology by, among other things, accumulating, storing and making accessible library collections, and by promoting modern information technology; To act for the good of the Pomorze community and Poland as a whole; To support the scientific and professional careers of the graduates of the University. The University, in carrying out its mission as defined in paragraph 3, cooperates with scientific/scholarly, artistic and other institutions in Poland and abroad, and participates in the creation of a European higher education space.

- **Jagiellonian University (JU)**

Contact: Iwona Brzozowska **Email:** Iwona.Brzozowska@uj.edu.pl

Address: Golebia 24, 31-007 Cracow

Website: <http://www.uj.edu.pl>

Jagiellonian University has 15 faculties: Faculty of Law and Administration, Philosophy, History, Philology, Polish Studies (the youngest Faculty), Physics and Astronomy, Mathematics and Informatics, Chemistry, Biology and Earth Sciences, Biotechnology, Management, International and Political Studies, Medicine, Pharmacy and Health Care.

Four institutes of the University have been ranked as “Centers of Excellence”. They cover such fields of research as: biotechnology, nanoscale physics, computer physics, environmental biology and stem cell therapeutics.

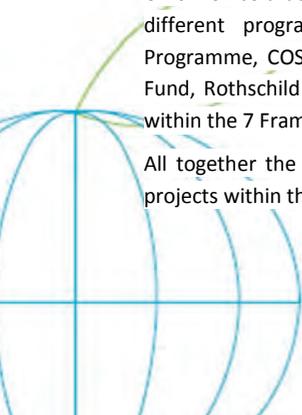
The Centres of Excellence:

- Molecular Biotechnology – Integration of Education and Research (BIER)
- Centre for Nanometer-scale Science and Advanced Materials (NANOSAM)
- Computer Physics - Interdisciplinary Research and Application (COPIRA)
- Integrating Basic and Applied Environmental Sciences for the benefit of local communities (IBAES)

As for international cooperation, we cooperate with 190 foreign universities.

But the most important factor indicating the range of JU international cooperation is its involvement in carrying on international projects. In 2006 The Jagiellonian University was granted with Crystal Brussels Prize, a prestigious award given in recognition of the most active and successful participation in the 6. Framework Programmes of the European Union. Since that JU managed 296 international research and educational projects within different programmes, such as: 7th Framework Programme, Lifelong Learning Programme, COST, Welcome Trust, National Institute of Health, International Visegrad Fund, Rothschild Foundation and many others. At the moment UJ manages 25 projects within the 7 Framework Programme and 26 within LLP scheme (educational projects).

All together the faculty staff of the Jagiellonian University carries out 88 international projects within the above mentioned schemes and 755 national research projects



Institute of Sociology Jagiellonian University

Address: Gołębia 24, 31-007 Krakow

Website: <http://www.socjologia.uj.edu.pl/index.php/eng/dzia/krakow/>

- University of Life Sciences in Lublin (UPL)

Contact: Stanisław Baran **Email:** biuro.rektora@up.lublin.pl, barst@o2.pl

Address: Akademicka 13, 20-950 Lublin

Website: www.up.lublin.pl

The University boasts a long educational tradition, modern scientific base, well-equipped laboratories, and above all great scientists. The mission of the University of Life Sciences in Lublin is to contribute to society through the pursuit of education, learning, and research in three key areas for a man. They are: • techniques, technologies and organization of food production: subjects: agriculture, science of commodities, economics, spatial economy, forestry, veterinary medicine, biology, work safety and hygiene, food safety, plant protection and phytosanitary control, agricultural and forestry engineering, management and production engineering, education in technology and information technology, geodesy and cartography, safety engineering, chemical and process engineering, food technology and human nutrition, biotechnology; • development and environmental protection of human life: subjects: environmental engineering, environment protection, agriculture; • health, healthy lifestyle: subjects: tourism and recreation, veterinary medicine, animal husbandry, horticulture, landscape architecture, dietetics.

- Warsaw University of Life Sciences (SGGW)

Contact: Sylwia Kosmala **Email:** sylwia_kosmala@sqgw.pl **Phone:** +48 22 59 310 41

Address: Nowoursynowska 166, 02-787 Warsaw

Website: <http://www.sqgw.pl>

The Mission of the Warsaw University of Life Sciences is to serve the economic and the intellectual development of the Polish society, with particular focus on rural areas, food economics and the natural environment in the broad sense. Our aim is to: conduct scientific research, provide education and perform implementation on the highest level. The basis for the identity of our University and for our success are values such as: professionalism, care for good quality, diligence and innovation.

Department of Sociology

Contact: Ewa Sadurska Duffy

Address: Nowoursynowska 166, 02-787 Warsaw

Website: <http://spin.sqgw.pl/en/node/613>

- **Wroclaw University of Economics (WUE)**

Contact: Anna Pluta **Email:** anna.pluta@ue.wroc.pl

Address: Komandorska 118-120, 53-345 Wrocław

Website: www.ue.wroc.pl

The mission of the Wrocław University of Economics is to be a leading centre of innovative ideas and economic education in our region of Europe

- **Wroclaw University of Environmental and Life Sciences**

Contact: Tadeusz Trziszka **Email:** tadeusz.trziszka@up.wroc.pl

Address: Norwida 25, 50-375 Wrocław **Region:** dolnoslaskie

Website: <http://www.up.wroc.pl>

WROCLAW UNIVERSITY OF ENVIRONMENTAL AND LIFE SCIENCES focuses its wide-ranging activities on education and research covering agriculture and related sciences. The profile of the WUELS and its mission are directly involved in transformation programmes dealing with rural development and food quality and management, with full respect paid to social support and interaction. The knowledge acquired and the research projects realised at the WUELS make provision for future development, regarding all aspects of environmentally sustainable development, which is friendly to human and animal welfare.

- **Franciszek Górski Institute of Plant Physiology, Polish Academy of Sciences**

Contact: Franciszek Janowiak **Email:** fjanowiak@yahoo.com

Address: Niezapomnajak 21, 30-239 Kraków, Poland

Website: www.ifr-pan.krakow.pl

The mission of the Institute of Plant Physiology, Polish Academy of Sciences (IPP PAS) is to conduct high quality research in the broadly defined field of crop plant physiology, spanning the levels of the organ, the organism, and the population, as well as cell or molecular processes. The main research area of IPP PAS is Ecophysiological factors of plant production in sustainable agriculture.

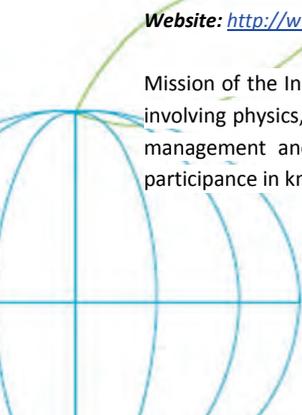
- **Institute of Agrophysics of Polish Academy of Sciences (IA PAS)**

Contact: Jozef Horabik **Email:** j.horabik@ipan.lublin.pl **Phone:** +48817445061

Address: Doswiadczalna 4, 20-290 Lublin

Website: <http://www.ipan.lublin.pl>

Mission of the Institute is gaining knowledge on agronomy-agrophysics by basic research involving physics, chemistry biology and informatics for solving problems of environment management and protection, sustainable agriculture and food processing as well as participation in knowledge dissemination, transfer and application.



- Institute of Animal Reproduction and Food Research of the Polish Academy of Sciences (IAR&FR PAS)

Address: *Tuwima 10, 10 748 Olsztyn*

Website: <http://www.pan.olsztyn.pl>

Institute of Animal Reproduction and Food Research of PAS conducts basic and applicatory investigations in the area of agricultural, veterinary and biological sciences. The results achieved are implemented into the food and processing industry and animal breeding. From its early beginnings the Institute of Animal Reproduction and Food Research of PAS has been holding a leading position amongst the Polish research centres in annual rankings of the State Committee for Scientific Research or the Ministry of Science and Higher Education.

Key achievements of the institute are: demonstrating a positive to humans activity of favourable bacteria of the gastrointestinal tract and implementation of food with their addition into the production process, including foodstuffs with reduced allergenic properties; patent specification of a method for obtaining dietetic starch preparations with increased resistance to amylolytic enzymes; elaborating a method for the isolation and identification of bioactive compounds of plant origin indispensable for the monitoring of their transformations in food production processes and in consumer's body after ingestion.

One of the secrets of scientific achievements of our Institute is good collaboration with leading worldwide research centres from Spain, Finland, Germany as well as USA, Japan and recently also India.

- National Food and Nutrition Institute (IŻŻ)

Address: *Powstańców 61-63, 02-903 Warsaw*

Website: <http://www.izz.waw.pl>

In 2011 the Institute was highly committed to work on amending and drafting new legislation on the food and nutrition health quality and prevention of diet-driven diseases. The Institute was also involved in development of evaluations, merits-based and legal opinions in relation to the preparation of permits for the Chief Sanitary Inspector for general consumption and special purpose foodstuffs. The Institute also ran widely-swept training and information activities. These activities aim at the protection of public health through enhancement of food health quality, rationalisation of nutritional patterns as well as prevention and combating diseases caused by malnutrition.

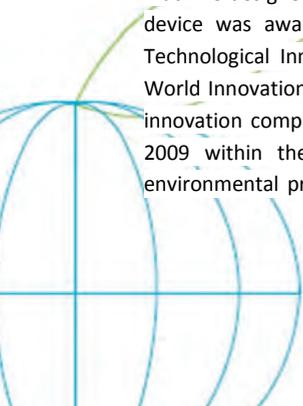
- National Marine Fisheries Research Institute (NMFRI)

Email: sekretariat@mir.gdynia.pl

Address: *Kołtątaja 1, 81-332 Gdynia*

Website: <http://www.nmfri.gdynia.pl>

The NMFRI mission is to advance the capacity of science to provide advice on human activities affecting and affected by marine ecosystems. The components of the NMFRI mission are: to establish effective paths for providing scientific advice to the Polish fishery administration, the EU Commission, and relevant international organizations; to perform and promote physical, chemical, biological, and interdisciplinary research of the marine environment; to perform and promote research in the fields of processing technology, marine foodstuff safety, fishery economics, and fishery technology; to foster public awareness of wide-ranging topics on the functioning and rational utilization of marine ecosystems with special emphasis on sustainable fisheries and the ecosystem approach to fisheries management issues. The main research interests of the NMFRI include disciplines that enable an ecosystem approach to fisheries management, i.e., marine ecology, marine chemistry, fishing gear technology, and fishery economics. The area of innovative and technical research done by the NMFRI comprises fish processing technology and mechanization as well as food and environmental chemistry. The statutory activity of the Institute is funded by the Ministry of Science and Higher Education (MSHE). The second source of funding for the NMFRI research budget comes from the EU Fisheries Data Collection Framework financed by the European Commission and MARD. Additional funds for NMFRI research come from competition grants including research projects financed by the MSHE, EU Framework Projects, and the European Fisheries Fund. Other funding for the NMFRI comes from scientific services contracted by institutions and companies in Poland and abroad, and from the Institute's other business ventures. International cooperation coordinated by the International Council for the Exploration of the Sea (ICES) is crucial for the scientific research performed at the NMFRI. Another important aspect of Institute research is fisheries data collection and management within the European Union Data Collection Framework (DCF). This is an indispensable element of Poland's implementation of the EU Common Fisheries Policy. The director of the NMFRI is also a member of the European Fisheries and Aquaculture Organization (EFARO). One of the greatest achievements of the NMFRI in recent years was the development of the selective T90 cod-end with meshes turned 90°. This gear was designed by the Department of Fisheries Resources. T90 trawls are used in the Baltic Sea fisheries in accordance with a European Commission Regulation from December 2005. Another recent achievement of the NMFRI is the development of a table fish bone cutting machine designed by the Department of Processing Technology and Mechanization. The device was awarded a gold medal at the Belgian and International Trade Fair for Technological Innovation (2009), a diploma at the XVII Exchange of Inventions at the World Innovation Fairs (2009), and a bronze medal at Concours Lépine, an international innovation competition, in Paris in 2010. According to the MSHE assessment for 2005-2009 within the G7 group of 28 Polish institutions involved in engineering and environmental protection and environmental, agricultural, and forestry technology, the



National Marine Fisheries Research Institute was ranked first in its category and classified as a category A institution.

- **Research Institute of Horticulture (InHort)**

Address: *Konstytucji 3 Maja 1-3, 96-100 Skierniewice*

Website: <http://www.inhort.pl>

Research Institute of Horticulture in Skierniewice, Poland is a governmental R&D organization supervised by the Ministry of Agriculture and Rural Development. It was established on January 1st, 2011, by merging two research units with long tradition and great achievements in horticultural sciences: Research Institute of Pomology and Floriculture (established in 1951) and Institute of Vegetable Crops (established in 1964). The new Institute is a legal and organizational successor of its predecessors and inherited their staff and properties as well as rights and obligations. At present, Research Institute of Horticulture employs 568 people, in that 45 professors, 85 doctors and 62 research assistants. Its research programme covers all areas related to fruit, vegetable, ornamental plant and bee sciences, from basic studies on physiology, biochemistry and molecular biology, through biotechnology, creative breeding, protection of genetic resources, agronomy, plant pathology, fruit and vegetable storage and processing, food safety, horticultural engineering, economics and marketing. Since all of the fruit and many vegetable plants are entomophilous and require bees for pollination, bee science was also included in the Institute's programme. The Institute also takes part in several governmental research programmes on food safety, integrated and organic fruit and vegetable production, protection of genetic resources and in campaigns aimed at changing nutritional habits of the Polish consumers toward increased consumption of fruits and vegetables. Due to active extension and implementation programmes and close cooperation with major stakeholders, the Institute has contributed in a large extent to the development of horticultural production in Poland. Besides research, the Institute is also involved in commercial activities, especially in food analysis. Several Institute's laboratories has ISO/IEC 17025 and/or GLP certificates and perform analysis (pesticide residues, heavy metals, nitrites and nitrates and mycotoxins) for food producers and wholesalers. It is estimated that Institute's laboratories have 50% share of commercial food analysis market in Poland. The Institute actively participates in building European Research Area. Cooperative links have been established with most of the horticultural research centres and clusters in Europe and several joint research project, co-financed by European Commission and other international organisations, were initiated. At present, the Institute is involved in four projects within 7th Framework Programme and in several others within Central European, LIFE and COST programmes and in bilateral projects financed by respective governments within agreements on cooperation in science and technology. Besides, the Institute is an active member of the European Fruit Research Institutes Network (EUFRIN). In Poland, the Institute is a coordinator of Centre of

Advanced Technologies “AgroTech”, which is a cluster of three universities, two R&D Institutes and four commercial enterprises aiming at developing and implementing innovative technologies in Polish agri-food industry and of a network „Agroengineering for sustainable development of agri-food industry and rural areas”. It is also a founding member of Polish Food Technology Platform. In September 2011 the Institute has organized conference “Food and nutrition in 21st century”, which was an official event in the frame of Polish Presidency in European Union.

- **European Regional Centre for Ecohydrology**

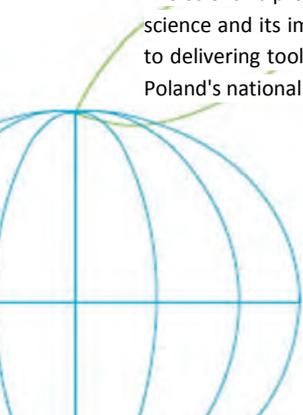
Contact: Magdalena Kociak **E-mail:** erce@erce.unesco.lodz.pl **Phone:** + 48 42 681 70 07

Address: Tylna 3, 90-364 Łódź, Poland

Website: <http://www.erce.unesco.lodz.pl>

Water resources, in the face of global climate changes, become one of the critical factors for achieving good ecological status of freshwater ecosystems and the Millennium Development Goals of the UN. Ecohydrology (EH) is a sub-discipline of hydrology focused on ecological aspects of the hydrological cycle. It refers specifically to two phases of the hydrological cycle: terrestrial plant - water - soil interactions and aquatic biota - hydrology interactions. The main body of ecohydrology theory is based on the assumption that sustainable use of freshwater resources in man-modified landscapes is highly complex. It is dependent not only on our ability to reduce emission of pollutants, but to a great extent on the ability of the environment to restore and to regulate water and nutrient circulation towards the enhancement of ecosystem capacity, sufficient to absorb human impact. EH provides a novel tool for regulation of ecological processes from the molecular to the landscape scale, defined as the "dual regulation" rule - regulation of biota by hydrology and vice versa. From the ecosystem management and conservation perspective this paradigm provides a conceptual and methodological framework for understanding how ecosystem properties can be used as management tools for achieving harmony between man's needs and environmental potential. Ecohydrology has become a transdisciplinary science. It integrates hydrology and ecology, by providing hypotheses valid for both scientific disciplines, and by incorporating into those hypotheses problem solving components to satisfy the needs of society.

The scientific profile of the Centre is focused on further development of ecohydrological science and its implementation for restoring freshwater resources. Priority is being given to delivering tools for implementing the European Water Framework Directive as part of Poland's national cooperation.



- Polish Academy of Sciences, Institute of Ichthyobiology and Aquaculture in Golysz

Contact: dr Patrycja Jurecka **E-mail:** ziqr@golysz.pan.pl

Address: Kalinowa 2, 43-520 Chybie, Poland

Website: <http://www.golysz.pan.pl>

Research in the area of aquaculture, fish breeding and genetics, pond ecosystems and ecology.

- Technical University in Cracow

Contact: Anna Boratyńska-Sala

- University of Agriculture in Krakow (UR Krakow)

Contact: M Korzeniowska **Email:** gosiak2000@yahoo.com

Website: <http://en.ur.krakow.pl>





SUSFOOD COUNTRY REPORT

ROMANIA

A stylized graphic in the bottom left corner consisting of a blue wireframe globe and a green leaf-like shape extending from its top right.

Authors:

UEFISCDI : Adrian Asanica, Nastasia Belc, Luciana Bratu

Introduction

The main organizations responsible for preparing national policies, programs and initiatives for food, nutrition, diet and health at national level in Romania are: Ministry of Agriculture and Rural Development, Ministry of Health, National Authority Sanitary-Veterinary for Food Safety (ANSVSA) and the National Authority for Consumer Protection. All these above mentioned authorities contribute to establish these policies in food and health.

The national policies related to food sector are coordinated by the Ministry of Agriculture and Rural Development.

There are two main research programs in the field of agrifood sector: The National Plan for Research, managed by Ministry of National Education, respectively Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI) and the second one, Sectorial program managed by Ministry of Agriculture and Rural Development (MADR).

Ministries of agriculture and food and public services

- [Ministry of Agriculture and Rural Development \(MADR\)](#)

Contact: Viorel Morarescu **Email:** dqia@madr.ro **Phone:** +4-0372-172-512

Address: B-dul Carol I 2-4, 020921 Bucharest

Website: <http://www.madr.ro>

Ministry of Agriculture and Rural Development is the central public authority responsible for implementation of government policies and programs, with a role in the development and implementation of the national strategy in the agricultural sector and food production rural development, fisheries and aquaculture, land reclamation, and in areas related: plant, specialized scientific research, conservation and sustainable management, soil and plant and animal genetic resources. Develop strategies and specific regulations in its areas of activity, Government policy and in accordance with EU regulations and the principles of the Common Agricultural Policy (CAP).

- [Ministry of Health, National Institute of Public Health Bucharest](#)

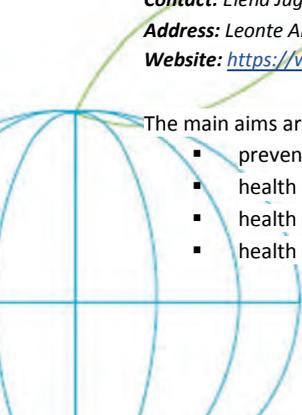
Contact: Elena Juganaru **Email:** ejuganaru@ispb.ro **Phone:** +40213183620

Address: Leonte Anastasievici 1-3, 050463 Bucharest

Website: <https://www.insp.gov.ro>

The main aims are:

- prevention, surveying and transmissible diseases control;
- health status monitoring;
- health promoting and health education;
- health related quality of environment;



- elaboration of health policies;
- ensuring of public health management;
- development of public health services.

The institute has organized at the national level 4 national centres and 6 regional centres.

National centres:

- National Centre for Surveying and Control of Transmissible Diseases (CNSCBT);
- National Centre for Monitoring of Human Environmental Risks (CNMRMC);
- National Centre for Health Status Assessment and Promotion (CNEPSS);
- National Centre for Statistics and IT in Public Health (CNSISP).

Regional centres:

Regional centre for Public Health, Bucharest (CRSPB);

Regional centre for Public Health, Cluj (CRSPC);

Regional centre for Public Health, Iasi (CRSPI);

Regional centre for Public Health, Timisoara (CRSPT);

Regional centre for Public Health, Targu Mures (CRSPM);

Regional centre for Public Health, Sibiu (CRSPS).

National funding bodies and research programmes

- Executive Unit for Financing Higher Education, Research, Development and Innovation (UEFISCDI)

Contact: Luciana Bratu **Email:** luciana.bratu@uefiscdi.ro **Phone:** + 40 21 307 19 10

Address: Str. Mendeleev 21-25, 010362 Bucuresti

Website: <http://uefiscdi.gov.ro/>

UEFISCDI implements, under the supervision of its advisory councils, four out of the six programmes of the National Plan for Research, Development and Innovation 2007-2013 (PN II):

- Human Resources (exploratory research),
- Ideas (exploratory research),
- Partnerships in Priority S&T Areas (applied research),
- Innovation (innovation and technology transfer).

The overall objective is to increase competitiveness by fostering partnerships RD in priority areas embodied in technology, innovative products and services to solve complex problems and creating mechanisms for implementation.

Instruments: calls

Research programmes funded by UEFISCDI:

Capacities

National research capacity development and integration of RDI in Romania in international scientific environment.

Types of projects:

- Module I - CD investments in infrastructure projects
- Module II - Projects support activities RDI
- Module III - Projects to support Romania's participation in international research projects.

The eligibility depends on the type of the project.

Contact: Mircea Segarceanu - mircea.segarceanu@uefiscdi.ro

Human Resources

Human resources to increase the number of researchers to improve their performances, attracting researchers in Romania living abroad and increase the attractiveness of the research career.

Different kinds of grants:

- Postdoctoral research projects
- Type PD Research projects to stimulate the formation of young independent research teams
- TE Research projects for stimulating recovery in the land of researchers
- RP Complex projects for the reintegration of researchers
- Type RC Research projects for young PhD
- TD PhD mobility projects
- MD Projects mobility of researchers
- MC Translational Research Awards
- Awards obtain certificate of entitlement
- Rewarding scientific and technical innovation and artistic creativity
- Research Fellowships "Stefan Odobleja".

The eligibility depends on the type of the project.

Contact: Eleonora Dobroiu- lioara.dobroiu@uefiscdi.ro

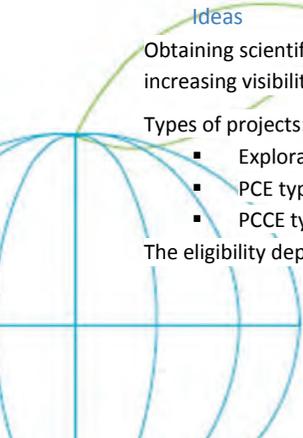
Ideas

Obtaining scientific and technological results, consistent with those of Europe reflected by increasing visibility and international recognition of Romanian research.

Types of projects:

- Exploratory Research Projects
- PCE type Exploratory complex research projects
- PCCE type Exploratory Workshops School of Advanced Studies

The eligibility depends on the type of the project.



Contact: Irina Bitescu- irina.bitescu@uefiscdi.ro

Innovation

Increased capacity for innovation, technological development and uptake of research results into production in order to improve the competitiveness and the quality of life.

Types of projects:

- Product Development
- Systems
- Technology HIGH-TECH stimulating export
- Infrastructure development of innovation and technology transfer
- Innovation support services EUREKA European Co-EUROSTARS

The eligibility depends on the type of the project.

Contact: Marius Mitroi - marius.mitroi@uefiscdi.ro

Partnerships

Creating conditions for better collaboration between different entities of research and development and innovation, companies and / or government units in order to solve the problems identified. The overall objective is to increase competitiveness by stimulating partnerships CD in priority areas, resulting in technology, innovative products and services to solve complex problems and mechanisms for implementation. program is structured on new research directions: 1. Information Technology and Communications; 2. Energy 3. Environment; 4. Health; 5. Agriculture, food safety and security; 6. Biotechnology; 7. Materials, processes and innovative products; 8. Space and security; 9. Socio-economic sciences and humanities.

Types of projects:

- Applied Research Collaborative Projects
- RDI projects thematically oriented.

The eligibility depends on the type of the project.

Contact: Nicoleta Dumitrache- nicoleta.dumitrache@uefiscdi.ro

- [Ministry of Agriculture and Rural Development \(MADR\)](#)

Contact: Viorel Morarescu **Email:** dqia@madr.ro **Phone:** +4-0372-172-512

Address: B-dul Carol I 2-4, 020921 Bucharest

Website: <http://www.madr.ro>

Minister Order 124/2011 – Sectoral Plan for agrofood and rural development research of Ministry of Agriculture and Rural Development, 2011-2014, "Agriculture and Rural Development - Orizont PAC 2020" – ADER 2020. Budget: 45.401.000 lei (10 mil euro).

The main objective of the Sectoral Plan is to find solutions for adaptation of agriculture to changing agro-eco-climate specific conditions and to establish a sustainable preservation and exploitation of national resources.

Specific objectives:

- crop technologies and animal production adaptation related to mitigation;
- improving of crop technologies to sustainable growth of agriculture;
- increasing of competitiveness of small farms;
- the assessment of ecosystem services;
- improving of resources management to preserve existing biodiversity;
- sustainable development of animal production;
- development of new, nutritious and personalized food and food safety assuring according with national and international requirements.

National research institutes

The research in Romania within the food and health sectors is scattered throughout a very large number of stakeholders.

- **National Institute of Research&Development for Food Bioresources - IBA Bucharest (IBA)**

Contact: *Nastasia Belc* **Email:** nastasia.belc@bioresurse.ro **Phone:** +40.31.6205833

Address: 5 Baneasa Ancuta, 020323 Bucharest 2

Website: <http://www.bioresurse.ro>

Coordinated by Ministry of National Education, The National Institute of Research and Development for Food Bioresources, IBA Bucharest, is a non-academic public-owned self-financing research organisation conducting food and nutritional research, product and technology development but also food S&T services including small-scale production of special foods. It also operates under scientific coordination of the Academy of Agricultural and Forestry Sciences.

The mission of IBA Bucharest is to meet the societal challenges by elaboration, implementation and dissemination of knowledge through research, education and services in the agrifood field; to increase the quality of life and wellbeing of people through offering healthy food and number of employees increasing within Romanian agrifood industry; to have strong connexion with industry and society and the support for national policy in the field development; to have a continue professional training for increasing of IBA researcher's skills.

IBA Bucharest is one of the most proeminent RTD entities in Romania and plays an important role in developing national food policies, as it provides the Ministry of Agriculture and Rural Development and the National Food Safety Authority (ANSVSA) with expert advice.

IBA Bucharest is an industry-oriented research organisation, accessing both public funding, via grant competitions, and private funding, through industry-funded product/technology development projects.



Therefore, IBA Bucharest has gained a solid experience in knowledge and technology transfer. IBA Bucharest is very active in approaching and putting together food sector stakeholders for various projects and events, as it coordinates the National Technological Platform Food for Life, which has taken part in several networking european FP6 and FP7 projects.

The existing research laboratories, i.e. Microbiology-ELISA, Molecular Biology Analyses, Food Packaging, Food chemistry, NMR, Sensorial and pilot plants (for cereal, meat and fruits and vegetables processing), etc., have suitable infrastructures and appropriate conditions for conducting research. IBA Bucharest has 4 main research fields with the following topics:

- Food safety: food preservation, food contaminants, food packaging;
- Food nutrition: influence of diet on health, food intolerance (coeliac disease and phenylketonuria), functional food;
- Food (bio)technologies;
- Consumer sciences.

IBA holds ISO17025 accreditation for assessing quality and safety of foodstuffs, functions as a national reference laboratory on several food safety and quality issues (e.g. GMOs, annual wheat crop rating, cereals quality so on). IBA Bucharest provides also laboratory accredited tests for industry and authorities, consultancy and technical assistance, professional trainings and competence evaluation for industry, proficiency tests, pilot scale tests and assure according the Ministry of Agriculture and Rural Development policies the surveying and certifying food supplements for trading.

- [National Agricultural Research and Development Institute Fundulea \(NARDI Fundulea\)](#)

Contact: Ittu Mariana **Email:** office@incda-fundulea.ro **Phone:** + 4021 315 40 40

Address: Nicolae Titulescu 1, 915200 Fundulea

Website: <http://www.incda-fundulea.ro/>

Mission: (1) Releasing varieties and hybrids in: small grains (common wheat, durum wheat, rye, triticale, barley, winter and spring two-rowed barley, rice), maize and sorghum, legumes for grains (soybeans, bean, peas), industrial crops (sunflower, linseed, flax) and forage crops (annual and perennial leguminous and grasses), (2) Elaboration of crop management systems, (3) Seed multiplication, (4) Scientific and technological services (testing of herbicides and insecto-fungicides, seed processing), (5) Dissemination of scientific research results to farms.

- National Institute of R&D for machines and installations designed to agriculture and food industry (INMA)

Contact: Ion Pirna **Email:** icsit@inma.ro **Phone:** +4021/269.32.55

Address: B-dul Ion Ionescu de la Brad 6, Bucharest

Website: <http://www.inma.ro/>

Keywords: Machinery, equipment, tools; Feed and feed technology; Conservation; Rehabilitation; Fertility; Environmental health.

- National Research-Development Institute for Biotechnology in Horticulture Stefanesti-Arges (INCDBH)

Contact: Marian Petre **Email:** marian_petre_ro@yahoo.com

Phone: +40248266814/+40213184457

Address: Sos. Bucuresti-Pitesti 37, Stefanesti Arges

Website: <http://www.incdbh-stefanesti.ro>

Keywords: Producer income, Rural development, Agricultural production, Organisation and management, Environmental management, Organic production, Food quality and quality control, Traceability, Labeling, Genetic resources, Conventional breeding, Resistance (stress, pathogens, etc) breeding, Plant development, Hormone action and regulation, Physical stress (water, drought, temperature etc), Nutrient assimilation, Nutrient deficiency, Fertilisation, Pest research, Plant protection, Pathogen control, Protected horticulture, Conservation, Rehabilitation, Erosion, Statistics applied to agricultural research.

- National Research – Development Institute for Animal Biology and Nutrition (INCDBNA)

Contact: Catalin Dragomir **Email:** catalin.dragomir@ibna.ro **Phone:** +0040-21-3512084

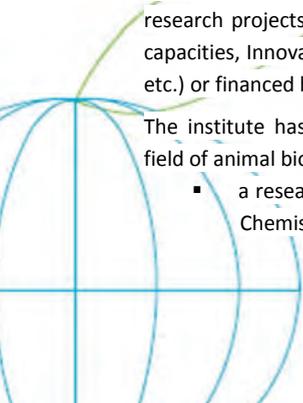
Address: Sos. Bucuresti-Pitesti 37, Stefanesti Arges

Website: <http://www.incdbh-stefanesti.ro>

Keywords: INCDBNA is the most important research institute in Romanian animal science field. It performs research and development activities in the field of animal biology and nutrition. The institute has an annual turnover of 5 million euro and runs 30 to 40 research projects yearly within the national RDI programs (Nucleus, Partnerships, Ideas, capacities, Innovation, Structural etc.), within international programs (FP7, COST, bilateral etc.) or financed by the private sector.

The institute has complete infrastructure for performing research-development in the field of animal biology and nutrition:

- a research department with three well-developed laboratories (Animal Biology, Chemistry and Nutrition Physiology, Animal Nutrition & biotechnologies),



- a development department and two compartments (Pilot station for experimental compound feeds and the Experimental vegetal-animal farm);
- their activity is supported by auxiliary compartments (PORUS, economic, etc.)

The institute managed to perform an institutional reform oriented toward a high degree of integration into European Research Area and increase of its impact in Romanian animal science sector. This led to a high capacity to approach both fundamental and applied research.

The institute has an extensive network of collaborations with the potential beneficiaries of the research outputs (farmers, professional associations, authorities, etc.), which ensure the practical relevance of the research directions and the high impact of the results.

The institute has a good international visibility – by the number of participations in international projects (such as FP6 506144, FP6 043077, FP6 506087, FP7 207043, FP7266061, FP7266367) / number & relevance of collaborations/presence in working groups, commissions, etc.). A high proportion (over 50%) of researchers have medium and long-period training stages abroad (PhD and post-doctoral training), thus being able to work at international standards. Other strong points of the institute are the high competition capacity / adaptability / speed of reaction.

Among the research directions are quality and safety of animal forages and animal products (subjects: mycotoxins, functional foods, ecological/traditional foods, food chain, etc.), more efficient use of the feed resources (including alternatives, such as by-products), alleviation of the adverse environmental impact of the animal industry, management of the animal genetic resources, interdisciplinary research to promote the public health (obesity, cardiovascular diseases, osteoporosis) using healthy animal products; adaptation of the feeding strategies of the farm animals to the global (market, climactic, socio-economic) changes.

- Scientific research and technological development in chemical and petrochemical industry (ICECHIM)

Contact: Melania Arsene / Diana Pasarin **Email:** office@icechim.ro / Diana.Pasarin@gmail.com

Phone: +4021-315.32.99

Address: Spl. Independentei 202, 060021 Bucharest

Website: <http://www.icechim.ro>

Keywords: Pest research, Plant protection, Animal nutrition, Medicals, Non-food use of aquatic resources, Diseases and pest control, Alternative resources, Waste management, Climate change and agriculture, Climate change models and forecast, Climate change monitoring.

- Valorisation bioresources, Biotechnologies

- Nanosciences and Nanomaterials, Nanotechnologies
- Environmental protection and sustainable management of resources, recycling of byproducts
- Technologies and advanced organic materials
- Improving the competitiveness of industrial products
- Rehabilitation and revitalization Romanian chemical and petrochemical industry
- **National Institute of Research and Development for Potato and Sugar Beet-Brasov**

Contact: Sorin Claudian Chiru **Email:** icpc@potato.ro **Phone:** +40268476795

Address: Fundăturii 2, 500470 Brasov

Website: <http://www.potato.ro>

Land	Robotics
Production structure	Precision agriculture
Producer income	GIS (Geographical Information System)
Rural development	DSS (Decision Support System)
Rural socio-economics	Genetic resources
Market development	Conventional breeding
Agricultural production	Resistance (stress, pathogens, etc)
Organisation and management	breeding
Environmental management	Plant development
Statistical and econometric analysis	Physical stress (water, drought, temperature etc)
Foresight and prospective study	Plant-plant interaction
Food Chain Analysis	Nutrient deficiency
Agricultural and Food market Policy	Fertilisation
Food chain management	Pest research
Transportation	Plant protection
Storage	Weed management
Processing	Pathogen control
Traceability	Biodiversity
GPS (Global Positioning System)	

- **National Institute of Research and Development for Biological Sciences - Centre of Bioanalysis**

Contact: Prof. Gabriel Lucian Radu, head of centre **Email:** rglucian2000@yahoo.com

Address: Splaiul Independentei 296, Bucharest

Website: www.bioanaliza.ro

Centre of Bioanalysis research focus is on four main directions:

- Development and validation of analytical methods for bio-compounds (nutrients, supplements, drugs, bio-marker of specific pathologies) and bio-

processes characterization: chromatographic, spectrometric (FTIR, Mass-Spectrometry, MALDI, fluorescence) and electrochemical hyphenated techniques;

- Plant and plant extracts composition and efficacy assessment;
- Bio-mimetic systems design, characterization and application;
- Biosensing systems development for active principles assessment and contaminants determination.

Interdisciplinary research is a key-word of the main activity of the Centre of Bioanalysis, focusing on concomitant approach of a subject by the means of different analytical techniques and data processing but even by research, teaching & education and services toward specific stakeholders (SMEs, other R&D units etc.). The interdisciplinary in research directions is supported by the national and international partnerships for research and development projects execution and implementation on specific domains such as: health, food and agriculture, nanomaterials (new materials), environment and security/safety issues.

- **National Institute for Research and Development of Isotopic and Molecular Technologies Cluj-Napoca**

Contact: Anca Muresan **Email:** anca.muresan@itim-cj.ro **Phone:** +040 264 58 40 37

Address: Donath 65-103, 400293, Cluj-Napoca

Website: <http://www.itim-cj.ro>

We are implementing and envisioning research topics to fulfill immediate , mediu and long term goals, in accordance with the major European research pillars : alternative energy , environment, health and food safety .

Main areas of research and development are:

- •Stable isotope separation and applications
- •Production of isotope labeled compounds
- •Multifunctional nano-structured materials (carbon nanotubes, functionalized metallic, polymeric, magnetic and composite nanoparticles, nanogels)
- •Molecular and bio-molecular materials with controlled architecture and functionality (preparation, physic-chemical and structural characterization, practical applications: inclusion compounds, solid forms screening of active pharmaceutical ingredients)
- •New multi- technique approaches for molecular systems characterization (combined solid-state NMR, X Ray diffraction, and molecular modeling; new photo-pyroelectric spectroscopy and calorimetry techniques)
- •Organic mass spectrometry, chromatography, and ion physics
- •Materials and technologies for hydrogen production and storage

- •Applied physical systems (analytical equipment design and production, ion optics)

Services / micro production are:

- •Micro production of labeled compounds with 15N, 13C and 2H;
- •Complex environmental analysis, food safety conducted under an ISO 17025 accredited laboratory;
- •Realization of equipment "high-tech" in the workshop of prototypes.

Universities

- University of Agronomic Science and Veterinary Medicine of Bucharest (UASVMB)

Contact: Adrian Asanica **Email:** post@info.usamv.ro **Phone:** + 40213182266

Address: Marasti 59, 011464 Bucharest

Website: <http://www.usamv.ro>

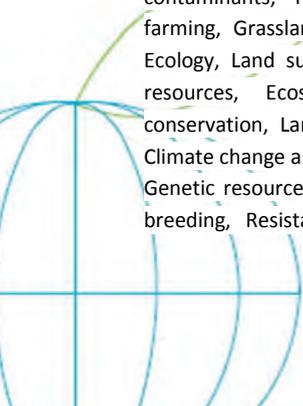
The University of Agronomic Sciences and Veterinary Medicine in Bucharest (UASVMB) is one of the oldest education institutions in Romania. The UASVM Bucharest includes seven faculties in its structure: Faculty of Agriculture. Faculty of Horticulture. Faculty of Animal Science. Faculty of Veterinary Medicine. Faculty of Land Reclamation and Environmental Engineering. Faculty of Biotechnologies. The goals are: High-quality education. Advanced research and innovation. Inter-faculty, inter-university and transnational cooperation. Development of regional and national networks.

Faculty of Agriculture (Agro)

Contact: Viorel Ion **Email:** info@agro-bucuresti.ro

Website: <http://www.agro-bucuresti.ro/>

Keywords: Food chain analysis, Organic markets, Distribution and consume,r Agricultural and Food market, Policy, Trade policy, Quality policies, organic policies, Environmental policy, Food and nutrition policy, Rural development policy, Conventional food, Food chain management, Transportation, Storage, Cooling, Processing, Conservation, Risk assessmen, Food quality and quality control, Traceability, Labeling, Residues and contaminants, Trust, Coexistence, Intensive cropping, Extensive cropping, Organic farming, Grasslands and pastures, Peri-Urban agriculture, Ecosystems, Agro forestry, Ecology, Land surveying, Environmental design, Countryside management, Alternative resources, Ecosystems, Biodiversity, Natural resources management, Nature conservation, Landscapes, Desertification, Environmental health, Waste managemen,t Climate change and agriculture, Statistics applied to agricultural research, Food chemistry, Genetic resources, Plant genomics, Gene regulation, Molecular evolution, Conventional breeding, Resistance (stress, pathogens, etc) breeding, GMO Plant development,



Hormone action and regulation, Physical stress (water, drought, temperature etc), Plant-plant interaction, Toxicity (toxicological evaluation), Fertilisation, Pest research, Plant protection, Pathogen control, Biological control, Protected horticulture.

Expertise: Field Crops, Production Genetics, Breeding and Plants Protection.

Faculty of Biotechnologies (Biotech)

Contact: Mona Popa **Email:** pandry2002@yahoo.com

Website: <http://www.biotehnologii.usamv.ro/>

Keywords: Food chain analysis, Agricultural Supply and Demand, Functional food, Conventional food, Food and diet related diseases, Food chain management, Food quality and quality control, Residues and contaminants, Molecular ecology, Resistance (stress, pathogens, etc) breeding, Plant protection, Pathogen control, Biological control, Animal nutrition, Feed and feed technology, Water management, Food chemistry ,Packing, Rural development, Agricultural production, Environmental management, Organic production, Food chain analysis risk assessment, Biomass – energy, Plant protection, Biological control, Organic farming, Feed and feed technology, Waste management.

Faculty of Horticulture (Horti)

Contact: Adrian Asanica **Email:** adrian.asanica@horticultura-bucuresti.ro

Website: <http://www.horticultura-bucuresti.ro/>

Keywords: Rural development, Agricultural production, Organisation and management, Environmental management, Organic production, Food Chain Analysis, Organic markets, Agricultural Supply and Demand, Agricultural and Food market, Policy, Quality policies, Organic policies, Environmental policy, Food and nutrition policy, Rural development policy, Food chain management, Transportation, Storage, Cooling, Processing, Conservation, Packaging, Food quality and quality control, Traceability, Labeling, Residues and contaminants, Machinery, equipment, tools GPS (Global Positioning System), Precision agriculture, Genetic resources, Plant genomics, Gene regulation, Photosynthesis, Conventional breeding, Resistance (stress, pathogens, etc) breeding, Biomass – energy, Plant development, Hormone action and regulation, Physical stress (water, drought, temperature etc), Plant-plant interaction, Nutrient assimilation, Nutrient deficiency, Toxicity (toxicological evaluation), Fertilisation, Mineral balance, Pest research, Plant protection, Weed management, Pathogen control, Biological control, Intensive cropping, Extensive cropping, Organic farming, Grasslands and pastures, Peri-Urban agriculture, Open air horticulture, Protected horticulture, Urban horticulture, Ecology, Land surveying, Environmental design, Countryside management, Conservation, Rehabilitation, Erosion, Soil (micro)biology, Fertility, Water management, Irrigation, Drainage, Water and sanitation, Water conservation, Alternative resources, Ecosystems, Biodiversity, Natural

resources management, Nature conservation, Landscapes, Ecotoxicology, Desertification, Environmental health, Waste management.

Center for applied biochemistry and biotechnology

Contact: Gheorghe Campeanu **Email:** office@biotehnol.eu

Address: Bd Marasti 59, 011464 Bucharest

Website: <http://www.biotehnol.eu>

Research Directions

- **Department of Industrial Biotechnology**
 - Microbial biotechnology
 - Fermentation biotechnology
 - Biotechnology for environmental protection
 - Biotechnology for obtaining biologically active substances for human and veterinary
 - Obtaining vegetal extracts
- **Department of molecular biology**
 - Molecular biology
 - Genetics of microorganisms
 - Qualitative detection of GMOs by PCR
 - Molecular cloning
 - Differential expression of genes in plants and microorganisms
 - Cell cultures and plant tissues
 - Enzymatic analysis
- **Department of applied biochemistry**

Chemical compounds and biochemical determinations in various matrices (plant, animal and microbial) using spectrophotometric methods, Fourier transform infrared spectrometry

- Isolation, purification and characterization of enzymes
- In vitro studies of the action of enzyme inhibitors
- Biochemical characterization of plant extracts containing biologically active compounds
- Structure-property relationship studies of physico-chemical-toxicity
- University “Dunărea de Jos” Galați

Faculty of Food Science and Engineering

Contact: Daniela Borda **Email:** daniela.borda@ugal.ro

Address: Str. Domnească, nr. 111

Website: <http://www.sia.ugal.ro/>

The broad range of educational programs in food science and engineering but also fishery and environmental protection at Bachelor, Master and PhD level demonstrate the vision and commitment of our Faculty to train students not only for the present but mostly for the future.

We educate and train our students using a modern infrastructure for fundamental and applied research that strengthens their education and nurture students' innovative spirit.

The research quest and the effort to educate new generations of specialists made by our professors are widely nationally and internationally recognized. The Faculty of Food Science and Engineering has 80 years of tradition, being the oldest food faculty in Romania, and has one of the top research and educational programs in food engineering at national level. Thus, scientific knowledge combined with management skills, but also leadership are attributes that are developed and harvested by our educational programs. Students can enjoy different types of mobility programs all across Europe. Therefore, by being involved in different research projects the students are motivated to explore their scientific interests and possibilities.

At FSIA we trust in well trained food engineers that provides healthy food for today and sustainable solutions for tomorrow.

The research strategy

The Faculty of Food Science and Engineering is giving research high priority. Our faculty aims to maintain the national leading role in food science, develop stronger international recognition and new collaborative projects with other prestigious Universities around the world. The strategy of the Faculty of Food Science and Engineering is harmonized with the research strategy of the "Dunarea de Jos" University and correlated with Europe 2020 Strategy and Horizon 2020.

The success of this research strategy over the next years will depend on our community members' ability to:

- attract **new funding sources** from different national and international research programs
- continue to foster new **research themes** in different disciplines from all the study programs - mainly at master and PhD level, and increase students' motivation for research
- encourage **crossdisciplinary** collaboration and aggregation in research clusters
- increase the research **impact** of our faculty at local, regional, national and international level - with new applications of expertise, knowledge or insight, primarily delivered to the food industry

The **TehnIA** platform for research - <http://sia.ugal.ro/en/index.php/faculty/photo>, has the technological pole **RE-SPIA** - www.sia.ugal.ro/respia/, the **BIOALIMENT** pole - http://bioaliment.ugal.ro/index_en.html and the Recirculating system – Pilot plant **SRAS** - <http://www.sras.ugal.ro/pole>.

More on research areas at <http://sia.ugal.ro/en/index.php/research/research-areas>.

- **VALAHIA UNIVERSITY of TÂRGOVIȘTE (VUT)**

Faculty of Environmental Engineering and Food Science

Contact: Alexandru Stoica **Email:** stoicaandi@yahoo.com **Phone:** +40.722854773

Address: 18-24, Unirii Street, 130082, Târgoviște

Website: <http://fimb.valahia.ro>

Constituting an essential part of the Romanian higher education, **Valahia University of Targoviste (VUT)** consists of 9 faculties with students enrolled for full-time studies, distance learning, master's degree and doctoral programs.

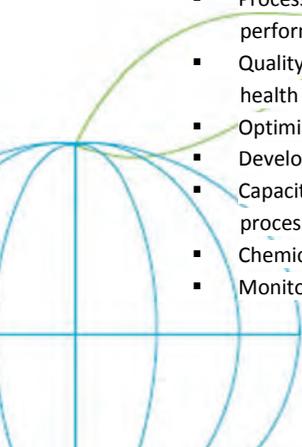
The mission of the **Faculty of Environmental Engineering and Food Science** is to train specialists with high professional, general and specialized skills. This goal includes graduates' responsibility regarding the implementation of the three security-nutrition-food safety norms, environmental protection and sustainable use of natural biological resources by humans.

The Faculty of Environmental Engineering and Food Science has earned a reputation for its high-calibre teaching programs, its friendly helpful staff and provides leadership in education and research by advancing the knowledge and understanding of science related to production, processing, preservation and marketing of food and other agricultural products. The Faculty engages in multidisciplinary research within the university community, as well as through the formation of partnerships with the agri-food industry and other universities.

The Food Engineering Department has expertise in the basic sciences, food science, food technology and conduct research on the processing, functional quality and safety of foods, apply the resulting knowledge in education and training of students and provide technical information and assistance to the food industry and consumers.

The research priority areas are:

- Food Biotechnologies
- Human Nutrition
- Food technologies, covering:
 - Processes, operations, processes and techniques to ensure product quality performance and a high degree of exploitation of food resources;
 - Quality assurance of food hygiene necessary to prevent attacks that may cause health risks nocivizări consumers;
 - Optimization and design of processing systems and agro-food products;
 - Development of innovative techniques and processes;
 - Capacity to implement modern methods of modeling and simulation of food processes;
 - Chemical and microbiological contaminants;
 - Monitoring of water quality.



- University “Stefan cel Mare” Suceava

Faculty of Food Engineering

Contact: Gabriela Constantinescu **Email:** gabriela.constantinescu@fia.usv.ro

Address: 13 Universitatii street, Suceava

Website: www.fia.usv.ro

The **Faculty of Food Engineering** was set up in the year 2002, on the structure of the Technical University College, carrying on the tradition of food education which has run in the Stefan cel Mare University of Suceava since 1977.

The mission of the Faculty of Food Engineering consists in training and guiding specialists who provide quality services accordingly to the European Union standards, by a highly performing educational process, in compliance with the present day demands and requirements in the field of food products engineering.

The academic objectives of the faculty aim at training and developing the graduates' skills in fundamental and applicative scientific research in the field of functional foods, biotechnologies, biosensors, discovering new resources of raw materials for food production, developing the expertise capacity of food products, building up competences in view of drawing up the authorization documentation for specialty laboratories and food production units, providing consultancy on the implementation of national and international programs respectively.

The **main direction of activity:**

- Food biotechnology
- Biosensors
- Biofuels
- Ecotoxicology
- Chemical and microbiological contaminants
- Mathematical modeling of quality
- Rheology
- Design and development of modern means of instrumental analysis
- [University of Agricultural Sciences and Veterinary Medicine, Cluj Napoca \(UASVM Cluj\)](#)

Contact: Carmen Socaciu **Email:** carmen.socaciu@usamvcluj.ro

Address: Calea Mănăştur 3-5, 400372 Cluj-Napoca

Website: <http://www.usamvcluj.ro/>

The University of Agricultural Sciences and Veterinary Medicine (USAMV) Cluj-Napoca is an "advanced research" scientific leader in Transylvania region (North-West of Romania), by its diverse, high-standing research & innovation & technological development (RTD) activities, specific to Life Sciences (Agriculture - Horticulture –Forestry - Engineering and

Environmental and Protection – Food Science and Technology- Animal Husbandry and Biotechnology – Veterinary Medicine), integrated in the current European Research Area (ERA) priorities and future ones (Horizon 2020).

The internal RDT network of USAMV Cluj-Napoca includes 3 research Institutes (Research Institute in Life Sciences, Research Center for Biodiversity and Advanced Horticulture Research Institute of Transylvania), 12 Research Centres and 24 research & service laboratories, where fundamental & applied research is focused on agrifood chain sustainability, environmental protection, plant and animal science, biotechnology, rural development and economics, tourism and veterinary medicine.

During the last 5 years, USAMV Cluj-Napoca achieved significant performances through national and international research projects, that allowed unprecedented development of infrastructure, improvement of laboratory facilities with equipments and food pilot stations, as well as employing, young researchers (post-graduate, PhD students and Postdocs) in the research teams. A special focus is devoted to the connections with economic stakeholders in the region, by technology transfer, laboratory services, consulting and long-life learning.

The International cooperation based on specific topics of expertise represents a major strategic objective for the research innovation and technological development of USAMV Cluj-Napoca, which aims its integration in the European platforms, as well by participation in joint ERANet projects, Horizon 2020, Bridge programs (public-private partnerships) or programs EIP (European Innovation Partnerships).

Details on the research activities of USAMV Cluj-Napoca can be found at http://www.usamvcluj.ro/en/cercetare_prezentare_en.php#

Key words for the university RTD topics:

1. Agricultural production, 2. Agriculture Economics and management, 3. Agrifood chemistry and biochemistry, 4. Applied nutrition and gastronomy, 5. Biofuels based on rich-lipid seeds and high-cellulose waste (biodiesel and bioethanol), 6. Biological control of plant pathogens, 7. Biomass conversion to energy (biogas), 8. Bioremediation and bioaccumulation, 9. Ecology and Ecotoxicology, 10. Environmental engineering, 11. Food and nutrition, 12. Food additives and ingredients, 13. Food authenticity and traceability, 14. Food Biotechnology, 15. Food Engineering, 16. Food Packaging, 17. Food Processing (dairy, meat, confectionery and beverages), 18. Food Quality and safety in the agrifood chain, 19. Food Quality Management, 20. Food Rheology and colloids, 21. Grasslands and pastures, 22. Natural resources management, 23. Open air /protected area horticulture, 24. Organic Agriculture, 25. Pest Research and Plant protection, 26. Plant adaptation and resistance to stress (water, drought, temperature etc), 27. Plant and animal Biodiversity, 28. Plant and food genomics, 29. Plant and food metabolomics, 30. Plant biodiversity, 31. Plant biotechnology, 32. Plant defence mechanisms against stress, 33. Preclinical veterinary sciences (physiology, genetics, physipathology, metabolic diseases), 34. Rural

development, 35. Soil and plant (micro)biology, 36. Soil science, 37. Waste management, 38. Water quality management.

Research topics and key words related to our research topics, related to ERA-Net SUSFOOD:

1. Valorisation of vegetable resources and food products:
2. Engineering of food production

Faculty of Food Science and Technology Cluj-Napoca

Contact: Carmen Socaciu **Email:** carmen.socaciu@usamvcluj.ro

Website: <http://www.inqinierialimentara.usamvcluj.ro/>

The research activity is developed in 2 Research Centres as well in research & service laboratories, complemented by applied research and technology transfer activities developed in an updated pilot station for meat, dairy products, confectionery and beverage (beer and wine producing stations).

The main research units are focused on Food quality/safety and processing, to mention:

Research Centre of Biochemistry and Agrofood Biotechnology

- Chemistry of natural resources: primary and secondary plant metabolites (pigments, phenolic compounds, phytosterols, glucosinolates)
- Food metabolomics: fingerprint and metabolic profile of secondary metabolites from plants and food, with applications in chemotaxonomy and biodiversity, authentication and traceability of food products
- Food biotechnology: new food products and bioprocesses assisted by enzymes and microorganisms
- Biorefining: recovery of active principles from agricultural, forest and food waste
- Microencapsulation technologies of natural food additives into natural matrices

Food Quality and Safety Research Centre

- Characterization of traditional products and organic food
- Preparation and characterization of natural food additives
- Obtaining and characterization of probiotic and prebiotic functional foods
- Food quality and safety analysis in agri-food chain using modern high-performance
- Food nutritional characterization and labelling
- Food authentication
- Implementation of food safety and security standards to ensure the health, welfare and consumer protection

Molecular Nutrition and Proteomics Research Laboratory

- BioGenProtOMICS platform development for molecular nutrition and food toxicology

- Production and purification, structural and functional characterization of bioactive peptides from food and food waste.

Research & Service Laboratory for Food Quality and Safety (LICSA)

- Food quality and safety analysis in agri-food chain using modern high-performance equipments
- Characterization of natural food additives and biologically active compounds.

Service Laboratory for AgriFood authenticity and traceability (AGRIAL)

- Metabolic profile of agriculture resources for chemotaxonomic and authenticity evaluation
- Food authenticity/traceability markers using metabolomics fingerprinting by high performance chromatography (LC_MS, GC-MS) and Uv-VIS-FTIR spectrometry

Details about the faculty activity at <http://www.ingineriealimentara.usamvcluj.ro/>.

Faculty of Horticulture Cluj Napoca

Contact: Radu Sestras **Email:** rsestras@usamvcluj.ro

Website: <http://horticultura.usamvcluj.ro/>

Keywords: Organic production, Food Chain Analysis, Agricultural Supply and Demand, Shelf life, Conservation, Plant genomics, Breeding, Plants resilience, Precision and durable horticulture, Plant protection system, Advance technologies in horticulture production, Biodiversity, Traceability.

More information: <http://horticultura.usamvcluj.ro/conducere/faculty-of-horticulture-cluj-...>

- **Food Technology Group/Technical University of Cluj Napoca**
-

Contact: Giurgiulescu Liviu **Email:** giurgiulescu@gmail.com

Address: Baia Mare

Website: <http://www.researchforindustry.ro/site/viewLab/267>

GCDI research group aims to develop researches in the field of food safety, food traceability, identify contaminants that may occur in the food chain, to improve the processes of the dairy, meat, wine, vinegar, beer, alcohol, oil and sugar industries.

Food Engineering

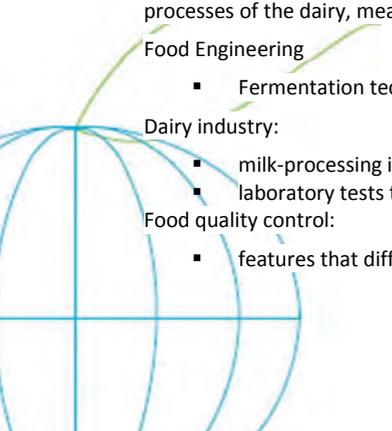
- Fermentation technology, biotechnology, extractive technology.

Dairy industry:

- milk-processing in order to obtain consumption milk and other dairy products;
- laboratory tests to check the conformity of raw materials and finished products.

Food quality control:

- features that different foods must meet to fit existing standards,



- quality control of the process streams to obtain food,
- laboratory tests to verify compliance with various control parameters.

Microbiology of food

- [University of Agricultural Sciences and Veterinary Medicine Iasi \(UASVM IASI\)](#)

Contact: Lucia Draghia **Email:** lucia@univagro-iasi.ro

Address: Aleea Mihail Sadoveanu 3, 700490 Iasi

Website: <http://www.uaiasi.ro/>

Keywords: Market development, Organic production, Food chain management, Storage, Processing, Conservation, Packaging, Traction, Machinery, equipment, tools, Precision agriculture, Genetic resources, Plant genomics, Conventional breeding, Resistance (stress, pathogens, etc) breeding, Plant development, Hormone action and regulation, Physical stress (water, drought, temperature etc), Plant-plant interaction, Nutrient assimilation, Nutrient deficiency, Fertilisation, Pest research, Plant protection, Pathogen control, Biological control, Intensive cropping, Extensive cropping, Organic farming, Open air horticulture, Protected horticulture, Urban horticulture, Ecology, Environmental design, Countryside management, Conservation, Rehabilitation, Erosion, Fertility, Water management, Irrigation, Alternative resources, Ecosystems, Biodiversity, Natural resources management, Landscapes, Environmental health, Food chemistry.

- [University of Bucharest, Department of Genetics, MICROGEN](#)

Contact: Ileana Stoica **Email:** ileana.stoica@bio.unibuc.ro

Address: Intr. Portocalelor 1, 060101 Bucharest

Website: <http://www.bio.unibuc.ro>

- [Spiru Haret University](#)

Contact: Simion Violeta-Elena **Email:** simion.violeta.elena@gmail.com

Address: Bdul Energeticienilor, sector 3 n° 9-11, 7000 Bucharest

Website: <http://www.spiruharet.ro/en/>

Spiru Haret University (USH) is a private university established in 1991, an autonomous, non for profit institution, accredited by law 443/2002, having 21 years of experience in teaching and research. USH's structure includes 24 faculties with 53 study programs at BA's level and 24 accredited Master's programs. Educational services are provided by a number of 729 permanent teaching staff and 104 associates. Spiru Haret University owns 160.000 sqm buildings for educational and research activities located in Bucharest and in other six important cities over the country. The USH total assets, in current prices, was 159.571.385 EUR, as was stated in the annual financial report.

The quality of education and research is assured by other services such as: access to a very modern TV broadcasting channel for education TVH, radio station for students Radio

HFM, weekly newspaper Opinia Nationala. In line with the international trends in education, USH has become the first Romanian university that invested in e-learning facilities, becoming the major East European client of Blackboard Inc.USA, and using Blackboard e-learning to support teaching-learning process since 2006.

Spiru Haret University is conduct research in five major areas: (<http://cercetare.spiruharet.ro>): social sciences, economics, humanities, art and architecture, science. Scientific report is available at: <http://cercetare.spiruharet.ro/en/docsen/Report%20on%20the%20Results%20o...>

USH has been involved in several R&D projects financed by national research schemes and EU programs like: COST, FP6 and FP7 and is successfully implementing 14 major project financed by European Social Fund and Romanian Government. USH is considering social inclusion important and is making effort to increase the young graduate adaptability to the labour market conditions. The current projects of USH as applicant, financed by European Social Fund and Romanian Government overcome the amount of 20 millions EUR and the number of beneficiaries is highly significant at national level. It can be mentioned some of the relevant projects as follows: Project 62249-,Calitate europeana in invatamantul superior' with a total budget of 17.878.149,77 RON (4.076.929,15 EUR) is targeting the quality of academic undergraduate and graduate programs in order to make them compatible with other similar EU academic programs; ISO701-Comparative Analysis of Enterprise Data: Industry Dynamics, Firm Performance and Worker Outcomes (partner), COST Project with the main objective of the Action to enhance international collaboration to produce cross-country comparative research using improved data to study the firm-level sources of economic growth and the consequences of the growth process for workers; 867-Welfare of fish in European aquaculture, COST Project (partner)with the main objective to improve the knowledge on welfare of fish and formulate a set of guidelines embodying a common and scientifically sound understanding of the concept of welfare in farmed fish and to construct a range of targeted operational welfare indicator protocols to be used in the industry.

- **The Bucharest University of Economic Studies**

Contact: Catalin Boja **Email:** catalin.boja@ie.ase.ro

Address: Piata Romana 6, 010374 Bucharest

Website: <http://www.ase.ro>

The Bucharest University of Economic Studies (ASE) is a research intensive university which ranks among the top 12 leading Romanian universities. All the study domains, like Economics, Business Administration, Public Administration, Cybernetics and Finances offered by the university are classified in this first category at national level.

Established by Royal Decree on 6 April 1913, the University has educated numerous generations of graduates who have become leading figures in their fields.

- Transilvania University of Braşov

Contact: *Gruia Romulus* **Email:** alimente_functionale@yahoo.com

Address: Eroilor 29, 500036 Brasov

Website: <http://www.unitbv.ro/>

The universities' mission is to produce and to transfer knowledge to society through: (1) Advanced Scientific Research, development, innovation and technology transfer in the field of Sustainable Development. (2) Initial training at university level through programs Undergraduate study, Masters Degree and PhD. (3) Post graduate programs. (4) Developing interaction between the university and society, through common structures and partnerships adapted to the knowledge based society.

The universities' strategy is designed to fulfill its assumed mission through realization of the following strategic objectives: (1) Continuous adaptation of the educational offer in terms of content and curricula for their personal development, increasing vocational insertion of graduates, to satisfy the demands of competence of the socio-economic milieu. (2) Continuous adaptation of the educational offer in terms of content and curricula for their personal development, increasing vocational insertion of graduates, to satisfy the demands of competence of the socio-economic milieu. (3) Development of the University's resources for expanding the supply of education and scientific research, especially in international languages. (4) Training, within the university community, of abilities and communication skills, entrepreneurial, creativity so that the University's graduates to become active participants in a complex society, in a constantly changing. (5) Increasing the integration of the scientific research in the initial training activities through the direct implementation of its results into the lines of study at the level of bachelor and Masters Degree programs. (6) Development of study programs and scientific research joint with other universities or institutions of higher education and / or research at regional, national and international levels, including through increased mobility of students and teachers. (7) Promoting the advanced scientific research through projects and partnerships at the regional level, national and international and through the direct relationship with economic and social environment. ICDT represents the framework of the deployment of advanced research in the University and ensure the fulfillment of its assumed mission, namely a representative university at the national level in the scientific research field for promoting sustainable development. (8) Quality assurance of academic processes and scientific research as well as of the relevance of the results of university activities for the society. (9) Assuming the major option of asserting the University as a advanced research institution, education and training.

- <http://www.unitbv.ro/im/Prezentare.aspx> - Mechanical Engineering
- <http://www.unitbv.ro/mi/DespreFacultate.aspx> - Mathematics and Computer Science

Faculty of Food and Tourism (UNITBV)

Contact: Gruia Romulus **Email:** alimente_functionale@yahoo.com **Phone:** +40732129488

Address: Castelului 148, 500014 Brasov

Website: <http://www.unitbv.ro/fat/PrimaPagina.aspx>

Following the reorganization of Transilvania University of Brasov, in line with the National Education Law, the departments were renewed as core academic structures in 2011.

Thus, the Department for Engineering and Management in Food and Tourism (IMAT) was established in September 2011 as a merger of two former departments (Food Engineering and Tourism and Management in Tourism).

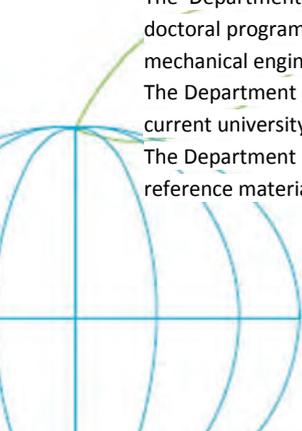
The Department for Engineering and Management in Food and Tourism convenes 6 undergraduate study programmes and 3 postgraduate study programmes:

- Undergraduate degree programmes – Bachelor of Engineering degree
- Machinery and Installations for Agriculture and Food Industry – undergraduate degree programme, four-year programme (full-time);
- Equipment for Industrial Processes – undergraduate degree programme, four-year programme (full-time);
- Food Engineering – undergraduate degree programme, four-year programme (full-time);
- Food Control and Expertise – undergraduate degree programme, four-year programme (full-time);
- Engineering and Management in Food Service and Agri-Tourism – undergraduate degree programme, four-year programme (full-time);
- Engineering and Management in Tourism Industry – undergraduate degree programme, four-year programme (full-time);
- Postgraduate degree programmes – Master of Engineering degree
- Agricultural and Food Eco-Biotechnologies – postgraduate degree programme, two-year programme (full-time);
- Development and Optimization of Agri-Food and Tourist Technical and Technological Systems – postgraduate degree programme, two-year programme (full-time);

The Department for Engineering and Management in Food and Tourism coordinates doctoral programmes, under the guidance of 5 PhD supervisors, in two priority domains – mechanical engineering and engineering and management.

The Department coordinates 13 teaching and research laboratories equipped to meet the current university demands.

The Department Library caters for students' needs to access specialist scientific books and reference materials.



Research Institute of Transilvania University of Brasov for Hi-tech Products for Sustainable Development PRO-DD (ICDT PRO-DD)

Contact: *Gruia Romulus* **Email:** alimente_functionale@yahoo.com **Phone:** +40732129488

Address: B-dul Eroilor 29, 500036 Brasov

Website: <http://www.unitbv.ro/Default.aspx?alias=www.unitbv.ro/icdt&>

Research Institute of the Transilvania University of Brasov was founded in 2012, bringing together 27 scientific research centers.

ICDT aims to deployment of the scientific research and technological development in the areas of excellence of Transilvania University of Brasov, for high tech product development and promotion of sustainable development.

Institute is the major outcome of the project PRO-DD (ID 123, SMIS 2637, ctr. 11/2009).

- C01 Renewable energy systems and recycling
- C02 High-tech products for the automotive industry
- C03a Management of forest and wildlife resources
- C03b Forest engineering, forest management and terrestrial measurements
- C04 Advanced mechatronic systems
- C05 Advanced manufacturing technologies and systems
- C06 ECO-BIOTECHNOLOGIES AND EQUIPMENT FOR FOOD AND AGRICULTURAL
- http://www.unitbv.ro/institut_prodd/fileadmin/documente/centre/D06.pdf
- C07 Advanced electrical systems
- C08 Advanced technologies and materials (metallic, ceramic and MMC composite)
- C09 Process control system
- C10 Industrial virtual informatics and robotics
- C11 Furniture eco-design, restoration and certification in wood industry
- C12 Advanced welding eco-technologies
- C13 Embedded systems and advanced communications
- C14 Innovative technologies and advanced products in wood industry
- C15 Mathematical modelling and software
- C16 Economic research centre
- C17a Center for innovative, fundamental and applied medicine
- C17b Center for research in applied medicine and interventional strategies in medical practice
- C18a Cultural innovation and creativity
- C18b Theoretical and applied linguistics
- C19 Life quality and human performance
- EM1 Juridical Research Centre for Sustainable Development

- EM2 Personal, professional, institutional development for a sustainable community
- EM3 Communication and social innovation
- EM4 The science of music - excellency in musical interpretation
- CCP Research and design centre for constructions and installations
- [Research Center of Eco-Biotechnologies and Equipment in Food and Agriculture \(EBIOTEFA\)](#)

Contact: *Gruia Romulus* **Email:** alimente_functionale@yahoo.com **Phone:** +40732129488

Address: Castelului 148, 500014 Brasov

Website: <http://www.unitbv.ro/icdt/Centre/C06-Ecobiotehnoiaisiechipamenteinaagricultura.aspx>

(http://www.unitbv.ro/institut_prodd/fileadmin/documente/centre/D06.pdf)

PRIORITY RESEARCH FIELDS

EBIOTEFA activate in the interdisciplinary field «Agriculture, biotechnologies, food and tourism development" and has as mission the research of excellence, certification and homologation in the direction of agro-foodstuff bio processes and also prototyping and development of bio-food high-tech and the related equipment, addressing the issue of the organic biotechnologies (eco-biotechnologies).

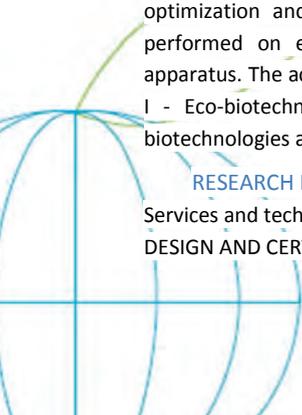
EBIOTEFA is specialized in researches on food design based on eco- biotechnologies, namely those in the sanogenous food group (functional foods, nutraceuticals, supplements etc.) or the composite food group (classic cuisine or the cuisine of Excellence). In this respect it is aimed at exploiting biodiversity, especially by plant origin, using biological and biotechnical methods, but also using unpolluting and undestructive traditional technological processes within the agro-foodstuff field.

Realization of the research programs are based on a computerized drying line, with a system of capturing in oily substratum of some volatile substances and on an extraction line at subcritical pressures of the biologically active liposoluble substances, in correlation with the extraction of the hidrosolubile substances from the vegetable resources. Centre holds workspaces provided with equipments for physico-chemical analysis, needed for the food prototyping of the designed food and for foodstuff safety. Researches of optimization and innovation of the technical systems in the agro-foodstuff field is performed on experimental stands interconnected with measurement and control apparatus. The activities are carried out in the two work modules of the Center: SECTION I - Eco-biotechnologies in agri-tourism and public catering and SECTION II - Eco-biotechnologies and technical systems in the food industry and food safety.

RESEARCH INFRASTRUCTURE CORROBORATED WITH THE RESEARCH

Services and technologies:

DESIGN AND CERTIFICATION of processes and equipment in agri-tourism



CERTIFICATIONS of nutritive, biological and toxicological quality of foods and biofoods
 CERTIFICATIONS for the quality and environmental management system in tourism industry

STRATEGY FOR PROJECTS DEVELOPMENT

I. AGRO-FOOD ECO-BIOTECHNOLOGIES

I.1. Development of extraction technologies Safe, economical and environmentally friendly

(non-polluting) techniques for extracting bioactive substances from vegetable raw materials,

designed for manufacturing pharmaceutical, cosmetic and food products.

- a) extraction in ultrasound field
- b) cold extraction by forced percolation
- c) liquefied gas extraction on sub-critical pressure

I.2. Innovation of sanogenous foods

I.2.1. Development of a wide range of nutritional, nutraceuticals supplements, functional foods, etc. particularly designed for overweight and diabetics (manufactured with extracts obtained with new Extraction technologies):

- a) Designing and manufacturing sanogenous foods containing safe (food-friendly) ingredients, such as concentrated syrups, tonics and refreshing soft drinks, jellies, etc.
- b) Innovating food ingredients and foods to improve digestion with a view to normalizing bowel transit, balancing the gastric acid content and achieving complete digestion.
- c) Designing of specific foods and food ingredients necessary for people suffering of or prone to certain diseases.

I.2.2. Analytical highlighting of xenobiotics and their effects on biosystems;

I.2.3. Analytical study on the antioxidant capacity of biologically active compounds ;

I.2.4. Pharmacodynamic studies on biologically active substances with potential use for nutritive

supplements and phytopharmaceutical products;

II. PROGRAM TO DEVELOP SMALL FARMS THROUGH ADEQUATE TECHNOLOGIES AND EQUIPMENT AND TO ENHANCE PRODUCTION VALUE THROUGH AGRO-TOURISM

II.1. Development of agri-food technologies and equipment processing

II.1.1. Advanced processing through drying and dehydrating

II.1.2. Prototypes for small farms

II.2. Development of expertise systems and technical analyses in food and tourism

II.2.1. Quality analysis of alcoholic and non-alcoholic

II.2.2. Expertise and ecological evaluation of agri-food and tourist enterprises

II.2.3. New technology to be developed: fluid extraction on sub-critical pressure

II.3. Innovation in the gastronomic engineering

II.3.1. Prototyping of composite food with incorporation of additions of liposoluble and hidropoluble extracts for optimizing the menus in the agro-tourism

- University Constantin Brancoveanu of Pitesti (univcb)

Contact: *Sirbu Alexandrina* **Email:** sirbu.alexandrina.ro@gmail.com **Phone:** +40744993123

Address: Nicolae Balcescu 39, 240210 Ramnicu Valcea

Website: <http://www.univcb.ro/>

- Market development
- Organisation and management
- Food Chain Analysis
- Food Supply and Demand
- Consumer behaviour
- Functional food
- Conventional food
- Food chain management
- Food quality
- Food pattern and health
- Food chain management
- Traceability
- FoodService and ospitality
- Waste management

- "Gr. T. Popa" University of Medicine and Pharmacy Iasi

Contact: *Oana Cioanca* **Email:** oana.cioanca@gmail.com

Website: <http://www.umfiasi.ro/>

- University of Craiova

Contact: *Dan Claudiu Danisor* **Email:** rectorat@central.ucv.ro **Phone:** +40-0251-414 398

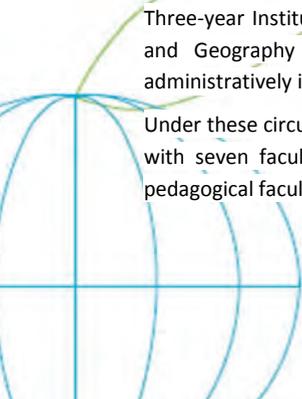
Address: St. A. I. Cuza 13, RO-200585 Craiova

Website: <http://www.ucv.ro/en/>

The University of Craiova was founded in accordance with the Decision of the Council of Ministers 894 of 27 August 1965 (published in the Official Bulletin of the Socialist Republic of Romania, issue no. 2 of 10 September 1965). Its establishment was justified by the need for the economic and cultural development of the Oltenia region, as well as the demand for higher education in the area.

The Ministry decision stipulated that the University of Craiova would consist of: the Faculty of Mathematics, the Faculty of Chemistry, the Faculty of Philology, the Faculty of Economic Sciences, the Faculty of Electrotechnics, the Faculty of Agriculture and the Faculty of Horticulture. The decision also mentioned that the Institute of Agronomy would cease its activity and its faculties would transfer to the University of Craiova, whereas the Three-year Institute of Pedagogy would continue to function with the Faculty of History and Geography and the Faculty of Natural Sciences, as a structure which was administratively integrated to the new institution.

Under these circumstances, in September 1966, the University of Craiova is officially open with seven faculties - agronomical, technical and economic specialisations - and two pedagogical faculties.



Proud of its tradition, the Faculty of Agriculture, continued its activity through the departments of Agricultural Machines and organisation, Agro-Phytotechny, Food Production and Zootechny. Until 1974, the duration of studies for this faculty being 5 years (4 years and half theoretical and practical education, and half a year – practical experience in the field). Starting from the academic year 1974-1975, the duration of studies was reduced to 4 years, which included internships. In accordance with official regulations which aimed at mapping the higher education system to production and research, starting from the academic year 1974-1975, the curricula were thoroughly reshaped, on the one hand, regarding the timeframe of courses and, on the other hand, regarding research and internships.

The Faculty of Horticulture managed to retain high standing teaching staff, out of which 4 Professors were Fellows of the Academy of Agricultural and Forest Sciences: Professor Mircea Oprean, PhD, Professor Radu F. Ion, PhD, Professor Şonea Vasile, PhD, Professor Teodorescu Ştefan, PhD. The establishment of the University of Craiova hallmarked, among others, the beginning of the economic higher education in the Oltenia region.

University of Craiova had the following structure of faculties and specialisations:

- Faculty of Agriculture, with the specialisations: Agriculture and Horticulture.
- Faculty of Electrotechnics, with the specialisations: Electrotechnics, Automation and Computers, Electromechanics, Electrical Machines and Appliances (junior engineers), Thermo-Electrical Centrals (junior engineers);
- Faculty of Philology, with the specialisations: Romanian language and literature – a foreign language (English, French, Russian), French – Romanian/a foreign language (English, Russian, Latin);
- Faculty of Mechanical Engineering, with the specialisations: Technology of automotive construction, Tools, Tools for the industry of construction materials (junior engineers), Civil, industrial and agricultural engineering (junior engineers);
- Faculty of Medicine, with the specialisation: general Medicine;
- Faculty of Economic Sciences, with the specialisations: Industrial economy, civil engineering and transport, Finance-Accounting, Accounting and Agricultural Economy;
- Faculty of Natural Sciences, with the specialisations: Mathematics, Informatics and Physics

Faculty of Agriculture and Horticulture (FAH)

Contact: Sina Cosmulescu **Email:** sinacosmulescu@hotmail.com **Phone:** 0251 418 475

Website: <http://www.agro-craiova.ro> or <http://www.ucv.ro/>

Genetic resources

Conventional breeding

Open air horticulture

Protected horticulture

Urban horticulture	Toxicity (toxicological evaluation)
Food and nutrition policy	Fertilisation
Food chain management	Mineral balance
Food Chain Analysis	Pest research
Food quality and quality control	Plant protection
Ecology	Weed management
Environmental design	Pathogen control
Plant protection	Biological control
Rural development policy	Intensive cropping
Rural development	Extensive cropping
Agricultural production	Land surveying
Agricultural Supply and Demand	Environmental design
Agricultural and Food market Policy	Countryside management
Organisation and management	Conservation
Environmental management	Rehabilitation
Organic farming	Erosion
Organic production	Soil (micro)biology
Organic markets	Ecosystems
Quality policies, organic policies	Biodiversity
Environmental policy	Natural resources management
Plant development	Nature conservation
Physical stress (water, drought, temperature etc)	Landscapes
Plant-plant interaction	Ecotoxicology
Nutrient assimilation	Desertification
Nutrient deficiency	Environmental health
	Waste management

- Banat University of Agricultural Sciences and Veterinary Medicine Timisoara (USAMVBT)

Contact: Sorina Popescu **Email:** biotehnologii_usab@yahoo.com **Phone:** 040256277296

Address: Calea Aradului 119, 300645 Timisoara

Website: www.usab-tm.ro/

Faculty of Food Processing Technology (USAM VTB)

Contact: Prof. Dr. Adrian RIVIS **Email:** secretariatftpa@usab-tm.ro

Website: http://www.usab-tm.ro/USAMVB-T_Food-Processing-&-Technology-en_6.html



- Lucian Blaga University of Sibiu - The Faculty of Agricultural Sciences, Food Industry and Environmental Protection (LBUS)

Contact: Cristina Danciu **Email:** cristina.danciu@ulbsibiu.ro

Website: <http://saiapm.ulbsibiu.ro/>

Other public research organisations

- Fruit Growing Research & Extension Unit Valcea (SCDP Valcea)

Contact: Mihai Botu **Email:** stpomvl@onix.ro **Phone:** +40250740885

Keywords: Genetic resources, Conventional breeding, Resistance (stress, pathogens, etc) breeding, Biomass – energy, Plant development, Physical stress (water, drought, temperature etc), Plant-plant interaction, Nutrient assimilation, Nutrient deficiency, Pest research, Plant protection, Weed management, Pathogen control, Intensive cropping, Extensive cropping, Organic farming, Statistics applied to agricultural research.

- Institute for Horticultural Products Industrialization and Marketing-Horting (Horting)

Contact: Miruna Bibicu **Email:** Contact@horting.ro **Phone:** +4021.461.07.06

Address: Str.Intrarea Binelui 1A, Bucharest

Website: <http://horting.uv.ro/>

Keywords: Functional food, Food and diet related diseases, Storage, Processing, Conservation, Packaging, Food quality and quality control, Traceability, Residues and contaminants.

- Institute of Biological Research Cluj-Napoca (ICB)

Contact: Coste Ana **Email:** anacos78@yahoo.com or ana.coste@icbcluj.ro

Phone: +40754456602

Address: Republicii 48, 400015 Cluj-Napoca

Website: <http://www.icbcluj.ro>

Main research domains: (i) Plant technology and molecular biology, (2) Micropropagation of medicinal, crop, rare and endangered plant species, (3) Long-term conservation of plant species by cryopreservation, (4) Using plant cell and tissue culture technologies for the production and extraction of high-value secondary metabolites, (5) Genetic stability assessment of in vitro regenerated and cryopreserved plantlets by means of DNA based markers (RAPD, PCR-RFLP, AFLP, SSR).

- **R&D Unit for Wine-Growing and Wine-Making, Odobesti (SCDVV Odobesti)**

Contact: *Enache Viorica* **Email:** scdvvodobesti@yahoo.com or enache_scdvv@yahoo.com
Phone: (+40) 0237.676.623 / +040236/340640
Address: Ștefan cel Mare 61, 625300 Odobesti, Vrancea
Website: www.scv-odobesti.ro/odobesti/index.php

Keywords: Agricultural production, Organisation and management, Environmental management, Genetic resources, Molecular ecology, Conventional breeding Resistance (stress, pathogens, etc) breeding, Plant development, Physical stress (water, drought, temperature etc), Plant-plant interaction, Nutrient deficiency, Pest research, Plant protection, Pathogen control, Organic farming, Open air horticulture, Conservation, Soil (micro)biology, Fertility, Ecosystems, Biodiversity, Natural resources management.

- **Research &Development Unit for Viticulture and Enology Blaj (SCDVV Blaj)**

Contact: *Tomoiağa Liliana Lucia / Iliescu Maria* **Email:** scvblaj@crystalsoft.ro
Phone: +40258-711623
Address: Gh.Baritui 2, 515400 Blaj, Alba
Website: <http://www.scvblaj.ro>

Keywords: Agricultural production, Organisation and management, Environmental management, Processing, Conservation, Packaging, Food quality and quality control, Plant development, Nutrient assimilation, Nutrient deficiency, Toxicity (toxicological evaluation), Fertilisation, Mineral balance, Pest research, Plant protection, Intensive cropping, Extensive cropping, Conservation, Rehabilitation, Soil (micro)biology, Fertility, Alternative resources, Environmental health.

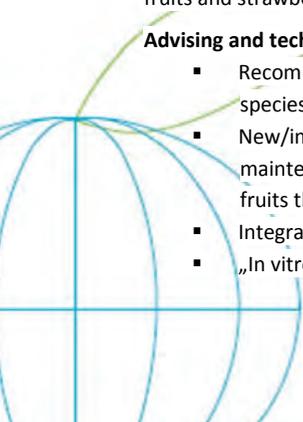
- **Research Institute for Fruit Growing Pitesti – Maracineni (RIFG)**

Contact: *Dorin Sumedrea* **Email:** office@icdp-pitesti.ro or dsumedrea@yahoo.com
Phone: + 40 248 27 85 19
Address: Mărului 402, 117450 Maracineni Pitesti
Website: <http://www.icdp.ro/en-index.php>

Keywords: Genetics and Breeding Lab, Propagation, Tissue culture – Virology Lab, Small fruits and strawberry laboratory, Orchard, Technologies and plant protection laboratory.

Advising and technical assistance:

- Recommendations regarding the best assortment - new cultivars of top fruit species, berries and strawberries ,
- New/improved fruit growing technologies: planting systems, ground soil maintenance, fertirrigation systems, prunings and training - canopy shapes, fruits thinning,
- Integrated Pest and Diseases Management Systems - phitosanitary assistance;
- „In vitro” propagation of the fruit species;



- Viruses testing technologies for fruit species;
- Creation of new rootstocks and the best propagation technologies for them.
- [Research Unit For Fishery Nucet \(RUFN\)](#)

Contact: Mioara Costache **Email:** scp_nucet@yahoo.com **Phone:** +40245.267.003

Address: Principala, 0230 Nucet, Dambovita

Website: <http://www.nucet.ro>

Keywords: Aquatic animal nutrition, Aquatic animal genetics and breeding, Water quality, Aquatic animal health and pathology, Aquaculture production systems, Fishery management, Fishery ecology, Fish capture systems, Biodiversity, Natural resources management.

- [R&D Unit for Fruit Growing Baneasa \(SCDP Baneasa\)](#)

Contact: Adela Bărbulescu **Email:** office@statiuneabaneasa.ro

Phone: +4 021 233 06 13 / +4 021 233 06 17

Address: Bd. Ion Ionescu de la Brad 4, Bucharest

Website: <http://www.statiuneabaneasa.ro/>

Keywords: Food Chain Analysis, Distribution and consumer, Food chain management, Storage, Cooling, Packaging, Food quality and quality control, Genetic resources, Photosynthesis, Conventional breeding, Resistance (stress, pathogens, etc) breeding, Plant development, Physical stress (water, drought, temperature etc), Nutrient assimilation, Nutrient deficiency, Fertilisation, Mineral balance, Plant protection, Pathogen control, Extensive cropping, Protected horticulture, Biodiversity, Natural resources management, Climate change and agriculture, Climate change monitoring, Statistics applied to agricultural research, Food chemistry.

- [Research-Development Center for Agricultural Plants and Soils \(CAPS\)](#)

Contact: Diaconu Aurelia **Email:** ccdcpondabuleni@yahoo.com **Phone:** +40251334402

Address: 207220 Dabuleni, Dolj

Website: <http://www.ccdcpndabuleni.ro/>

Keywords: Agricultural production, Genetic resources, Nutrient assimilation, Nutrient deficiency, Fertilisation, Peri-Urban agriculture, Open air horticulture, Protected horticulture, Urban horticulture, Conservation, Rehabilitation, Erosion, Soil (micro)biology, Fertility, Water management, Irrigation.

- [Research-Development for Fruit Growing Unit Voinești Dambovita \(RDFGU Voinești\)](#)

Contact: Petre Gheorghe **Email:** statiuneavoinesti@gmail.com **Phone:** +40723632178

Address: Principala 1, 137525 Voinești, Dambovita

Keywords: Rural development, Agricultural production, Agricultural Supply and Demand, Distribution and consumer, Competitiveness, Quality policies, organic policies, Rural development policy, Agricultural public finance, Food chain management, Transportation, Storage, Cooling, Conservation, Packaging, Food quality and quality control, Residues and contaminants, Machinery, equipment, tools, Precision agriculture, Genetic resources, Plant genomics, Gene regulation, Conventional breeding Resistance (stress, pathogens, etc) breeding, Plant development, Plant-plant interaction, Nutrient assimilation, Nutrient deficiency, Toxicity (toxicological evaluation), Fertilisation, Pest research, Plant protection, Pathogen control, Biological control, Intensive cropping, Extensive cropping, Open air horticulture.

Research centres

- Center for applied biochemistry and biotechnology (BiotehnoI), Bucharest

Contact: Florentina Israel Roming **Email:** office@biotehnoI.eu **Phone:** + 40213180468

Address: Bd Marasti 59, 011464 Bucharest

Website: <http://www.biotehnoI.eu>

Department of Industrial Biotechnology

Keywords: Microbial biotechnology, Fermentation biotechnology, Biotechnology for environmental protection, Biotechnology for obtaining biologically active substances for human and veterinary, Obtaining vegetal extracts.

Department of molecular biology

Keywords: Molecular biology, Genetics of microorganisms, Qualitative detection of GMOs by PCR, Molecular cloning, Differential expression of genes in plants and microorganisms, Cell cultures and plant tissues enzymatic analysis.

Department of applied biochemistry:

Keywords: Chemical compounds and biochemical determinations in various matrices (plant, animal and microbial) using spectrophotometric methods, Fourier transform infrared spectrometry, Isolation, purification and characterization of enzymes In vitro studies of the action of enzyme inhibitors, Biochemical characterization of plant extracts containing biologically active compounds, Structure-property relationship studies of physico-chemical-toxicity.

- NRDSB-„Stejarul” Biological Research Centre, Piatra-Neamt (CCB "STEJARUL")

Contact: Elvira Gille **Email:** elgille9@yahoo.com **Phone:** +40233210806

Address: Alexandru cel Bun 6, 610004 Piatra-Neamt

Website: <http://www.dbioro.eu/index.php?lang=en>

Plant and environmental biology

Main research domain: (i) Elaboration of some biopreparations formula with utilization in phytotherapy, cosmetics, nutrition. (ii) Quantitative and qualitative phytochemical analysis of active principles, bioproductive evaluation. (iii) Conventional cultures of medicinal and aromatic plants, In vitro tissue cultures, microporpagation and other phytobiological tests. (iv) Genetic variability inducement, new genotypes analysis.

Ecology resources and environment

Technical expertise: (i) Biodiversity and biopreservation. (ii) Obtaining vegetal extract products (technological transfer). (iii) Researches performed together with Agricultural Research Centers (SCDL-Bacau, SCDA-Secuieni, Neamt) to induce variability of the biosynthetic potential in MAP. (iv) Cooperation with SMEs producing food supplements (Plantavorel, Piatra Neamt, Dacia Plant, Brasov).

- **PROPLANTA SA**

Contact: Carmen Socaciu **Email:** cproplanta@yahoo.com **Phone:** +40264595825

Address: Mănăştur 5-7, 400372 Cluj-Napoca

Website: <http://www.proplanta.ro>

Keywords: Functional food, Nutrigenomics, Food pattern and health, Processing, Risk assessment, Food quality and quality control, Plant (cell) based fine chemicals, Cosmetics, ...

- **R&D Station for Wine-Growing and Wine Making Bujoru (SCDVV Bujoru)**

Contact: Simion Cristina **Email:** scdvvbujoru@clicknet.ro **Phone:** +40236340642

Website: www.scdvvbujoru.ro

Keywords: Land, Agricultural production, Physical stress (water, drought, temperature etc), Nutrient assimilation, Fertilisation, Pest research, Plant protection, Sustainable management, Ecology, Land surveying, Environmental design, Conservation, Rehabilitation, Erosion, Soil (micro)biology, Fertility, Water management, Landscapes, Desertification, Environmental health, Climate change and agriculture.

R&D Institute for Wine-Growing and Wine-Making, Valea Calugareasca

Contact: Ion Marian **Email:** icdvv@xnet.ro

Address: Valea Mantei 2, 107620 Valea Călugărească, Prahova

Website: <http://www.icdvv.ro/>

Processing, Conservation, Food quality and quality control, Traceability, Precision agriculture, GIS (Geographical Information System), DSS (Decision Support System), Genetic resources, Photosynthesis, Conventional breeding, Resistance (stress, pathogens, etc) breeding, Cosmetics, Medicals, Colorants etc, Plant development, Physical stress (water, drought, temperature etc), Plant-plant interaction, Nutrient assimilation, Nutrient

deficiency, Fertilisation, Mineral balance, Pest research, Plant protection, Weed management, Pathogen control, Biological control, Intensive cropping, Extensive cropping, Organic farming, Conservation, Erosion, Fertility, Irrigation, Ecosystems, Biodiversity, Statistics applied to agricultural research

Private research organisations

- Company of Applied Researches and Investments SA (ICA)

Contact: Alexandru Ciric **Email:** ica@ccai-ro.com **Phone:** +40744153772

Address: Splaiul Independentei 202, Bucharest

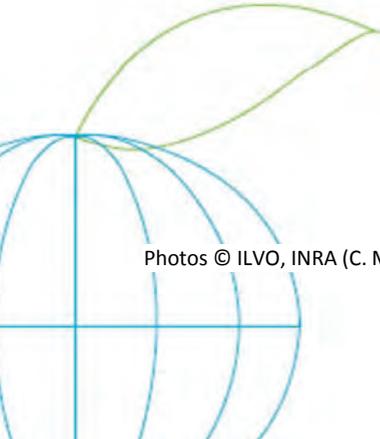
Website: <https://www.ica-rd.ro/>

Keywords: Market development, Organisation and management, Food Chain Analysis, Food and nutrition policy, Functional food, Food pattern and health, Food chain management, Risk assessment, Food quality and quality control, Traceability, Residues and contaminants, Organic farming, Animal nutrition, Feed and feed technology, Natural resources management, Food chemistry.





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SUSFOOD COUNTRY REPORT SLOVENIA

Author:

MIZS: Kim Turk



Introduction

Slovene policies and strategies strive towards sustainable development of agriculture, in which the production of safe, quality and affordable food is key. Many comprehensive strategic documents have been published in recent years that have identified sustainable food production and consumption and related topics as priorities for the sustainable development of Slovenia, among them the Smart specialization strategy of Slovenia (2013), the Strategy on Nutrition and Physical Activity for Health (2013), the Resolution on the Strategic Guidelines for the Development of Slovenian Agriculture and Food Technology by 2020 (2011), the 2011-2020 Target Research Program "Securing food for tomorrow" (2011), and the Strategic Research Agenda of the Slovenian Food for Life Technological Platform (2007).

Agriculture, forestry, fishing and hunting contributed 2.5 % to Slovenia's gross domestic product in 2011, with the food industry contributing 1,45 %. There are 617 registered companies in the food processing industry which employs around 12.000 people (1,64% of the total workforce)^{iv}.

Positive trends in the Slovenian food-processing industry are indicated by the export growth of mostly milk and meat products, as well as feedstuff, oil and milling products. In comparison to other new Member States Slovenia has a comparative advantage in meat, bread and bakery products, beverages and dairy products (listed according to turnover), but it continues to be a net importer of agricultural and food products with a problem of self-sufficiency in food production.

Ministries of agriculture and food

- Ministry of Agriculture and the Environment (MAE)

Contact: Jana Erjavec **Email:** gp.mko@gov.si **Phone:** + 386 1 478 00 00

Address: Dunajska 22, 1000 Ljubljana

Website: <http://www.mko.gov.si/en/>

In the field of agriculture the Ministry of Agriculture and the Environment oversees the area of agriculture, rural development, food, plant protection, veterinary medicine and zootechnics, forestry, hunting and fishing, the safety and quality of feeding stuff and food or foodstuffs – with the exception of food supplements, foodstuffs for particular nutritional use, foodstuffs for special medical purposes and food or foodstuffs for use in hospitality activities, institutional catering and canteens.

Despite MIZS being the main responsible ministry for implementing the 2011-2020 National Research and Innovation program, the MAE is also involved with respect to its field of responsibility: (i) in the co-financing of applied research projects, which are directed towards specific practical aims or objectives and have a practical value for the

agriculture sector, and (ii) in the Target Research program (TRP) «Securing.si food for tomorrow».

MAE has been involved in four ERA-NET initiatives, 3 of which are still ongoing and in which it actively contributes (EUPHRESKO II, FORESTERRA, Core Organic 2), and a few SCAR-CWGs. Furthermore the MAE is currently involved in the proposal preparation of 3 new ERA-NET's, including ARIMNNet 2.

- **Ministry of Education, Science, and Sport (MIZS)**

Contact: Kim Turk Križanec **Email:** kim.turk-krizanec@gov.si **Phone:** +386 1 4784705

Address: Masarykova 16, 1000 Ljubljana

Website: <http://www.mizks.gov.si/en/>

In the field of Science the Ministry of Education, Science and Sport (MIZS) defines the expert bases for the adoption of political documents in the field of research policy. It drafts laws and implements regulations on research activities. It establishes and enhances the system of comprehensive analyses and monitoring of the developments in research, develops new tools for attaining research policy goals, and plans the required financial resources for research. MIZS is thus the main responsible ministry for implementing the National Research and Innovation program 2011-2020 as the key strategic and political document of the Slovenian policy on research and innovation.

The Ministry is also the focal point for FP7 / Horizon 2020 activities and acts as a host for the NCP network. As such it has participated as a partner in many ERA-NET's, including those in the area of Food, Agriculture, Fisheries and Biotechnology, i.e. SAFE-FOOD ERA, ERA ARD, RURAGRI and SUSFOOD and will also participate in ARIMNET 2.

- **Institute of Public Health of the Republic of Slovenia**

Contact: Mojca Gabrijelčič Blenkuš **Email:** mojca.gabrijelcic@ivz-rs.si **Phone:** +386 1 2441 400

Address: Trubarjeva 2, 1000 Ljubljana

Website: <http://www.ivz.si/>

The National Institute of Public Health of the Republic of Slovenia is a government agency accountable and responsible for public health promotion at the national level.

The Institute is interested in the following work areas related to food production, consumption and safety: Alcohol, Child Health, Environmental Health, Food Policy, Health Impact Assessment, Health Systems, Nutrition.

National funding bodies and research programs

Both, the Ministry of Agriculture and the Environment (MAE) and the Ministry of Education, Science, and Sport (MIZS) provide funding for research projects (Basic and Applied Research Projects, the Target Research Program) covering the areas of research in the SUSFOOD ERA-NET. The Slovenian Research Agency is responsible for funding mainly

national and bilateral research programs, but also the Target Research Program, while funding under the EC Framework programs is mainly implemented by MIZS and other line ministries.

- **Slovenian Research Agency (ARRS)**

Contact: *Simon Ošo, dr. Primož Pristovšek, Marko Perdih* **Email:** *info@arrs.si*

Phone: *++386 1 400 5910*

Address: *Bleiweisova cesta 30, 1000 Ljubljana*

Website: <http://www.arrs.gov.si/en/>

The Slovenian Research Agency (ARRS) as an independent public funding organization perform tasks relating to the 2011-2020 National Research and Innovation program and the creation of European Research Area. ARRS provides a framework for scientific research within the national budget and other sources, promotes high quality scientific research in Slovenia and its application, fosters internationally comparable evaluation standards in Slovenia, provides the transparency of organizing research community in Slovenia, promotes international research cooperation, analyses R&D activities and provides science policy expertise.

The ARRS provides funding via research projects, research programs and targeted research programs and research infrastructure.

The Target Research Program: «Securing.si food for tomorrow».

Target research programs (TRPs) represent a system for inter-sectoral cooperation in planning and implementing networked R&D projects for specific areas of public interest. They represent a special form of scientific and research program with which the Ministry for Education, Science and Sport intends to contribute to setting and implementing strategic development objectives for Slovenia in cooperation with other line ministries and other interested users, in order to improve Slovenia's competitive capacity. TRPs take into account the basic guidelines from the Slovenian Economic Development Strategy on the sustainable development of Slovenia and the interconnection and dependence of economic, social and environmental dimensions of development. They thus promote interdisciplinary, multidisciplinary and inter-institutional dimensions.

The Securing.si Food for Tomorrow TRP is problem oriented and targeted towards improving the Slovene agriculture competitive capacity, which should form the basis for successful and sustainable development and increase the living standard in rural areas. In identifying priority areas it takes into account basic guidelines from the Resolution on the Strategic Guidelines for the Development of Slovenian Agriculture and Food Technology on the sustainable development of Slovenia and the interconnection and dependence of economic, social and environmental dimensions of agriculture and rural development. The TRP has been running since 2011 and will continue to run until 2020, with the MAE

being the main funder of projects, with up to a 40% co-funding of the ARRS. The main research priorities include:

- ensuring food security through a stable production of safe and quality food that is affordable for all consumers;
- enhancing the competitiveness of agriculture and food technology;
- sustainable use of production potentials and ensuring public goods associated with agriculture;
- ensuring the harmonious and socially sustainable rural development (in cooperation with other policies).

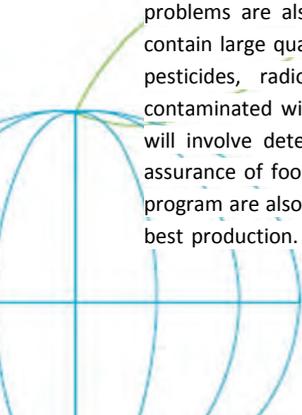
Research programs funded by the ARRS:

Research programs are a public service which represent an area of research, relevant and useful for a longer period of time and of such importance for Slovenia that there is national interest, as defined in the National Research and Development program for long-term research by the program group in this area. The research programs can be carried out by program groups in public research institutions, universities, independent education institutions and program groups organized by public and private legal entities on the basis of concessions.

Animal health, environment and food safety

There are numerous diseases affecting animal and human health. Diseases can be caused by several pathogens or poor animal breeding management or inadequate and poor nutrition. Protection of human health is directly linked to the state of animal health. Research studies related to this area include detection and determination of causative agents of diseases, the incidence and their transmissibility and finding possible solutions for the prevention of diseases occurring in domestic and wild animals, including fish and bees. Our research work is also aimed at contemporary diseases such as transmissible spongiform encephalopathies, tick transmitted diseases, Born disease, Visna, caprine arthritis and encephalitis and other infectious and non-infectious encephalopathies.

Animal and human health and their immune system depend on qualitative and healthy nutrition. Therefore our research is also aimed at the study of the impact of unsaturated fatty acids in animal feed and the structure of pasture vegetation on several indicators of health, immune system and the occurrence of diseases in animals and humans. Many problems are also related to poor quality or even harmful food or feed, which may contain large quantities of naturally occurring antinutritive and toxic substances such as pesticides, radionuclides, heavy metals and drug residues. Feed may also be contaminated with saprophytic and pathogenic bacteria, fungi and their toxins. Studies will involve determination and finding adequate solutions of problems linked to the assurance of food safety and thus to human health. Within the frames of our research program are also studies of adequate environment assuring animal health along with the best production. Studies also involve possible ways of environmental protection against



harmful impacts of intensive breeding systems and treatment of large number of animals on one place. Studies are linked to the determination of impact of drug residues (ecotoxicology) and the study of safe disposal of excretes and other forms of organic wastes produced in intensive animal breeding systems and food production (aerobic treatment of organic waste materials).

Key terms: Veterinary medicine; animal diseases; environment; ecotoxicology; food safety

Contact: Matjaž Ocepek - Matjaz.Ocepek@vf.uni-lj.si

Competitiveness of the agri-food sector

Research aims of the program group can be described by different aspects of competitiveness of the agricultural and food sector. The research team intends to create and disseminate new findings, develop and upgrade empirical tools, share its research expertise within the international research community, assist business subjects and policymakers with expertise, incorporate new findings to higher education curricula and develop young experts in the broader field of agricultural economics. By attaining proficiency and research expertise, the group aims towards efficient exchange of knowledge and research findings on the international level. The research work can be classified in three groups described by the following keywords: indicators, models and instruments for strengthening competitiveness. Research area dealing with competitiveness of the agro-food sector, estimation of the following indicators of competitiveness is envisaged: i) a network of indicators measuring competitiveness of the agro-food sector; (ii) policy information system; (iii) demand and supply elasticity coefficients for key agricultural products; (iv) socio-economic structure of agriculture; (v) comparative analysis of legal regulation of agriculture; (vi) institutional analysis of agriculture and food industry. In order to obtain an overall assessment of competitiveness, and in particular the ability to forecast the impacts and consequences of changed economic conditions, the work concentrates to the following sectoral models: (i) development of Economic Account for Agriculture; (ii) internationally comparable partial equilibrium sector model; (iii) general equilibrium model with an emphasis on agro-food sector; (iv) regionalised input/output model for analysis of employment effects; (v) sectoral model based on positive mathematical programming with integrated module for analysis of environmental effects; (vi) analysis of decision-making processes by the farm household model; (vii) models of decision-making in agricultural policy. Special attention is devoted to the relevance and applicability of results for agricultural policy decision makers. In this context, the following instruments for strengthening competition are taken into account: (i) list of competitive products / production technologies; (ii) vertical integrations and models of marketing and traceability; (iii) evaluating feasibility of quality and food safety systems; (iv) evaluation of applicability and possibilities for e-commerce in agriculture; (v) assessment of potentials for supplementary activities of farm households; (vi) proposals for marketing strategy models; (vii) model for improvements in

the market of production factors in agriculture; (vii) proposals for rational and efficient decision-making mechanisms in agricultural policy

Contribution to the development of science is emphasized by the thematic sections.

Key terms: Agriculture, food processing, agricultural policy, competitiveness, indicators, sectoral models, agricultural household models, Input-Output models, agricultural structures, non-commodity outputs of agriculture, vertical market integrations, EU Common Agricultural Policy, decision-making models.

Contact: Emil Erjavec - emil.erjavec@bf.uni-lj.si

Food Safety and Health

Research that is undertaken is continuing successful scientific research work in the field of development of analytical and new diagnostic tests and methods. Some of them have been already efficiently realized and published in scientific journals with high impact factors. This could be seen from the bibliographic data. Through development of new products and basic findings concerning their activity, the program contributes to interdisciplinary science development in the field of food and health safety and in this way promoting Slovenian science and scientists in the EU and in the wordAs a common program of the Faculty of Agriculture and Life Sciences and the Faculty of Medicine of the university of Maribor, enables the development of the integrated research approach in the area.

Contact: Dejan Škorjanec - dejan.skorjanc@uni-mb.si

Integrated food technology and nutrition

Foods of animal origin. The genetic and breeding influences on chemical and sensory quality parameters and nutrition value of meat of different species of animals (cattle, pigs, poultry, lambs, fish) are investigated. The effects of processing technologies (additives) and treatments of meat (thermal treatment, fermentation) on composition and nutrition value (lipids and proteins composition) and safety of foods (heterocyclic amines (HCA), chemical environmental contamination) are studied too. Our researches also deal with the problems of oxidative and thermo stability of fats, possibility of replacement animal fats with vegetable oils and fats in meat products, introducing of nondestructive methods (NMR) for establishing food safety and quality and finding criterions (sensory, chemical, microbiological) for determination stability of canned prepared foods. The investigations are also directed to find criterions for establishing and certificating the botanic and geographic origin of honey. Samples of vegetables, cereals, flour, breads and meat and meat products of different species of animals are analysed for preparing the National nutritional tables. Plant food. In the field of post harvest technologies we study the aroma regeneration in apples after storing in different atmospheres and temperatures; in apple seeds and on the apple peel we determine the content of fatty acids; we study the storability of fresh-cut fruits, vegetables and baked goods in modified atmosphere. In the field of wine technology the research work include

different technologies of maceration of red grape varieties; emphasise is given to reduce the application of oenological agents and to increase the phenolic profile; in white wine processing the research work is focused on how to increase the extract and increase the wine stability. Nutrition. We determine the nutritional status by means of interviews and nutritional software Prodi 5.0; we study the antioxidative potential (DPPH) of whole-day (total) meals. We use the model method based on degradation of ascorbic and dehydroascorbic acid. The degradation products can be used as indicator parameters for the determination of antioxidative potential of fresh and processed food.

Key terms: Food, technology, quality, nutrition

Contact: Božidar Žlender - bozidar.zlender@bf.uni-lj.si

Nutrition and ecology of gastrointestinal tract

Nutrition is an important factor in maintaining organism in good health condition. A new concept in searching for optimal food was introduced designated as functional food. Original definition stating "Food can be labeled as functional when its beneficial effect on one or more target function in the body, beyond satisfying traditional nutrient requirements can be sufficiently demonstrated by evidence", requires establishment of new objectives of research and developmental nature. Study of mechanisms and searching for appropriate markers on molecular and immunological level which enable satisfactory measurement of effects of food or feed, are basic approaches in progress of this new scientific area. Reasons for development of modern civilisation diseases which can be defined from nutrition-medical point of view can be classified into two groups, the first comprising energetically and compositionally non-equilibrated nutrition, and the latter resulting in disturbed microbial balance of the gut. Normal gut microflora has at least three important roles: it reduces the possibility of infections with pathogenic bacteria, it stimulates maturation of gut mucosal immunological system and development of immune tolerance to ubiquitous antigens. Discovering roles of microorganisms in interactions with host organisms and host itself, is one of the key steps towards understanding the function of the human and/or animal gastrointestinal tract ecosystems. Different *in vitro*, *ex vivo* and *in vivo* methods and different animal models will be applied to carry out the proposed research. Nutrition studies will be performed on domestic and laboratory animals, via monitoring of feed intake and quantitative excrement of substances with urine and faeces, via monitoring of metabolic parameters and investigating of nutritional factors by different markers such as malonaldehyde (MDA) in plasma, in urine, in feed, in animal products and food (HPLC), via level of DNA damage in the cells (comet test), concentration of E-vitamins (alpha-, beta plus gamma-, delta-tocopherol/HPLC), overall antioxidative status of blood serum and glutathione peroxidase activity in enterocytes. In addition to conventional analysis of feed and food, determination of macro- and micro-minerals concentration (atomic absorption spectrometry) and *in sacco* method for determination of feed digestibility by using fistulated animals, the conditions and microbial fermentation in particular parts of the gut

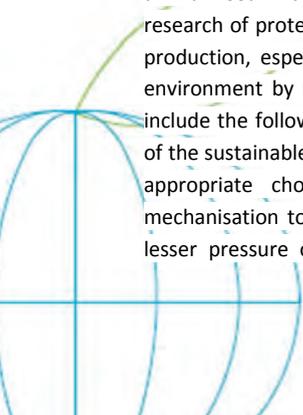
will be studied by determination of concentrations of short chain fatty acids (gas chromatography), ATP, ammonia, of intestinal content viscosity and fermentability (in vitro gas-tests). Besides traditional microbiological methods for isolation and cultivation of microaerophilic and strictly anaerobic bacteria in anaerobic chambers, a wide range of molecular and genetic methods will be used to study structure and population dynamics of microbial community. Objectives: study of mechanisms and new approaches in feeding, enabling the production of functional food of animal origin, finding out the effects of alternative feed additives (plant extracts, fibrinolytic enzymes) and selected probiotics and prebiotics on the composition of microbial population in the gut of domestic animals or humans and in the systems simulating these ecosystems, selection of markers for measurement of influences of feed, nutrients, pre-, probiotics and other bioactive substances in organism and development of toxicological, genotoxicological and immunological methods for tracing of their positive and negative effects.

Key terms: Nutrition, feed, environment, functional food, health, oxidative stress, probiotics, prebiotics, microbiology, bacteriocins, gastrointestinal tract, selection criteria, markers, identification, classification, biotechnology

Contact: Gorazd Avguštin - gorazd.avgustin@bf.uni-lj.si

Sustainable Agriculture

Agriculture plays a multipurpose role in the environment since beside its basic, i.e. economic function, it plays an important ecological, environmental, social and cultural role. Therefore, the principles of sustainable development cannot avoid the agriculture, its goal as to sustainability being the production of healthy food, reduction of negative influence on environment, preservation of biotic diversity, soil fertility and care of cultural landscape. The presented program entitled "Sustainable Agriculture" deals with the research of production technologies of fruit, grapes, vegetables and field crops, with the methods of wine production and with animal husbandry, all this in the sense of competitiveness and lesser pressure on the environment. Special emphasis is paid to plant protection, the prevention of spreading of harmful organisms, and to the controlled use of phytopharmaceutical products (PPP), which will be reflected in a higher quality of the foodstuffs produced. Further on, we study factors on the level of primary agricultural production influencing the contamination of food (cereals, vegetable, and wine) and animal feed with mycotoxins, and search for the solutions to diminish the risk. The research of protein metabolism in ruminants and the research of some methods in plant production, especially fertilisation, contribute to the reduction of the pressure on the environment by nitrogen and to a controlled ammonia emission. The research project include the following concrete subjects: - Improvement of the existing and development of the sustainable production technologies in fruit-, vine-, and vegetable growing using an appropriate choice of varieties, a balanced plant protection and an adjusted mechanisation to assure competitive products as to quantity, yet of better quality and lesser pressure on the environment. - Study of phytophysiological processes on the



practical level of growing of fruit trees and grapevine. Investigations: The process of fruit abscission in apple-tree; optimal fruit-tree load from the viewpoint of fruit quality; tolerance of the combinations variety/rootstock to stress conditions such as drought in grapevine; the use of previous crops in strawberry growing; solarisation and mycorrhization in small fruit; factors influencing flower bud formation in apple-tree; determination of reasons for natural fruitlet thinning of fruit plants; - Phytophagous and phytopathogenic organisms. Investigations: Identification, inventory making and geographic distribution of viruses, bacteria, nematodes and certain insects; microbiological activity of soil and interactions among hosts, parasites and their carriers; the influence of virus infections on economically important plant properties; resistance of harmful organisms to PPP; - Introduction of precise farming systems as a consequence of development of special agricultural mechanisation. Investigations: Ecological soil cultivation; emission of hotbed gasses; reduction of mechanical damage of soil; localisation of required fertilisers conforming to the variability of soil and requirements of plants; technology of bringing PPP onto agricultural plants; - Technology of wine production. Investigations: Monitoring of ochratoxin A content in Slovene and imported wines; determination of authenticity of Slovene wines; investigations of isotopic structure of sugars with the purpose of determination of geographic origin of wine; biological availability of anthocianins and hydroxycinnamonic acids; - Animal husbandry. Investigations: Study of protein metabolism in ruminants; reduction of pressure on the environment by nitrogen by means of optimisation of animal nutrition; selection of cattle for milk yield in less optimal breeding conditions; study of the presence of mycotoxins in animal feeds and foodstuffs; - Development of rural area and sustainable agriculture.

Key terms: Sustainable Agriculture, healthy food, organic agriculture, harmful organisms, mycotoxins, pesticide application, pesticide residues, phytophysiology, vine growing, vegetable growing, fruit growing, cattle breeding, agriculture mechanisation, agriculture economics

Contact: Matej Stopar - matej.stopar@kis.si

Microbiology and biotechnology of food and environment

The aim of our research program is to study microorganisms and their interactions in natural and/or industrial environments to ensure food safety and, a healthier and more sustainable food production. We study microorganisms at the molecular and cellular level and at the level of microbial communities with the aim to exploit their potential and control the negative consequences of their action. To achieve this we study model microorganisms in highly controlled laboratory model system (e.g. biofilms, planktonic cultures plant/microbe model systems) using genomics, proteomics, fluorescence microscopy, analytical and chromatographic (HPLC, GS, spectroscopy) methods and recombinant technology. We are particularly interested in production of extracellular molecules that are of industrial importance or play a role in biocontrol, we purify them and study their function. These are signaling molecules, bioactive molecules (enzymes,

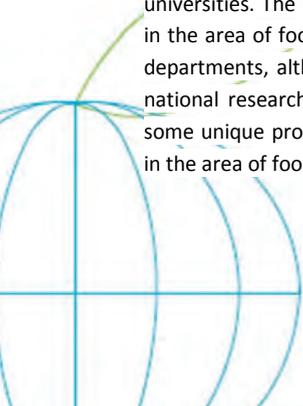
antibiotics) and polymers that constitute the extracellular matrix components (polysaccharides) in the biofilm. These molecules also often play an essential role in microbial interactions and are used in food production as additives and in fermentation. We also isolate bacteria and fungi directly from various habitats aiming to understand their beneficial or harmful effects (e.g. on wine production, on plant growth, on pathogens). We have recently developed methods and approaches to study plant biocontrol and address synergistic and antagonistic interactions of multispecies microbial communities in rhizosphere to improve plant growth and protect plants from pathogens. This is increasingly important in the light of novel EU regulations that require decreased application of phytopharmaceuticals and promote more eco-friendly food production. Finally, we study microbial communities directly in soil, in and on plants, in foods and in bioprocess environments (e.g. wastewater treatment, food production chains) using state of the art molecular and high resolution omics (e.g. metagenomics, metatranscriptomics) approaches and bioinformatics. These high-throughput approaches allow us to monitor microbial biodiversity in relation to community adaptive responses to environmental stresses and the role of microorganisms in nutrient cycles and production of greenhouse gasses. These approaches also provide state of the art tools to exploit microbial communities as a source of novel molecules (e.g. enzymes), that participate in turning the food waste into high value products. We also develop new molecular-biological methods for detection and identification of microorganisms in food and environment and improve bioprocesses through metabolic engineering of bacterial for the production of various active ingredients such as vitamins, nucleotides, fatty acids and other primary metabolites using appropriately platform technologies, combined with “omics” approaches and “smart” strain selection approaches. Overall, the program aims to broaden the scientific knowledge needed for safe and more sustainable food production and food-supply chain.

Keywords: microorganisms, biocontrol, microbial communities, biofilms, soil, plants, food, waste processing, genomics, transcriptomics, proteomics, enzymes, secondary and primary metabolites, polymers, food safety, wine fermentation, metabolic engineering.

Contact: Peter Raspor - (peter.raspor@bf.uni-lj.si)

National research institutes

Research in the scope of SUSFOOD is mostly conducted under the umbrella of universities. The University of Ljubljana and the University of Maribor are a leading force in the area of food and health research, which is still scattered among various university departments, although a tendency for individual departments to establish a network of national research in food and health related topics has emerged in the last years and some unique programs, which contribute to the development of an integrated approach in the area of food research are currently running.



There is a modest but increasing interest from the Slovenian food industries to enter this area as well, among them the most active include companies with strong research departments, including:

- Jata Emona d.o.o. (production of feeds for domestic animal species, production of table and hatching eggs, poultry sales and retailing)
- Medex d.d. (honey and honey based products),
- Mercator – Emba d.d. (manufacture of cocoa, chocolate and sugar confectionery)
- Mlekarna Celeia d.o.o (processing of milk, production of fermented products, semi-hard cheeses, butter, whey concentrate)
- Mlinostest d.d. (pasta, milled and bakery wares and other related products),
- Panvita d.d. (vegetable production, wine growing, pig breeding and poultry farming, meat and meat products production),
- Perutnina Ptuj d.d. (processing of poultry meat and production of poultry products)
- Radenska d.d. (natural mineral and spring waters and non-alcoholic beverages),
- Žito d.d. (production of bakery, confectionary and milled products, frozen foods, candy, chewing gum, chocolate, biscuit pastry, pasta, spices, tea, rice and retailing).

BRIN Competence Center for Biotechnological Development and Innovation, EMONA RCP (part of Jata Emona group), Pan-Nutri d.o.o (part of Panvita group) and the Nutrition Institute are the most active (for and not for profit) private research organizations.

The main organisations involved in the food and health research in Slovenia are listed below.

- [University of Ljubljana \(UL\)](#)

Address: Kongresni trg 12, 1000 Ljubljana

Website: http://www.uni-lj.si/en/about_university_of_ljubljana.aspx

[Biotechnological faculty \(BF\)](#)

Email: info@bf.uni-lj.si **Phone:** + 386 1 3203 000

Address: Jamnikarjeva 101, 1000 Ljubljana

Website: <http://www.bf.uni-lj.si/en/>

The fundamental mission of the Biotechnical Faculty is to provide university level, advanced professional, and postgraduate education, as well as to carry out scientific research and technical and consulting work concerning the sciences of living nature (biology, microbiology) as well as agriculture, forestry and fisheries (forestry, animal husbandry, agronomy) and the related production technologies (wood technology, food technology, biotechnology). The common denominator of all academic and scientific

disciplines at the Biotechnical Faculty is natural resources (soil, physical space, flora, fauna, and water).

The Faculty's scientific and research work combines basic, applied and developmental research work, enabling the rapid transfer of research results into practice.

The Department for Food Science and Technology conduct researchs related to the SUSFOOD scope in the area of Biochemistry and chemistry of food, Biotechnology, microbiology and food safety, Microbiology, Technology of meat Food assessment.

There are also two relevant institutes operating under the Biotechnological faculty, namely the Institute for Nutrition and the Institute for Dairy.

Faculty of Health Sciences

Email: dekanat@zf.uni-lj.si **Phone:** +386 (0)1 300 11 11

Address: Zdravstvena pot 5, 1000 Ljubljana

Website: <http://www2.zf.uni-lj.si/en/>

The mission of the Faculty of Health Sciences, as the leading educational and research institution in Central Europe in the field of health sciences on all academic levels is to educate outstanding professionals, to foster new discoveries through high quality research work and to enable their transfer into practice. The Biomedical research group is the group conducting research in the scope of SUSFOOD.

Faculty of Medicine

Email: dekanat@mf.uni-lj.si

Address: Vrazov trg 2, 1000 Ljubljana

Website: <http://www.mf.uni-lj.si>

Veterinary faculty

Email: dekanat@vf.uni-lj.si

Address: Vrazov trg 2, 1000 Ljubljana

Website: <http://www.vf.uni-lj.si/vf/>

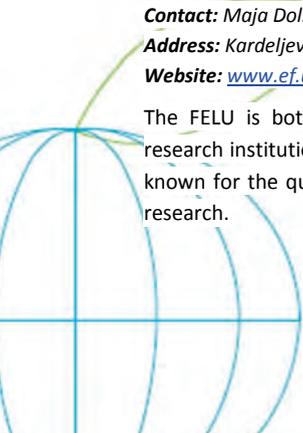
Faculty of Economics

Contact: Maja Dolinar **Email:** maja.dolinar@ef.uni-lj.si

Address: Kardeljeva ploščad 17, 1000 Ljubljana

Website: www.ef.uni-lj.si

The FELU is both a national leader and an internationally recognised academic and research institution in the fields of business and economics. We strive to become a world known for the quality of our academic programmes and achievements in education and research.



- University of Maribor (UM)

Email: rektorat@uni-mb.si **Phone:** + 38622355280

Address: Slomškov trg 15, 2000 Maribor

Website: <http://www.uni-mb.si/podrocje.aspx?id=2>

Faculty of Agriculture and Life Sciences (FALS)

Email: fkbv@uni-mb.si **Phone:** +386 2 320 90 00

Address: Pivola 10, 2311 Hoče

Website: <http://fk.uni-mb.si/index.php?id=1>

The primary mission of the Faculty of Agriculture and Life Sciences (FALS) of the University of Maribor is carrying out educational, research and innovative processes for the purpose of Slovenian agriculture and the food processing industry, as well as in a broader sense, for the needs of industries associated with agriculture (tourism, renewable energy, waste materials, environmentalism, health, etc.).

The vision of the FALS is to become an educational, research and economy-integrating centre of European importance, where superb knowledge will be created and later spread amongst domestic and foreign graduates at all study levels, as well as into the technological knowledge of agricultural holdings and companies. We wish to become a renowned European centre with intensive exchanges of professors, researchers and students. The FALS's vision in connecting with corporations is to become a development incubator and a place for demonstrating and analysing alternative technological and business processes in agriculture, food processing and environmentalism. The FALS wishes to become an important factor in the creation of the agricultural, economical and environmental policies of the Republic of Slovenia (RS) and a European factor in these areas.

There are several research groups conducting research in the scope of SUSFOOD, among them the Research group for livestock production and processing and the Research group for plant production and processing.

Faculty of Mechanical Engineering

Contact: Lidija Fras-Zemljic **Email:** lidija.fras@um.si

Address: Slomškov trg 15, 2000 Maribor

Website: <http://www.fs.uni-mb.si/podrocje.aspx>

Faculty of Medicine

Address: Slomškov trg 15, 2000 Maribor

Website: <http://www.mf.uni-mb.si/index.php/en>

- **Agricultural institute of Slovenia (KIS)**

Contact: Andrej Simončič **Email:** andrei.simoncic@kis.si **Phone:** + 386 1 280 52 62

Address: Hacquetova 17, 1000 Ljubljana

Website: <http://www.kis.si>

The Agricultural Institute of Slovenia is a public research institution. Its present founder is the Government of the Republic of Slovenia. The status of a public research institution implies a governmental non-profit making institution with defined activities in the sense of public service. The Institute carries out the following tasks:

- Basic, applied and developmental investigations,
- Expert projects defined by laws,
- Advising, studies and laboratory service,
- Supervision and verification of quality of agricultural products and products used for agriculture,
- Publication of findings and results of research, expert and control work.

Its results are published in scientific and expert magazines, in reports to contracting partners or in its own publications.

The Institute is organised in the following departments:

- Crop Science Department,
- Infrastructure Centre Jablje,
- Plant Protection Department,
- Department of Fruit Growing, Viticulture and Oenology,
- Agricultural Economics Department,
- Animal Production Department,
- Department of Agricultural Engineering and Energetics ,
- Department of Agroecology and Natural Resources,
- Central Laboratories (agrochemistry and oenology).

University of Nova Gorica

Email: info@ung.si

Address: Vipavska 13, 5000 Nova Gorica

Website: <http://www.ung.si/en/>

University of Primorska

Address: Titov trg 4, 6000 Koer

Website: <http://www.upr.si/>

Faculty of Health Sciences

Email: info@fvz.upr.si

Address: Polje 42I, 6310 Zola

Website: <http://www.fvz.upr.si/index.php?lang=eng>

- **National Institute of Biology (NIB)**

Email: tajnistvo@nib.si **Phone:** + 386 (0)59 232 700

Address: Večna pot 111, 1000 Ljubljana

Website: <http://www.nib.si/eng/index.php/domov.html>

The National Institute of Biology (NIB) is a public non-profit research institute. The mission and core activity of the NIB is basic and applied research, in various areas of biology (microbial ecology, plant and animal physiology, etc.), environmental sciences and medicine (molecular and genetic research), such as biomedicine, systems biology and biotechnology.

NIB's long-standing experience of collaboration with the pharmaceutical industry and food industry, it was a logical step to join the competency center in this field in order to transfer our research findings into industrial applications. We hope that by joining the CCBDI we will deepen our collaboration with industrial partners, and contribute to the successful implementation of the center's goals."

National Institute of Chemistry

Email: info@ki.si

Address: Hajdrihova 19, 1000 Ljubljana

Website: <http://www.ki.si/index.php?id=117&L=1>

Research

Basic and applied research are oriented towards fields which are of long-term importance to both Slovenia and the world: biotechnology, environmental protection, structural and theoretical chemistry, analytical chemistry, materials research, and chemical engineering, through which the institute is in line with the needs of the domestic chemical, pharmaceutical, tire, and food industries. The work of the Institute is also in line with the priority thematic areas of the 7th Framework Program of the EU, which places an emphasis on genomics and biotechnology for health, nanotechnology, quality and safety of food, as well as nutrition, sustainable development, and global change.

Education

Currently 74 graduate students are being trained at the Institute within the national Young Researchers Program for the acquisition of their PhD degrees. The young researchers represent about 25% of the Institute's staff members, making National Institute of Chemistry one of the leading Slovenian organizations for graduate-level education and training.

Cooperation with industry

Research is oriented towards the development of new technologies and products, which will help to ensure the long-term development of Slovenia and which are internationally relevant. Industry is an important partner to the Institute in these endeavors. There are a number of Slovenian companies with whom the Institute has entered into close long-term

cooperation, as well as a number of well-regarded foreign companies. From a financial point of view, this kind of cooperation represents 20% of the income of the Institute.

Contact with world science

The Institute offers high-level research equipment, allowing researchers to engage in even the most cutting edge research challenges at the world level. Some acquisitions are: a Karl Zeiss Supra 35 VP Electronic Microscope with EDX analysis, a high resolution powder x-ray diffractometer, and an 800 MHz NMR spectrometer; these are the only ones of their kind in Slovenia. The NMR spectrometer is the first of this kind of instrument to be found in the new member states of EU and represents one of the largest investments in a free-standing piece of research equipment in Slovenia.

The National Institute of Chemistry was the first research institution in Slovenia to obtain ISO 9001 standards in December 2003 with the goal of improving the conditions, as well as organization and effectiveness, of its work.

- **Laboratory for Food Chemistry**

Contact: Irena Vovk **Email:** irena.vovk@ki.si

- **Institute of Public Health of the Republic of Slovenia**

Contact: Mojca Gabrijelčič Blenkuš **Email:** mojca.gabrijelcic@ivz-rs.si **Phone:** +386 1 2441 400

Address: Trubarjeva 2, 1000 Ljubljana

Website: <http://www.ivz.si/>

The National Institute of Public Health of the Republic of Slovenia is a government agency accountable and responsible for public health promotion at the national level.

The Institute is interested in the following work areas related to food production, consumption and safety: Alcohol, Child Health, Environmental Health, Food Policy, Health Impact Assessment, Health Systems, Nutrition.

The Research group of the Institute of Public Health performs important research regarding public health both on a national and international level. Research as one of the pillars of public health is an important part of IVZ's activities, and there is a tendency to become even more involved in both national and international research activities.

- **Pan-Nutri – Agricultural and Food Technology Center**

Contact: Saša Štraus **Email:** sasa.straus@pan-nutri.si **Phone:** +386 (0)2 52131 45

Address: Industrijska 8, 9000 Murska sobota

Website: <http://www.pan-nutri.si/en/>

The Pan-Nutri company, as its name suggests, originates in the Pannonian Plain (Pan) and emphasises development in the field of nutrition (nutrire/food). It is the main promoter of



applied research and developmental work in the wider agricultural and food sector in Pomurje.

By facilitating applied research and development projects we would like to establish tighter cooperation between companies and individuals from the wider agricultural and food processing sector in Pomurje together and with the institutions of concentrated knowledge; by concluding and implementation of these projects we are beginning a new era in the Pomurje agriculture and food processing industries.

The Pan-nutri Agricultural and Food Technology Centre will evolve, through its projects, into the most important factor for transferring scientific and research achievements into practical use, and become the central link between companies and individuals from the agrifood sector in Pomurje.

The company's main goals are:

- Stimulating and conducting development and research projects in the wider agricultural and food sector in Pomurje;
 - Encouraging specialised applied development and research in individual companies (establishment of development units) with the aim of forming a stronger and wider development and research potential in the wider agrifood sector in Pomurje;
 - Offering expert assistance and support when applying to national and international development, research and other tenders;
 - Following innovations and novelties in the field of research and technologies within the agrifood sector.
- [EMONA RCP - Nutrition Research & Development Department](#)

Contact: Miha Gajster **Email:** miha.gajster@quest.arnes.si **Phone:** +386 1 584 26 55

Address: Kavčičeva 72, 1000 Ljubljana

Website: <http://www.e-crp.si>

Emona RCP is the Nutrition Research and Development Department of Jata Emona d.o.o., a company engaged in poultry production and food processing. The main activities of Emona RCP include:

- Human nutrition: development of functional food, semi-products and components for food supplements
- Animal nutrition: physiological needs of animals, quality of feed, adequate supply of nutritious substances
- Chemical laboratory development and performance of chemical analyses of raw materials and of finished products and controls their quality
- Technology transfer activities

- **The Nutrition Institute**

Contact: Dr. Igor Pravst **Email:** igor.pravst@nutris.org **Phone:** +386 5 9068 870

Address: Tržaška 40, 1000 Ljubljana

Website: <http://www.nutris.org>

The Nutrition Institute is a non-profit research organization, focusing on human nutrition, food safety and health. It performs research to support healthy diets and promote the development of safe and healthy foods and is primarily oriented towards the nutritional composition of foods, stability of nutrients and other ingredients, and development of functional foods. The Institute collaborates nationally and internationally with universities, research institutions, organizations and companies to support consumer health and well-being.

- **BRIN Competence Center for Biotechnological Development and Innovation**

Contact : Mateja Štempelj **Email:** mateja.stempelj@medis.si or info@kc-brin.si

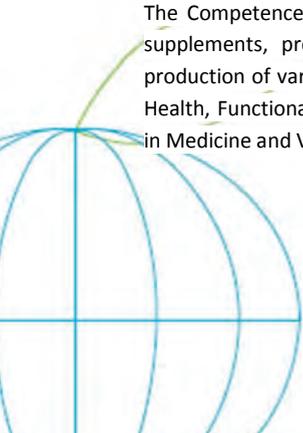
Phone : +386 (0)1 600 22 68

Address: Brnčičeva ulica 1, 1231 Ljubljana Črnuče

Website: <http://www.kc-brin.si/en/>

The Competence Center for Biotechnological Development and Innovation is a strategic partnership between leading industrial partners and top-flight research organizations (Medis d.o.o., Aceies Bio d.o.o., Clinres Farmacija d.o.o., Jožef Stefen Institute, Lek Veterina d.o.o., Mlekarna Celeia d.o.o, National Institute of Biology, Institute of Dairy Science and Probiotics, Vitiva d.d.) .This strategic partnership is based on linking companies with excellent knowledge of market demands in the field of functional food and health with leading development companies and public research organizations which are skilled in the most demanding and up-to-date methods of development and analysis of new biotechnology processes. The partners' co-operation ensures the development of innovative and internationally competitive products and services and the simultaneous strengthening of the research and development excellence of the participating research organizations.

The Competence Center combines research in the field of functional food and dietary supplements, probiotic microbial strains and industrial microorganisms used in the production of various active ingredients. Areas of research activity include Probiotics and Health, Functional Food and Dietary Supplements and Active Pharmaceutical Ingredients in Medicine and Veterinary Medicine.





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SUSFOOD COUNTRY REPORT SPAIN

Authors:

ELIKA : Antton Alza

INIA : Angeles Alonso de Blás, Anabel de la Peña, Jesus Jimenez

INFO MURCIA : Rafael Ataz, Maria Luisa Lopez



Introduction

The Spanish food industry is the first industrial sector for the Spanish economy and the fifth in Europe. Moreover the Spanish Food Industry has recognized prestige. Although it is not the largest, the Spanish market is the most dynamic in global functional foods.

Spain has a high level of expertise and specialization in Food Science and Technology research. A significant amount of research groups and companies have been working on healthy and functional food development, research and development on new ingredients for a number of years.

The National Institute for Agricultural and Food Research and Technology (INIA) is one of the Public Research Organization (OPI) responsible for research in agriculture and food in Spain. It depends of the State Secretariat of Research of the Ministry of Economy and Competitiveness.

Ministries of agriculture and food

The Ministry of Economy and Competitiveness (MINECO) manages the scientific research agenda of Spain. At regional scale, each autonomous community has its own research, development and innovation plan or strategy. Spain has many public research facilities that act under the supervision of the Ministries.

- **Ministry of Economy and Competitiveness (MINECO)**

Contact: Rosa Rodríguez Bernabé **Email:** rosar.bernabe@mineco.es **Phone:** 34 916037741

Address: Albacete, 5, 28071

Website: <http://www.mineco.qob.es/portal/site/mineco/>

The Ministry of Economy and Competitiveness is responsible of the implementation of government policy on economic and reforms to improve competitiveness, scientific research, technological development and innovation in all sectors, trade policy and business support and all other powers and duties conferred by law.

The Ministry is organized into the following governing bodies:

- The State Secretariat for Economic and Business Support.
- The State Secretariat of Commerce.
- The State Secretariat of Research, Development and Innovation.

The Spanish research is mainly funded by The State Secretary of Research, Development and Innovation. The MINECO activities are aimed at a push back of the frontiers of knowledge in all disciplines, stimulating and funding fundamental academic research at the Spanish universities and at scientific research institutes. MINECO is funding research through the National Plans of Research, Development and Technological Innovation. These plans have a duration of four years with annual public and competitive calls which are peer-reviewed. They are developed in the framework of the National Strategy for

Science and Technology, aiming that all activities are on service of the well being of the society, the sustainable development, the woman incorporation to the scientific community, the increase of industrial competitiveness and the generation of employment.

Public research institutions owned by the governmental institutions:

A summary of these public research institutions related to food research are briefly described here. More information can be found on the SUSFOOD MKB.

▪ **National Institute for Agricultural and Food Research and Technology (INIA)**

Contact : Ana Isabel de la Peña **Email:** anaisabel.delapena@inia.es **Phone:** + 34913478776

Scientific: Ángeles Alonso de Blás **Email:** blas@inia.es **Phone:** +34913473935

Address: Ctra. de A Coruña Km. 7,5, 28040 Madrid

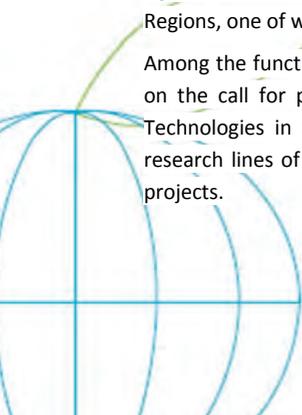
Website: <http://www.inia.es>

The National Institute for Agricultural and Food Research and Technology (INIA) is a Public Research Organisation (OPI) of the State Secretariat of Research, Development and Innovation of the Ministry of Economy and Competitiveness. Its unique mandate entails a dual responsibility 1) as coordinator of the national network of agrifood research centers is responsible for the harmonization, resource allocation, monitoring and evaluation of scientific, technical research activities and funds research through the National Program INIA Autonomous Regions System 2) as an agrifood research institution is responsible of the execution of its own research and technology projects (including technology transfer) under the General Deputy Directorate of Research and Technology (SGIT).

INIA-Autonomous Regions System

The Royal Decrees of transfer of services and functions in agricultural research establish the responsibilities of the Central Government, the Autonomous Communities and those in which the General State Administration and the Autonomous Regions must cooperate. For the coordination of competencies that concern both administrations, the Coordination Commission of Agricultural Research, a collegiate body, was created by Ministerial Order of January 8, 1987, which involved the Central Government, through the INIA, which holds its presidency, the Ministry of Public Administration and the Ministry of Agriculture, Fisheries and Food, as well as representatives of the seventeen Autonomous Regions, one of which holds the First Vice Presidency of the Commission.

Among the functions of the Coordination Commission it is particularly relevant to inform on the call for projects of the Subprogramme of National Resources and Agricultural Technologies in Coordination with the Autonomous Regions and propose the priority research lines of each call as well as study and ratify the evaluation and funding of the projects.



The list of Autonomic Research Institutions (INIA's Autonomomous Regions):

Andalucía	Instituto de Investigación y Formación Agraria y Pesquera (IFAPA)
Aragón	Centro de Investigación y Tecnología Agroalimentaria (CITA)
Asturias	Servicio Regional de Investigación y Desarrollo Agroalimentario (SERIDA)
Baleares	Instituto de Investigación Y Formación Agraria Y Pesquera de Las Islas Baleares (IRFAP)
Canarias	Instituto Canario de Investigaciones Agrarias (ICIA)
Cantabria	Centro de Investigación y Formación Agrarias (CIFA)
Castilla-La Mancha	Dirección General de Infraestructuras y Desarrollo Rural
Castilla y León	Instituto Tecnológico Agrario de Castilla y León (ITACyL)
Cataluña	Instituto de Investigación y Tecnología Agroalimentarias (IRTA)
Extremadura	Servicio de Coordinación y Administración del SECTI
Galicia	Instituto Gallego de Calidad Alimentaria (INGACAL)
La Rioja	Dirección General de Investigación y Desarrollo Rural
Madrid	Instituto Madrileño De Investigación Agraria y Desarrollo Rural Agrario y Alimentario (IMIDRA)
Murcia	Instituto Murciano de Investigación y Desarrollo Agrario y Alimentario (IMIDA)
Navarra	Instituto Navarro de Tecnologías e Infraestructuras Agroalimentarias (INTIA)
País Vasco	Neiker Tecnalia, Instituto Vasco de Investigación y Desarrollo Agrario (See Basque Country)
Valencia	Instituto Valenciano de Investigaciones Agrarias (IVIA)

▪ Institute of Health Carlos III, (ISCIII)

Contact: Carlos Segovia Pérez **Email:** csegovia@isciii.es

Phone: +34 918222272

Website: <http://www.isciii.es/>

The Instituto de Salud Carlos III (Institute of Health Carlos III, ISCIII) is the main Public Research Entity funding, managing and carrying out biomedical research in Spain. The Institute has been conducting research and providing key services in the life and health sciences for over 20 years. It is also the body responsible for managing Spain's Health Research and Development Strategy within the framework of the National R+D+I Plan. The ISCIII reports directly to the Ministry of Economy and Competitiveness (Royal Decree 345/2012) and in operational terms to both this Ministry and to the Ministry of Health, Social Services and Equality (Royal Decree 200/2012). Its key mission is to support the development of scientific knowledge in the health sciences and to contribute to innovation in healthcare and the prevention of disease. Putting patients and the public at the heart of all its activities and objectives, the Institute promotes and coordinates biomedical research and provides scientific and technical services of the highest quality in

partnership with all the organisations forming part of the Spanish System of Science, Technology and Innovation.

- **Consejo Superior de Investigaciones Cientificas (CSIC)**

Website: <http://www.csic.es/>

The Spanish National Research Council (CSIC) is the largest public institution dedicated to research in Spain and the third largest in Europe. Belonging to the Spanish Ministry of Economy and Competitiveness through the Secretary of State for Research, Development and Innovation, its main objective is to develop and promote research that will help bring about scientific and technological progress, and it is prepared to collaborate with Spanish and foreign entities in order to achieve this aim. Its research is driven by its centres and institutes, which are spread across all the autonomous regions, and its more than 15,000 staff, of whom more than 3,000 are staff researchers and the same number again are doctors and scientists who are still training.

Its multidisciplinary and multisectorial nature means CSIC covers all fields of knowledge. Its activity, which covers everything from basic research to technological development, is organised around eight scientific-technical areas:

- Area 1. Humanities and Social Sciences
- Area 2. Biology and Biomedicine
- Area 3. Natural Resources
- Area 4. Agricultural Sciences
- Area 5. Physical Science and Technologies
- Area 6. Materials Science and Technology
- Area 7. Food Science and Technology
- Area 8. Chemical Science and Technology

The institutions/departments of CSIC are listed in the MKB (<http://susfood-db-era.net>).

National funding bodies and research programmes

The National Plan for Scientific Research and Innovation (2013-2016) lets face simultaneously and continuously the design of interventions aimed at promotion and coordination of the process of R&D&I, comprising from the generating the ideas until incorporation to market in the form of new products and / or processes, improving quality of life, the welfare of citizens and contributing to the economic development. It directed to all agents Spanish System Science, Technology and Innovation responsible for: (a) the execution activities R&D&I (B) managing the activities of R&D&I and (c) the provision of services R&D&I for scientific, technological and Innovation of Spanish economy and society.

The programmes and subprogrammes related to R&D&I are described below:

- National Programme to promote the talent and it's employability in R&D&

- National Programme to foment Scientific And Technical Research in excellence
- National Programme for Business Leadership R&D&I
- National Programme of R&D&I oriented to society challenges.

INIA manage a national challenge of security and quality food, sustainable, productive agricultural activity, natural resource sustainability and marine and maritime research inside of National Programme of R&D&I oriented to society challenges.

The main funders next to the Ministries and industry in the food research sector are listed below:

- National Institute for the Agriculture and Food Research (INIA)

INIA has funded the first call of SUSFOOD with 400.000 €. Only the pre-proposals submitted through the Research Section, were elegibles to INIA. In addition, only the topic 1 and topic 2 had a priority interest for funding.

- Quality and Food Industries Directorate-Department for Economic Development and Competitiveness – Basque Government (DIIA-GV)

Contact: Peli Manterola Arteta **Email:** p-manterolaarteta@ej-gv.es

Address: Donostia 1, Vitoria-Gasteiz, Basque Country

Website: <http://www.nasdap.ejqv.euskadi.net/r50-2397/es/>

The Quality and Food Industries Directorate only funds Basque Country organisations and is responsible of:

- Planning, programming and promoting the agriculture, food and fisheries research, development and innovation (R&D&I) and health conditions and quality of food products, coordinating, promoting and managing the different lines of action in this matter, in collaboration with other Basque Directorates in the areas of their competence
- Promote and coordinate research in food security and production and sustainable food consumption

Basque Foundation for Agro-Food Safety (ELIKA)

Contact: Antton Alza **Email:** alza@elika.net **Phone:** +34 945122170

Website: <http://www.elika.net>

Elika, Basque Foundation for Agro-Food Safety, is a public foundation created by the Department for Economic Development and Competitiveness in 2001, whose aim is to: Provide autonomous governments with technical advice on the development of policies and preventive actions relating to Agrofoods Safety, from the very beginning of the food chain. Coordinate, provide information and technical advice to a number of different public organizations in the field of Animal Health and Food.

- Instituto de Fomento de la Región de Murcia (INFO MURCIA)

Contact: Luisa Lopez **Email:** programamarco@info.carm.es

Address: Avda. Fama, 3, 30003 Murcia

Website: <http://www.institutofomentomurcia.es>

Only funds Spanish region Murcia

The Instituto de Fomento de la Región de Murcia (INFO), public Regional Development Agency from Murcia, depending on Universities, Enterprise and Research Regional Ministry, is a driving force behind the regional economy, promoting and supporting regional business sector through different aid mechanisms and technical services provided for the improvement of business competitiveness.

One of its main actions is fostering innovation management and increasing of quality standards as well as fostering the incorporation of SMEs.

National research institutes

In Spain, research in food and health is currently distributed between public research organizations (OPI) and universities.

Food scientific research is being carried out by a high number of research groups in different organizations including: IFI, IF, IATA, the Autonomous University of Madrid, Complutense University of Madrid, the University of Navarra, the University of Barcelona, etc.

In addition of CSIC, ISCIII and INIA, there are many research groups briefly described below:

- Andalusian Institute of Agricultural Research and Training, Fishing, Food and Organic Production (IFAPA)

Contact: Juan José de León Barca **Email:** jjose.leon@juntadeandalucia.es

Phone: +34 671532252

Address: Edificio Bluenet. Avenida de Isaac Newton nº3 3ª planta. Parque tecnológico Cartuja 93, 41092 Sevilla

Website: <http://www.juntadeandalucia.es/agriculturaypesca/ifapa/web>

Mission: Genetic Improvement of Agrifood; Genetic Improvement of extensive herbaceous crops; Improvement and Biotechnology of Crops; Olivicultura y Elaiotecnia; Postharvest Technology and Food Industry; Rural Economy and Resources; Strawberry Production and Improvement

Genetic Improvement of Agrifood

Contact: Salvador Nadal Moyano **Email:** salvador.nadal@juntadeandalucia.es

Genetic Improvement of extensive herbaceous crops

Contact: Josefa Carmen, Sillero Sánchez de Puerta **Email:** josefinac.sillero@juntadeandalucia.es

Improvement and Biotechnology of Crops

Contact: Ana María, Torres Romero **Email:** anam.torres.romero@juntadeandalucia.es

Olivicultura y Elaiotecnia

Contact: Gabriel Beltrán Maza **Email:** gabriel.beltran@juntadeandalucia.es

Postharvest Technology and Food Industry

Contact: Emma Cantos Villar **Email:** emma.cantos@juntadeandalucia.es

Rural Economy and Resources

Contact: Manuel Arriaza Balmón **Email:** manuel.arriaza@juntadeandalucia.es

Strawberry Production and Improvement

Contact: José Manuel, López Aranda **Email:** josem.lopez.aranda@juntadeandalucia.es

- Center for Agro-Food Research and Technology of Aragon

Contact: Clara M^a Marin Alcala **Email:** cmmarin@araqon.es **Phone:** +34 9766458

Website: <http://www.cita-araqon.es>

The CITA of Aragon is a Research Public Organization belonging to the Department of Industry and Innovation of the Government of Aragon whose mission is to obtain benefits for our society by research, technological development, training and transfer. The objectives are the following: Improve the economic profitability of the agrifood enterprises of our Autonomous Region as well as increase the life quality of the whole population, from producers of raw materials to consumers.

- Regional Service Agri-Food Research and Development (SERIDA)

Contact: Koldo Osoro Otaduy **Email:** sridavilla@serida.org **Phone:** +34 985890066

Address: Ctra. Oviedo s/n - Apdo. 13, 33300 Villaviciosa - Asturias

Website: <http://www.serida.org/>

Mission: Design and implementation of research, development, and innovation projects, and the knowhow transfer, in the biotechnology, animal and vegetal production, and food technology areas.

Biotechnological processes for the production of fermented vegetables

Contact: Belén Suárez Valles **Email:** mbsuarez@serida.org

- Development of new products and processes for the horticultural products biotransformation. Micro biota characterization for biotechnological processes.

- Increase in value of agro-alimentary by-products. Isolation, identification, and characterization of functional molecules with positive impact on human health.

Biotechnology applied to quality control and food safety

Contact: *Dra. María del Carmen Oliván García* **Email:** mcolivan@serida.org

- Safety food production with differentiated quality and a high functional value. Implementation non-destructive “in line” and “on line” NIR technologies for safety, quality control, and food traceability.
- Use genomic and proteomic techniques in the traceability control and safety of food maturing process. Chemical, olfactometry, and sensory characterization of foods.

Sustainable animal production systems

Contact: *Dr. Koldo Osoro Otaduy* **Email:** kosoro@serida.org

- Effect animal production systems on biodiversity, animal welfare and agrolivestock productions quality.
- Diversification and differentiation of animal productions by use of local breeds and management systems well suited to temperate-wet ecosystems.
- Profitability enhancement of animal production systems by to make use of grazing resources, and forage production and ensilage nutritive quality improvement.

Sustainable crop production and plant breeding

Contact: *Dr. Enrike Dapena de la Fuente* **Email:** edapena@serida.org

- Characterization, conservation, evaluation, and use of plant and microbial genetic resources of interest in agro-alimentary sector.
- Use of genomic and proteomic tools for heredity study of productive, adaptive, and quality traits in breeding program of plants. New plant cultivars that enhancement efficiency, quality products, and growing sustainability.
- Improvement of plant growing. Interaction studies between soil, rootstocks, cultivar, and auxiliary fauna. Biological pest control.
- **Institute of Agricultural and Fishing Research and Training (IRFAP)**

Contact: *Margaret Mercadal Camps* **Email:** mmercadal@daagric.caib.es

Phone: +34 971176100 / +34 971784640

Website: <http://irfap.caib.es>

IRFAP is an administrative agency that was created by Decree 32/2002, of March 8, and is attached to the Ministry of Agriculture, Environment and territory. The main objectives of

IRFAP are, on the one hand, promote and coordinate research activities, search, training and experimentation in agricultural and fishing areas, and the other, transferring the results of these activities to the primary sector.

- Instituto Canario Investigaciones Agrarias (ICIA)

Contact: Manuel Caballero Ruano **Email:** mcruano@icia.es **Phone:** +34 922923291

Website: <http://www.icia.es>

Mission: Animal production; Plant genetic resources; Plant Protection; Postharvest - Tropical Fruit; Soils and irrigation.

Animal production

Contact: Juan Capote Alvarez **Email:** jcapote@icia.es

Postharvest and Food Technology Laboratory

Address: Apdo. 60, 38200 La Laguna

Plant Protection

Contact: Estrella Marina, Hernández Suárez **Email:** ehernand@icia.es

Plant genetic resources

Email: areyes@icia.es

Postharvest -Tropical Fruit

Contact: Víctor Galán Saucó **Email:** vgalan@icia.es

Soils and irrigation

Contact: Carlos Manuel, Regalado Regalado **Email:** cregalad@icia.es

- Center by Agricultural Research and Training (CIFA)

Contact: Manuel José, Mora Martínez **Email:** manuelmora@cifacantabria.org

Phone: +34 942254193

Website: <http://www.cifacantabria.org>

The Center for Agricultural Research and Training (CIFA), located in Muriedas, develops research work and non-formal agricultural training in Cantabria. Depends on Rural Development Department of the Ministry of Livestock, Fisheries and Rural Development of the Government of Cantabria.

- Agricultural Research Department of the Castile-La Mancha Regional Ministry of Agriculture (JCCM)

Contact: Conrado Angulo Heras **Email:** canqulo@jccm.es **Phone:** +34925266789

Website: <http://www.castillalamancha.es/tema/agricultura/agricultura>

Mission: Regional Centre of Animal Breeding and Reproduction; Grape and Wine Research Institute; Centre for Research, Experimentation and Services of Mushrooms; Beekeeping Research Centre of Marchamalo; Agricultural Research Centre of El Chaparrillo; Agricultural Research Centre of Albaladejito.

Agricultural Research Centre of Albaladejito

Contact: Luis de León Larraínzar **Email:** lleon@jccm.es

Address: Centro Agrario de Albaladejito / Carretera Toledo – Cuenca Km 174 16194 Cuenca

Website: <http://pagina.jccm.es/agricul/albaladejito/albaladejito.htm>

Agricultural Research Centre of El Chaparrillo

Contact: Esaú Martínez Burgos **Email:** esaum@jccm.es

Address: Crta. de Porzuna s/n km 3,5 13071 Ciudad Real

Website: <http://pagina.jccm.es/agricul/chaparrillo/chaparrillo.htm>

Beekeeping Research Centre of Marchamalo

Contact: Amelia Virginia González Porto **Email:** avgonzalez@externas.jccm.es

Address: Camino San Martín s/n 19180 Marchamalo (Guadalajara)

Website: <http://pagina.jccm.es/agricul/albaladejito/albaladejito.htm>

Centre for Research, Experimentation and Services of Mushrooms

Contact: Francisco José Gea Alegría **Email:** figea.cies@dipucuenca.es

Address: C/ Peñicas, s/n - Apdo. nº 63, 16220 Quintanar del Rey (Cuenca)

Website: http://www.dipucuenca.es/web_ant/pdp/secdesrural/cies.htm

Grape and Wine Research Institute

Contact: Esteban García Romero **Email:** estebang@jccm.es

Address: Ctra. Toledo - Albacete, s/n, 13700 Tomelloso (Ciudad Real)

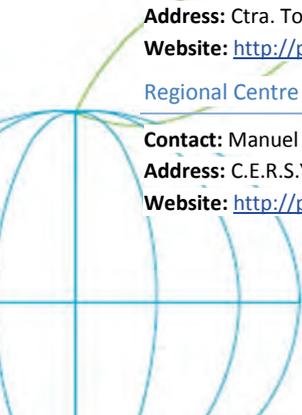
Website: <http://pagina.jccm.es/ivicam/>

Regional Centre of Animal Breeding and Reproduction

Contact: Manuel García-Cervigón García-Cervigón **Email:** manuelg@jccm.es

Address: C.E.R.S.Y.R.A. Avenida del Vino 6, 13300 Valdepeñas (Ciudad Real)

Website: <http://pagina.jccm.es/agricul/paginas/desarrollorural/investigacion/CERS...>



- Agrarian Technological Institute of Castilla-Leon Deputy directorate of Science and Technology (ITACYL)

Contact: Ángeles Melero González **Email:** ita-melqonma@itacyl.es **Phone:** +34 983317373

Website: <http://www.itacyl.es>

The Agrarian Technological Institute of Castilla-Leon (ITACYL) was created as a public body under the auspices of the Ministry of Agriculture and Livestock of the Regional Government of Castilla-Leon. The main activity of the Institute is focussed on the technological development of the food and agriculture sector through research, innovation and the transfer of scientific advances by means of collaboration with public and private organisations.

- Institute of Agriculture and Food Research and Technology (IRTA)

Contact: Eliecer López Jiménez **Email:** eliecer.lopez@irta.eu **Phone:** +34 934674040

Website: <http://www.irta.es>

IRTA is a public research institution attached to the Department of Agriculture, Food and Rural Action of the regional Government of Catalonia, Spain. IRTA's mission is to contribute to modernising, improving, boosting competitiveness, and fostering sustainable development in the primary and agri-food sectors All these sectors are covered by 5 areas in which scientific structure is divided: • Animal production (including aquaculture) • Plant production • Food technology • Rural economics • Environment and global change. Other areas of activity are those that are directly or indirectly related to the supply of healthy, high-quality foodstuffs to end consumers, food safety and safe processing of foodstuffs and in general enhancing the health and well-being of the population.

- Center of agricultural research Finca La Orden-Valdesequera

Contact: Carlota Daza Delgado **Email:** carlota.daza@juntaextremadura.net.

Phone: Phone: +34924 01 40 00 **Fax:** +34924 01 40 01

Website: <http://centrodeinvestigacionlaorden.gobex.es/contacto>

This center consists of two buildings devoted to agricultural research: "La Orden" and "Valdesequera". The first is in Vegas Bajas del Guadiana in the municipality of Lobón. With an area of 95 ha of irrigation and 110 ha of rainfed and where they develop many of the trials of horticulture, field crops and pastures and forest production. At Finca La Orden is the central building which houses management and administration, along with different laboratories and library and meeting two buildings. The farm "Valdesequera" has an area of 718 ha of pasture, and her projects have been carried out forestry and pasture production and animal production.

- **Agri-food Technological Institute of Extremadura (INTAEX)**

Contact: *Carlota Daza Delgado* **Email:** carlota.daza@juntaextremadura.net

Phone: +34 924014009

Website: <http://intaex.juntaextremadura.net/>

INTAEX is integrated into the Directorate General for Modernization and Technological Innovation of the Ministry of Employment, Enterprise and Innovation of Extremadura region government. It is situated on the farm "Santa Engracia" (Badajoz) and has an area of over 10,000 square meters for the development of their business. All in order to meet the needs of the food industry in Extremadura, where the market reduces the life cycle of products, forcing a constant innovation in themselves and their processes and which seeks the establishment of a consistent quality and adequate in their products, covering the growing demand of the final consumer product of the highest quality. His main areas of work are: Horticultural Products; Meat Products; Dairy Products; Oils and Enology.

- **Agricultural Research Center of Mabegondo (CIAM)**

Contact: *Juan Castro Insua* **Email:** juan.fernando.castro.insua@xunta.es **Phone:** +34 881881801

Website: <http://www.ciam.es>

CIAM depends on the Department of Innovation and Industry Agricultural and Forestry, the Department of Rural Affairs (Galicia Region). It has the function to perform basic and applied research focused on the research programs of the preferred resource and Related Technologies.

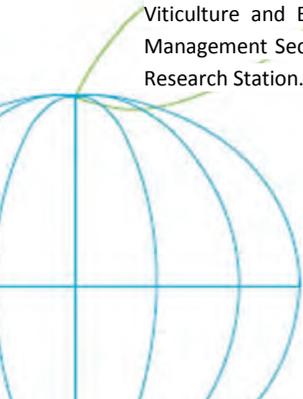
- **Agri-Food Research and Technological Development Service (CIDA).**

Contact: *Enrique, García-Escudero Domínguez* **Email:** enrique.garcia@larioja.org

Phone: +34 941291395

Website: <http://www.larioja.org>

The Center for Research and Technological Development of Agriculture is located on the farm Valdegón, 54 acres, on the left bank of the Ebro (La Rioja). It's assigned to the Directorate General for Research and Rural Development of the Ministry of Agriculture, Livestock and Environment, develops actions on scientific research, experimentation, and agricultural and food processing transfer. This centre have different sections: Section of Viticulture and Enology; Natural Resources Section; Crop Protection Section; Media Management Section Agrarian; Agricultural Experimentation Section; Section Haro Wine Research Station.



- **Madrid Institute For Rural World Development and Agricultural and Food Research**

Contact: M^a Pilar, Tenorio Sánchez **Email:** tenorio@madrid.org **Phone:** +34915802488

Website: <http://www.madrid.org>

IMIDRA coordinate and conduct research projects with company or arrangements with other research institutions both domestic and foreign scientific community to solve problems and innovate in the activities of environmental, farming and food. The purpose of the research is to improve and increase the competitiveness and profitability of the productive sectors of agriculture and its associated food industry while respecting the environment. On the other hand, are coordinated and conducted technical assistance in environmental, agricultural and food according to the skills and interests of IMIDRA. The main purpose is to support research projects by providing them with the necessary material and human resources and skills needed to perform the tasks, and manage and maintain native plant and animal heritage of the Community of Madrid.

- **Institute of Technology and Agrofood Infrastructures of Navarra (INTIA)**

Contact: Alberto Lafarga Arnal **Email:** alafarga@intiasa.es **Phone:** +34 948013040

Website: <http://www.intiasa.es>

Mission: Experimentation and research on all matters related to the production of field crops, horticultural and greenhouse. Experimentation the most common lines are: Testing of new varieties that are appearing on the market; Trials of new plant protection products, and new crop protection techniques that respect the environment; Trials of fertilization, irrigation, tillage and cultivation techniques in general; Programming crop year; Trials of diversification, and new crop rotations; Evaluation of production systems.

- **National Centre for Technology and Food Safety (CNTA)**

Contact: Carlos Javier, González Navarro **Email:** cgnavarro@cnta.es **Phone:** +34 948260621

Website: <http://www.cnta.es>

The National Center for Food Safety and Technology (CNTA) is a nonprofit organization created in 1981 by initiative of the Industrial Association of Canned Vegetables Ebro Valley, with the aim of contributing to the development and innovation of food businesses and by extension, enhance the competitiveness of the sector. CNTA has evolved according to the demands of the environment and food market demands for cover any technological need of any subsector of the food industry. Thus the center provides advanced technology services to companies and institutions that need external support for technical, research and development, quality control and food safety training and food processing, thus becoming, in the partner technology sector companies.

- Valencian Institute for Agriculture Research (IVIA)

Contact: Florentino Justo Pérez **Email:** juste_flo@qva.es **Phone:** +34 963424003

Website: <http://www.ivia.es>

Mission of IVIA: To promote and carry out projects, agreements or research contracts in the agrofood sector. To transfer the scientific and technological results obtained, either directly by the researchers, or through the Office for Research Results Transfer (OTRI), or by collaborating with the Services of Agricultural Technology Transfer (Extension Services)(SDT) of the Agriculture, Fisheries and Food Authority.

- Autonomous University of Barcelona

Contact: Francisca Rabadán Sotos **Email:** francisca.rabadan@uab.es **Phone:** +34 935813752

Website: <http://www.uab.es>

Mission: Animal Nutrition and Welfare Service; Department of Animal and Food Science; Histology, Phatology; Wildlife Ecopathology; Special Research Centre Food; Technology Plant and Veterinary Mycology Group.

Animal Nutrition and Welfare Service

Contact: Dra. Lorena Castillejos **Email:** sniba@uab.cat / lorena.castillejos@uab.cat

Address: Edificio V, Universidad Autónoma de Barcelona, 08193 Bellaterra – Barcelona

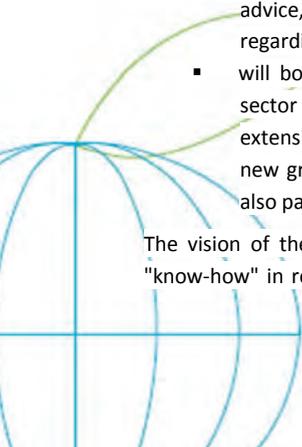
Website: <http://www.sniba.es>

Animal Nutrition and Welfare Service (SNIBA) of the Department of Animal and Food Science is a scientific- technical service at the Autonomous University of Barcelona (UAB). It promotes and leads research in the agricultural and livestock sectors. The main objective of our service is to encourage knowledge transfer between the public university and private companies providing advice, management, development and integrated solutions to R&D projects in the fields of animal nutrition, management, production and welfare.

SNIBA:

- offers research services to agricultural and livestock enterprises by way of advice, management, development and integral resolution of R&D projects regarding animal nutrition, management, production and welfare.
- will boost the competitiveness and innovative capacity of companies in our sector while promoting the transfer of established knowledge and the extensive scientific experience of our researchers. Educating and training of new graduates and PhDs for careers in the agricultural and livestock sector is also part of our description.

The vision of the SNiBA is being recognized and consolidate as a reference center in "know-how" in research, development and formation at national and European level to



companies within the agricultural and livestock sector especially for companies of chain value of food production of animal origin.

The SNIBA has as description to promote the transfer of knowledge between public university and private companies:

- promoting and leading research in agricultural and livestock sector to achieve the integral resolution of problems as to increase efficiency, reduce production costs and improve the quality and security of final product.
- stimulating the education of the sector in topics related to animal nutrition, management, production and welfare.
- and developing new knowledge (innovation) applicable to the productive reality to promote the innovative capacity and competitiveness of the sector.

Department of Animal and Food Science

Contact: *Artur Xavier Roig i Sagués*

Email: d.c.animal.aliments@uab.es / arturxavier.roig@uab.cat

Website: <http://www.uab.es/departament/ciencia-animal-aliments/>

Histología y Anatomía Patológica

Contact: *Jorge Martínez Martínez* **Email:** jorge.martinez.martinez@uab.cat

Address: *Facultad de Veterinaria, Edificio V*

Website: <http://www.uab.es>

Research in animal health and food safety

Servicio de Ecopatología de Fauna Salvaje

Contact: *Santiago Lavín* **Email:** Santiago.Lavin@uab.cat

Address: *Facultad de Veterinaria*

Website: <http://www.uab.cat/sefas>

Special Research Centre Food Technology Plant

Contact: *Buenaventura Guamis* **Email:** buenaventura.guamis@uab.cat

Address: *Facultat de Veterinària. Campus de la UAB*

Website: <http://www.cerpta.com>

Veterinary Mycology Group

Contact: *F. Javier Cabañas Saenz* **Email:** javier.cabanes@uab.es

Address: *UAB Facultat de Veterinària*

Website: <http://sct.uab.cat/svbm/>

- Miguel Hernandez University (EPSO-UMH)

Contact: Fernando Borrás **Email:** Vdo.investin@umh.es **Phone:** +34 966749601

Website: <http://www.umh.es>

Mission: Agricultural Biodiversity and Genetic Improvement; Agrochemistry and Environment.

Agricultural Biodiversity and Genetic Improvement

Contact: Juan Jose Ruiz Martinez **Email:** juanj.ruiz@umh.es

Agrochemistry and Environment

Contact: Raul Moral Herrero **Email:** raul.moral@umh.es

Economics, Politics and Development of Environmental and Rural

Contact: Laura Martinez-Carrasco Martinez **Email:** lmartinez@umh.es

Fruit growing and production techniques

Contact: Pablo Melgarejo Moreno **Email:** pablo.melgarejo@umh.es

Genetics, Welfare, Food Quality and Safety in Animal Production

Contact: Jose Ramon Diaz Sanchez **Email:** jr.diaz@umh.es

Industrialization of Animal Products

Contact: Jose Angel Perez Alvarez **Email:** ja.perez@umh.es

Post-Harvest Fruit and Vegetables

Contact: Daniel Valero Garrido **Email:** daniel.valero@umh.es

Quality and Food Safety

Contact: Ángel Antonio Carbonell Barrachina **Email:** angel.carbonell@umh.es

Water and Energy for Sustainable Agriculture

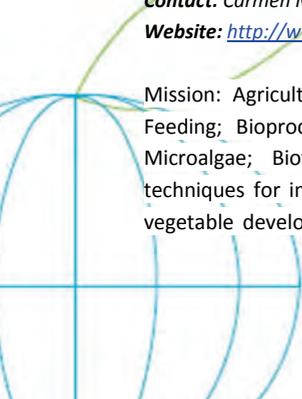
Contact: Carmen Rocamora Osorio **Email:** rocamora@umh.es

- University of Almeria (UAL)

Contact: Carmen Miralles Fernández **Email:** proyectoseuropeos@ual.es **Phone:** +34 950214656

Website: <http://www.ual.es>

Mission: Agricultural production technology in semiarid zones; Animal Nutrition and Feeding; Bioprocesses engineering and water technology; Biotechnology of Marine Microalgae; Biotechnology of natural products; Development of microbiological techniques for improvement of soil of agricultural interest; Genetics and physiology of vegetable development; Greenhouse crop vegetable production; Horticultural genetics;



Intensive horticultural systems; Ornamental and Sustainable Horticulture; Pesticide Residues; Production systems in plasticulture, and computer applied to agricultural and environmental sciences; Protein Structure; Rural Engineering; Structural studies of the protein ligand interaction; Subtropical and mediterranean fruit cultivation; Vegetable production in mediterranean crop systems.

Agricultural production technology in semiarid zones

Contact: Franciso Agüera Vega **Email:** faquera@ual.es

Website: <http://www.ual.es>

Animal Nutrition and Feeding

Contact: Fco. Javier, Moyano López **Email:** fimoyano@ual.es

Website: <http://www.ual.es>

Bioprocesses engineering and water technology

Contact: José Antonio, Sánchez Pérez **Email:** jsanchez@ual.es

Website: <http://www.ual.es>

Biotechnology of Marine Microalgae

Contact: Emilio Molina Grima **Email:** emolina@ual.es

Website: <http://www.ual.es>

Biotechnology of natural products

Contact: Federico García Maroto **Email:** fgmaroto@ual.es

Website: <http://www.ual.es>

Development of microbiological techniques for improvement of soil of agricultural interest

Contact: José Joaquín, Moreno Casco **Email:** jcasco@ual.es

Website: <http://www.ual.es>

Genetics and physiology of vegetable development

Contact: Rafael Lozano Ruiz **Email:** rlozano@ual.es

Website: <http://www.ual.es>

Greenhouse crop vegetable production

Contact: Tomás Cabello García **Email:** tcabello@ual.es

Website: <http://www.ual.es>

Horticultural genetics

Email: mjamille@ual.es

Website: <http://www.ual.es>

Intensive horticultural systems

Contact: María Luisa, Gallardo Pino **Email:** mgallard@ual.es

Website: <http://www.ual.es>

Ornamental and Sustainable Horticulture

Contact: María Teresa, Lao Arenas **Email:** mtlao@ual.es

Website: <http://www.ual.es>

Pesticide Residues

Contact: Amadeo, Rodríguez Fernández-Alba **Email:** amadeo@ual.es

Website: <http://www.ual.es>

Production systems in plasticulture, and computer applied to agricultural and environmental sciences

Contact: Jose Ramón, Díaz Alvarez **Email:** jrdiaz@ual.es

Website: <http://www.ual.es>

Protein Structure

Contact: Ana María, Cámara Artigas **Email:** acamara@ual.es

Website: <http://www.ual.es>

Rural Engineering

Contact: Diego Luis, Valera Martínez **Email:** dvalera@ual.es

Website: <http://www.ual.es>

Structural studies of the protein ligand interaction

Contact: Vicente Jara Pérez **Email:** vjara@ual.es

Website: <http://www.ual.es>

Subtropical and mediterranean fruit cultivation

Contact: Julian Cuevas González **Email:** jcuevas@ual.es

Website: <http://www.ual.es>

Vegetable production in mediterranean crop systems

Contact: Julio Cesar, Tello Marquina **Email:** jtello@ual.es

Website: <http://www.ual.es>

- General Foundation of the University of Valladolid (FGUVa)

Contact: Yolanda Calvo Conde **Email:** promotores@funqe.uva.es **Phone:** +34 983186353

Website: <http://cytuva.funqe.uva.es>

The Department of Innovation, or the Centre for Transfer and Innovation, has been constituted as the Office for the Transfer of Research Results of the University of

Valladolid and, as such, it is filed with the Ministry of Education Registry. Its main mission focuses on promoting and managing the transfer of the University of Valladolid's technology and know-how.

AGRO-GUIDE: Precision agriculture

Contact: Jaime Gómez Gil **Email:** jgomez@tel.uva.es

Address: E.T.S. de Ingenieros de Telecomunicación, Paseo de Belén 15, 47011 Valladolid

Website: <http://www.uva.es>

Active research in precision agriculture.

Advanced Technologies for Sustainable Rural Development

Contact: Luis Manuel Navas **Email:** lmnavas@iaf.uva.es

Address: E.T.S. de Ingenierías Agrarias, Avenida de Madrid 57, 34004 Palencia

Website: <http://www.uva.es>

Its main objective is to develop new technologies to rural and agricultural. Precision agriculture, agro-forestry and agro processes.

Applied Economics Group

Contact: Pablo Gordo Gómez **Email:** pablog@emp.uva.es

Address: E.U. de Estudios Empresariales, Paseo Prado de la Magdalena, 47005 Valladolid

Website: <http://www.uva.es>

"Research Lines:

- The Territorial Rural Development Policies of the European Union in Castilla y León.
- Rural Development at European Union
- Studies in AgroFood Industry: economics points"

CELLMAT Technologies, Cellular Material Laboratory

Email: marrod@fmc.uva.es **Contact:** Miguel Ángel Rodríguez

Address: Facultad de Ciencias, Paseo de Belén 7, 47011 Valladolid

"CellMat is the Cellular Materials Laboratory of the Condensed Matter Physics Department of the University of Valladolid, Spain (www.cellmat.es). The lab is an international recognized research institution in the filed of cellular materials. It was created in 1999.

RESEARCH TOPICS

- Cellular materials
- Composites and Nanocomposites
- Bioplastics

MAIN ACTIVITIES

- Creating new scientific knowledge on cellular materials, plastics, bioplastics and composite materials.
- Developing research and development projects in collaboration with the industry.
- Transferring the developed materials and technologies to the industry.
- Teaching of young scientists in the field of materials science.

Chemical and biochemical processes

Contact: Gerardo Gonzalez Benito **Email:** gerardo@iq.uva.es

Address: E. de Ingenierías Industriales - Sede Doctor Mergelina, Ingeniería Química y Tecnología del Medio Ambiente, Calle Doctor Mergelina, 47011 Valladolid

Website: <http://www.uva.es>

The aim of the group is to deepen the analysis of chemical and biochemical processes in order to establish design and optimization strategies.

Research Interests:

- Chemical Process Technology
- Obtaining enzymes, biopolymers and fermentation products
- Removal of recalcitrant compounds in industrial effluents
- Biochemical kinetics and bioreactor design
- Sugar processing technology
- Analysis unit operations and optimization at the chemical

Endocrinology and Clinical Nutrition Research Center

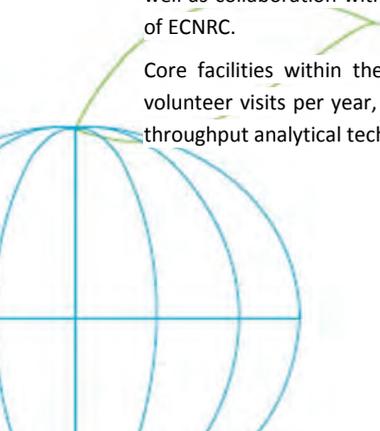
Contact: Daniel de Luis **Email:** dadluis@yahoo.es

Address: Facultad de Medicina, Avenida de Ramón y Cajal 7, 47011 Valladolid

Website: <http://www.uva.es>

"Endocrinology and Clinical Nutrition Research Center (ECNRC) overall aims the development of teaching and highly specialized research in the broad field of endocrinology, diabetes and nutrition, both in its basic aspects and in its clinical applications. Also, at all times ECNRC favor close cooperation between its members, as well as collaboration with other institutions whose interests converge with the purposes of ECNRC.

Core facilities within the group include a full equipped clinical unit, which facilitates volunteer visits per year, and access to a range of cutting edge, genomic and other high throughput analytical techniques.



Food Industry Technology: cereal and derivatives

Contact: Pedro Martín **Email:** pmartin@pvs.uva.es

Address: E.T.S. de Ingenierías Agrarias- Avenida de Madrid 57, 34004 Palencia

Website: <http://www.uva.es>

Expanded research on the processing of cereals, flour, bread, pastries, cookies, ... Development of new products specifically for celiacs and other common diseases (diabetes, cardiovascular problems, obesity, etc.) With same organoleptic properties.

High Pressure Process Group

Contact: María José, Cocero **Email:** mjcocero@iq.uva.es

Address: E. de Ingenierías Industriales - Sede Doctor Mergelina, Ingeniería Química y Tecnología del Medio Ambiente, Calle Doctor Mergelina, 47011 Valladolid

Website: <http://www.uva.es>

We have been researching for more than 20 years in the field of supercritical fluids. Nowadays there are a number of applications for High Pressure Technology from extraction, to reaction, nanoparticle synthesis, etc. These technologies will be of great importance for the immediate future where products, processes and technologies that promote sustainability are essential.

Human Nutrition Group

Contact: Paz Redondo **Email:** pazr@ped.uva.es

Address: Facultad de Medicina, Avenida de Ramón y Cajal 7, 47005 Valladolid

Website: <http://www.uva.es>

This research group research at food and nutritional sciences. They use molecular biology and clinical trial techniques to examine the association between diet, genotype and chronic disease and gain an understanding of its molecular basis.

Institute at Molecular Biology and Genetics

Contact: Javier Álvarez Martín **Email:** jalvarez@ibgm.uva.es

Address: Edif. IBGM, Calle Sanz y Forés, 47003 Valladolid

Website: <http://www.uva.es>

The “Instituto de Biología y Genética Molecular” (IBGM), a joint venture of the University of Valladolid(UVA) and the Spanish Research Council (CSIC) for biomedical research was born in 1998 with the aim of performing basic and applied research in the following areas: molecular basis of cell activation, chemoreception, inflammation, neurodegenerative processes and embryonic development, programmed cell death (apoptosis), and genetic diagnosis of perinatal diseases and cancer. From this initial start point, new incorporations of both CSIC and University staff Scientists, together with the natural evolution of the initial research activities have ended in the present moment in an Institute articulated around three Units or Departments.

Inteligente Transport Systems

Contact: Diego Llanos **Email:** diego@infor.uva.es

Address: Laboratorio MoBiVA - (Modelado, Biomecánica y Visualización Avanzada), Paseo de Belén, 11, 47011 Valladolid

Website: <http://www.uva.es>

DESO (development of embedded systems and open) is oriented towards the use of new and integrated distributed systems, and their applications to industry. The aim is to develop mechanisms for automatic parallelization to exploit the parallelism inherent in many loops.

Machine Vision Group

Contact: Eusebio de la Fuente **Email:** eusfue@eis.uva.es

Address: E. de Ingenierías Industriales - Sede Paseo del Cauce, Ingeniería de Sistemas y Automática, Paseo del Cauce, 47011 Valladolid

Website: <http://www.uva.es>

Inspection and Handling Automatic Classification using Machine Vision. The increasing demands for quality and productivity to which they are subjected to food processes make it increasingly necessary for greater automation and control them. In this context, machine vision systems provide innovative solutions for automating inspection and automatic handling in the food industry. On inspection, machine vision can ensure that the product reaches the customer after a reliable automatic quality control. This control can be extended to verification of labeling, control the filling level in containers, detection of spots or bruises, print control dates, etc.

Mathematics and Statistics Institute

Contact: Carlos Matrán **Email:** matran@eio.uva.es

Address: Facultad de Ciencias, Paseo de Belén 7, 47011 Valladolid

Website: <http://www.uva.es>

Its main objective is to promote and develop quality research in all areas of mathematics and its applications, allowing for groups and existing lines of research at the Universidad de Valladolid and, at the same time, encouraging the opening of new lines interdisciplinary research and the transfer of research results to the productive sectors. The recruitment of researchers and developing competitive research training programs are also priorities adopted the Institute.

Nutrition and Bromatology

Contact: Tomás Gírbés **Email:** girbes@bio.uva.es

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Website: <http://www.uva.es>



"Studies in ""Food and Nutritional Sciences"". Its research is based into the relationship between diet and the risk of chronic disease; food, nutrition and industry; Functional Foods. Also they have developed Intestinal Regeneration Models: ""Intestine model to test functional foods. Intestinal Regeneration Model"", very useful and necessary to prove the benefit of different functional ingredients."

Oxygen and Wine, alternative to barrel

Contact: María del Álamo **Email:** delalamo@ga.uva.es

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Website: <http://www.uva.es>

The research group UVaMOX arises from the need to integrate different fields of knowledge in the development of technology applied to the food industry sector and especially the wine industry. UVaMOX Group is pioneered the study of oxygen management and evaluation in Spain and worldwide.

Research lines:

- Micro- oxygenation of wines: toward a high efficiency micro-oxygenation system.
- Barrels, alternative and wine micro-oxygenation
- Automation. Intelligent winemaking

Photonic Group

Contact: Pedro Chamorro **Email:** pedro.chamorro@tel.uva.es

Address: E.T.S. de Ingenieros de Telecomunicación, Paseo de Belén 15, 47011 Valladolid

Website: <http://www.uva.es>

Studies in the use of OLED red-spectrum emitters for the illumination of greenhouse plants.

Research in theoretical and numerical study at the propagation of electromagnetic waves in linear and nonlinear media, optical solitons, photonic devices, optical transdescription systems, information and quantum computing, parallel computing, organic optoelectronics.

Process Control and Supervision

Contact: César de Prada **Email:** prada@autom.uva.es

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Website: <http://www.uva.es>

The Process Control and Supervision research group includes researchers that work in problems related to modelling and process advanced control from different angles, which integrates in what is known as Process and Systems Engineering and Industrial Informatics.

Research Topics:

- Industrial Informatics
- Process Advanced Control
- Modelling and Process Simulation
- Process Supervision

Production and Food of ruminant animals

Contact: Teresa Manso Alonso **Email:** tmanso@agro.uva.es

Address: E.T.S. de Ingenierías Agrarias, Avenida de Madrid, 44, Edif. La Yutera, 34004 Palencia

Website: <http://www.uva.es>

Studies in animal food production oriented high quality food (meat & milk).
Determination of nutritional and functional quality of meat & milk of small ruminants.

Remote Sensing Laboratory of Universidad de Valladolid

Contact: José Luis Casanova **Email:** jois@latuv.uva.es

Address: Facultad de Ciencias, Paseo de Belén 7, 47011 Valladolid

Website: <http://www.uva.es>

Carrying out research for Remote Sensing using satellite images analysis.

Rural World

Contact: Fernando Molinero **Email:** molinero@fyl.uva.es

Address: Facultad de Filosofía y Letras, Plaza del Campus, 47011 Valladolid

Website: <http://www.uva.es>

Studies in Economic development of farm and rural areas. Its purpose geographic study of rural, with particular attention to Castilla y Leon.

Your objectives are the study of the structures and processes of economic, social and environmental conditions in rural areas and the development of proposals for land use.

Research Interests:

- Rural development
- Economic activities in rural areas
- Land Policies
- Environment and Natural Resources
- Structure and dynamics socio-demographic settlements in rural areas

Sensor Research Group

Contact: María Luz Rodríguez **Email:** mluz@eis.uva.es

Address: E. de Ingenierías Industriales - Sede Paseo del Cauce, Química Física y Química Inorgánica, Paseo del Cauce 47011 Valladolid

Website: <http://www.uva.es>



The UvaSens group is a multidisciplinary team of chemists, physicists and engineers, which is based in the School of Industrial Engineering at the University of Valladolid.

Research lines:

- works on the preparation and characterization of nanostructured films and their application as gas or liquid sensors,
- applied research lines: electronic noses and tongues in sensor networks and applied to the analysis and quality control of foods and beverages (wine, olive oil, fish, etc).
- new line: the development of biosensors and their application in bioelectronic tongues.

Sugar Technology Center

Contact: María Teresa García **Email:** maite@iq.uva.es

Address: E. de Ingenierías Industriales - Sede Doctor Mergelina, Ingeniería Química y Tecnología del Medio Ambiente, Calle Doctor Mergelina, 47011 Valladolid

Website: <http://www.uva.es>

The Sugar Technology Center is an investigation center attributed to the University of Valladolid, and whose patronage is formed by this University and the company of the sugar sector: Azucarera Ebro, S.L.

- A database for the sugar sector.
- Simulation of the sugar manufacture process with respect to its optimization:
- A Plant simulator to train plant operators in a beet sugar factory.
- SIMPD: Intelligent system for the Modelling of Dynamical Process.
- Modular Simulators oriented to train operators in process units.
- Multimedia Modules oriented to train operators.
- Assessment of a juice treatment process (pilot plant operation).
- Waste water treatment.
- Simulator of sugar factories for optimization of the process and training of personal.

Vine-growing and Oenology

Contact: Josefina Vila Crespo **Email:** jvila@pat.uva.es

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Website: <http://www.uva.es>

Since 1997 they have been working together in different areas of knowledge for the development of new knowledge around the world wine (from the grapes to the marketing of wine). Their researchers are focused at the next objectives:

- Integrated control of pests and physiological disorders in the vineyard.
- New technologies in winemaking.
- driving systems of the vineyard.

- physico-chemical analysis of musts and wines.
 - Automation and process control winemaking.
 - Selection, identification and monitoring of spontaneous and inoculated yeast, using molecular markers in the field and cellar.
 - Application of plant growth regulators in the vineyard.
 - Study of aging wine in barrels and alternative systems.
 - genetic characterization by microsatellite vine varieties.
 - Biotechnology winemaking.
 - Mineral nutrition and fertilization of the vineyard.
- **Universidad Politécnica de Madrid (UPM)**

Contact: Eva María, Báguena **Email:** internacional.investigacion@upm.es

Phone: +34 913363631

Website: <http://www.upm.es>

UPM's Schools cover most of engineering disciplines. The UPM researchers have large expertise in research projects participation both at national and international level. The presence of UPM in the international R&D arena is ensured by its consistent participation in various EU programmes. As UPM participation in the 7th Framework Programme is concerned, the University has taken part in above 230 European R&D projects with more than 63 M€ of funding received from the European Commission. The UPM has been recognized as the Spanish University with the highest number of projects approved.

Agricultural systems group

Contact: Carlos Gregorio Hernández Díaz-Ambrona **Email:** carlosgregorio.hernandez@upm.es

Address: CAMPOS DE PRÁCTICAS DE LA ESCUELA TÉCNICA SUPERIOR DE INGENIEROS AGRÓNOMOS—Ciudad Universitaria, 28040 Madrid

Website: <http://www1.etsia.upm.es/GRUPOSINV/AgSystems>

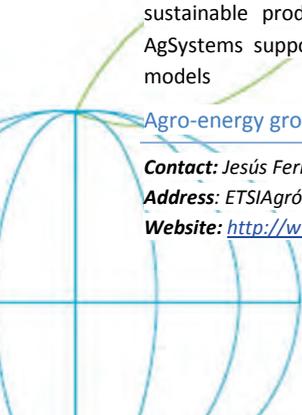
The Research Group Agricultural Systems (AgSystems) is an interdepartmental consortium of university researchers from the Departments of “Producción Vegetal: Fitotecnia” and “Biología Vegetal” of the Universidad Politécnica de Madrid. The main idea of research is the study of management and productivity of agricultural systems and their relation to environment. The final objective is the design of new or modified strategies for sustainable production systems under current and future conditions. To this end, AgSystems supports research projects that combine field experiments and simulation models

Agro-energy group

Contact: Jesús Fernández **Email:** j.fernandez@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.grupodeagroenergetica.com>



Agroecosystems contamination by agricultural practices

Contact: Antonio Vallejo **Email:** antonio.vallejo@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.upm.es>

Animal production

Contact: Juan Carlos, de Blas **Email:** c.deblas@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.upm.es>

Biodiversity and conservation of plant genetic resources

Contact: Maria Carmen Martín **Email:** mariacarmen.martin@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.upm.es>

Centre for Plant Biotechnology and Genomics

Contact: Fernando García-Arenal **Email:** fernando.garciaarenal@upm.es

Address: Parque Científico y Tecnológico de la U.P.M. Campus de Montegancedo, 28223 Pozuelo de Alarcón (Madrid)

Website: <http://www.upm.es>

In October 2005, the creation of a Centre for Plant Biotechnology and Genomics (Centro de Biotecnología y Genómica de Plantas, CBGP) was approved by Universidad Politécnica de Madrid (UPM) following a proposal from faculty from the Department of Biotechnology. The proposal of such a Centre had been maturing for a long time and from the beginning it had also included researchers from Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA). As a result, CBGP became a joint UPM-INIA research centre after the joint agreement was signed by both institutions in July 2006.

CBGP was created with a double goal: to carry out the most advanced research aimed at understanding plant function, and to contribute to fulfil the needs of the economic agents within the agriculture, forestry and environment productive sectors that are potential users of this research. CBGP also seeks to have an educational role, and strives to become a reference centre for training of both scientists and technicians in the fields of plant biotechnology and genomics, an area not fully developed in Spain at present.

Food quality engineering

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Hydraulics of irrigation

Contact: Leonor Rodriguez **Email:** leonor.rodriquez.sinobas@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.upm.es>

Improvement (of health) by fitness, nutrition and exercise

Contact: Marcela Gonzalez Gross **Email:** marcela.gonzalez.gross@upm.es

Address: INEF. c/Martin Fierro-Ciudad Universitaria, 28040 Madrid

Website: <http://www.upm.es>

Integrated pest management

Contact: Flor Budia **Email:** flor.budia@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.upm.es>

Laboratory of physical properties and advanced technologies in agri-food

Email: pilar.barreiro@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.lpftaq.upm.es/>

Mathematics Applied to Agricultural Engineering

Contact: Beatriz Recio **Email:** beatriz.recio@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.upm.es>

Oenology, oenotechnic and biotechnology of wine

Contact: Jose Antonio, Suarez Lepe **Email:** joseantonio.suarez.lepe@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.upm.es>

Plant Genetics Improvement

Contact: José María, Carrillo **Email:** josem.carrillo@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.geneticaymejora.es>

Plant protein biotechnology

Contact: Araceli Díaz **Email:** araceli.diaz@upm.es

Address: ETSIAgrónomos. Avda. Complutense, 28040 Madrid

Website: <http://www.bit.etsia.upm.es>



Research Centre for the Management of Agricultural and Environmental Risks

Contact: Alberto Garrido **Email:** Alberto.garrido@upm.es

Address: CAMPOS DE PRÁCTICAS DE LA ESCUELA TÉCNICA SUPERIOR DE INGENIEROS AGRÓNOMOS–Ciudad Universitaria, 28040 Madrid

Website: <http://www.ceigram.upm.es>

The Research Centre for the Management of Agricultural and Environmental Risks (CEIGRAM) is a Joint Research Centre of the Technical University of Madrid (UPM). It was created in 2007 under the collaboration agreement signed by the State Agency for Agricultural Insurance (ENESA, Autonomous Agency of the Ministry of Environment and Rural and Marine Affairs, MARM), AGROMUTUA-MAVDA (private insurer in the agricultural sector) and UPM.

CEIGRAM's activity focuses on development and innovation, dissemination and training, in the field of analysis and management of agricultural and environmental risks. Thanks to its description, its study topics and the composition of its staff, the CEIGRAM is integrated as part of the Technical School of Agricultural Engineering of the UPM.

- **University of Santiago de Compostela (USC)**

Contact: Eva Fabeiro Buceta **Email:** citt.europeos@usc.es **Phone:** +34 881816208

Website: <http://www.usc.es>

Mission: Agroecología EPS Lugo; Analytical Chemistry, Nutrition and Food Science Department; Food Technology Research Group; Laboratory for Research and Development of Analytical Solutions.

Agroecología EPS Lugo

Contact: Xan Neira Seijo **Email:** xan.neira@usc.es

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Website: <http://www.usc.es>

Analytical Chemistry, Nutrition and Food Science Department

Contact: M Pilar, Calo Mata **Email:** p.calo.mata@usc.es

Address: Campus Lugo, Avda Carballo Calero, 27002 Lugo

Website: <http://imaisd.usc.es/grupoficha.asp?idpersoatipogrupo=75517&i=gl&s=-126-...>

Food Technology Research Group

Contact: Perfecto Paseiro Losada **Email:** perfecto.paseiro@usc.es

Address: Laboratorio de Bromatología. Facultad de Farmacia (Universidad de Santiago), Campus Vida, 15782 Santiago de Compostela

Website: <http://imaisd.usc.es/grupoficha.asp?idpersoatipogrupo=75521&i=gl&s=-126-...>

Laboratory for Research and Development of Analytical Solutions

Contact: Carmen Garcia-Jares **Email:** carmen.garcia.jares@usc.es

Address: Campus Vida- Avda das Ciencias, 15782 Santiago de Compostela

Website: <https://www.usc.es/es/investigacion/grupos/lidsa/index.html>

LIDSA is a research group headed by three Associate Professors and senior researches (X, X y X) working in the field of analytical chemistry developments intended to be easily applied by chemical, textile, winemaking, food and personal care products industries. The group has full experience in recent sample preparation techniques for the analysis of several classes of chemical compounds that can be found naturally or as ingredients and pollutants in food, cosmetics, consumer goods, plastics and envelopments, building materials, among others. Chemical compounds of interest include polyphenols, wine aroma compounds, fragrances, parabens and other widespread used preservatives such as BHT, BHA, triclosan, brominated preservatives, isothiazolinone derivatives; phthalates, pesticides, PAHs, PCBs, etc. Techniques include solvent extraction (assisted by microwaves and ultrasounds, pressurized solvents) and solid-phase extraction, using microextraction developments (SPME, USAEME, MSPD). The group is instrumentally equipped with chromatographic techniques coupled to triple quadrupole mass detectors, and with other analytical techniques.

The group counts with regular funding by Spanish and regional government s, as well as from agreements with companies.

LIDSA currently collaborates with research groups from the INGACAL-CIAM, and from Universities of Santiago and Vigo, and the Technical University of Crete. Much of these collaborations are focused to the characterization, recovery and valorization of vegetable and winemaking industry wastes.

More information about research lines, projects, clients, publications, awards, and personnel can be found in the official web of LIDSA.

USC Research Group GI-1771

Contact: Olga Díaz Rubio **Email:** olga.diaz.rubio@usc.es

Address: Facultad de Ciencias de Lugo. USC. Campus de Lugo, 27002 Lugo

Website: <http://www.usc.es/tecnal/>

- University of Alcalá (UAH)

Contact: Sandra Fernández Gutiérrez **Email:** sandra.fernandez@uah.es **Phone:** +34 918852485

Website: <http://www.uah.es>

Mission: Analytical Chemistry Department; Biomedical Sciences Department and TECNAL R+D+I.



Analytical Chemistry Department

Contact: María Luisa, Marina Alegre **Email:** mluisa.marina@uah.es

Address: Departamento de Química Analítica. Edificio Polivalente. Universidad de Alcalá. Campus Universitario, 28870 Alcalá de Henares

Website: <http://www2.uah.es/mlmarina>

- Development of innovative analytical methodologies for the control of the quality and safety of foods.
- Novel markers for the detection of adulterations of foods.
- Valorisation of by-products of food industry: olive industry, soybean industry, etc. in order to re-use the bioactive ingredients present and to decrease the environmental derived problems.
- **Determination of amino acids, peptides, and proteins in foods by HPLC, micro/nano-HPLC and Capillary Electrophoresis.**
- Characterization and determination of vegetable proteins (soybean, olive, and cereal proteins) applied to food quality control.
- Identification of new bioactive compounds in foods and by-products of food industry. Determination of bioactive peptides in foodstuffs for their use in the preparation of functional foods or nutraceuticals.
- Food proteomics and metabolomics.
- Development of new analytical methodologies for chiral separations by capillary electromigration and chromatographic techniques applied to food analysis. New materials for enantiomeric separation using capillary electromigration techniques

Biomedical Sciences Department

Contact: Esther Ferrer Cebrián **Email:** esther.ferrer@uah.es

Address: Departamento de Ciencias Biomédicas I, Edificio de Biología Celular y Genética. Universidad de Alcalá, Campus Universitario, 28871 Alcalá de Henares

Website: <http://www.uah.es>

Identificación de genes de avena implicados en resistencia a patógenos, principalmente a la roya *Puccinia coronata*, mediante la utilización de:

- a) Métodos genéticos de localización de marcadores moleculares en mapas genéticos.
- b) Métodos genómicos de selección de genes diferencialmente expresados en plantas resistentes versus susceptibles a roya.
- c) Análisis fenotípico de resistencia a roya de cultivares de avena y selección.

Cell Biology and Genetics Department

Contact: Gregorio Hueros Soto **Email:** gregorio.hueros@uah.es

Address: Dpto. Biología Celular y Genética. Univ. Alcalá. Campus Universitario, 28870 Alcalá de Henares

Website: <http://www.uah.es>

Cereal Seed Development

- Public University of Navarra (UPNA)

Contact: Benigno Gómez/ Cristina Arizcun **Email:** servicio.investigacion@unavarra.es

Phone: +34 948169028

Website: <http://www.unavarra.es>

Animal Production and Meat Quality and Technology

Contact: Dr. José A. Mendizabal **Email:** jamendi@unavarra.es

Address: Dpto. de Producción Agraria - E.T.S. Ingenieros Agrónomos - Edificio Los Olivos - Universidad Pública de Navarra - Campus de Arrosadía, 31006 Pamplona

Website: <http://www.unavarra.es>

Research topics:

- a) Meat quality and technology:
 - Characterisation of local breeds.
 - Effect of diet on lipogenesis and fatty acid composition of meat.
 - Carcass classification.
 - Ageing/packaging technology.
 - Meat quality estimation by instrumental means.
 - Cured products/new meat products.
 - Food Biotechnology.
- b) Food security (“traceability”).
- c) Adipose tissue development and metabolism.

Institute of Agrobiotechnology

Contact: JON VERAMENDI **Email:** jon@unavarra.es

Address: Instituto de Agrobiotecnología - Universidad Pública de Navarra - Campus Arrosadía, 31006 Pamplona

Website: <http://www.agrobiotecnologia.es>

Mission: Animal production, meat quality and technology.

- University of Zaragoza (UNIZAR)

Contact: Susana Pérez Jiménez **Email:** susanapi@unizar.es **Phone:** +34 876553738

Website: <http://www.unizar.es>



The University of Zaragoza, founded on the year 1542, is considered as the main centre of Technological Innovation in the Ebro Valley and enjoys a great prestige among the Spanish and European Universities. The Research activity in the University is carried out through 202 research groups formed by 2400 researchers. The sustainable food and consumption is the core expertise of an important number of multidisciplinary research groups in our University.

Aragón Institute for Engineering Research

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Address: Pedro Cerbuna 12, Edificio Interfacultades 1ª planta 12, 50009 Zaragoza

Website: <http://www.unizar.es>

The University of Zaragoza, founded on the year 1542, is considered as the main centre of Technological Innovation in the Ebro Valley and enjoys a great prestige among the Spanish and European Universities. The following figures show the importance of the institution: 33.000 students, 2500 postgraduate students, 3000 researchers and educational staff, 1700 administrative staff and 19 faculties which offer 78 degrees covering all areas of knowledge from Humanities and Social Sciences to Engineering and Science studies. The Research activity in the University is carried out through 202 research groups formed by 2400 researchers. The research are of sustainable food and consumption is the core expertise of an important number of multidisciplinary research groups in our University.

- **Pablo de Olavide University (UPO)**

Contact: Bruno Martínez Haya **Email:** vrintest@upo.es **Phone:** +34 954349227

Website: <http://www.upo.es>

Pablo de Olavide University has succeeded in developing a research and training work very prominent. In just one decade has seen consolidate a number of excellent research teams in a variety of fields and a student population that has been growing and increasing their qualifications. The University has adopted an academic structure and organizational guarantee to respond with the purposes of the institution and the challenges posed by the economic and social environment in which it belongs.

One of the main groups related to SUSFOOD is the Unit of molecular biology and biochemical engineering.

Dpto. Biología Molecular e Ingeniería Bioquímica

Contact: Ángeles Ortega de la Torre **Email:** maortega@upo.es

Address: Carretera de Utrera, Km 1, 41013 Sevilla

Website: <http://www.upo.es>

- **Area de Nutrición y Bromatología**

Contact: Eva Valero **Email:** evalero@upo.es

Address: Carretera de Utrera, Km 1, 41013 Sevilla

Website: <http://www.upo.es>

- **Autonomus University of Madrid (UAM)**

Website: <http://www.uam.es>

Mission: Bioactive Extracts and Healthy Lipids Research Group.

Bioactive Extracts and Healthy Lipids Research Group

Contact: Dr. Francisco Javier Señoráns **Email:** javier.senorans@uam.es

Address: Sección Dept. Ciencias de la Alimentación - Facultad de Ciencias, despacho M-08-502 – UAM, 28049 Madrid

Website: http://www.uam.es/personal_pdi/ciencias/alimento/

Research and development in Food Science and Technology, with a focus in applied research for cooperation with industry.

- **University of Oviedo (UNIOVI)**

Contact: María Paz, Suárez Rendueles **Email:** viceinvestigación@uniovi.es

Phone: +34 985104061

Website: <http://www.uniovi.es>

Biomedicine and Health Cluster; Humans & Natural Resources; Infobotica RG and Nanobioanálisis.

UNIOVI - Department of Chemical Engineering and Environmental Technology

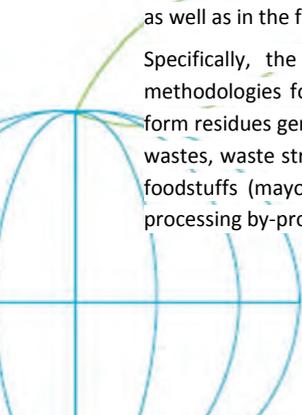
Contact: Mario Díaz **Phone:** +34 985 10 34 41

Address: Julián Clavería 8, 33006 Oviedo

Website: <http://www.uniovi.es/en/departamentos/ingenieriaquimica>

The research has been focused on two main topics: waste recovery/reuse of specialty components from residues, and the microbial production of commercial metabolites from food residues, with the aim of reducing and providing added value in the food processing as well as in the food chain.

Specifically, the areas of research interest have been the development of novel methodologies for the recovery of components (proteins, amino acids, peptides, etc...) from residues generated during food manufacture (slaughter-house blood, egg processing wastes, waste streams from dairy industry, etc...). We have developed successfully novel foodstuffs (mayonnaise, alcoholic beverages, etc...) and polymer gels from these food processing by-products.



In addition, the research group has been focused on the microbial production of value-added bio-products (bio-ethanol, organic acids, enzymes, etc...) from food by-products (cheese whey, residual yoghurt whey, etc...), designing novel strategies for a sustainable and cost-effective industrial production.

The research group has also contributed to the development of novel processes in the beer and cider industry by expanding knowledge on these industries. Emphasis has been also given on the environmental impact of food industry, particularly in the ready meal food and cider industry, through life cycle assessment methodology.

Biomedicine and Health Cluster

Contact: Julia María, Gutiérrez Álvarez **Email:** alvarezjulia@uniovi.es **Phone:** +34 985103994

Address: Plaza de Riego 4, 33003 Oviedo

Website: <http://cei.uniovi.es/biomedicina>

Humans & Natural Resources (UNIOVI-GAP)

Contact: Eva García-Vázquez **Email:** egv@uniovi.es **Phone:** +34 985102726

Address: Departamento de Biología Funcional, Universidad de Oviedo. C/ Julián Clavería, 33006 Oviedo

Website: <http://www.uniovi.es>

Infobotica RG

Contact: Ignacio, González Alonso **Email:** gonzalezaloignacio@uniovi.es **Phone:** +34 985458162

Address: C/Gonzalo Gutierrez Quirós, 33600 Mieres, Asturias

Website: <http://www.uniovi.es>

Nanobioanálisis

Contact: Carmen Blanco, Agustín Costa **Email:** costa@uniovi.es **Phone:** +34 985458162

Address: Plaza de Riego, nº 4, 1ª planta, 33003 Oviedo

Website: <http://www.uniovi.es>

- **University of Lleida (UdL)**

Contact: Jaume Puy Llorens **Email:** vr.secretaria@udl.cat **Phone:** +34 973702018

Website: <http://www.udl.cat/>

The 26 departments of UdL form a basic structure able to bring together the human capital needed for research. This structure is complemented by the UdL-IRTA Foundation, the IRBLleida Foundation and the Agri-food Science and Technology Park, which were jointly set up by the University of Lleida and a number of Catalan public institutions. The

University also has a research support network designed to enable research groups to work together in providing scientific technical services. Amongst the most outstanding are the electron microscopy and nuclear magnetic resonance spectrometry services. Both are equipped with state-of-the-art technology and have proved to be invaluable in leading research projects.

Centro DBA

DBA has the mission to transfer its research results and innovation experience to companies using eco-friendly processes that provide biotransformations of waste and low-value products from agriculture, forestry and food industries into value-added products with diverse applications. We focus our activities in aspects like: transformation of wastes and low-value products from agriculture, forestry and food industries; development of biocatalysts; advanced analytical methods development; advice on microbiological issues; environment-friendly synthetic methods; biodiesel production; and use of glycerol.

Novel technologies for food processing (UdL-NOVELTEC)

Contact: Olga Martín-Belloso **Email:** omartin@tecal.udl.cat

Address: Alcalde Rovira Roure 191, 25198 Lleida

Within the research group we are actively working on the development of appealing, safe and healthy ready-to-eat fruit and vegetable derivatives by combining the already existing processing technologies with novel techniques such as pulsed electric fields, intense pulsed light, ultrasounds, cold plasma, modified atmosphere packaging, edible coatings, nanoemulsions and nanoencapsulation in addition to the valorization of wastes generated by the fruits and vegetables processing industries. Modeling, process condition optimization, kinetics and shelf-life studies are important tools for achieving the research objectives.

Physical technologies above mentioned may be used to both food preservation and increasing the efficiency in extraction of compounds from fruits and vegetables wastes. In addition, incorporation of the extracted compounds in food through edible emulsions or coatings is also one of our areas of expertise.

- **Universidad Politècnica de Catalunya (UPC)**

Contact: Ana Isabel Pérez Neira **Email:** vre.pneira@upc.edu **Phone:** +34 93 401 61 11

Website: <http://www.upc.edu>

The aim of the research groups is to organise research into teams and to transfer their results to society. Some are specific research centres (CER) whose main aim is to meet the demands of external public or private entities in specific research fields; others belong to the TECNIO network of support centres for technological innovation. Research centres

partially owned by the UPC that have an independent legal status and were created in collaboration with other public and private institutions. One of this research groups is the “Agrifood Cluster UPC”.

CLÚSTER AGRO@LIMENTARIO UPC (UPC CLUSTER AGRO-FOOD)

Contact: Dra. Montserrat Pujolà Cunill **Email:** montserrat.pujola@upc.edu **Phone:** +34 935521114

Address: Campus Baix Llobregat UPC - Esteve Terradas, 8 – Edificio D4 31, 08860 Castelldefels

Website: <http://clusteraagroalimentari.upc.edu>

- University of Cordoba (UCO)

Contact: Elena Fernández-Conde Cuadra **Email:** otri@uco.es **Phone:** +34 957218022

Website: <http://www.uco.es>

The main department related to sustainable food research at UCO is the Department of nutrition and food technology whose mission is the quality food, safety and nutrition.

The researching group develops its R + D + i in lines of work directly related to the discipline that is called, some of which has been developing for two decades, at the same time seek to open up new fields of interest. These guidelines are applicable to collaborative studies and research with companies.

- University of Extremadura (UEx)

Contact: María Ángeles, Guisado Valsera **Email:** sgtriinv@unex.es **Phone:** +34 924 289342

Website: <http://www.unex.es/>

Applied Economic Analysis (AEA-UEx)

Contact: María Teresa, Fernández Núñez **Email:** teresafn@unex.ex **Phone:** +34 924289300 ext. 89169

Address : Avda de Elvas 06006 Badajoz

Website: <http://www.unex.es/>

Commercial and productive specialization in food industry in European Union

Biochemistry Department

Applied Economic Analysis; Applied Social Studies Group; Bioantropocordis; Physiology , cellular and molecular biology of plants; Food Quality and Technology; Food Technology; Forestry Research; Hyperspectral Computing; Local and sustainable development; Management, soil conservation and recovery, water and sediments; Media Engineering Group; Micrology Veterinary; Nutrigenomics and metabolism; Physiology, Analytical Chemistry and community health; Quality Food and Microbiology; Robotics and Artificial Vision; Tradinnoval Research Group.

- **Technical University of Valencia (UPV)**

Contact: Carmen Rodrigo Aliaga **Email:** ctt@ctt.upv.es **Phone:** +34 963877409

Website: <http://www.upv.es>

The main department related to sustainable food research in UPV is the Food and Technology Department.

- **University of Vigo (UVIGO)**

Website: http://www.uvigo.es/uvigo_en/index.html

The main department related to sustainable food research in UVIGO is the Food Safety and Environmental Toxicology; Group EQ2 – Uvigo.

- **Jaume I University (UJI)**

Website: <http://www.uji.es/>

The University Jaume I is located in the first half of the table in research and teaching production among 48 Spanish public universities analyzed in the U-Ranking prepared by the BBVA Foundation and the Valencian Institute of Economic Research (IVIE). Specifically, the scientific production at the UJI is positioned at number 21, while on teaching production it stands at 24. Production data take into account the relationship between the results and the size of each university, to make them more comparable.

- **University of Barcelona (UB)**

Contact: Antonio Casabosch Ramos **Email:** g.recerca@ub.edu **Phone:** +34 934035398

Website: <http://www.ub.edu>

The main department related to sustainable food research in UB is the Laboratory of water contaminants viruses and Food and the Microbiology Department.

- **Research Center for Animal Health (CRESA)**

Contact: Joaquim Segalés **Email:** Joaquim.segales@cresa.uab.cat **Phone:** +34 935814492

Website: <http://www.cresa.es/cresa3/default.asp?mod=strmenu01&idioma=es>

Mission of CRESA: Contribute to the scientific advance in the field of animal and public health by means of basic and applied research, knowledge transfer and service to private and public partners.

- **University of La Rioja (UNIRIOJA)**

Contact: Javier Tardáguila Laso **Email:** vice.investigacion@unirioja.es **Phone:** +34 941299106

Website: <http://www.unirioja.es>



Research Group of Analytical Chemistry; Research Group of Antimicrobial resistance and food security; Research Group of Biotechnology of the Department of Food and Agriculture; Research Group of Recision Viticulture.

Applied Social Studies Group

Contact: Eusebio Medina García **Email:** emedina@unex.es **Phone:** +34 927257049

Address : Fac. de Formación del Profesorado. Avda. de la Universidad, 10003 Cáceres

Website: <http://www.gessa-ex.es/>

BIOANTROPOCORDIS

Contact: Javier Barca Durán **Email:** Javierbd22@gmail.com **Phone:** +34 661849743

Address : FACULTAD DE ENFERMERÍA Y TERAPIA OCUPACIONAL. Avenida de la Universidad, 10071 Cáceres

Website: <http://www.unex.es/>

The comprehensive management of cardiovascular risk and cardiovascular rehabilitation is our field of interest. In particular dietary reeducation in patients with cardiovascular risk or with cardiovascular disease. Also the search and selection of heart-healthy foods.

Fisiología y biología celular y molecular de plantas (FBCMP – Uex)

Contact: Francisco Espinosa Borreguero **Email:** espinosa@unex.es **Phone:** +34 661849743

Address: Área de Fisiología Vegetal, Campus Avenida, 06006 Badajoz

Website: <http://www.unex.es/>

- Mycorrhization of plants of agricultural interest.
- Defense reactions of plants to pathogens.
- Culture "in vitro" plant of interest.

Food Quality and Technology (TECAL-UEx)

Contact: Jesús Ventanas Barroso **Email:** gestorali@unex.es **Phone:** +34 927257100 – Ext. 51343

Address: Facultad de Veterinaria – Avda. de la Universidad s/n, 10003 Cáceres

Website: <http://www.unex.es/>

- APPLICATION OF DYNAMIC SENSORY TECHNIQUES TO EVALUATE THE SENSORY QUALITY OF
- MEAT PRODUCTS
- PROTEIN AND LIPID OXIDATION IN MUSCLE FOODS
- BIOACTIVE COMPOUNDS (conjugated linoleic acid, ω -3 (PUFA), oleic acid, antioxidant extracts of local plants and plant by-products, natural tocopherol isomers) ENRICHMENT OF MEAT AND MEAT PRODUCTS THROUGH DIFFERENT STRATEGIES

- R+D+i IN NEW CULINARY METHODS
- ENVIRONMENTALLY FRIENDLY MEAT PRODUCTION
- EMERGING TECHNOLOGIES AND NEW PACKAGING STRATEGIES IN DRY-CURED HAM

Food Technology (TALICA-UEx)

Contact: M^a Luisa, Timón Andrada **Email:** mltimon@unex.es **Phone:** +34 924286200

Address: Escuela de Ingenierías Agrarias. Carretera de Cáceres, 06007 Badajoz

Website: <http://www.unex.es/>

The research group has developed a number of research projects related to quality of food products (meat, meat products, milk products, fruits, mushrooms). The group has a wide experience in research in relation to the decrease in oxidative damage in food and in the implementation of modified atmospheres and edible coatings in several products. Other researches focused in the revalorization of agricultural by-products, such as tomato, wine and olive waste, have been carried out.

Highlighted projects:

- Technological and microbiological optimization of modified atmosphere packaging (MAP) of Iberian ham and shoulder slices.
- Equipment for vacuum and modified atmosphere packaging of fresh and precooked products
- Lamb meat packed in modified atmosphere: shelf life improvement and quality maintenance
- Analysis of antioxidant effect of natural extracts in precooked and MAP meat products
- Technological development of a new curing process of Iberian sausages
- Manufacturing Iberian "salchichón" and "chorizo" with antioxidant active peptides. Use of different packaging atmospheres in fresh meat and derived cured products from Iberian pig and prolonging shelf life.
- Effect of the addition of natural antioxidants from tomato waste paste in feeding of lambs on meat quality. Shelf life of MAP meat. Preliminary studies in precooked and cooked products.

Forestry Research (GIF-UEx)

Contact: Fernando Pulido **Email:** nando@unex.es **Phone:** +34 927257000 ext 52155

Address: Centro Universitario, Ingeniería Forestal, Avenida Virgen del Puerto 2, 10600 Plasencia Cáceres

Website: <http://www.unex.es/>

- Using wild fruits, especially selected oak acorns in the diet Animal oleic exploiting its potential, antioxidant and antiparasitic.

- Using wild fruits, especially selected oak acorns in the human diet exploiting their potential oleic and antiparasitic antioxidant for humans.
- Exploitation of natural phenolic compounds forest environments.

Hyperspectral Computing (HYPERCOMP)

Contact: Antonio Plaza Miguel **Email:** aplaza@unex.es **Phone:** +34 927257000

Address: Fac. de Formación del Profesorado. Avda. de la Universidad, 10003 Cáceres

Website: <http://www.unex.es/investigacion/grupos/hypercomp>

Local and sustainable development (DELSOS – Uex)

Contact: Aurelio, Moreno Fernández - Durán **Email:** amor@unex.es **Phone:** +34 600722402

Address: Mingo Ramos 2, 06006 Trujillo

Website: <http://www.unex.es/>

Director, along with Juana Labrador and Rafael Robina of various Conference on Enterprise, Ecological Agriculture, organized by the Faculty of Business Studies and Tourism in collaboration with the Association for Culture and Nature (Acuna). Disclosure through samples and tasting organic food products sustainable food, including acts of disclosure of the benefits of the food with organic products at the University of Extremadura, making two meals with products in the Central Dining ecological. Transferability of results to organic production companies. Local sustainability indicators. Member of the Research Group DELSOS Local and Sustainable Development.

Management, soil conservation and recovery, water and sediments (GORSAS – Uex)

Contact: Aurelio, Moreno Fernández - Durán **Email:** amor@unex.es **Phone:** +34 600722402

Address: Mingo Ramos 2, 06006 Trujillo

Website: <http://www.unex.es/>

Management, soil conservation and recovery, water and sediments (GORSAS – Uex)

Contact: Antonio López Piñeiro **Email:** pineiro@unex.es **Phone:** +34 924289355

Address: Avda de Elvas, 06006 Badajoz

Website: <http://www.unex.es/>

Media Engineering Group (GIM- UEx)

Contact: Manolo Barrera **Email:** barrera@unex.es **Phone:** +34 927257257

Address: Fac. de Formación del Profesorado. Avda. de la Universidad, 10003 Cáceres

Website: <http://gim.unex.es/>

Micrology Veterinary (MIVET – Uex)

Contact: Alberto Quesada Molina **Email:** aquesada@unex.es **Phone:** +34 927257000

Address: Depto. Bioquímica, Facultad de Veterinaria, Av. de la Universidad s/n, 10003 Cáceres

Website: <http://www.unex.es/>

Molecular and epidemiological characteristics of antimicrobial resistance detected in strains of Enterobacteriaceae (Salmonella) and Campylobacter isolated from food, animals and human clinical cases.

Nutrigenomics and metabolism (NUTRIMET – Uex)

Contact: M^a Elena, García Martín **Email:** elenag@unex.es **Phone:** +34 924289676

Address: Servicio de Gestión y Transferencia de Resultados de la Investigación (SGTRI) Ed. Guadiana - Gestión del Conocimiento Av. de Elvas s/n, 06006 Cáceres

Website: <http://www.unex.es/>

- Biomarkers in adverse reactions to allergens and drugs, including food allergies
- Nutrigenomics
- Nutritional supplements and bio-active principles.

Physiology, Analytical Chemistry and community health (FIQASAC – Uex)

Contact: Marcos Maynar Mariño **Email:** mmaynar@unex.es **Phone:** +34 661510597

Address: Servicio de Gestión y Transferencia de Resultados de la Investigación (SGTRI) Ed. Guadiana - Gestión del Conocimiento Av. de Elvas s/n, 06006 Cáceres

Website: <http://www.unex.es/>

We implement and evaluate dietary and nutritional survey on macro and trace minerals, through a program conducted by our group. We also perform mineral determinations in human matrices, serum, plasma, and urine erythrocytes.

Robotics and Artificial Vision (Robolab – Uex)

Contact: Pablo Bustos **Email:** pbustos@unex.es **Phone:** +34 927257259

Address: Fac. de Formación del Profesorado. Avda. de la Universidad, 06006 Cáceres

Tradinnoval Research Group (TRADINOVA – Uex)

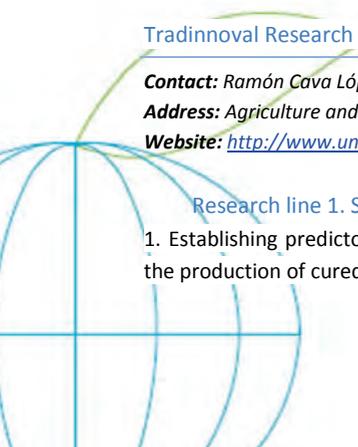
Contact: Ramón Cava López **Email:** rcava@unex.es **Phone:** +34 927257169

Address: Agriculture and Agronomy Unit - Facultad de Veterinaria, 10003 Cáceres

Website: <http://www.unex.es/>

Research line 1. Sustainable and ecologic meat production

1. Establishing predictors of quality parameters in fresh pork Iberian and Alentejano for the production of cured meat products and fresh consumption. (IPR99D01. JExt). Project



Coordinator: Dr. Ramón Cava

7. Organic production of beef under different production systems: identification of potential biomarkers associated with the production, meat quality and adequacy of conservation processes. (Reference: RTA2012-00051-C02-02. INIA) Project Coordinator: Dr. Ramón Cava

Research line 2. Minimal processing for safety and healthy traditional and new foods

1. Evaluation of emerging technologies for conservation-oriented quality assurance and food safety in Iberian pig products (PDT09A016. JExt). Project Coordinator: Dr. Ramón Cava

Research line 3. Antioxidants and antimicrobials from natural resources and agrifood industry by-products

1. Development of new processed Iberian products with natural antioxidants. (IPR00A059. JExt). Project Coordinator: Dr. Ramón Cava

2. Suitable plant extracts to control oxidation processes in food. (PDT06A028. JExt) Project Coordinator: Dr. Ramón Cava

Research line 4. Agri-food industry by-products as functional ingredients

1. Development of Iberian meat products enriched in fibre and lycopene: development of functional products (PDT05A055. JExt). Project Coordinator: Dr. Ramón Cava

2. Developing a range of healthy and functional meat products from Iberian fat and tomato fibre: adaptation to new nutritional guidelines and recommendations (PDT07A025. JExt). Project Coordinator: Dr. Ramón Cava

2. Evaluation of quality and technological aptitude Iberian pigs from different genetic lines crosses with Duroc pig. (2PR02B018. JExt). Project Coordinator: Dr. Ramón Cava

3. ECONWELFARE. Good animal welfare in a socio-economic context: Project to promote insight on the impact for the animal, the production chain and European society of upgrading animal welfare standards. (FP7 programme of the European Comdescription). Project Coordinator: Dr. Hans Spooler

4. Improved quality of Iberian pigs fed on extensively: Use of tomato industry by-products (PDT08A024. JExt). Project Coordinator: Dr. Ramón Cava

5. Study the feasibility of different models of organic beef production: Influence on meat quality and economic analysis. (RTA2009-0012. INIA) Project Coordinator: Dr. Susana García

6. Influence of production conditions on the overall quality of Iberian pork: nutritional technological and ethical aspects (Subproyecto 2). (RTA2011-00035-C02-02. INIA). Project Coordinator: Dr. Ramón Cava

UeX - Food Quality and Microbiology Research Group (CAMIALI – Uex)

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Website: <http://www.unex.es/>

- **University of Salamanca (USAL)**

Contact: María José Gil Ingelmo **Email:** mjgil@usal.es **Phone:** +34 923 29 4490
Website: <http://www.usal.es/webusal/inicio>

Salamanca University boasts a wide range of faculties and research institutions in sciences and humanities. It is a public university, located in Salamanca, in the region of Castilla y Leon, and is within the 15 first public universities of the country in the matter of research. The research groups at the University also participate regularly in European RDT Framework programmes and other international programmes. University of Salamanca has 26 research institutes and technological centres distributed among all the areas of knowledge. All of them have contributed to enhancing the role of the University of Salamanca as a knowledge generator in different areas.

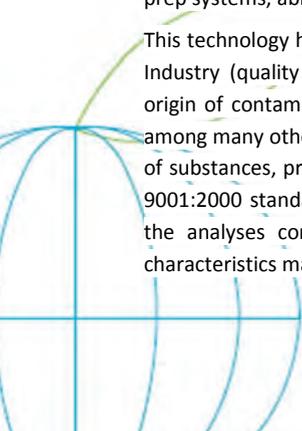
The main department related to sustainable food research in USAL is the Stable Isotope Laboratory.

Stable Isotope Laboratory

Contact: Dr Clemente Recio Hernández **Email:** recio@usal.es **Phone:** +34 923294500 - Ext. 1540
Address: Laboratorio de Isótopos Estables - Facultad de Ciencias - Plaza de los Caídos 37008 Salamanca
Website: <http://www.usal.es/isotopos>

The Stable Isotope Laboratory is an useful service for the determination of stable isotopic ratios of light elements (H, C, N, O and S) in a wide variety of materials. These stable isotopes are very good natural tracers and they are difficult to be tampered with or falsified. The lab is equipped with 5 magnetic sector mass spectrometers, and several prep systems, able to handle a range of materials for analysis.

This technology has many applications in a variety of fields, such as, Earth Sciences, Food Industry (quality control / quality assurance), environmental consultancy (tracking the origin of contaminants in soil and water) and mineral and energy resource exploration, among many other. The technique has evolved and it can be used to analyse a wide range of substances, processes, provenance and quality assurance of food. The Lab has the ISO 9001:2000 standard certification, and is currently in the process of accrediting some of the analyses commonly offered according to the ISO 17025:2005 standards. These characteristics make it unique at national level, and competitive at international level.



- **Universidad Complutense de Madrid (UCM)**

Contact: Ignacio Gómez Cuesta **Email:** ignacio.gomez@rect.ucm.es **Phone:** +34 913946472

Website: <http://www.ucm.es>

The main department related to sustainable food research in UCM is the Supercritical Food.

Supercritical Food (UCM)

Contact: Lourdes Calvo Garrido **Email:** lcalvo@quim.ucm.es **Phone:** +34 913944185

Address: Facultad de Ciencias Químicas, Avenida Complutense, 28040 Madrid

Website: <http://www.ucm.es>

- **University of Castilla-La Mancha (UCLM)**

Contact: Cecilia Fernández Vaquero **Email:** cecilia.fernandez@uclm.es **Phone:** +34 967599200

Website: <http://www.uclm.es/>

The main department related to sustainable food research in UCLM is the Food Technology and the Faculty of Sciences and Chemical Technologies.

Tecnología de Alimentos. Facultad de Ciencias y Tecnologías Químicas

Contact: Ana Isabel Briones Pérez **Email:** Ana.Briones@uclm.es **Phone:** +34 926295300 - ext 3424-

Address: Avda Camilo José Cela 10, 13071 Ciudad Real

Website: <http://www.uclm.es/>

- **Universidad Nacional de Educación a Distancia (UNED)**

Contact: Elisa Estébanez **Email:** mestebanez@pas.uned.es **Phone:** +34 913987589

Website: <http://www.uned.es>

Research is for UNED a priority. Since its inception, our University has had professors and renowned researchers and relevant trajectories. Our main asset in this area are our research groups, with the development of their scientific projects, enable the generation of new knowledge is attached to the role of forming and transmitting culture of our University.

- **University A Coruña (UdC)**

Website: <http://www.udc.es/>

The University of A Coruña is a public institution that has as its primary objective the generation, management and dissemination of culture and scientific, technological and professional development through research and teaching.

Genetic of Marine Organisms (XENOMAR – UdC)

Contact: Josefina Méndez Felpeto **Email:** josefina.mendez@udc.es **Phone:** +34 981167050 Ext 2055

Address: Facultad de Ciencias, Departamento de Biología Celular y Molecular. A Zapateira s/n, 15071 A Coruña – Galicia

Website: <http://www.xenomar.es>

- University of Huelva (UHU)

Contact: Francisco Tallante Ruiz **Email:** fr@dqyp.uhu.es **Phone:** +34 959219481

Website: <http://www.uhu.es>

The scientific development of the research groups of the University of Huelva and the potential increase of the results obtained in the last ten years have led to the development of new projects applied to the needs that today's society demands. Under this environment, it is necessary to dissemination of knowledge in society, to bring this progress of science and technology to other citizens. Research projects led or participated by researchers at the University of Huelva, experts from scientific and humanistic knowledge of the university community, require a qualified informative treatment.

- University of Jaén (UJA)

Contact: José Rodrigo Gallardo **Email:** jrodrigo@ujaen.es **Phone:** +34 953213343

Website: <http://www.ujaen.es>

Its objective is to promote the development of research in the various fields of knowledge and its transfer to society by providing various services to researchers.

- University of León (ULE)

Contact: Alberto J. Villena **Email:** vice.investigacion@unileon.es **Phone:** +34 987 291637

Website: <http://www.unileon.es>

ULE's mission is to value our knowledge capital to contribute to the society that supports dynamic graduates ready to enter the world of work to achieve success and results in basic and applied research focused mainly on human development with respect to the environment and values education. Our commitment is to reach the excellence in teaching, research and innovation.

- University of Sevilla (US)

Contact: Mercedes Fernández Arévalo **Email:** dsinves@us.es **Phone:** +34 954488103

Website: <http://www.us.es>

The University of Seville Research considered as the work of creation, development and updating critical science, technology, art and culture. The research activity is carried out



within the departments, university institutes and research centers, and has sources of public and private funding. The University has a strong commitment to social and economic development of their environment, so it works intensively to transfer knowledge and technology to society and productive.

- University of the Balearic Islands (UIB)

Contact: Xavier Garcias **Email:** osr@uib.es **Phone:** +34 971172940

Website: <http://www.uib.es>

The main departments related to sustainable food research in UIB are: Agro-food engineering; Biochemistry, molecular biology, nutrition and biotechnology – nutrigenomics. The lines are: Nutrition, genes and pathologies; Obesity and cancer; Nutrigenomics and customized nutrition; Functional foods. Food safety and quality; Food engineering: process simulation.

Research institutes of Murcia

- University of Murcia (UMU)

Contact: Mar Sojo **Email:** operum@um.es **Phone:** +34 868884291

Website: <http://www.um.es/>

Departamento de Tecnología de los Alimentos, Nutrición y Bromatología

Contact: M^a Jesús Periago Castón **Email:** mjperi@um.es **Phone:** +34 968884793

Website: <http://www.um.es/nutbro>

- Universidad Politécnica de Cartagena (UPCT)

Contact: María Jesús Legaz **Email:** opect@upct.es **Phone:** +34968338991

Website: <http://www.upct.es>

The Universidad Politecnica de Cartagena is devoted to the preparation of its students for the professional world, opening their minds to the most recent knowledge and discoveries. The Higher Technical School of Agricultural Engineering is leading in terms of research output and quality, is consist of several departments: Department of Food Engineering and Agricultural Equipment Department, Department of Agriculture Science and Technology and Department of Plant Production. There is also a Workstation for Agrifood Research with several greenhouses, laboratories and experimental farms.

The University promotes joint research and scientific exchange programmes with public and private organizations, as well as with numerous universities. In order to face the challenges of current society and the needs of the labour market, the University organizes conferences and seminars in various areas of science and technology, which also help to strengthen the links between the University and the world of industry. It also teaches several postgraduate and doctoral programmes. The Higher Technical School of

Agricultural Engineering also has a PhD program with quality mention from the Spanish government since 2006.

With over 72 active research and development groups, this University aims to be not only a place for the diffusion of knowledge, but also a source of scientific and technological creation. These groups carry out basic and applied research into a broad variety of fields like Food safety, food processing and packaging technology and engineering, to mention just a few.

The Institute of Vegetable Biotechnology (IBV) was created in the UPCT in the year 2000 to establish and consolidate excellence groups in the Region of Murcia in the areas of vegetable and agricultural biotechnology and biological systems engineering, with the development of relevant projects of agricultural production and its industry. Main Research lines: Technology and Engineering of Biotechnical Processes Development and application of technology and engineering of biotechnical processes to obtain bottled, canned or packed food and drinks. Active and intelligent vessels. Food by-products and waste recycling.

The European Project Office of UPCT has a wide experience in EU projects: they coordinate one Collaborative Project and one directorate-General for environment project (and participates in several FP7 Collaborative Projects and Network of Excellence). The Knowledge Transference Office of the Universidad Politécnica de Cartagena facilitates and promotes collaboration between the university research world and companies from its socio-economic environment. The KTO develops the following functions:

- Identification, assessment, protection, diffusion and promotion of the knowledge and abilities generated within the University, promoting their technological transfer.
- Promotion, participation and advice in the elaboration and negotiation of the research co-operative agreements and in the preparation of the proposals for the public administrations.

Research activities are supported by the S.A.I.T., the Technological Research Support Service. This service was created in 1992 with the aim of facilitating and gathering the work of the different university R+D groups, in close cooperation with different public and private bodies. It is divided into two well-equipped and advanced units: the Computing and Industrial Design Unit, and the Service of Technological Instrumentation and Environmental Control.

- Universidad Católica San Antonio (UCAM)

Website: <http://www.ucam.edu/>

- CEBAS-CSIC Spanish National Research Council

Contact: Yolanda Hernando **Email:** yhernando@cebas.csic.es **Phone:** +34 968 39 63 56

Website: <http://www.cebas.csic.es/>

The Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC) is a research institute of the Spanish National Research Council (CSIC)- the first national research agency in Spain. CEBAS-CSIC carries out scientific research and develops technology directed at improving agricultural and food development within a sustainable use of natural resources in semiarid environments. CEBAS-CSIC has more than 50 years research experience which guarantee its quality and compromise with excellence in research.

- Association Enterprises Metal Technology Centre (CTMETAL)

Contact: *Fernando Hidalgo* **Email:** fhidalgo@ctmetal.es **Phone:** +34 968 89 70 65

Website: <http://www.ctmetal.es/CC/jsp/Portal/PortadaPortal.jsp?ce=CTMETAL>

Its experience classified as: - Industrial Safety And Quality - Quality Management Systems - Environmental Management Systems - Ec Marking - Industrial Design - Product Design - Industrial Automation And Robotics - Phytosanitary Machinery Testing Laboratory - Irrigation Materials Laboratory

- Centro Tecnológico del Calzado y del Plástico (CETEC)

Email: cetec@forodigital.es **Phone:** +34 968 63 22 00

Website: <http://www.ctcalzado.org/CC/jsp/Portal/PortadaPortal.jsp?ce=CETEC>

Technology Watch: a technological update system based on constant observation and analysis of key plastics sector information sources, providing firms with the latest developments and innovative techniques in the industry. Documentary service: an information service providing members with bibliographic funds, lists of documentaries, regulations and periodic information bulletins. IRC network collaborating organization: a compilation, analysis and distribution of technological offers and requests that circulate within the IRC network. Advice on patent rights: patents, utility models, brands and design. Resolution of technical queries.

- Centro Tecnológico Nacional de la Conserva (CTNC)

Email: angel@ctnc.es **Phone:** +34 968 38 90 11

Website: <http://www.ctnc.es/>

- Centro Tecnológico de la Energía y el Medio Ambiente (CETENMA)

Contact: *Sergio Frutos* **Phone:** +34 968 52 03 61

Website: <http://www.cetenma.es/CC/jsp/Portal/PortadaPortal.jsp?ce=CTMA>

CETENMA, is a private, non-profit Business Association, which was set up to support companies with technological research, development and innovation in all areas relating to Energy and the Environment, thereby assisting them in becoming more competitive. Our R&D activities range over four main areas of Knowledge: Water Technology, Bioenergy, Renewable Energies and Energy Efficiency. CETENMA is your R&D reference in energy and environment preservation.

- AGROFOOD COOPERACION EMPRESARIAL (AGROFOOD)

Contact: Pablo Flores **Email:** pablo@agrofoodmurcia.com **Phone:** +34 968 38 90 11

Website: <http://www.agrofoodmurcia.com/>

- Federación de Cooperativas Agrarias de la Región de Murcia (FECOAM)

Contact: Pedro Sánchez Seiquer **Email:** psanchez@fecoam.es **Phone:** +34 968 35 12 82

Website: <http://www.fecoam.es/web/portal/inicio>

- Centro Tecnológico Naval y del Mar (CTN).

Contact: Noelia Ortega **Phone:** +34 968 19075021

Website: <http://www.ctnaval.com/CC/jsp/Portal/DetalleServicio.jsp>

The Naval Technology and Sea Center (hereafter CTN) is a non-profit association born in 2003 which aims at improving the competitiveness of maritime and naval industry by promoting R&D activities.

CTN offers a multipurpose technical department with naval, marine, industrial, telecom engineering, competitive intelligence and biological capabilities. We also want to be a meeting place between companies, other research organizations and regional and national administration Centro Tecnológico Naval y del Mar

Research institutes of the Basque Country

- AZTI-Tecnalia (AZTI)

Contact: Jaime Zufia **Email:** jzufia@azti.es **Phone:** +34 946574000

Website: <http://azti.es>

AZTI-Tecnalia's experience and in-depth knowledge of the food industry is its greatest strength. Specialisation in future technologies and our capacity to develop complex projects provide firm guarantees. That's why at AZTI-Tecnalia we support the search for the best products, processes and systems for an increasingly diversified food industry.

Thanks to our policy of permanent investment, both in scientific/technical equipment and high-level training for our professionals, AZTI-Tecnalia enables the companies that place their trust in us – guaranteeing maximum confidentiality in their projects – to achieve technological excellence.

We work with the following sectors of the food industry:

- Pre-cooked meals, catering and the restaurant trade
- Transformation of fish products
- Drinks manufacturers: bottled water, juice, cider and wine
- Fruit and vegetable transformation
- Dairy sector
- Meat sector
- Bread-patisserie sector

Equipment: manufacturers of appliances and industrial equipment



No matter what your sector in the food industry (packaged ready-to-eat fresh and pre-cooked products; fish products, meat products, bread and patisserie products; dairy products; snacks; non-alcoholic drinks, etc.), AZTI-Tecnalia invites you to discover the most suitable and state-of-the-art food preservation processes/technologies. These technologies can be applied to products that are fresh, relatively unprocessed, manufactured, frozen, refrigerated (pasteurised and unpasteurised) and/or stored at room temperature (sterilised or dehydrated).

We offer proven experience in the field of food preservation, stabilisation and decontamination processes and technologies, and can obtain and adapt new technologies to design new products, both intermediate and finished, or improve production systems. Furthermore, we provide advice and guidance regarding the automation of processes and support for the validation of technologies for the food industry.

- **Ikerkuntza eta teknologia (Leartiker)**

Contact: Naia Andonegi **Email:** nandonegi@leartiker.com **Phone:** +34 946169167

Website: <http://www.leartiker.com/>

Leartiker is the center of research and technology of Lea Artibai Ikastetxea and is partner of the Basque Technology and Research net (RVCTI). The structure of Lea Artibai Ikastetxea gives an innovative technical service to many companies on food industry research and technology, engineering in polymers, industrial design, metrology and machining. Internationally recognised researchers and doctors work together in the laboratory, developing new products, as well as working with companies on other specific projects.

To make it possible and to ensure best results, the research and technology center of Lea Artibai Ikastetxea works with the most up to date technology.

Leartiker pretends to be the driver in applied innovation center dedicated to innovation and diversification of food products, in order to help companies mainly in the region of Lea-Artibai to be more competitive

- **Neiker-Tecnalia**

Contact: Eva Ugarte **Email:** euugarte@neiker.net **Phone:** +34 945121313

Website: <http://neiker.net>

Neiker-Tecnalia, the Basque Institute for Agricultural Research and Development, is a nonprofit state-owned company assigned to the Department of Environment, Regional Planning, Agriculture and fisheries of the Basque Government. Neiker-Tecnalia is involved in the following R&D objectives: to improve productivity and competitiveness of agricultural production systems, to develop and apply new management technologies in farms, and meeting the quality needs of the agri-food processing industry, the distinctive products and the general consumer. Also becoming the technological infrastructure for

the response against biological threats, to the food production system itself and the population in general.

A highly qualified specialization focused on 2 business units:

- Agricultural innovation.
- Environment and natural resources.

Instruments: Besides R&D projects, Neiker-Tecnalia performs transfer and training actions, has its own resources and infrastructures, and also the highest qualified staff.

Currently NEIKER is a non-profit state-owned company that belongs to the Basque Government and also, since the end of 2006, member of TECNALIA, Technological Corporation which description is to contribute to the economic and social development by means of the promotion of Technological Innovations.

- [Universidad del Pais Vasco-Euskal Herriko Unibertsitatea \(UPV-EHU\)](#)

Contact: Mailo Virto **Email:** mailo.virto@ehu.es **Phone:** +34 945013099

Website: <http://www.ehu.es/p200-home/es>

The UPV / EHU is a public university, research, rooted in Basque society, open to the world, with an intellectual leadership and social and ethical commitment.

[EHU-EPV - QAProdNat Research Group](#)

Contact: Luis Angel Berrueta **Email:** luisangel.berrueta@ehu.es

The Analytical Chemistry of Natural Products Group within the Analytical Chemistry Department of the Science and Technology Faculty of the University of the Basque Country took shape in 1990 and nowadays have 3 professors and 6 Ph. D. Students.

Research areas

Food industry:

- Wine
- Cider
- Fruit juices
- Vegetable oils
- By-products re-utilization
- Nutraceuticals, functional foods
- Food authenticity
- Food safety

Pharmaceutical industry:

- Search for new active compounds, medicinal herbs
- Analytical control of raw materials and during pre-clinic studies.



Research topics:

- "Characterization of polyphenolic content in medicinal herbs"
- "Re-utilization of by-products of cider- and wine-making and of potato"
- "Chemical evolution of anthocyanins and tannins during wine aging"
- "Quick methods for the determination of anthocyanic content of wines"
- "Food safety. III- Search for Chemicals markers for the authentication of vegetal foods"
- "Improvement of the technology for natural cider- and txakoli- (wine of Basque Country) making: Control of physico-chemical parameters and of natural products contents with organoleptic and healthy interest"
- "Use of biomarkers for the control of environmental contamination: Bees"
- "Food safety. II- Control of Polynuclear Aromatic Hydrocarbons (PAHs) and its application to the improvement of production processes of fatty foods"
- "Food safety. I- Detection methods for pesticide residues in foods"
- "Implementation of quality systems in chemical analysis laboratories"
- "Pre-clinic research of molecules of pharmaceutical interest: Analytical methods for galenic and pharmacokinetic studies"

Equipment

- HPLC-DAD-MS/MS: Liquid chromatograph with photodiode detector coupled to a triple quadrupole mass spectrometer (within the General Research Services of the University of the Basque Country).
- HPLC-DAD-FLD: Liquid chromatographs with photodiode and fluorescent detectors.
- GC-GC-MS: Multidimensional gas chromatograph with detection by Mass Spectrometry, for Fast GC.
- GC-FID: gas chromatograph with flame ionization detector, for Fast-GC.
- SFE: Supercritical fluid extractor.
- SPE: Solid Phase extractor.
- Balances, UV-vis spectrophotometer, spectrofluorimeter, climatic chambers, liofillizator, microwave extractor and other general equipments.

More Spanish institutions can be found on line in the MKB (<http://susfood-db-era.net>).



Photos © ILVO, DEFRA, INRA (C. Maitre).



SUSFOOD COUNTRY REPORT SWEDEN

Authors:

FORMAS: Hyrije Hasani, Susanne Johansson, Lena Strålsjö, Jessica Umegård



Introduction

The Food Industry has a great economical impact in Sweden, being the fourth largest industry according to production value and number of employees. The production value for 2009 was, according to Statistics Sweden and The Swedish Food Federation, about 160 billion SEK, with an export value of 50 billion SEK when including agricultural products. The number of companies in the food industry was about 3 200, of which 660 firms with more than nine employees, and a total number of employees of 55 000. The food industry managed to increase their export value with 5% when many other important export markets decreased. This shows that the food production in Sweden is of high class and the government has seen its potential.

In Sweden, the Livsmedelsföretagen - The Swedish Food Federation (Li), has approximately 850 member companies, representing all kinds of companies in the food industry, from small, local companies to large, international concerns.

Ministries of agriculture and food

- Swedish Governmental Agency for Innovation Systems (VINNOVA)

Website: <http://www.vinnova.se>

VINNOVA - Swedish Governmental Agency for Innovation Systems - is Sweden's innovation agency. The mission is to promote sustainable growth by improving the conditions for innovations, as well as funding needs-driven research.

- Swedish Ministry for Rural Affairs

Website: <http://www.government.se/sb/d/2064>

Areas of responsibility: Agriculture Animals Fisheries; Foodstuffs; Forestry; Hunting and Game management; International cooperation; Natural resources and the environment; Organic production and consumption; Reindeer husbandry; Research and education in land-based industries; Rural development; Sami - Sami policy.

Swedish National Food Agency

Website: <http://www.slv.se>

The National Food Agency is t a governmental central supervisor authority for matters relating to food, including drinking-water. SLV works in the consumer's interest for safe food of good quality, fair practices in the food trade and healthy eating habits. By fair practices meaning that the consumer can rely on the labeling regarding e.g. composition, weight, keeping qualities and origin of the food.

- The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)

Contact: Lena Strålsjö **Email:** registrator@formas.se **Phone:** + 46-8-7754000

Address: Kungsbron 21, 111 82 Stockholm

Website: <http://www.formas.se>

The mission of Formas is to promote and support basic research and need-driven research in the areas Environment, Agricultural Sciences and Spatial Planning. The research that is funded should be of the highest scientific quality and relevance to the areas of responsibility of the Council. Formas may also fund development projects to a limited extent.

Formas' three primary areas are:

- Environment and Nature
- Agricultural Sciences, Animals and Food
- Spatial Planning.

National funding bodies and research programmes

National research programmes in Sweden are funded by several funding bodies. The most important funding bodies for projects related to SUSFOOD topics are listed below.

- Swedish Governmental Agency for Innovation Systems (VINNOVA)

Website: <http://www.vinnova.se>

VINNOVA - Swedish Governmental Agency for Innovation Systems - is Sweden's innovation agency. The mission is to promote sustainable growth by improving the conditions for innovations, as well as funding needs-driven research.

- The Swedish Farmers' Foundation for Agricultural Research (SLF)

Website: <http://www.lantbruksforskning.se>

The Swedish Farmers' Foundation for Agricultural Research is a Swedish organisation for funding of research and development within the agricultural industry. The purpose of the foundation is to strengthen the competitive ability of Swedish agriculture and can sometimes grant activities within the food and health sector, such as one of the financiers of the Multidisciplinary research program for food science.

- The Swedish foundation for strategic environmental research (MISTRA)

Website: <http://www.mistra.org>

Supporting research of strategic importance for a good living environment and sustainable development.



- The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)

Contact: Lena Strålsjö **Email:** registrator@formas.se **Phone:** + 46-8-7754000

Address: Kungsbron 21, 111 82 Stockholm

Website: <http://www.formas.se>

The mission of Formas is to promote and support basic research and need-driven research in the areas Environment, Agricultural Sciences and Spatial Planning. The research that is funded should be of the highest scientific quality and relevance to the areas of responsibility of the Council. Formas may also fund development projects to a limited extent.

Formas' three primary areas are:

- Environment and Nature
- Agricultural Sciences, Animals and Food
- Spatial Planning.

Formas uses annual open call within their scope and strategic calls (from ERA-Nets) as instruments for funding projects.

- The Swedish Retail and Wholesale Development Council (HUR)

Website: <http://www.hur.nu>

The Swedish Retail and Wholesale Development Council is one of Sweden's largest financiers of research in the area of wholesale and retail. The council annually pays approximately 20 million SEK to various research projects. The main purpose is to develop and strengthen the academic retail and wholesale research. The aim is also to increase the knowledge of wholesale and retail, for the benefit of companies, employees, customers and society.

Swedish research programmes:

Hållbar Butik - Sustainable Retailing 2010-2013

A Swedish research call cooperation between Formas and "Svensk Handel" the employers' organisation serving the entire trade and commerce sector.

Funded by The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning and The Swedish Retail and Wholesale Development Council.

Timing: 2010-2013

Total Budget: 3 600 000EUR, **Annual Budget:** 1 200 000EUR

Mistra Biotech – Biotechnology for Sustainable and Competitive Agriculture and Food Systems

Globally, food production faces major challenges. Examples are the scarcity of natural resources, including cultivable land, and the changing climate. Moreover, economic growth is contributing to a constant rise in return requirements. To date, biotechnology has usually been discussed as a potential source of environmental problems. Correctly applied, however, it allows environmental impact to be reduced while providing more — and more wholesome — food. Sweden has the capacity to lead the world in key subsectors, and this would help to boost the competitiveness of Swedish agriculture. To succeed, we need biotech innovations to cut environmental impact and simultaneously meet the stringent safety and ethical standards set by food producers, government agencies and consumers. Research in social sciences and ethics, as well as natural sciences, is therefore necessary.

Funded by the Swedish foundation for strategic environmental research (MISTRA).

Timing: 2012-2015

Total Budget: 4 500 000EUR

Contact: Christopher Folkesson Welch - chris.welch@mistra.org

Tvårlivs - interdisciplinary food research programme 2010-2014

The research programme aims to: - strengthen Swedish food research - strengthen the ability of the industry to be innovative and cost-effective - create sustainable development in the food industry sector by improving powers of competitiveness.

Funded by The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning, Swedish Governmental Agency for Innovation Systems, The Swedish Farmers' Foundation for Agricultural Research, The Swedish Retail and Wholesale Development Council, The Swedish Food Federation and The Swedish Retailing Federation.

Timing: 2010-2014

Total Budget: 25 000 000EUR, **Annual Budget:** 5 000 000EUR

Contact: Formas, Lena Strålsjö - lena.stralsjo@formas.se

Ekologisk production – Organic Food Production

The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning has had special calls within organic food production every third year.

Timing: 2010-2012

Total Budget: 5 200 000EUR, **Annual Budget:** 1 800 000EUR

Contact: Formas, Susanne Johansson – susanne.johansson@formas.se



National research institutes

The most important research institutes of Sweden in the field of food research are listed below:

- [Chalmers - The Department of Chemical and Biological Engineering](#)

Website: <http://www.chalmers.se>

The department for Chemical and biological engineering promotes research and education for sustainable development, for improved health and quality of life. Our research ranges from natural science and bioscience, applied chemistry and biotechnology to chemical engineering. Our educational programs are characterized by technological solutions for improving people's everyday life, and are continuously developed for meeting and promoting societal and industrial development. We have approximately 350 employees, divided into five research divisions and one administrative unit. We are situated at campus Johanneberg. Our department is characterized by stimulation of world leading research, in an environment where people develop and create new knowledge.

- [Lund University - Department of Food Technology, Engineering and Nutrition](#)

Website: <http://www.foodandnutrition.lth.se/english>

We pursue education at undergraduate, master's and postgraduate levels. At the department we carry out research within subjects connected with the design and production of foods with health benefits.

[Department of Food Technology, Engineering and Nutrition](#)

Website: <http://www.foodandnutrition.lth.se/english>

We pursue education at undergraduate, master's and postgraduate levels. At the department we carry out research within subjects connected with the design and production of foods with health benefits.

[Applied Systems Analysis & System Dynamics \(ASASD\) Group - Department of Chemical Engineering](#)

Contact: Deniz Koca

Website: <http://www.lth.se/asasd>

The ASASD Group is a networking organization within the Lund University Faculty of Engineering (LTH) located at the Department of Chemical Engineering.

The ASASD Group initiates, coordinates and facilitates education and research activities on System Sciences (i.e. Systems Thinking, Systems Analysis and System Dynamics) and Sustainability Science within the Lund University as well as other national/international universities, and organizations in public and private sectors.

- **Swedish University of Agricultural Sciences - Department of Food Science (SLU)**

Website: <http://www.slu.se>

Global challenges and national needs both underscore the importance of intensified research, combining the strengths of all four faculties at SLU. Four interdisciplinary platforms: Future Forests; Future Agriculture; Future Animal Health; and Welfare Future Urban Sustainable Environment, FUSE.

- **Swedish Institute for Food and Biotechnology (SIK)**

Website: <http://www.sik.se>

SIK develops and mediates technology to promote the development and competitiveness of the food industry. •SIK is an industrial research institute Owned by SP Technical Research Institute of Sweden. The purpose of the Institute is to strengthen the competitiveness of food industry.

- **Karlstad University**

Contact: Lars Järnström **Email:** Lars.Jarnstrom@kau.se

Address: Universitetsgatan 2, 65188 Karlstad

Website: <http://www.kau.se>

The main aim of Karlstad University is to provide broad-based, multidisciplinary programmes for students in Sweden and visiting students from abroad, while developing strong areas of research. The University is located on one campus offering a modern and stimulating environment. The architecturally inspiring library lies at the heart of the campus providing a much appreciated study environment for about 16,000 students. In 2009, a new exciting building, Vänern, was inaugurated which reflects our high ambitions for education and research. The University also has a campus in Arvika, about 80 km from Karlstad, where the Inggesund School of Music with its 300 students is located.

- **University of Gothenburg**

Contact: Fredrik Carlsson

Website: <http://www.gu.se/english>





SUSFOOD COUNTRY REPORT TURKEY



Authors:

GDAR: Ahmet Budaklier, Eda Çalikođlu, Necati Tulgar

Ministries

- Ministry of Food, Agriculture and Livestock (MFAL)

Email: abudaklier@tagem.gov.tr **Phone:** +903122873360

Address: Eskisehir Yolu, 06060 Ankara

Website: <http://www.tarim.gov.tr/>

General Directorate of Agricultural Research and Policies (GDAR)

Contact: Ahmet Budaklier **Email:** abudaklier@tagem.gov.tr **Phone:** +903123157623

Address: Istanbul Yolu 38, 06171 Ankara

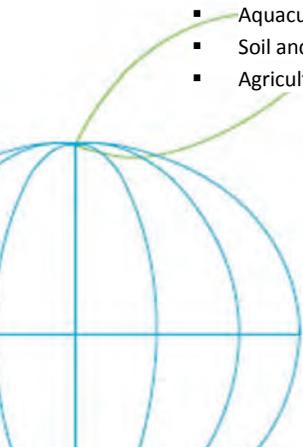
Website: <http://www.tagem.gov.tr/>

Aim of GDAR:

- Increase of yield and quality in plant and animal production,
- Development of new species, variety, breeding stock and technologies according to the demand of industries, domestic and foreign trade,
- Reduce post-harvest losses,
- Development of methods and technologies to provide food safety,
- Protection and sustainable use of natural resources including soil, water, pasture and genetic resources,
- Development technique and technologies for plant protection and animal health,
- Improvement of capacity (physical and human resources) and use of information systems in agriculture,
- Development of alternative production technologies to adopt climatic changes.

Thematic R&D Areas:

- Food and Feed
- Plant Breeding and Agronomy
- Plant Health
- Livestock Breeding and Husbandry
- Animal Health
- Aquaculture and Fisheries
- Soil and Water Resources and Biodiversity
- Agricultural Economy



General Directorate of Food and Control (GKGM)

Address: Eskişehir Yolu 9. km

Website: <http://www.gkqm.gov.tr/indeks.html>

Mission:

- Safe delivery of agricultural inputs e.g. seeds, drugs and vaccines.
- Production and marketing of safe products of animal or plant origin and food.
- Protection of plant, animal and marine product resources and ensuring the safety of products there from
- To carry out food foreign trade control and inspections at each phase of the production in food production sites,
- To ensure qualified and reliable food supply,
- To perform studies in order to ensure efficient nutrition of the public,
- To prepare and publish product Codex,
- To make registrations of food packing production facilities and to permit their manufactured products,
- To prepare food industry inventories.
- [Ministry of Science, Industry and Technology](#)

Website: <http://www.sanayi.gov.tr/Default.aspx?lnq=en>

The Scientific and Technological Research Council of Turkey (TÜBİTAK)

Website: <http://www.tubitak.gov.tr/en>

The Scientific and Technological Research Council of Turkey (TÜBİTAK) is the leading agency for management, funding and conduct of research in Turkey. It was established in 1963 with a mission to advance science and technology, conduct research and support Turkish researchers. The Council is an autonomous institution and is governed by a Scientific Board whose members are selected from prominent scholars from universities, industry and research institutions.

TÜBİTAK is responsible for promoting, developing, organizing, conducting and coordinating research and development in line with national targets and priorities.

TÜBİTAK acts as an advisory agency to the Turkish Government on science and research issues, and is the secretariat of the Supreme Council for Science and Technology (SCST), the highest S&T policy making body in Turkey.

Setting its vision as to be an innovative, guiding, participating and cooperating institution in the fields of science and technology, which serves for improvement of the life standards of our society and sustainable development of our country, TÜBİTAK not only supports innovation, academic and industrial R&D studies but also in line with national

priorities develops scientific and technological policies and manages R&D institutes, carrying on research, technology and development studies.

Furthermore, TÜBİTAK funds research projects carried out in universities and other public and private organizations, conducts research on strategic areas, develops support programs for public and private sectors, publishes scientific journals, popular science magazines and books, organizes science and society activities and supports undergraduate and graduate students through scholarships.

More than 1,500 researchers work in 15 different research institutes of TÜBİTAK where contract research as well as targeted and nation-wide research is conducted.

National funding bodies and research programmes

- General Directorate of Agricultural Research and Policies (GDAR)

Contact: Ahmet Budaklier **Email:** abudaklier@tagem.gov.tr **Phone:** +903123157623

Address: Istanbul Yolu 38, 06171 Ankara

Website: <http://www.tagem.gov.tr/>

Research programmes funded by GDAR:

National Food and Feed Research Program

The aim of this program is to improve the technological conditions and solve the problems of food and feed industry, improve safety and quality of food and feed, develop novel techniques, contribute the standards and regulations of food and feed.

Keyterms: Food&Feed Safety and Quality, Product Development, Novel techniques, Valorisation of Food&Feed Industries Wastes and Residues, Traditional Turkish Foods, Development of Storage and Packaging Technologies of Food&Feed.

Timing: Annual

Total Budget: 800.000 EUR

Contact: Ahmet BUDAKLIER - abudaklier@tagem.gov.tr

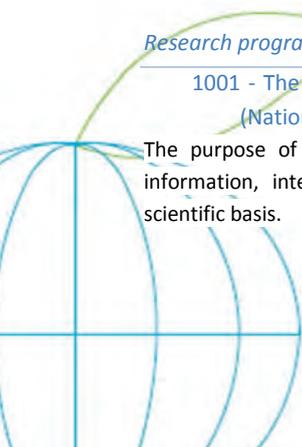
- The Scientific and Technological Research Council of Turkey (TUBITAK)

Website: <http://www.tubitak.gov.tr/en>

Research programmes funded by TUBITAK:

1001 - The Support Program for Scientific and Technological Research Projects (National)

The purpose of this program is to support research in Turkey for generating new information, interpreting scientific findings, or solving technological problems on a scientific basis.



1002 - Short Term R&D Funding Program (National)

The purpose of this program is to support short-term R&D projects with small budgets and immediate start requirements. Proposals are accepted from members of universities, research hospitals, and research institutes.

1003 - Primary Subjects R&D Funding Program (National)

To support result-oriented and R&D projects in Turkey's primary areas, which have observable targets and to provide coordination between the projects.

1007 - Public Institutions Research Funding Program (National)

Objectives: Solving problems of public, national defense and security institutions by means of result oriented projects

To enhance the relationships between public institutions, universities, and industry, Enabling our country to produce technologies for economic improvement and social welfare.

Key terms: Customer Institution: Institution that needs a solution to its R&D based problem. TÜBİTAK and this institution prepare documents for the call.

Project Executor: Universities, private firms or public R&D institutions that prepare and manage a project in accordance with the call of public institution.

Project Results Implementation Plan (PSUP): It is a signed form that shows a guarantee by the Customer Institutions for implementing the results of R&D. This form has to be submitted during application.

1008 - Patent Application Promotion and Funding Program (National)

The purpose of 1008 Patent Application Promotion and Funding Program is to increase the number of national and international patent applications of Turkey, to encourage people to make patent applications, and to increase awareness about registering intellectual and industrial property rights.

1010 - Global Researcher Program (EVRENA - National)

The purpose of 1010 Global Researcher Program is to support the collaboration between Turkish researchers and their foreign colleagues and to enrich the international dimensions of research projects supported by TÜBİTAK. Before applying for this program, it should be ensured that the support of the global researcher in a specific research area is critical for the success of the project and there are not qualified researchers in Turkey in the respective research area.

1011 - The Support Program for Participation in International Scientific Research Projects (UBAP - National)

The purpose of 1011 The Program for Participation in International Scientific Research Projects is to support our researchers in joint international projects that are conducted by multiple research groups and organizations from different countries. The proposals of

1011 program are evaluated in related panels of 1001 and 1010 programs. However, different evaluation criteria essential to 1011 program are used in these panels.

In order to increase the competitiveness of Turkey in the international market, the priority is given to projects, (i) which are related to advanced technology applications, transfer, or adaptation; and (ii) whose outcomes can be commercialized by project partners.

3501 - National Young Researchers Career Development Program (CAREER - National)

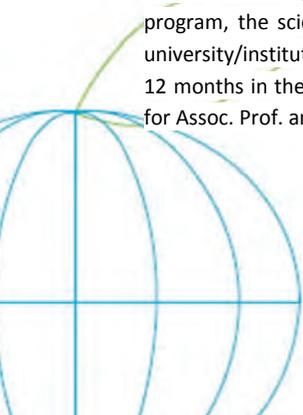
The purpose of this program is to encourage young scientists with PhD degrees and who are at the beginning of their scientific careers by supplying project funds for their studies. The other goals of the program are helping young scientists, who are going to be the academic leaders of the 21st century, maintain their careers as researchers and lecturers in the best possible way, improving the national scientific level and increasing the role of science in national development.

2216 - Research Fellowship Programme for Foreign Citizens (International)

The Scientific and Technological Research Council of Turkey (TÜBİTAK) grants fellowships for international highly qualified PhD students and young post-doctoral researchers to pursue their research in Turkey in the fields of Natural Sciences, Engineering and Technological Sciences, Medical Sciences, Agricultural Sciences, Social Sciences and Humanities. The program aims to promote Turkey's scientific and technological collaboration with countries of the prospective researchers. Preference will be given to candidates who demonstrate the potential to contribute significantly to Turkey's goal of international cooperation in scientific and technological development.

2221 - Fellowships for Visiting Scientists and Scientists on Sabbatical Leave (International)

In order to contribute to the improvement of human resources and the research in Natural Sciences, Engineering and Technology, Medical Sciences, Social Sciences and Humanities (*) at Universities, Research Institutions and Industry in TURKEY, the eminent scientists/researchers are supported to visit to Turkey by giving seminars/conferences/lectures, or doing R&D activities. Applications should be made by the host scientist/institution. SABBATICAL IN TURKEY According to the revised rules of the program, the scientists/researchers on sabbatical leave aiming to come to any Turkish university/institution will also be supported. The scientists in sabbatical leave must stay 3-12 months in the host institution. The monthly payment is 2.500\$ for Asst. Prof., 3.000\$ for Assoc. Prof. and 3.500\$ for Prof., as well as travel and health insurance expenses.



Research Institutes/ Universities:

Research Institutes:

The most important research institutes in the field of food in Turkey are listed below. These research institutes are all governmental institutes under supervision of one of the General Directorates listed above.

- Research institutes under supervision of the General Directorate of Agricultural Research and Policies (GDAR):

Apricot Research Station (KAIM)

Email: kaim@kaim.gov.tr **Phone:** +904223511530

Address: Malatya

Website: <http://www.kaim.gov.tr/>

The station is focused mainly on the production and breeding of apricot products and on solutions of the problems in apricot production, however some other fruit species are also studied.

Atatürk Horticultural Central Research Institute (ABKAE)

Email: bilgi@yalovabahce.gov.tr **Phone:** +902268142520-21

Address: 77102 Yalova

Website: <http://www.yalovabahce.gov.tr/>

The purpose and duties of the institute are;

- Carrying out basic and applied research on fruits, vegetables, ornamental plants, medicinal - aromatic plants and viticulture.
- Determining the level of input use and appropriate cultivation techniques to increase the yield and quality in these products
- Developing high-yield, high-quality, disease and pest resistant and appropriate species and varieties to satisfy consumer wishes.
- Reducing losses after harvesting and providing long-term storage of horticultural products
- Developing solution proposals for encountered problems during production and marketing
- Producing healthy production materials of selected species and varieties after the research and development activities
- Preparing and implementing joint projects in cooperation with other countries, provide of exchange personnel and material
- Organizing scientific meetings such as technical national and international seminars, conferences, symposium and congresses.

Bursa Central Research Institute of Food and Feed Control

Contact: Yıldırım İstanbul **Email:** bursaqida@bursaqida.gov.tr or y.istanbullu@bursaqida.gov.tr **Phone:** + 902242464721
Address: Hürriyet 126, 16036 Bursa
Website: <http://www.bursaqida.gov.tr/HOMEPAGE.html>

Keywords: Protecting the health of society, providing customer satisfaction and food safety, performing qualified, rapid and trustable control, research and training services that food sector requires.

Central Research institute of Food and Feed Control affiliated to MFAL (Ministry of Food, Agriculture and Livestock) provides lab services with its qualified staff works in team spirit and has principle based on to fulfil customers' requests on time with a trustable and objective manner. The aim of our Institute is to extend our skills and be leader by following technology.

Our customers consist of firms in private sector, provincial directories of MFAL established in Bursa and nearby cities where activities of food industry and agricultural production is very common and directories of other public organizations. In accordance with mission given by MFAL; Our Institution implements research and analysis services of food, feed, water and fishery products. Our Institution aims to provide the most qualified, quick and trustable services to our customers and improve strategies focused on customers. Samples dispatched to our institute are classified as import, export, control, private request and other control samples. Our staff implements research projects on food sector by working especially together TAGEM, TÜBİTAK, universities and private sector.

Our institute has been accredited according to TS EN ISO/IEC 17025 standard by Turkish Accreditation Agency since 2004; and the number of accredited analysis has been increasing year after year. Accreditation of our institute provides advantages which are reason for being preferred by customers, easiness for national and international trade of goods and prestige in sector. Our institute has led other affiliated laboratories of MFAL for accreditation.

Fig Research Station

Email: info@erbeyliincir.gov.tr **Phone:** + 902565811123-26
Address: Aydın
Website: <http://www.erbeyliincir.gov.tr/>

Mission:

- Experimenting base and applied studies on fig
- Producing fig nursery
- Applying training and extension activities

- Protecting and conservation Turkish fig genetic resources
- Improving new fig varieties with high yield and quality traits, resistant and tolerable against some diseases and insects, human and nature friendly, harmonious with domestic and foreign markets
- Determining appropriate production technics and input usage levels

Fisheries Central Research Institute (SUMAEM)

Email: bilqi@sumae.gov.tr **Phone:** + 904623411053

Address: Vali Adil Yazar 14, 61250 Trabzon

Website: <http://www.sumae.gov.tr/Default.aspx>

The Institute, established in 1987 by the name of "Trabzon Fisheries Research Institute", sustains applied research activities since 1988. In 1998, the institute got "Central Institute" status by the Ministry and its regional base duties advanced to national level and its name changed as "Central Fisheries Research Institute - Trabzon". To investigate every kinds of aquaculture and seafood based research is the task of Ministry of Food, Agriculture and Livestock in our country (Fisheries Law No. 1380 and the changed item of this law; 14. proviso of Fisheries law No. 3288). The aim of our institute is to investigate aquaculture and seafood in seas especially in Black sea and inland waters in Turkey and to ensure the adoption of research results. Task area of the institute is Black sea, inlandwaters in Marmara and North East Anatolia. Unique studies are being put forth in scientific area by the investigations of the institute as well as practical, feasible information owning economic aspects which contributes to development of the country and the region is presented to those who work in fishing and the cultivation of aquatic products. Also, the institute assists government in incentives for fishing and aquaculture and bans on fishing by the results of investigations.

Tasks:

- Basic, strategic and applied researches are done for increasing of efficiency and production of aquaculture
- Generating and evaluating data, making recommendations to determine policies for Fisheries Management
- Identifying and controlling the area of fisheries aquaculture production resources and making recommendations for protection of these areas.
- Determining and investigating sustained use of marine protected areas
- Identifying, protecting and improving of gene resources of native fish and aquaculture products
- Investigating how to develop race and species in aquaculture and fishery
- Generating data for protecting of aquatic ecosystems and it's sustained usage
- Investigating fish diseases
- Investigating how to process and evaluate aquatic foods and forage researches

- Ensuring coordination regarding research priorities and project management with other institutes
- Making socio-economical researches within the purview of the Ministry
- Broadcasting research results to put into practice and organizing joint programs with provincial directorates
- Organizing educational programs in national and international level and carrying out research projects
- Making cooperation with public and private institutions
- Publishing a journal regarding aquaculture which has at least one referee

Hazelnut Research Station

Email: info@fae.gov.tr **Phone:** + 904542151551

Address: Atatürk, 28200 Giresun

Website: <http://www.fae.gov.tr/>

Mission:

- Nation-wide Hazelnut data collection and evaluation;
- Basic and strategic research;
- Collection and evaluation of hazelnut genetic resources;
- Improving research infrastructure and collaborate with other related institutes;
- Literature providing, training and publishing

Olive Research Station (ORS)

Email: posta@zae.gov.tr **Phone:** + 902324627 74

Address: Üniversite 43, Izmir

Website: <http://www.zae.gov.tr>

Olive Research Station (ORS) is one of the institutes working for the Turkish Ministry of Food, Agriculture and Livestock. ORS has been working in every step from growing of olive to consumption for table olive and olive oil production. By following the recent developments for olive growing in the world, it is aimed to transfer the knowledge gained to the domestic growers and industry for good quality and stable production with low cost. Activities of the station are basically research and education. ORS is responsible for collecting data for olive and evaluating, collecting and preserving the gene resources, conducting research activities in national and international level, organizing activities such as training, courses, workshops, etc.) and publication, providing stock material to the growers (sapling production) and serving as an authorized laboratory for soil, leaf and fertilizer.



Olive Research Institute (ORS) has 5 departments in its structure;

- Breeding (National and international projects in subjects of genetic improvement, genetic resources, selection and adaptation for breeding new varieties which are high quality for fresh consumption and olive oil)
- Management and Growing (The scientific studies on the new techniques of the fruit quality, alternate, fertilization, pruning, irrigation, harvest, ecological growing and GIS)
- Plant Protection (improvement new methods on olive plant and fruit protection from illnesses which are affecting the plants and fruit in terms of quality)
- Food Technology for Table Olive and Olive Oil (technologies on producing olive oil, green and black table olive for fresh consumption, their physical - chemical - organoleptic analysis, by-product of olive oil, packaging and storage)
- Economy and Statistics (Analyses on agricultural strategies and business management, prediction of annual crop and cost analysis for the olive sector)

ORS has a

- Molecular Genetics Laboratory
- Growing Technique Laboratory
- Leaf - Soil Analysis Laboratory
- Food Technology Lab. (Table Olive Lab., Chemical Analysis Laboratory, Instrumental Analysis Laboratory, Sensory Analysis Laboratory)
- GIS Laboratory

Batı Akdeniz Agricultural Research Institute (BATEM)

Email: batem@batem.gov.tr **Phone:** + 902423216797

Address: Paşa Kavakları 11, Antalya

Website: <http://batem.gov.tr/>

Research areas:

- Breeding and Growing Techniques
- Plant Nutrition
- Food Technology
- Plant Protection
- Agricultural Economics
- Soil and Water Resources
- Postharvest Physiology

The institute has 450 hectares of land and it is located in 6 different localities of Antalya. Administrative unit is in the city center, two technical units are in Calli, two technical units are within the boundaries of the town of Aksu, two technical units are within the boundaries of the town of Serik. Fruit growing, vegetable growing, ornamental plants, grains, industrial crops, edible grain legumes, medicinal and aromatic plants, grassland,

meadows and fodder crops, plant protection, soil, water, biological diversity and genetic resources are the subjects of the duties.

Aegean Agricultural Research Institute (ETAE)

Email: etae@ari.gov.tr **Phone:** + 902328461331

Address: Menemen / Izmir

Website: <http://www.etae.gov.tr/Default.aspx#>

- Mission:
- Conducting agricultural research on product groups which are suitable for agricultural properties and priorities of the region
- Participating as an implementer or coordinator in interregional research projects
- Developing collaboration with public- private research organizations of the region and universities
- Identifying the problems restricting the production of economically important products or product groups in the region and planning and programming research, writing and conducting projects to overcome these problems
- Programming and conducting research under producers' conditions to transfer research findings rapidly into practice at regional level; helping provincial directorates to prepare and interpret demonstration programs
- Conducting research on determination, protection, and utilization of plant diversity in Turkey
- Conducting research on improvement of new varieties with high yield, high quality, resistance to biotic and abiotic stress conditions and on agricultural practices
- Conducting apicultural research, forming colonies
- Production of certified seeds and saplings of registered varieties, and queen bee
- Conducting trials under farmers' conditions and organizing information exchange meetings to transfer research findings into practice rapidly and effectively

Field Crops Central Research Institute (TARM)

Email: tarmevrak@tarlabitkileri.gov.tr **Phone:** + 903123431050

Address: Şehit Cem Ersever 9-11, 06171 Ankara

Website: <http://www.tarlabitkileri.gov.tr/index.php?lang=en>

Mission:

- Improving new field crop varieties by conventional and molecular breeding methods and producing elite seeds of those varieties. Carrying out applied and

basic scientific researches. Ensure the coordinations among Institutes on field crops research.

- Give priority to research topics which will provide maximum benefits in terms of economy, social and environmental aspects by taking into consideration National Agricultural Research Policies and international trends. Implementing research activities in collaboration with international universities, research institutes and stations in multidisciplinary approach.
- Improving capacity of research staff to be able to produce universal agricultural knowledge and technology.
- Collection and conservation of plant genetic resources from both Türkiye and international sources and make them available to be used in research and breeding activities.
- Improve and extend the use of Geographical Information Systems (GIS) and Remote sensing techniques in agricultural applications.
- Conducting researches on characterisation for quality traits of cereal and legume breeding materials.
- Using public funds effectively, economically for the purpose of general goals of government policy and to assure services and procedures be carried out in accordance with regulations.

Goal:

- Contributing development of national agricultural sector by improving proper varieties and agricultural technologies to meet demands of growers, agricultural industry, and consumers.
- Improving capacity of research staff so that they can guide agricultural sector of nation, develop solutions for the sectoral problems and become innovative and visionary researcher.

Fundamental Value

- Scientific
- Reliability
- Leadership and guidance
- Innovative
- Productivity
- Sustainable
- Up-to dateness
- Professional expertise

Viticultural Research Station

Email: tekirdaq@baqcilik.gov.tr **Phone:** + 902822612042

Address: 59100 Tekirdağ

Website: <http://www.baqcilik.gov.tr/eng/>

Main research activities/sector area: National/International research studies related to breeding, ampelography, growing techniques, grape physiology, in vitro culture, grape storage, vine irrigation, mechanization, the technology of wine, grape juice and other grape products.

The studies at The Department of Food Technologies are:

1. Determination and spreading of best wine grape varieties and clones for Thrace Region
2. Determination of domestic grape genotypes to produce grape juice and quality wine
3. Technological maturity levels of grapes for making wine had been fixed.
4. The effects of cultural practices on wine quality
5. The development of processing of grape juice, grape molasses and storage grape leaves with various techniques
6. Improvement of seed separation techniques from byproducts of wineries and evaluation grape seeds for human health.
7. The determination of content and chagement of Resveratrol and antioxidant capacities in fresh grapes and grape products.

- Research institutes under supervision of the General Directorate of Food and Control:

National Food Reference Laboratory

Email: uqrl@uqrl.gov.tr **Phone:** +903123274181

Address: Fatih Sultan Mehmet Bulvarı No: 70 Yenimahalle / ANKARA

Website: <http://www.uqrl.gov.tr/>

Vision: To be a reputable national and international well-known laboratory that is a guide for laboratories working in the field of food safety, researches for the development of quality, diversity, reliability of food analysis

Mission: To be a leader at food safety and public health; To meet the needs of our country about regarding the safety of food with our scientific work; To ensure that communication and cooperation with our stakeholders; To make research, education and broadcasting in quality; To do sustainable food safety risk assessment with the monitoring programs.



Ankara Food Control Laboratory

Email: bilgi@aqkl.gov.tr **Phone:** + 903123150089

Address: Şehit Cem Ersever 12, 06170 Ankara

Website: <http://www.aqkl.gov.tr/tr/index.php>

Activities:

- To analyze food and feed products and any raw and auxiliary materials used in production of food and feed products,
- To analyze the plastic-based packaging materials coming into contact with food,
- To analyze the samples concerning cultivation water, water products and water pollutions,
- To submit reports related to importation, exportation and controlling of products in the scope of its activity area and also reply analysis' requested by legal entities.
- In addition to all these, our directorate has been appointed to make research projects by General Directorate of Agricultural Research and also has prepared and executed research projects for food and feed safety.
- 63 projects have successfully been completed so far and put service for sector thereof.
- A laboratory must have certain criteria and accreditation certificate to ensure the international validity of analysis'.

Bornova Veterinary Control Institute

Email: bornova@bornovavet.gov.tr **Phone:** + 9002323880010

Address: Ankara 172, 35010 İzmir

Website: <http://www.bornovavet.gov.tr/english.htm>

Bornova Veterinary Control Institute provides diagnostic services for the diseases of large and small ruminants, poultry, companion animals, bees and aquatic animals as well as examinations for feed and food of animal origin as a regional level. Responsible area is the Aydın, Denizli, İzmir, Kütahya, Manisa, Muğla and Uşak provinces of the Aegean region of Turkey. As a national level; The institute, as well as being the only center in Turkey for the control of veterinary biological products imported or locally produced, also carries out the services of National Reference Laboratory for Antibiotic Residue Analyses, Aquatic animals Diseases, Avian Influenza and Newcastle Diseases of poultry.

Etlik Veterinary Control Central Research Institute

Email: ehh.o@merkezvet.gov.tr **Phone:** + 903123260090

Address: Ahmet Şefik Kolaylı 23, 06020 Ankara

Website: <http://www.etlikvet.gov.tr/tr/index.asp#>

Duties of Institute: (i) Research Activities, (ii) Diagnosis and Control Activities, (iii) Training Activities and (iv) Production Activities.

- **Food Microbiology and Food Chemistry Laboratory:**

Since the foundation of our Institute, this laboratory has provided services on the subject of foodstuff control. In our laboratory; microbiological examinations of particularly foodstuffs of animal origin, various food substances and potable water are being performed via internationally validated methods such as ISO, TSE and Bacteriological Analytical Manuel.

Duties of Laboratory:

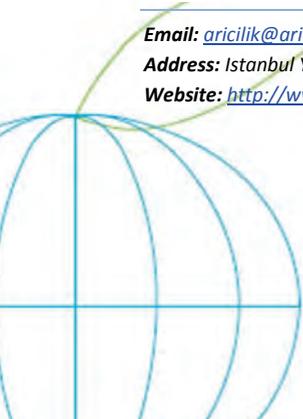
- Conducting microbiological analyses of food substances.
- Performing certain chemical analyses of food products.
- Performing sensory and physical analyses on food products.
- Conducting histological examination for the determination of internal organ and foreign tissue inside meat productions. (salami, sausage, fermented sausage, meatballs, etc.).
- Performing toxicological examination related with the determination of microbial toxins in food products and determination of staphylococcal enterotoxin.
- Performing the serological differentiation of meat type in raw meat also with the seroprecipitation method and AGID tests.
- Producing cattle, equidae, pig and chicken precipitant sera to be used in the differentiation of non-heat treated meat and meat types.
- Providing training to Veterinary Control and Research Institutes and Provincial Control Laboratories with relation to subjects falling under our scope.
- Conducting research studies on matters relating to food.

Apiculture Research Station

Email: aricilik@aricilik.gov.tr **Phone:** + 00904522562453

Address: Istanbul Yolu 38, 06171 Ordu

Website: <http://www.aricilik.gov.tr/Default.aspx?currentCulture=en-US>



Izmir Food Control Laboratory

Email: bilgi@izmir-kontrollab.gov.tr **Phone:** + 00902324351481

Address: Üniversite 45, 06060 Izmir

Website: <http://www.izmir-kontrollab.gov.tr/>

Konya Food Control Laboratory

Address: Eskişehir Yolu 9km, 42090 Konya

Website: <http://konyaqidakontrollab.gov.tr/iletisim.html>

Universities:

There are 177 universities in Turkey of which 69 are private universities. Fifty-nine of these, have Food Engineering Departments. All these can be found at the online Meta Knowledge Base.

Below, there is information of some universities in Turkey.

- **Middle East Technical University (METU)**

Address: Dumlupınar Bulvarı No:106800 Çankaya / Ankara

Website: <http://www.metu.edu.tr/>

The mission of the Middle East Technical University is to reach, produce, apply and promote knowledge and to educate individuals with that knowledge for the social, cultural, economic, scientific and technological development of our society and humanity. This is to be done by bringing teaching, research and social services up to universal standards.

The language of instruction at METU is English.

Basic principles of METU are (i) Scientific Approach, (ii) Academic Freedom, (iii) Interdisciplinary Approach, (iv) Lifelong Education, (v) The Training of Qualified People, (vi) Student Support, (vii) Communication with Society, and (viii) Involved Administration.

Department of Food Engineering (<http://fde.metu.edu.tr/>)

METU- Food Engineering program aims to provide graduates with the knowledge and skills that can be applied to design, develop and manufacture safe, high quality, value added food products, and production and distribution systems for the benefit of mankind.

Research: The faculty with emeritus professors, specialists, visiting scholars, postdoctoral associates, research assistants and graduate students carries out a broad spectrum of innovative, basic and applied research related to (i) food engineering and processing, (ii)

food safety and security, (iii) food biotechnology, (iv) food microbiology, and (v) food chemistry. Research in food processing is carried out in partnership with the major food companies in Turkey.

- **Istanbul Technical University**

Adress: 34469 Maslak-İSTANBUL

Website: <http://www.itu.edu.tr/>

Through a combination of its three core missions of education, research and development, ITU maintains its leadership role in science, art and technology as a Pioneer through the ages.

Vision: As a research university, to be a focal point for pioneering studies in science, technology and arts and humanities on a national and international scale.

Mission: To produce graduates who possess the ability to: compete at the national and international level; associate their national identity with global values; engage in continuous improvement; have a good command of technology; respect their environment, societal and ethical values; excel entrepreneurship and leadership qualities.

Conduct research in basic and applied science; create a breakthrough in national development; and develop and support leading creative research groups and faculty working towards this common goal.

To conduct research studies that will contribute to science and technology at the international level, to establish and support research groups and faculty to carry out such research activities and to develop and sustain the necessary infrastructure.

Department of Food Engineering (<http://fde.metu.edu.tr/>)

The mission of the Department is to educate food engineers with contemporary knowledge and abilities to design and to produce safe, high-quality, and economical food products and systems; to conduct scientific and applied research and to extend accumulated knowledge to the respective benefits of food industry and society.

The vision of Food Engineering Department is to be the leading research and education institute of Turkey in the food engineering area by offering undergraduate and graduate programs based on a continuous improvement approach and by producing basic knowledge for technological advances and publishing those nationally and internationally for the benefits of the society.

- **Hacettepe University**

Adress: Beytepe / Ankara

Website: <http://www.hacettepe.edu.tr/english/>



Mission: Hacettepe University pledges itself to train highly qualified individuals for the future of the country in the light of the universal values and availing of its wide experience in science, technology and art and to offer its output in the fields of research, education and service for the benefit of the society.

Department of Food Engineering

Website: <http://www.food.hacettepe.edu.tr/indexen.html>

Scientific studies are performed in the field of Food Science and Technology.

The research topics are:

- Biosensors
- Biotechnology & Bioengineering
- Enzyme Technology
- Meat Science and Technology
- Determination of Food Components and Contaminants
- Food Safety
- Food Chemistry and Biochemistry
- Food Microbiology
- Cereal Science and Technology
- Fruit and Vegetable Technology
- Dairy Technology
- Thermal Processing
- Unit Operations

▪ Ankara University

Adress: Döğol Caddesi 06100 Tandoğan / Ankara

Website: <http://www.ankara.edu.tr/>

Mission: The mission of Ankara University is to educate individuals that will guide the society in the fields of science and arts through a universal perspective, and to contribute to the production of science, technology and arts with its distinctive and qualified research in the light of Atatürk's saying, "Science is the most reliable guide in life."

At the same time, Ankara University offers the accumulation of knowledge and technology acquired through the wide range of research and application centres within its body focused on various scientific fields.

Department of Food Engineering (<http://food.eng.ankara.edu.tr/>)

Keywords: food science and technology, food production, product development, quality and food control.

▪ Yeditepe University

Adress: İnönü Mah. Kayışdağı Cad. 26 Ağustos Yerleşimi 34755 Ataşehir - İstanbul

Website: <http://www.yeditepe.edu.tr/>

Department of Food Engineering

Website: <http://www.yeditepe.edu.tr/undergraduate/food-engineering>

Yeditepe University, Department of Food Engineering embodies power of various disciplines by the nature of Food Engineering profession. Main objective of the Food Engineering Department is to raise graduates who are equipped with necessary knowledge for basic sciences, basic engineering, food science and food technology, who can use effectively his/her acquired knowledge and skills in such fields as food production, product development, quality control and food control, who are research and development oriented, who have built his/her self-confidence, who adapt him/herself to team work, who are respectful to the ethics of the profession, who are pretty sociable, who are sensitive to the problems of the day, who are aware of the necessity of learning throughout life and who are preferred by public institutions and by universities.

- **Ege University**

Address: Bornova - İzmir

Website: <http://ege.edu.tr/>

The University is situated in Bornova, which is one of the biggest districts of İzmir. The University Campus with its 3700 hectare of parkland is composed of many buildings used for educational, cultural, sporting and social purposes. The Campus is equipped with parking areas, roads, traffic signs and direction signboards. Furthermore, interdivisional, intercity, national and international communication is possible due to the fact that the University provides Internet and phone networks throughout the Campus.

Department of Food Engineering

Website: <http://food.ege.edu.tr/>

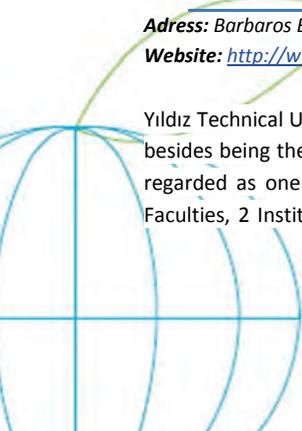
Vision of the department is to educate food engineers who are capable to make a contribution on improvement of science, technological and economical needs of our age and sensitive to human affairs and responsible to food engineering ethics.

- **Yıldız Technical University**

Address: Barbaros Bulvarı 34349 Yıldız-İstanbul

Website: <http://www.yeditepe.edu.tr/>

Yıldız Technical University is one of the seven government universities situated in İstanbul besides being the 3rd oldest university of Turkey with its history dating back to 1911. It is regarded as one of the best universities in the country as well. Our university has 10 Faculties, 2 Institutes, the Vocational School of Higher Education, the Vocational School



for National Palaces and Historical Buildings, the Vocational School for Foreign Languages and more than 25,000 students.

Mission: Our mission is to create a university which pioneers education, scientific research, technological development and artistic work aimed at the progress of society and the increase of the quality of life within an understanding of national and international solidarity; and educates creative, enterprising, questioning and ethical students equipped with universal values, who constantly renew themselves, aim for lifelong learning and are capable of analysis and synthesis.

Vision: Our vision is to become one of the most-preferred world universities with our educational, research and cultural environment.

Department of Food Engineering

Website: <http://www.food.yildiz.edu.tr/en/>

Food Engineering is a field of engineering which includes implementation of physics, chemistry, biology and engineering sciences to food engineering area; improvement of food processing, transportation and preservation methods; physicochemical analyses of foods; improvement of novel food products. Food engineering is a field which is responsible for healthy food production from farm to fork.

Food engineering department aims to research about evaluation of raw materials, preservation of food sources, recycling of byproducts, providing of safety of raw materials, production of functional foods.

- **Adnan Menderes University**

Address: Aytepe Mevkii 09100 Aydın

Website: <http://www.adu.edu.tr/>

Adnan Menderes University was founded in Aydın in 1992. The main aim of Adnan Menderes University is to bring up young individuals who have fully adopted secular and democratic values in line with Atatürk's principles and Kemalist reforms; who can do research, ask questions, and discuss; who can create solutions stipulated by reason and science; who assume a rational approach in all areas from production to administration; who safeguard national values; who can contribute to Turkish civilization and who are highly qualified people of the information age.

Department of Food Engineering

Website: <http://www.akademik.adu.edu.tr/bolum/muhendislik/gida/default.asp>

Food Engineering department is a higher education programme that research on evaluation of food raw materials, conservation of foodstuffs from quality and quantity

viewpoints, multi-faceted utilization from raw materials and thus contribute to enhancement of healthy food varieties.

Mission: To foster prospective food engineers who are experienced theoretically and practically on food engineering; sophisticated with science, technology and engineering knowledge; innovative; enterprising; prone to common mind and study, and responsive to nature. Furthermore, to construct a department to produce solutions for regional and national problems related to food engineering by studies; to contribute human for enhancing quality of life by national and international research; and also to be favored by successful students through well instructed education.

Vision: To attain a structure that give national and international level education; solve problems of food industry by the activities of R&D and practice, and by carrying out significant scientific research on food engineering field; and contribute country development by fostering staff who aid industrial development.





Photos © DEFRA



SUSFOOD COUNTRY REPORT UNITED KINGDOM

Authors:

DEFRA: Paul Ndede, Lucy Foster



Ministries and public services

- Department of the Environment, Food and Rural Affairs (Defra)

Defra is the lead department responsible for agriculture and food and including the development and implementation of policy in England on the environment, rural affairs, farming and food production. Food security, resilience and efficiency of food chain activity is set within the Government's wider policy framework (coalition priorities) to support and develop farming and encourage sustainable food production, enhance the environment/biodiversity to improve quality of life; support a strong sustainable green economy, including thriving rural communities, resilient to climate change and address coalition objectives of deficit reduction and growth. Agriculture, food and environment policy in Scotland, Wales and Northern Ireland are set by the Devolved Administrations.

Defra manage research programmes on an England and Wales basis and work closely with the Welsh Assembly Government to develop future research priorities. Defra's annual research budget is approximately £60M.

Major facilities and centres of expertise on agriculture and food at Research Council, Government and Devolved Administration (DA) institutes are key parts of the national capability, as are strengths in the university sector and private sector

Defra works in partnership with other funders to coordinate research on agriculture and food through the Global Food Security Programme

Funding bodies and research programmes

The UK food research and innovation landscape encompasses a range of Government departments, Devolved Administrations and other public bodies, including the Research Councils, Agencies, the Higher Education Funding Councils, Levy Boards and a diverse industrial base. The UK publically-funded research programmes are summarised below per funding body.

- Department for Environment, Food and Rural Affairs (Defra)

Contact: Lucy Foster **Email:** Lucy.Foster@defra.gsi.gov.uk **Phone:** +44 (0) 207 238 5932

Address: 17 Smith Square, Nobel House, SW1P 3JL London

Website: <http://www.defra.gov.uk>

The Department for Environment, Food and Rural Affairs (Defra) has primary responsibility for food and agriculture policies in England. Defra's evidence portfolio spans the food chain from primary production to consumption (including fisheries and aquaculture), and addresses the need for a resource efficient, productive, secure and sustainable food system.

Research programmes funded by DEFRA:

Resource Efficient and Resilient Food Chain

Resource Efficient and Resilient Food Chain research programme (approximately £4M) which spans the food chain at all stages from primary production (mainly post-harvest) to consumers. It has a post-farm-gate focus and this programme is the primary link with SUSFOOD. The current focus of the programme addresses overarching challenges to increase the resource efficiency, competitiveness and resilience of the food and drink sector, maintain food security and reduce environmental impact on the food supply chain, reduce waste and to promote the availability and uptake of quality, healthy food.

Evidence priorities addressed by the programme supporting food quality, sustainability and behaviour include:

- (i) Improving raw material quality and reducing post-harvest storage losses to increase efficiency through waste reduction (breeding, genetics, crops, livestock, horticulture, agronomy).
- (ii) Increase resource efficiency and competitiveness in the food supply chain (by reducing energy use, water use, GHG emissions, waste in processes, products) focusing on sectors where growth can be achieved and overcoming barriers to supporting a sustainable economy.
- (iii) Reduce the environmental and social impacts of food production by strengthening environmental metrics and understanding business drivers, economic and social issues affecting the food chain and business environment; identifying factors influencing supply chain attitudes, behaviours, practices and inter-relationships to drive changes in the supply chain.
- (iv) Understanding society's engagement with food production; gathering evidence to understand and improve information on a healthy sustainable diet and supporting a low carbon food chain.
- (v) Understanding economic issues affecting food price rises, growth, exports, production, food chain sector business needs and what behaviour change interventions will influence the food chain, and their cost-effectiveness. Research on effects of food price changes on demand, food price inflation, and attitudes/behaviours to sustainable food purchasing.
- (vi) Supporting food labelling policy including the role of labelling in influencing sustainable consumption.

Centre of Expertise on influencing behaviour

Centre of Expertise on influencing behaviour funds the Sustainable Lifestyles Research Group with ESRC and Scottish Government. Activity includes research on attitudes and behaviours around sustainable food purchasing (to inform how prices might need to change), how eating habits are formed and exploring consumer responses to sustainable foods website:



<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=ProjectList&Completed=0&AUID=1701>)

<https://www.gov.uk/government/publications/evidence-strategy-for-defra-and-its-network>

Other Defra R&D programmes

Other Defra R&D programmes on Sustainable Farming Systems, Water Quality Management, adapting to Climate Change support sustainable diets through targeting reducing greenhouse gases across the supply chain, increasing sustainable production in agriculture, reducing the water footprint of UK produced food and reducing waste in the supply chain. Wider interests include understanding ecosystem services, animal welfare and sustainability, animal disease transmission and identifying solutions to maintain a competitive agri-food system, whilst protecting and enhancing the environment. These activities meet short and long-term needs set within the context of global issues including water scarcity; resource constraints; climate change impacts; social and demographic change; rising food demand, obesity and how these impact on supply chain production and consumption

- **Agric-Tech Strategy**

To take advantage of agriculture's opportunities and drive growth the Agricultural Technologies Strategy has set out a range of key actions, including:

- 160m investment in Agri-Tech Strategy.
- £70m Catalyst project fund to help commercialise new agri technologies, co-funded with industry. This includes a £10 million contribution from DfID aimed at technology and new products for developing countries.
- £90m capital funding to establish world class Centres for Agricultural Innovation. Industry-led and co-funded with industry, the Centres will support wide-scale adoption of agricultural innovation and technology.

<https://www.gov.uk/government/news/160-million-technology-boost-for-uk-agricultural-industries>

- **Collaborative R&D (SAFIP)**

Defra also supports collaborative research and development through the Innovate UK (formerly TSB)-led Sustainable Agriculture and Food Innovation Platform (SAFIP) which promotes growth through technological innovation with industry in the agriculture, food and drink sector. Priorities address increasing productivity with reduced environmental impact covering crop protection, sustainable protein, resource efficiency, waste and greenhouse gas reduction.

- **FOOD and HORT LINK Programmes**

Although closed to new projects these LINK programmes have historically supported pre-competitive research with industry to address developing technological solutions to

improve raw material/ingredients, quality, resource efficiency in food processing, manufacture and retail, flexible automation in plant/processing, and waste reduction in food manufacture.

- **The Global Food Security Programme**

Contact: Riaz Bhunnoo **Email:** riaz.bhunnoo@foodsecurity.ac.uk

Website: www.foodsecurity.ac.uk

The Global Food Security programme takes interdisciplinary and whole systems approaches to research on UK and global food supply systems, considering both supply and demand. The scope of the programme includes: food production and resource management; food economics, markets and trade; food processing, manufacture and distribution systems; food safety and nutrition; consumption habits and practices; and waste in the food system. The programme coordinates research supported by the programme partners across government departments, the devolved administrations, Research Councils and the Technology Strategy Board. It builds on the partners' existing activities, aiming to add value to their current and future investments, and complementing rather than replacing their individual strategies. It brings additional coherence by acting as a focus for joint activities and helping to ensure alignment of individual activities with shared goals. It also provides a platform for working in partnership with a wide variety of stakeholders and users, both internationally and in the UK

- **Food Standards Agency (FSA)**

Contact: Alisdair Wotherspoon **Email:** Alisdair.Wotherspoon@foodstandards.gsi.gov.uk

Phone: +44 (0) 20 7276 8786

Address: 125 Kingsway, Aviation House, WC2B 6NH London

Website: <http://www.food.gov.uk/>

The Food Standards Agency (FSA) protects the public's health and consumers' other interests in relation to food (as defined in the Food Safety Act 1990). The Food Standards Agency is responsible for food safety and food hygiene and is the UK Central Competent Authority for official controls. The Agency works with local authorities to enforce food safety regulations and has staff who work in UK meat plants to check that the requirements of the regulations are being met. Responsibilities for food policies differ slightly within the 4 countries of the UK (see <http://www.food.gov.uk/about-us/about-the-fsa/>)

Research programmes funded by FSA:

The Agency works closely with other research funders in the UK and internationally, to ensure that its work is co-ordinated, and to add value by working together. Research programmes on food safety and effective regulation and compliance – social science is a component of many of these projects.

Research is funded to provide the evidence to support the Agency's Strategic Plan outcomes which were recently reviewed and revised:

- Food produced or sold in the UK is safe to eat
- Imported food is safe to eat
- Food producers and caterers give priority to consumer interests in relation to food
- Consumers have the information and understanding to make informed choices about where and what they eat
- Business compliance is effectively supported because it delivers consumer protection. This will include a focus on effective, risk-based and proportionate regulation and enforcement
- As well as specific projects in areas such as microbiological and chemical safety of food, food allergy and risk based enforcement/compliance, there is a programme of Strategic and cross-cutting sciences (including economics, social science, analytical methods). There is also a programme of work on diet and health to support responsibilities within Food Standards Agency Scotland and Northern Ireland.

Website: <http://www.food.gov.uk/science/sci-gov/chiefsoci/csreps/>

Total Budget: £25m pa

- Department of Health

Contact: Mark Bush **Email:** mark.bush@dh.qsi.gov.uk **Phone:** +44 (0) 20 7210 4850

Address: 79 Whitehall, Richmond House, SW1A 2NS London

Website: <http://www.dh.gov.uk/>

The Department of Health (DH) provides strategic leadership for public health, the NHS and social care in England. The Department of Health's purpose is to improve England's health and well-being and in doing so achieve better health, better care, and better value for all. The DH leads the integration of health and well-being into wider Government policy, working with other sectors and systems with which they do not have a direct relationship, as well as integrating wider public policy into health and care services. They also take the lead internationally on some health issues for the UK.

Research programmes funded by Department of Health:

Research programmes mainly focused around health but containing aspects on nutrition, diet, lifestyle and obesity.

- The Scottish Government

Contact: Pieter van de Graaf **Email:** Pieter.vandegraaf@scotland.qsi.gov.uk

Phone: +44 (0) 131 244 9258

Address: Broomhouse Drive, Q Spur, Saughton House, Edinburgh EH11 3XD

Website: <http://www.scotland.gov.uk/>

The Scottish Government funds a wide range of nutritional, agricultural, biological and environmental research. The core strategic research programmes are managed by the Rural and Environment Science and Analytical Services Division (RESAS). The research funded is mainly strategic and applied in nature, and includes a Strategic Partnership on Food & Drink Science focused on industry needs.

The Scottish Government sets health, rural affairs, food and environment policy for Scotland and has a long-term Strategic Research portfolio to support these policy areas with evidence and advice. All activities contribute to the Scottish Government's purpose of creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth.

Food and drink policy and research is relevant to all five of [the Scottish Government's strategic objectives](#): wealthier & fairer; healthier; safer & stronger; smarter; greener.

Key policies relevant to food & drink and associated research in Scotland include:

- [Recipe for Success, Scotland's National Food & Drink Policy](#)
- [Becoming a Good Food Nation](#)
- [Preventing Overweight and Obesity in Scotland: A Route Map Towards Healthy Weight](#)
- [Supporting Healthy Choices](#)

The Scottish Government has several Main Research Providers (research institutes) which receive long term funding for research and knowledge exchange in the area of food & drink. The Scottish Government's current approach is set out in its [Rural Affairs and Environment Strategic Research Strategy 2011-2016](#).

The Scottish Government collaborates with other public funders of food & drink research on a regular basis, principally through the Global Food Security Programme.

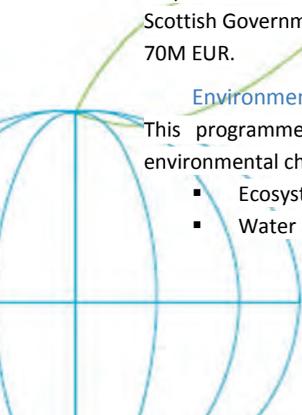
Research programmes funded by the Scottish Government

The Scottish Government funds strategic research on a wide range of aspects of environment and rural affairs, including human nutrition and consumer behaviour. In addition it funds research on fisheries and aquaculture at Marine Scotland, and seeds, crop varieties and plant health at Science and Advice for Scottish Agriculture (SASA). The Scottish Government's annual research budget for environment and rural affairs is around 70M EUR.

[Environmental Change Programme](#)

This programme is aimed at contributing to help Scotland be more resilient to environmental change. It contains research themes in the following areas:

- Ecosystem services
- Water and renewable energy



- Land use
- Rural economy

Annual Budget: around 14M EUR

Food, Land and People Programme

The main objective of this research programme is to optimise the use of Scotland's natural assets for food security. It contains research themes in the following areas:

- Food supply chains
- Animal health and welfare and plant health
- Healthy safe diets
- Vibrant rural communities

Annual Budget: around 23M EUR

Strategic Partnerships (industry focus)

- Food and Drink Science
- Animal Science

Centres of Expertise (policy focus)

- Climate change
- Water
- Animal disease epidemiology

Annual Budget: around 11.5M EUR

- **Research Councils**

Research Councils are executive Non-Departmental Public Bodies, established to fund basic, strategic and applied research and related postgraduate training.

Biotechnology and Biological Sciences Research Council (BBSRC)

Contact: *jef.Grainger* **Email:** jef.grainger@bbsrc.ac.uk **Phone:** +44 (0) 1793 413200

Address: North Star Avenue, Polaris House, SN2 1UH Swindon

Website: <http://www.bbsrc.ac.uk/>

The Biotechnology and Biological Sciences Research Council (BBSRC) is the lead research council on food, with responsibilities for bioscience research spanning the food chain from basic plant, soil and animal science to food science and human nutrition. Funding is primarily through HEI and research council institutes, but BBSRC also funds industrial collaborative schemes, international collaborations and public engagement which help to add value to the research and increase its impact. The BBSRC-led Global Food Security Programme brings together all the UK public funders to coordinate research to address the challenges posed by food security.

Research programmes funded by the Biotechnology and Biological Sciences Research Council (BBSRC):

Research on Sustainable Food Production falls within the scope of approx 10 individual programmes. This falls within the scope of 10 research programmes:

- Plant and Crop Science
- Animal Health
- Studentships
- Diet and Health
- Food Safety
- Agricultural Systems
- Environmental Change and Agri-systems
- Soil Science
- Food Manufacturing
- Animal Welfare
- Aquaculture

The Economic and Social Research Council (ESRC)

Contact: Hannah Collins **Email:** hannah.collins@esrc.ac.uk **Phone:** +44 (0) 01793 413024

Address: North Star Avenue, Polaris House, SN2 1UJ Swindon

Website: <http://www.esrc.ac.uk/>

The Economic and Social Research Council (ESRC) research also spans the food chain, with a focus on the social sciences and economics from understanding farm management and modelling world food supplies to gaining insights into food choice.

Research programmes funded by the Economic and Social Research Council (ESRC):

ESRC is identifying ways to secure safe, sustainable and affordable food supplies, particularly through the three following programmes:

Supply / Demand Economies

- Land use management.
- Agricultural productivity.

Security

- Food security

Diet/Behaviour

- Food safety.

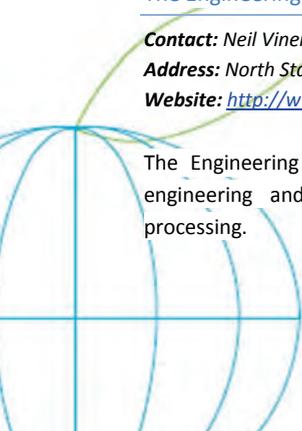
The Engineering and Physical Sciences Research Council (EPSRC)

Contact: Neil Viner **Email:** Neil.Viner@epsrc.ac.uk **Phone:** +44 (0) 1793 413000

Address: North Star Avenue, Polaris House, SN2 1ET Swindon

Website: <http://www.epsrc.ac.uk/>

The Engineering and Physical Sciences Research Council (EPSRC) funds fundamental engineering and chemistry, which has implications for food manufacturing and processing.



Research programmes funded by the Engineering and Physical Sciences Research Council (EPSRC):

EPSRC funding focuses on underpinning engineering and physical sciences through its standard funding mechanisms. Research of relevance includes:

- Food and drink products or ingredients
- Food structure and properties:
- Food and drink manufacture and handling
- Packaging (where relevant to food and drink properties or uses).
- Food modelling, functional foods

The Medical Research Council (MRC)

Contact: Karen Finney **Email:** Karen.Finney@headoffice.mrc.ac.uk **Phone:** +44 (0) 1793 416200

Address: 14th Floor, One Kemble Street, London WC2B 4AN

Website: <http://www.mrc.ac.uk/>

Medical Research Council (MRC) funds research into human health and disease and therefore has an interest in nutrition, and especially how it relates to ageing and obesity. The MRC's spend on food related research, including nutrition and obesity, was £26.8m for 2012/13.

- Innovate UK

Contact: Calum Murray **Email:** calum.murray@tsb.qsi.gov.uk **Phone:** +44 (0) 1793 442700

Address: North Star Avenue, North Star House, SN2 1UE Swindon

Website: <http://www.innovateuk.org/>

The vision of the Innovate UK is for the UK to be a global leader in innovation and a magnet for innovative businesses, where technology is applied rapidly, effectively and sustainably to create wealth and enhance quality of life.

The TSB assists businesses to innovate to develop new products and services based on technology. It also assists in knowledge transfer for the benefit of the UK economy through knowledge transfer partnerships (KTP) and knowledge transfer networks (KTNs). The TSB Sustainable Agriculture and Food Innovation Platform (SAFIP) addresses agricultural productivity (crops and livestock), food processing and waste reduction (from primary production to point of purchase by consumers f); a The Technology Strategy Board provides a critical link in the innovation chain, helping business in the development stages where research ideas can be taken through to products and services that can be commercialised.

The Detection and Identification of Infectious Agents (DIIA) Innovation Platform is mostly focused on human disease but is also investing in the development of tests for the rapid detection of certain animal diseases which will help the livestock industry.

Research programmes funded by Innovate UK

This funds innovative technological research and development in areas such as:

Sustainable Agriculture & Food Innovation Platform

This funds innovative technological research and development in areas such as crop productivity, sustainable livestock production, waste reduction and management and green house gas reduction. <https://connect.innovateuk.org/.../sustainable-agriculture-and-food-innovation-platform>.

The objective of the Innovation Platform is to support UK based companies to develop innovative solutions to the problem of sustainable intensification of agriculture, reduction of environmental impact and improved security in the food supply chain.

Annual Budget: 22 000 000EUR

Nutrition for Life

Providing safe, healthy and nutritious food is key to ensuring global food security, enabling all people to meet their dietary needs and food preferences for an active and healthy life. <http://www.innovateuk.org/content/competition/nutrition-for-life-feasibility-study.ashx>

This programme funds projects that encourage the development of innovative processes and technologies with an emphasis on providing “healthy” and “safe” food and drink, and will support both feasibility studies and collaborative research & development projects.

Annual Budget: approx £2.33M

Universities/Research Institutes:

A wide range of institutes, universities and consultancies support Defra research on the food chain. These include:

- **ADAS UK Ltd**

Contact: Colin Speller **Email:** enquiries@adas.co.uk **Phone:** 0845 766 0085

Address: Pendeford House, Pendeford Business Park, Wobaston Rd, Pendeford, Wolverhampton WV9 5AP

Website: <http://www.adas.co.uk/>

Expertise: Environmental impacts, Agriculture and Food

ADAS is the UK’s largest independent provider of environmental consultancy, rural development services and policy advice

Expertise spans the entire environmental sector together with crop and livestock research and waste contracting and composting business.



- Ricardo-AEA

Contact: Hugh Martineau **E-mail:** hugh.martineau@ricardo-aea.com

Phone: +44 (0) 1235 753652

Website: <http://www.ricardo-aea.com/cms/>

Expertise: Environmental impacts, Agriculture and supply chain

Ricardo-AEA is a leading provider of analysis, advice, and data on economically sustainable solutions for environmental challenges. The sustainable agriculture team specializes in soil management, ghg emissions, sustainable production systems and deliver national programmes of advice to farmers and land managers on behalf of government.

Additional areas of interest are Air Quality and Environmental impacts, Chemical Risk, Energy and Climate Change, Resource Efficiency and Waste Management and Sustainable Transport.

- Biotechnology and Biological Sciences Research Council

Contact : Jef Grainger **Email:** jef.grainger@bbsrc.ac.uk **Phone:** +44 (0) 1793 413200

Address: North Star Avenue, Polaris House, SN2 1UH Swindon

Website: <http://www.bbsrc.ac.uk/>

The Biotechnology and Biological Sciences Research Council (BBSRC) is the lead research council on food, with responsibilities for bioscience research spanning the food chain from basic plant, soil and animal science to food science and human nutrition. Funding is primarily through HEI and research council institutes, but BBSRC also funds industrial collaborative schemes, international collaborations and public engagement which help to add value to the research and increase its impact. The BBSRC-led Global Food Security Programme brings together all the UK public funders to coordinate research to address the challenges posed by food security.

Institute of Biological, Environmental and Rural Sciences (IBERS)

Contact: Prof Iain Donnison **Email:** isd@aber.ac.uk **Phone:** +44 (0)1970 823092

Address: Aberystwyth University, Penglais, Aberystwyth, Ceredigion, SY23

Website: <http://www.aber.ac.uk/en/ibers/>

Focus: agriculture, food, Sustainability, diet, health

IBERS areas of expertise include traditional agricultural, grassland, rural, environmental and biological science disciplines, and working in multidisciplinary teams that draw upon the wide range of life science and social science expertise in Aberystwyth University.

IBERS science interests include plant, animal and microbial sciences, agriculture, cell biology and physiology, genomics parasitology, ecology, plant and animal breeding/reproduction, social sciences and evolutionary processes.

Institute of Food Research (IFR)

Contact: Professor David Boxer **Email:** vivien.munro@ifr.ac.uk **Phone:** +44 (0)1603 255119

Address: Norwich Research Park, Colney, NR4 7UA Norwich

Website: <http://www.ifr.ac.uk/>

Focus: Sustainability, food

IFR is one of eight institutes that receive strategic funding from the Biotechnology and Biological Sciences Research Council (BBSRC).

IFR science aims to meet the challenges of supplying safe, nutritious food that promotes healthy ageing now and in the future. IFR provides underpinning science for government and the food manufacturing industry.

Research areas include understanding the working of the intestinal tract, how food-borne bacteria can cause human disease, and how the chemical and physical nature of our food influences health and can add value to the food chain. They have strategic relationships with other BBSRC institutes, the University of East Anglia and Imperial College, London.

- **Computational Microbiology Research Group**

Contact: Jozsef Baranyi **Email:** jozsef.baranyi@ifr.ac.uk

Address: North Star Avenue Polaris House, SN2 1UH Swindon

Website: <http://www.ifr.ac.uk/safety/comicro/default.html>

The core of our efforts in science is the application of advanced mathematical, statistical and computational tools to food microbiology research. Our interdisciplinary approach is key to the activity of the group.

Our research includes (i) Predictive Microbiology, a quantitative approach to food microbiology); (ii) Modelling Microbial Complexity and Variability by network analysis and stochastic processes; and (iii) Biostatistical Analysis of microarray data (see further information on IFR's Microarray facility) .

Rothamsted Research

Contact: Professor Maurice Moloney **Email:** maurice.moloney@rothamsted.ac.uk

Phone: +44 (0) 1582 763 1332

Address: West Common, Harpenden, Hertfordshire, AL5 2JQ

Website: <http://www.rothamsted.ac.uk/>

Focus: agriculture, Sustainability



Research areas: plant productivity, crop quality and agricultural sustainability; knowledge transfer to improve crop yields and enhance nutrition, contribute to energy security, reduce the carbon footprint of farming and protect and nurture the agricultural environment.

- **Brunel University**

Contact: Dr Nicholas Holland. **Email:** Nicholas.Holland@brunel.ac.uk

Phone: +44 (0)1895 274000

Address: Kingston Lane, Uxbridge, UB8 3PH Middlesex

Website: <http://www.brunel.ac.uk/>

Focus: Innovation, Resource Efficiency and Sustainability

- **Campden BRI (CCBRI)**

Contact: Jeremy Davies **Email:** jeremy.davies@campdenbri.co.uk **Phone:** +44(0)1386 842255

Address: Station Road, Chipping Campden, GL55 6LD UKCa Gloucestershire,

Website: <http://www.campdenbri.co.uk/>

Focus: Food, Innovation, Resource efficiency And Sustainability, consumer science

Campden BRI provides technical, legislative and scientific support and research to the food and drinks industry worldwide. It offers a comprehensive “farm to fork” range of services covering agri-food production, analysis and testing, processing and manufacturing, safety, training and technical information services. The company has cutting-edge facilities for analysis, product and process development, and sensory and consumer studies, including a specialist brewing and wine division.

- **Cranfield University**

Contact: Prof Leon A. Terry **Email:** L.a.terry@cranfield.ac.uk

Phone: +44 (0)1234 754006

Address: Cranfield, Bedfordshire MK43 0AL

Website: <http://www.cranfield.ac.uk/>

Expertise: Internationally recognized expertise across both domestic and international food supply chains from primary food production, inputs - soil, plants and water, through to point of sale, waste reduction and applied informatics.

Largest group of soil scientists in any UK university or institute, with over 25 staff

UK National Reference Centre for soil, and is a member of the European Environment and Observation Network (EIONET) and of the European Soil Bureau Network. We hold national and international soil reference data and samples, publically-accessible through the Land Information System (LandIS) and the World Soil Survey and Archive Catalogue (WOSSAC).

- **East Malling Research (EMR)**

Contact: Prof. Peter Gregory **Email:** peter.gregory@emr.ac.uk **Phone:** +44 (0) 1732 843833

Address: New Road East Malling, Kent ME19 6BJ

Website: <http://www.emr.ac.uk/>

Focus: agriculture, horticulture, Sustainability, breeding resource use efficiency, pest and disease management, food security.

EMR is focused on high quality strategic and applied research in horticultural and environmental sciences to deliver knowledge, products and services to a range of public and private customers. Our vision is to be recognized as the pre-eminent research institute in the UK for horticultural crops, with a particular emphasis on perennial and clonally propagated crops.

- **Newcastle Business School (University of Northumbria)**

Contact: Sarah Boon Sarah Boon **Email:** s.boon@northumbria.ac.uk

Phone: +44 (0) 191 2273896

Address: City Campus East, Newcastle upon Tyne NE1 8ST

Website: <http://www.northumbria.ac.uk/sd/academic/nbs/>

Expertise: Environmental Impact behaviours

- **Plymouth University (SERIO)**

Contact: Professor Jim Griffiths **Email:** jim.griffiths@plymouth.ac.uk **Phone:** +44 (0)1752 232407

Address: Room 303, Link Block, Drake Circus, Plymouth, Devon, PL4 8AA

Website: <http://www.serio.ac.uk/>

Expertise: Environmental impacts behaviour

SERIO, based at Plymouth University, provides specialist social, economic and market research.

- **University of Aberdeen**

Contact: Rachael Bernard **Email:** r.bernard@abdn.ac.uk **Phone:** 01224 (27)3388

Address: King's College, AB24 3FX Aberdeen

Website: <http://www.abdn.ac.uk>

Relevant research themes include: Environment and Food Security

College of Life Sciences and Medicine

Contact: Professor Neil Gow **Email:** n.gow@abdn.ac.uk

Phone: +44 (0)1224 437460/+44 (0)1224 437483

Address: School of Medical Sciences, Institute of Medical Sciences, Foresterhill, AB25 2ZD Aberdeen



Website: <http://www.abdn.ac.uk/clsm/>

Biological and environmental science research within the Institute of Biological and Environmental Sciences focuses on integrative physiology, ecology and biotic interactions, leading to a cross-disciplinary focus on predicting the biotic impacts of environmental change.

Rowett Institute of Nutrition and Health (RINH)

Contact: Professor Peter J. Morgan / Professor Harry J. McArdle

Email: p.morgan@abdn.ac.uk / h.mcardle@abdn.ac.uk

Phone: +44(0)1224 438642 / +44(0)1224 438628

Address: Greenburn Road Bucksburn, AB21 9SB Aberdeen

Website: <http://www.abdn.ac.uk/rowett/>

Nutrition research: obesity, food security, malnutrition, and ageing.

- [Scotland's Rural College \(SAC\)](#)

Contact: Professor David McKenzie **Email:** David.McKenzie@sruc.ac.uk **Phone:** 0131 535 4293

Address: SRUC Edinburgh Campus, King's Buildings, West Mains Road, Edinburgh EH9 3JG

Website: <http://www.sruc.ac.uk/>

The growing human population, and growing demand for food, are major challenges in their own right that need to be addressed in a world with potentially dramatically changing climate, and with growing pressure on its natural resources.

SAC provides strategic and applied research on the global and local food security issues, and actively supports the translation of research results into practice.

- [The Food and Environment Research Agency \(FERA\)](#)

Contact: Mike Wray **Email:** mike.wray@fera.gsi.gov.uk **Phone:** +44 (0) 1904 462000

Address: Sand Hutton, YO41 1LZ York

Website: <http://www.fera.co.uk>

Focus: Food, agriculture and the environment

Over the past 100 years, Fera has been a leading voice for scientific evidence, advice and solutions across plant health and the agri-food supply chain. Our business is understanding problems and developing sustainable solutions through innovative thinking, and the gathering and analysis of robust scientific evidence. Fera employs over 500 scientists and is located on the National Agri-Food Innovation Campus at Sand Hutton, York.

Food and Drink

Fera's food and drink capabilities are geared around the concept of Food Integrity, which spans ensuring food is free from natural and process contaminants, through to ensuring our food is what it says it is on the tin, whether that be contents, method of production or geographic origin. We are able to do this not only because of our scientific expertise but also because we have a detailed knowledge of current and emerging regulations.

Fera acts as National Reference Laboratory in the areas of Food, Feed and Food Contact Materials, Pesticide Residues and Veterinary Medicine Residues.

Plants, Bees & Seeds – Detection and Surveillance

Fera provides a range of diagnostic and consultancy services to UK and overseas customers in pest and disease management. This includes support to statutory inspection services in relation to plant health, bee health and plant varieties and seeds alongside and applied crop protection research. We use cutting edge omics capabilities covering both biological (proteins and DNA) and chemical (small molecules) analysis to develop and deploy new diagnostics both in the lab and at the point of use. Our innovative, flexible and responsive approach was particularly important in tackling the Ash dieback outbreak.

Sustainable Agriculture and Environment

Land use and sustainability is a core area of Fera's expertise covering agriculture, ecology, economics, spatial analysis and geographic information systems. Fera also focuses on the evaluation of strategies to reduce the impact of climate change on land use and alternative crop assessment.

We combine our analytical chemistry and molecular technology capabilities to evaluate renewable energy technologies and safe recycling of waste materials into food packaging.

Fera also provides science-based solutions for sustainable use of chemicals such as agrochemicals and pharmaceuticals. We specialise in bespoke and higher tier studies, modelling and advice for pre-registration data packages and product support.

- **University of Hertfordshire**

Contact: Professor John Senior **Email:** j.m.senior@herts.ac.uk **Phone:** +44 (0)1707 284301

Address: Hatfield, AL10 9AB Hertfordshire

Website: <http://www.herts.ac.uk/home-page.cfm>

Focus: Environmental Sustainability, labelling

Research areas include Agriculture, Environment, Health, Life Sciences, Engineering.

- [University of Warwick](#)

Contact: Professor Jim Beynon **Email:** jim.beynon@warwick.ac.uk **Phone:** +44 (0) 24765 75141

Address: University of Warwick, Wellesbourne, Warwick CV35 9EF

Website: <http://www2.warwick.ac.uk/>

Focus: Environmental impacts, sustainability, resilience, resource efficiency

- [Cardiff university](#)

Contact: Janice Addecott **Email:** Addecottji@cf.ac.uk **Phone:** (029) 208 79351

Address: GOVERN, 4th Floor, McKenzie House, 30-36 Newport Road, Cardiff CF24 0DE

Website: <http://www.cardiff.ac.uk/>

Biodiversity research including the ecological, health and genetic consequences of environmental change on biological diversity.

- [Newcastle University](#)

Contact: Chris Seal

- [Teesside University](#)

Email: enquiries@tees.ac.uk

Website: <http://www.tees.ac.uk/>

[School of Science and Engineering](#)

Contact: Maria Olea **Email:** sse-admissions@tees.ac.uk

Website: <http://www.tees.ac.uk/schools/sse/>

Address: Tees Valley, TS1 3BA Middlesbrough

The Technology Futures Institute is an international leader in key areas of research and innovation related to sustainable engineering, advanced processing, and measurement and control. As well as developing applications-focused new knowledge and technologies, the Institute provides a wide range of services through its strong, long-standing relationships with public and private sector organisations.

[Clean room](#)

The Institute has approximately 33 full academic members plus research staff and 64 PhD students. The North East of England is leading the way in the transition to the low carbon economy and the Institute is at the heart of this exciting, interdisciplinary activity. As a major centre for the chemical and process industries, the Tees Valley is home to major international companies that are actively involved in developing new clean technologies, including bioprocesses and biotechnologies, biofuels and hydrogen technologies. Our research and innovation activities complement these areas through active collaboration

and dynamic knowledge exchange. The Technology Futures Institute has a key role to play in securing the region's future as a world-leading low carbon industrial centre.

Themes

Research within TFI is organised into three main interrelated themes.

Engineering sustainability - focuses on the sustainability of the built environment with particular emphasis on the use of information and communication technology for building information management and modelling and for visualisation of construction processes.

Manufacturing and process engineering there are two key elements - firstly development of bespoke, advanced and functional materials for specific industrial applications and secondly on the use of micro and nanomanufacturing to create devices that have high density and enhanced functionality. Measurement and control systems - activity centres on the applications of intelligent algorithms in systems control, advanced chemical analysis technologies, and process flow measurement in challenging environments. The Tees Valley is a major centre for the chemical and process industries, with an innovative industrial base. Companies are actively involved in developing future technologies such as clean manufacture, biotechnology, biofuels, hydrogen technologies and printable electronics. Our research and innovation activities deliberately mirror these foci.

The Institute will have a key role to play in securing the region's future as a world-leading centre for the chemical and process sectors.

Our activities are applications oriented - developing new products, processes and systems in conjunction with industry and other industrially focused research institutes and universities within the region and nationally and internationally.

Collaborators and partners include some of the world's leading companies and research organisations. We work with partners in various ways including collaborative research projects, consultancy and Institute hosted best practice and research events.

We have a track record in working with industry through the Knowledge Transfer Partnership Scheme. The Institute has approximately 33 full academic members plus research staff and 64 PhD students.

- **University of Bristol**

Contact: Bogdan Warinschi

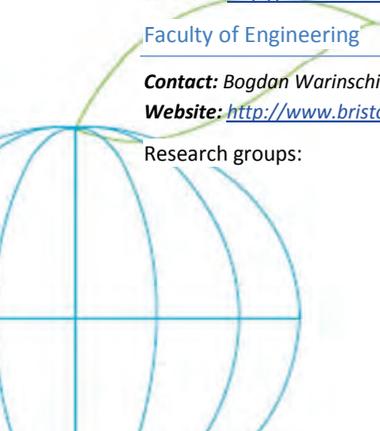
Website: <http://www.cs.bris.ac.uk/~bogdan>

Faculty of Engineering

Contact: Bogdan Warinschi **Email:** csxbw@bristol.ac.uk

Website: <http://www.bristol.ac.uk/engineering/research/>

Research groups:



Advanced Composites Centre for Innovation and Science (ACCIS)	Intelligent Systems
Applied Nonlinear Mathematics	Interaction and Graphics
Communication Systems and Networks	Microelectronics
Cryptography	Photonics
Dynamics and Control	Robotics
Earthquake and Geotechnical Engineering	Solid Mechanics
Electrical Energy Management	Systems
Fluid and Aerodynamics	Ultrasonics and NDT
	Visual Information Laboratory
	Water and Environment

- **University of Lincoln**

Address: Brayford Pool Lincoln LN6 7TS Lincolnshire

Website: <https://www.lincoln.ac.uk/home/>

National Centre for Food Manufacturing (NCFM)

Contact: Mark Swainson **Email:** m.swainson@lincoln.ac.uk **Phone:** 01406 493000

Address: The National Centre for Food Manufacturing University of Lincoln Park road Holbeach, PE12 7PT Lincolnshire

Website: <http://www.lincoln.ac.uk/home/NCFM>

Mission/expertise: NCFM school mission focuses on developing a research centre of excellence which combines the subject areas of Food Microbiology, Food Safety, Food Quality, Food Process Engineering and Sensory Technology.

Instruments: Resources include food processing halls, extensive food manufacturing equipment / facilities, laboratories for food microbiology, food chemistry and sensory analysis. The NCFM also has an extensive partner network of businesses in the food manufacturing and related food processing equipment sectors.

- **University of Manchester**

Website: <http://www.manchester.ac.uk/>

- **The University of Sheffield - Department of Geography**

Contact: Peter Jackson **Email:** p.a.jackson@sheffield.ac.uk

Address: Western Bank Sheffield S10 2TN

Website: <http://www.sheffield.ac.uk/>

- University of Birmingham - School of Biosciences

Contact: Warwick Dunn **Email:** w.dunn@bham.ac.uk

Website:

<http://www.birmingham.ac.uk/schools/biosciences/staff/profile.aspx?ReferenceId=53168>

Dr Warwick (Rick) Dunn's research group focuses on developing innovative chromatography, mass spectrometry, sample collection and computational resources and their application in the study of the complex role of metabolites in human ageing and diseases. Areas of biomedical study include endocrinology, inflammation and immunology including musculoskeletal health, cardio-renal diseases and complications of reproduction and pregnancy.



PART II.

Mapping of research in framework of SUSFOOD

Introduction

The main task of the SUSFOOD Workpackage 1 (WP1) was to provide comprehensive information about research programmes, research activities, research facilities, etc. that are run in each participant's country during the running time of SUSFOOD.

There were two levels of mapping:

The first level of mapping (mapping 1) included the mapping of the European research landscape including funding possibilities and research programmes. These results were written in the national Country reports (see part I).

The objective of the second level of mapping (mapping 2) was to collect information on past, present and future research projects at national, regional and interregional level to give input in the SUSFOOD Strategic Research Agenda (SRA) and to try to identify gaps and overlaps in the European research.

Aims

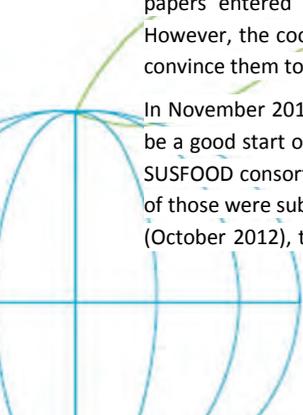
The second mapping analysis in the SUSFOOD project is performed to gather information about (past and current) research projects from the research community. The main purpose of the second mapping analysis in the SUSFOOD project was to identify the past, current and future research in Europe (only the 16 SUSFOOD partner countries) within the scope of sustainable food production and consumption from beyond the farmgate to the consumer.

Methodology

To map European food research, SUSFOOD launched an open web based archive (Meta Knowledge Base or MKB) in September 2012. This MKB offered a freely accessible database, an open forum and partnering tool to the whole research community. This database was intended to become a forum for the exchange of information and best practices between Member States and candidate countries for the EU and also for launching transnational calls and joint trans-national calls with other relevant activities such as other ERA-NETs (see general introduction page 11)

The idea was that this second analysis would be done via the postings (projects and papers entered in the MKB) that would be submitted by researchers in the MKB. However, the cooperation of researchers therefore is crucial, and often it was difficult to convince them to spend time on submitting their research to the database.

In November 2014, a total of 526 project postings were recorded in the MKB, which may be a good start of a new database, but were considered to be a very little amount by the SUSFOOD consortium compared to the research in food science on-going in Europe. Most of those were submitted in the framework of the collection of data for the Country Report (October 2012), the first research Call (January – April 2013), after the promotion of the



updated SUSFOOD MKB and a first preliminary result per country, which was sent to the partners (July – August 2013). The projects submitted from October 2013 until November 2014 were mainly added by the funding bodies among the SUSFOOD partners.

When performing a “relevance to SUSFOOD” check, it was shown that 13% of all projects (69 out of 526) were purely about agriculture and could be regarded as out of scope for SUSFOOD. These postings were among others, about land use, water use, horticulture, seeds, optimal growing conditions of plants, optimal plants, GMOs and detection thereof, aquaculture and fishing, organic farming, etc.

Because of the rather low input of projects by the researchers themselves, it was opted to also analyse papers in the mapping task to enlarge the amount of data to work with. These papers were analysed separately since normally more than one paper is written with the results of a whole project.

To find papers, a Web of Science author search was performed on all users of the Meta Knowledge Base. As many users didn't provide us with projects, we tried to get their input this way. This led to 2094 papers of which, 1831 papers were found to be relevant for SUSFOOD, which makes 13.5% out of scope. A similar number to what was found based on the project analysis.

Next to the projects and paper analysis, a more general Web of Science search was performed based on all the keywords which were found within the scope of SUSFOOD, as decided by all SUSFOOD Partners at the Ghent workshop in 2012 when the scope of SUSFOOD was outlined. The search was performed on the 25th of November based on the records in Web of Science for the last 5 years (2012-2014) in all SUSFOOD Partner countries and comprised only publications, reviews and conference proceedings in English. The detailed search terms can be found in addendum.

Results

▪ Projects and papers

At the workshop in Ghent in May 2012, it was decided that a keyword based classification system would be the best approach to classify all projects (postings) in the database. Therefore a complete domain, subdomain and keyword system was set up in accordance with all SUSFOOD partners. For each of these domains and subdomains a set of keywords was decided which would describe the content (table 1).

Table 1 The scope of SUSFOOD, described via domains, subdomains and fixed keywords (next page)

Based on the keyword system, it is shown (figure 1) that the main part of the projects and papers are located within domain 1 (Valorisation of food and food products) and domain 2 (Engineering the food production chain for resource efficiency). The distribution along the 4 domains is slightly different, but the trend is similar.

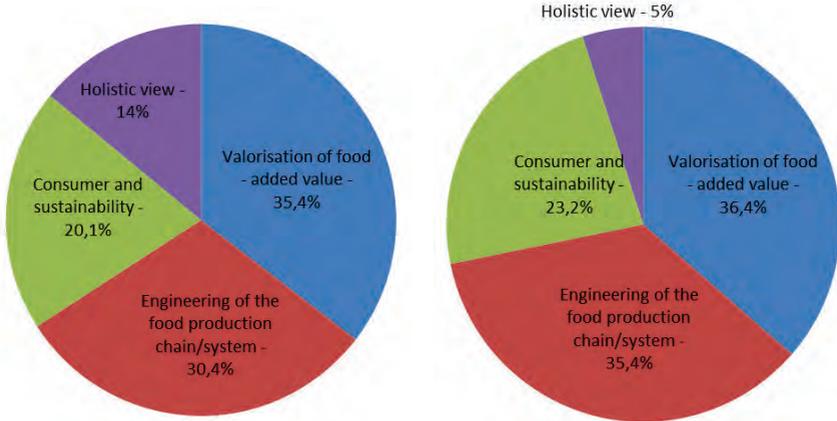


Figure 1: Distribution of the projects (left) and papers (right) according to the domains. Domain 1 : Valorisation of food and food products – added value, Domain 2 : Engineering of the food production chain/system, Domain 3 : Consumer and sustainability, Domain 4 : Cross-cutting issues.

The same result is seen in the distribution between subdomains (Figure 2 A and B). In domain 1 both subdomains have a lot of projects assigned to one of the keywords belonging to this subdomain. In domain 2, the main part of postings is assigned to keywords belonging to the first 2 subdomains, resource efficiency and improved quality. In domain 3 (Consumer preferences and behaviour), most postings belong to the subdomain consumer attitude and behaviour. In the section cross cutting issues (Holistic view) all other important keywords not directly linked to a certain general topic were listed.

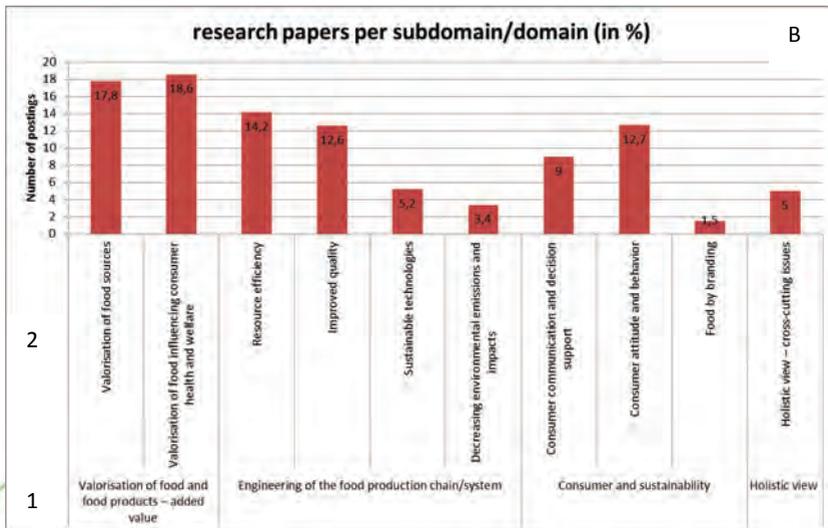
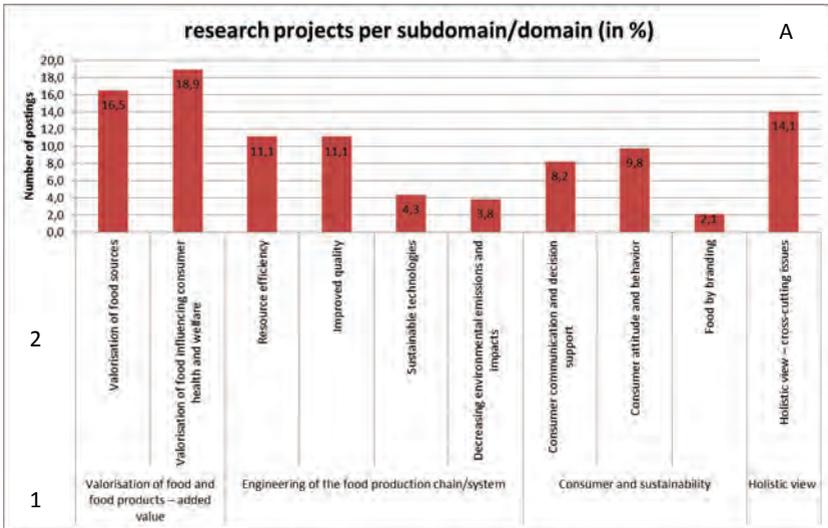


Figure 2: Number of projects (A) and papers (B) in percentages per domain (1) and subdomain (2.)

For most postings more than one fixed keyword was used to classify the project. Beside additional freely chosen keywords, 2% had one fixed keyword, 15% two keywords, 25% had three fixed keywords and most of the postings (58%) were classified based on four

keywords. These keywords were often chosen from different subdomains and domains, indicating a broad scope of the projects.

In Figure 3, the most frequently used keywords and their subdomains are presented. The most popular keywords are about « nutritional aspects » and « healthy sustainable diet/nutritional aspect of food » (both subdomain 1.2); « Quality, raw materials and ingredients » (subdomain 1.1) and « Food quality/raw materials » (subdomain 2.2); « Food safety » (subdomain 1.2, 2.2 and 4), « Consumer attitude, perception and behaviour » (subdomain 3.2), « Public health » (subdomain 1.2) and « Valorisation, added value » (subdomain 1.1). The least frequently used keywords are mostly about « Economy », « Regulation », « Distribution and logistics » and « Environmental issues ». The last keyword could be more about agricultural issues, explaining why it is not much used.

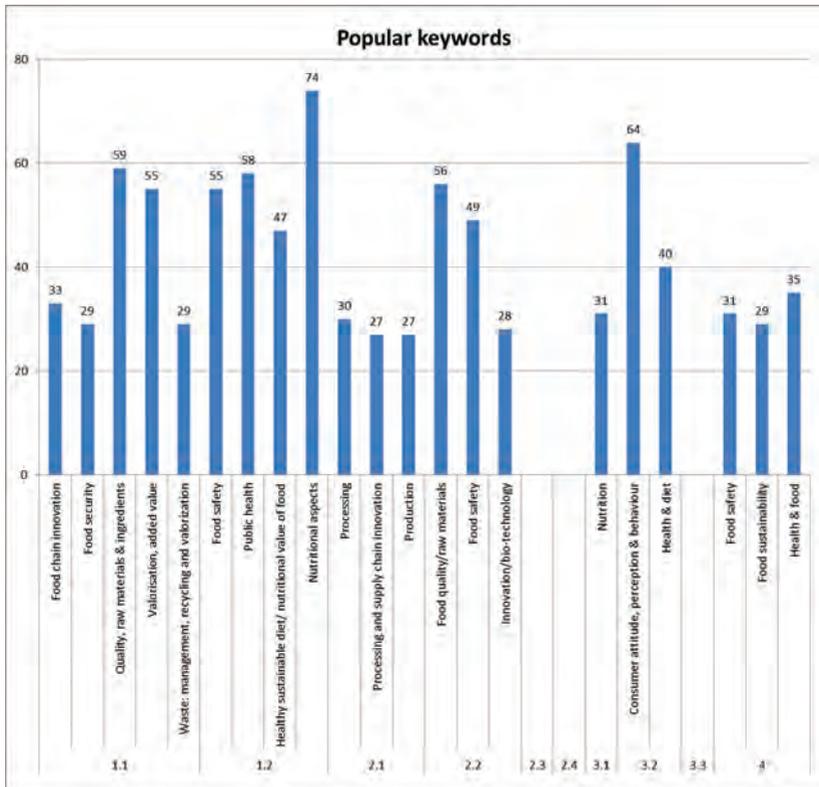


Figure 3 Most frequently used keywords and their subdomains when classifying a posting. The total amount of keywords used is 1660. This shows that even these keywords aren't used very frequently.

- **Web of science search on all keywords within the scope of SUSFOOD**

As a comparison of the relevance of the analysis performed on the MKB data a general Web of Science search was performed using the search term described on page 421 and in the addendum).

In total 20279 records were found. The distribution of these records based on the SUSFOOD domains by using the SUSFOOD keywords are given in Table 2. These results are very likely to those from the MKB data. The main part of the records are located within domain 1 (Valorisation of food and food products) and domain 2 (Engineering the food production chain for resource efficiency). However, domain 2 has nearly the same amount of records as domain 1 depending on the year. This is slightly different from the MKB data analysis.

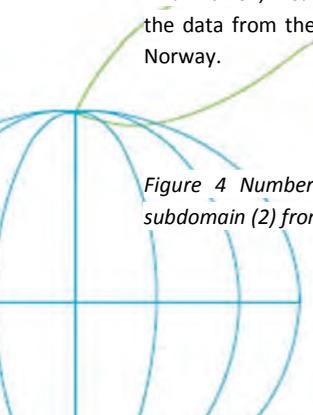
Table 2 Distribution of the Web of Science publications according to the SUSFOOD domains between 2010 and November 2014. Domain 1 : Valorisation of food and food products – added value, Domain 2 : Engineering of the food production chain/system, Domain 3 : Consumer and sustainability, Domain 4 : Cross-cutting issues.

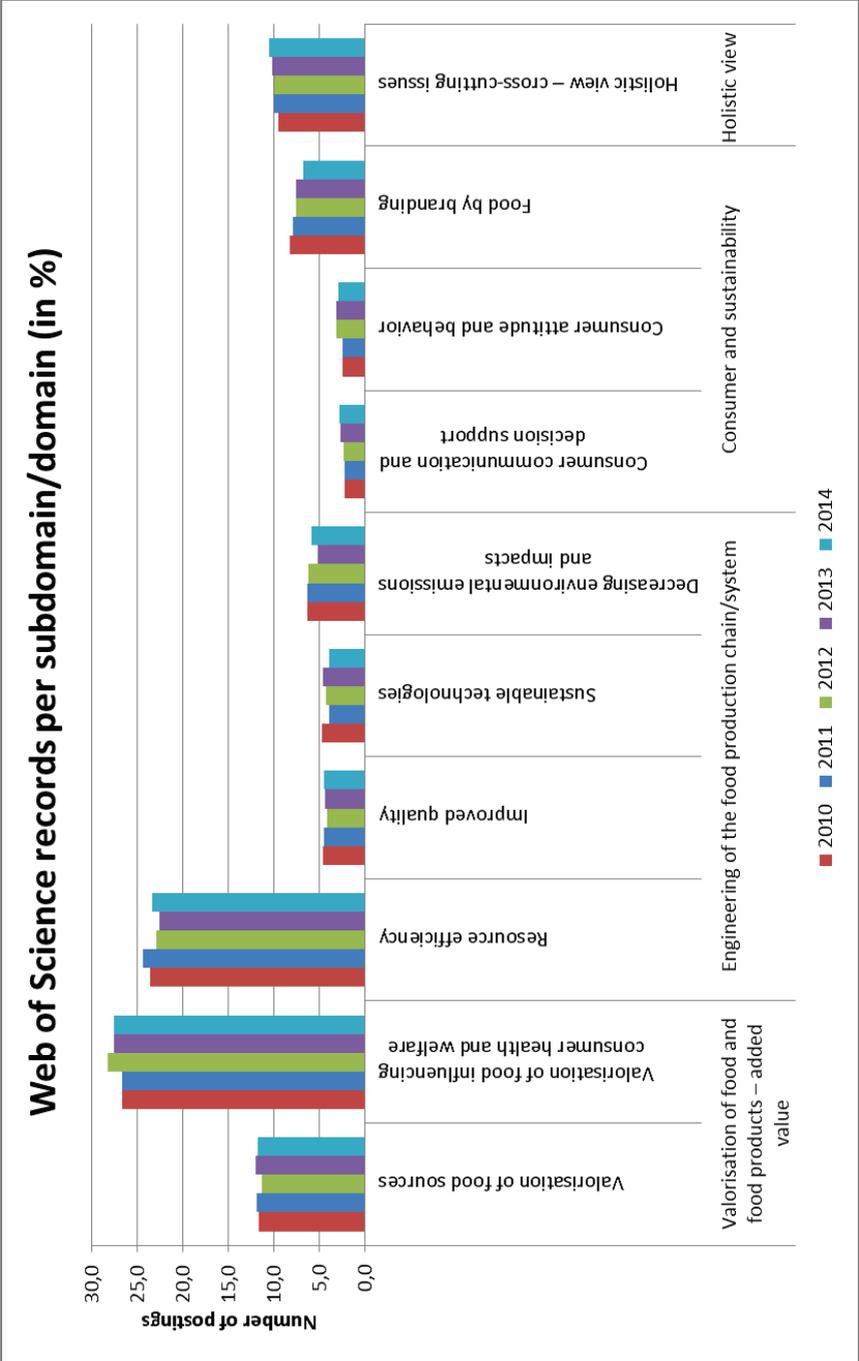
SUSFOOD domains	2010	2011	2012	2013	2014
1.Valorisation of food - added value	38,2	38,5	39,6	39,7	39,3
2.Engineering of the food production chain/system	39,3	39,1	37,5	36,8	37,8
3.Consumer and sustainability	13,0	12,5	13,0	13,4	12,4
4.Holistic view	9,5	9,9	9,9	10,2	10,5

Based on the subdomains quite a clear difference can be seen as the most important subdomains are 1.2 valorisation of food influencing consumer health and welfare, 3.1 resource efficiency, 4. Holistic view and 3.4 Food by branding.

The Web of Science search also showed that 31% of all records were funded via European funding possibilities, while 69% was funded by national funding bodies. The search showed that 21.1% of all records regarded Spain, 16.9% were Italian publications, 11.5% were German, 10.6% were French, 7.8% were Turkish, 5.7% were Belgian, 5.2% Polish, 4.1% Danish, 2.6% Swedish and 2.4% from Finland and the UK. This was not reflected in the data from the MKB as the top 5 was taken by: Italy, Denmark, Belgium, Spain and Norway.

Figure 4 Number Web of Science publications in percentages per domain (1) and subdomain (2) from 2010 to November 2014. (next page)





Advantages of using an MKB database for mapping

Nevertheless the small differences between the MKB data analysis and the We of Science search, the analyses of the MKB data gives a rather good image of what has been published in the previous years.

Mapping tasks using published papers (e.g. Web of Science searches) have the disadvantage that the research is already going on for a while (most probably at least a year) before the paper has been published. This means, that it isn't possible to know about recently started research. An online freely useable database tool such as the Meta Knowledge Base (MKB) could be a very good way to keep researchers up to date on what kind of projects have been

An online database such as a MKB also gives other advantages, such as the ability to know much sooner than publications are written and submitted how the research landscape is evolving. This however depends very much on researchers and whether they are willing to submit projects which are just started or about to start. Once this hurdle would be overcome, such a database and analysis should have several large advantages for both research as well as funding and policy as it will give an overview of the most current state.

Another advantage of submitting projects into the MKB database is the increase of visibility on the Web as a total of 3410 visits were registered via Google Analytics. 72% was only an accidental visit, but 28% stayed on the website and visited several pages. The most used way to get to the MKB database is via an organic search, meaning that a Google search based on some sort of keyword or organisation has led to the visit. It was clearly seen that MKB pages were listed within the 5 first hits when performing a Google search. Figure 5 shows the distribution of getting to the MKB database.



Figure 5 Distribution of how visitors get to the SUSFOOD MKB pages. Organic search (e.g. Google search), Direct (by entering an URL), Referrals (ehu.es (16.7%); inra.fr (11.5%); uefiscdi.goc.ro (11.5%); sc.ehu.es (9.4%) and enquetes.agencerecherche (5.2%).

To facilitate the work for researchers, developments within Open Data Repositories are crucial and should be explored in the future.

Also it should be identified what stakeholders would find very interesting to know in order to submit their projects.

Addendum

(WC="food science & technology" AND PY=2010-2014 AND CU=(Belgium OR Denmark OR Estonia OR Finland OR France OR Germany OR Italy OR The Netherlands OR Norway OR Poland OR Romania OR Slovenia OR Spain OR Sweden OR Turkey OR United Kingdom) AND TS=(certifi*or side flow* or byprod* or coprod*or subprod* or econom* or sustainable food or protein alternati* or food chain innovation or traceab* or logistic* or food security or valorization or added value* or ((qualit* or raw) near/10 food) or ingredient* or (waste near/5 (manage* or recycl* or valori* or reduc*)) or regulation or food chain innovation or "quality of life" or safe* near/3 food or regulat* or legal issue* or sensor* assessment* or public health or health* or ((supplement* or additive* or substitute*) near/3 claim) or ((health* or market*) near/3 claim*) or diet* or ((health* or sustainable) near/3 diet*) or (nutrition* near/3 value*) or nutrition* or process* or ((supply or process*) near/3 chain*) or chain innovat* or distribut* or food product* or management* or resilien* or "non\$food produc*" or ((resource or water or energ* or waste* or GHG* or gas*) near/3 efficien*) or (process near/5 (food or chain* or product*)) or (raw near/3 food) or (standard* near/5 food) or ((cost or benefit*) near/15 quality) or (packaging near/15 (food or sustainabl*)) or (preserv* near/15 (food or sustainable)) or (innovat* near/15 (food or produc*)) or innovat* or bio\$tech* or bio\$refiner* or (resource* near/5 (water or energy or use or availab*)) or economic* or (environment* near/5 (metric* or evaluat*)) or social impact* or ((ICT or robotic* or automat*) near/15 sustainabl*) or (supply near/3 (attitudes or behavio*)) or LCA or life cycle assesement or life cycle analysis or (technol* near/3 innovat*) or (resource near/3 efficien*) or (waste near/3 recycl*) or communicat* or ((quality or access or choice or policy or educat*) near/3 food) or social medi* or ((label* or consum*) near/3 sustainabl*) or (attitu* near/15 technolog*) or (household near/10 econom*) or (access near/5 food) or ((accept* or perception or behavio* or psycholog* or cultur*) near/10 food) or social attitude* or safe diet* or ((diet* or waste or health*) near/15 consumer) or ((econom* or sustainabl*) near/5 diet) or (innovation near/3 accept*) or tast* or media or technolog* or novel technolog* or trace* or label* or regulat* or ((database or review* or eco\$label* or environment* or indicat* or econom* or access* or policy or price* or volatil* or safe* or sustainabl* or resilien* or resilien*) near/3 (system or health*)) or geograph* or local* or impact* or (secur* near/5 global) or food secur* or social aspect* or sustainabl* innovat* or ((trade* or econom* or waste) near/15 food))) AND LANGUAGE: (English). Refined by: DOCUMENT TYPES: (ARTICLE OR REVIEW OR

PROCEEDINGS PAPER). Timespan: 2010-2014. Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCIS, CPCI-SSH.



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(<http://www.capedecision.com/2011%2007%2011%20Belgium%20showcase.pdf>)

ⁱⁱ INEA (National Institute of Agricultural Economics), 2012: *Italian Agriculture in figures 2012*:

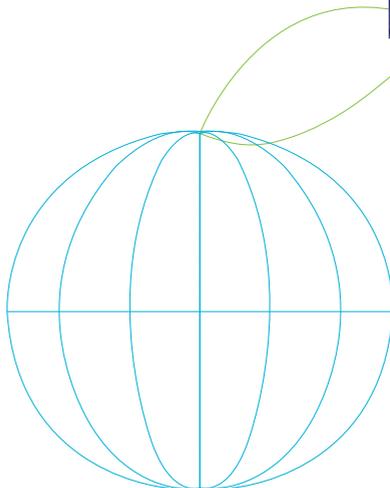
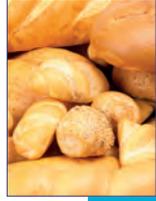
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ⁱⁱⁱ INEA, *Annuario dell'Agricoltura italiana 2011 (in Italian)*:

http://www.inea.it/annuario/ultima_edizione

^{iv} *Report on the state of Agriculture, Food, Forestry and Fisheries in 2012, Ministry of Agriculture and the Environment, June 2013, available at:*

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SUSFOOD